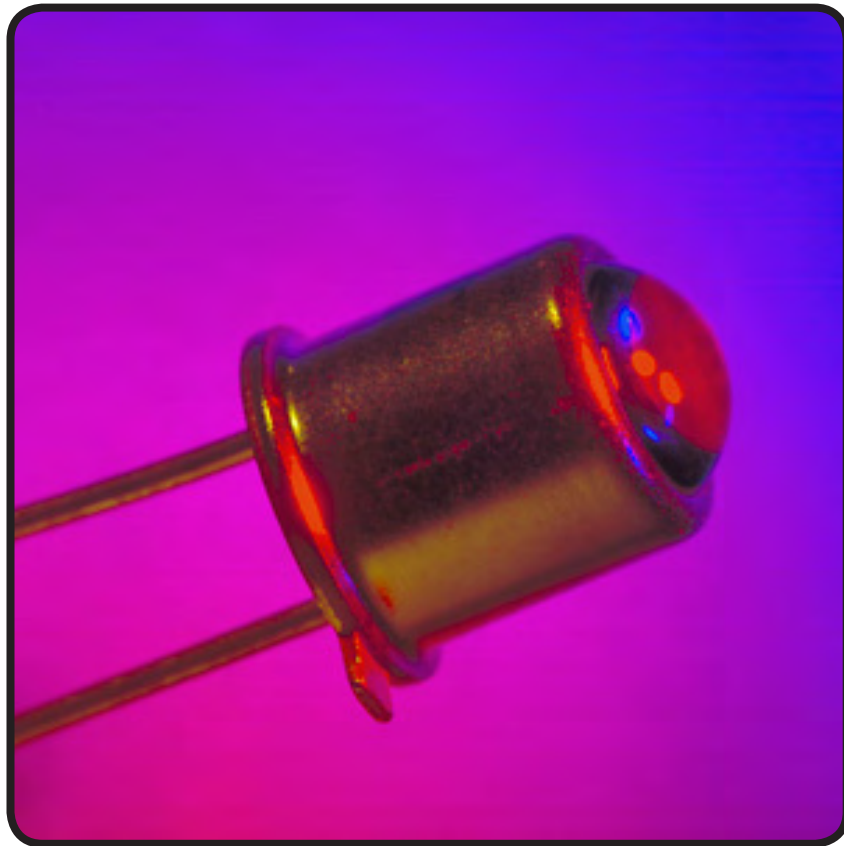




OPTO DIODE CORP.

Optoelectronics Data Book



Innovators in Optoelectronics

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SAFETY STANDARDS APPLICABLE TO LEDs

The United States applies different emission limits than other countries so care should be taken to apply the proper Standard and emission limit.

In the United States, ANSI Z136.1-2000, American National Standard for Safe Use of Lasers, is the standard used to define emission limits for Lasers. Appendix H of this Standard refers manufacturers to ANSI RP27.1 and RP27.3 to apply Safety Standards for LEDs.

Western Europe, and other Countries, apply IEC 60825-1, Safety of Laser Products as the standard for LEDs and Lasers. This document does not make a distinction or apply different emission limits between LEDs and lasers.

Reflector cups, multiple LEDs, external lenses and/or other optical components applied by the equipment manufacturer may significantly alter the emission level. It is the responsibility of the equipment manufacturer to test and verify the actual emission in the system. Opto Diode will be available to provide values at the component level as requested.

INTRODUCTION

Opto Diode Corporation was established in 1981 as an independent, privately held corporation whose mission is to supply the most reliable and highest power IRLED's in the world. While still maintaining that edge, we have also diversified into detectors sensitive only to near infrared LED's, detector and emitter arrays, and specialized wavelength devices. Our high power IRLED's are used in a variety of applications including:

- **Photo-Electric Controls**
- **Optical Encoders**
- **Night Vision Systems**
- **CCD Illuminators**
- **Autofocusing Cameras**
- **Ophthalmic Instrumentation**

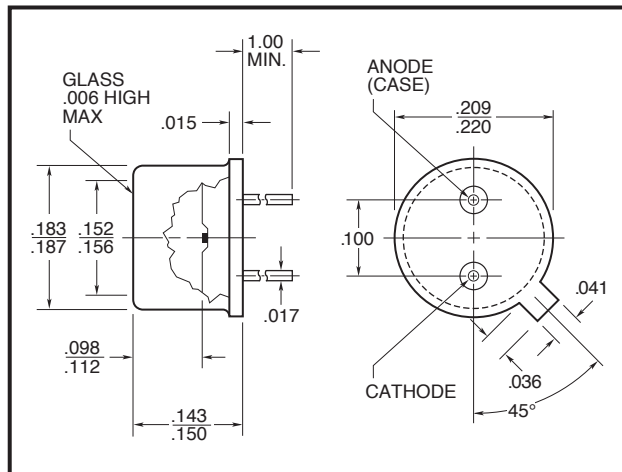
A quality control system for all products which meet the requirements of Mil-I-45208 is in place to ensure the highest quality devices are available at the most reasonable cost. In addition, we specialize in small production runs for military applications. We can adapt the appropriate sections of Mil-S-19500 to provide a product suitable for ground, air or space based applications. Our devices have been used on many high reliability platforms including:

- **Accelerometers for Airborne Applications**
- **Motion Control Systems on the Space Shuttle and various Weather Satellites**
- **Aircraft Landing Lights and Illuminators**

Opto Diode is also a source you should think of when needing custom packaging of LED's in the visible range. We work closely with other chip suppliers to specify the exact wavelength of interest and package them singly or in array formats to achieve higher power output levels and better heat sinking than is currently available from T1 3/4 plastic packages. On a custom basis we can assemble chips on any imaginable TO header from a TO-46 to a TO-66 and everything in between.

Call or fax us with details of your custom application.





FEATURES

- High reliability liquid-phase epitaxially grown GaAlAs
- 880nm peak emission for optimum matching with ODD-45W photodiode
- Wide range of linear power output
- Hermetically sealed TO-46 package
- Wide emission angle to cover a large area

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	18	20		mW
Radiant Intensity, I_e			16		mW/sr
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ			80		Deg
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.55	1.9	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Capacitance, C	$V_R = 0\text{V}$		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	190mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 400Hz) ²	3A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R_{THJA} ¹	400°C/W Typical
Thermal Resistance, R_{THJA} ²	135°C/W Typical

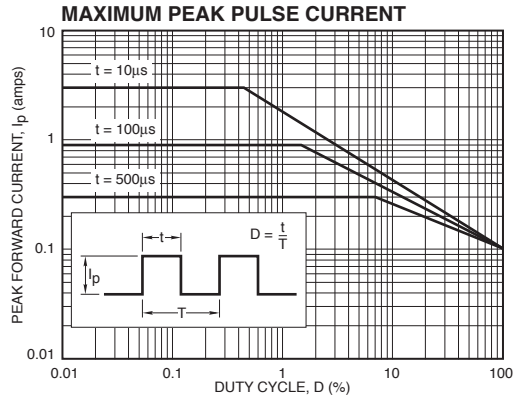
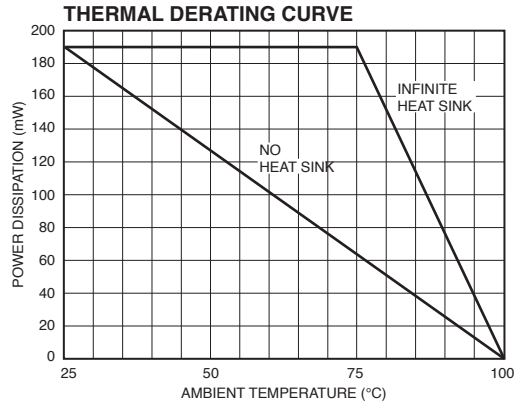
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

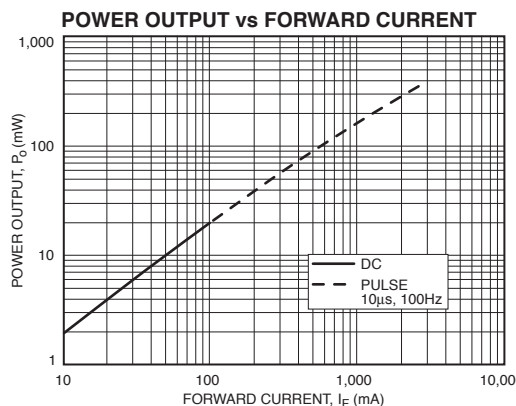
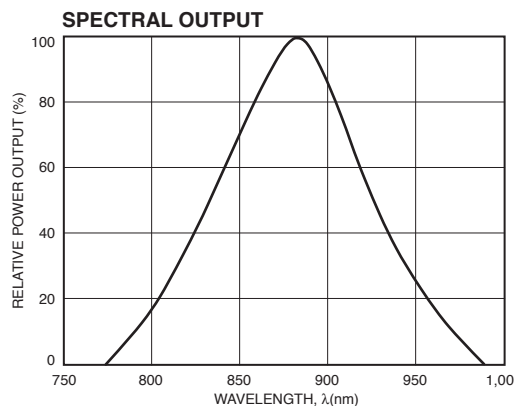
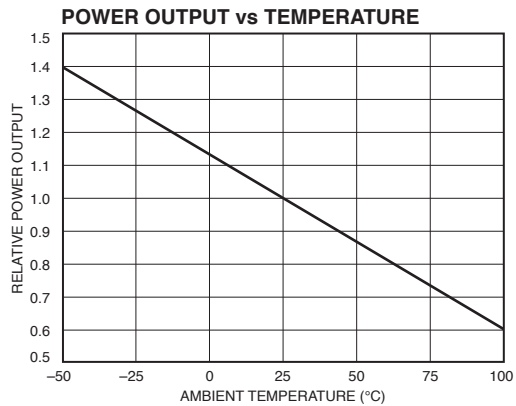
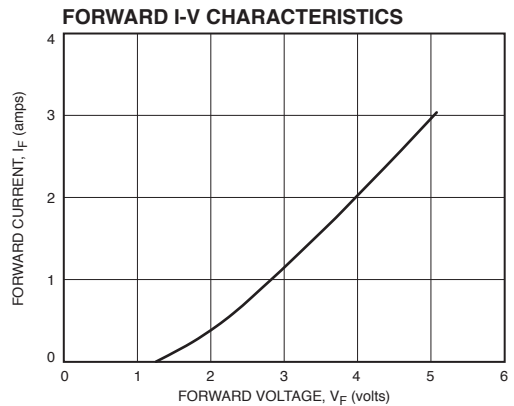
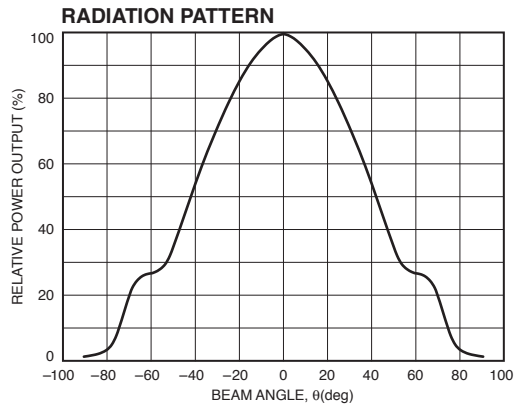
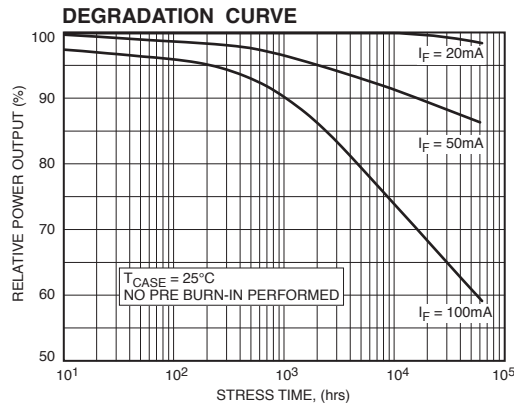


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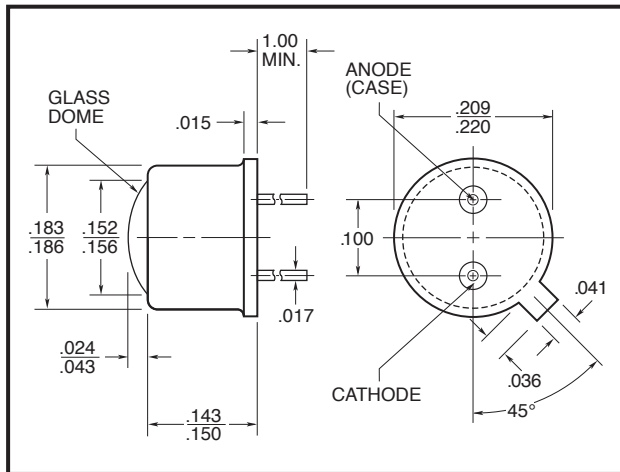
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FEATURES

- High reliability liquid-phase epitaxially grown GaAlAs
- 880nm peak emission for optimum matching with ODD-45W photodiode
- Wide range of linear power output
- Hermetically sealed TO-46 package
- Medium emission angle for best coverage/power density

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	18	20		mW
Radiant Intensity, I_e			50		mW/sr
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ			35		Deg
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.55	1.9	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Capacitance, C	$V_R = 0\text{V}$		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	190mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 400Hz) ²	3A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

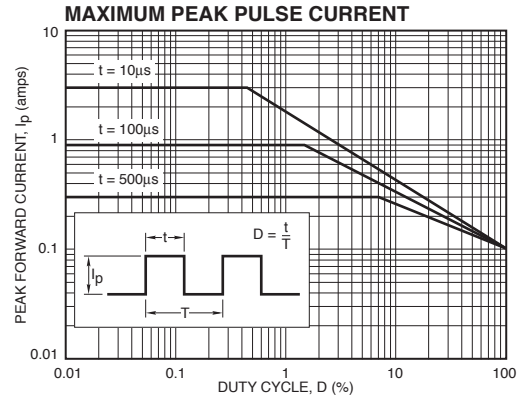
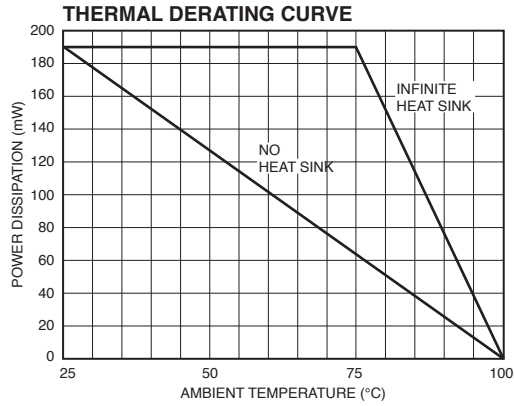
¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

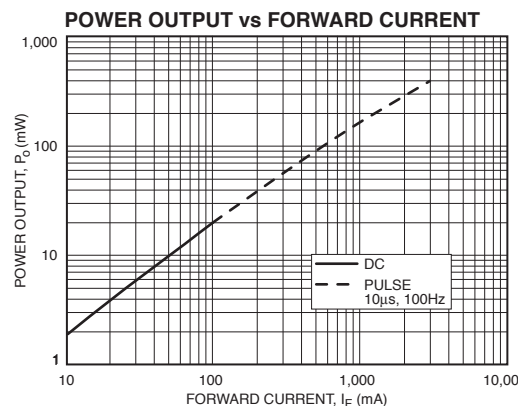
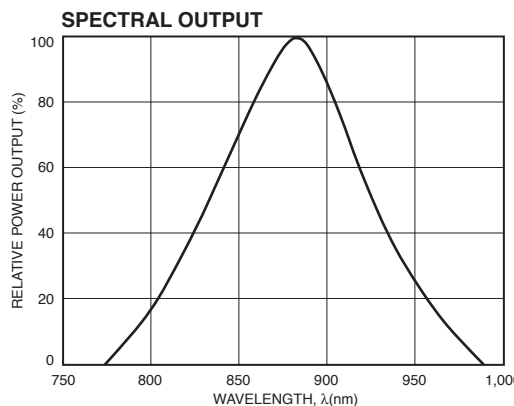
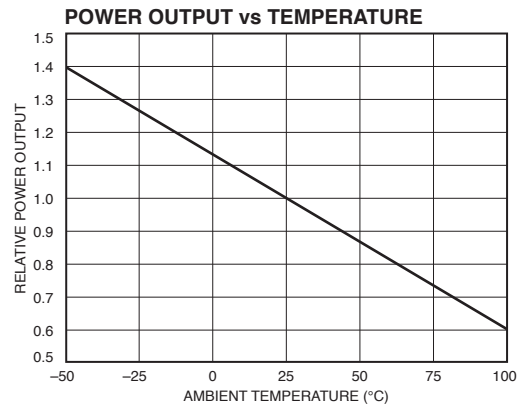
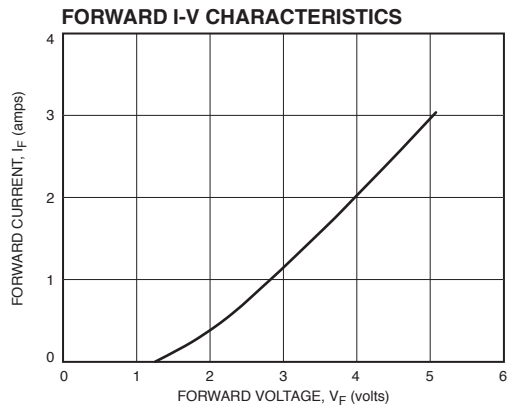
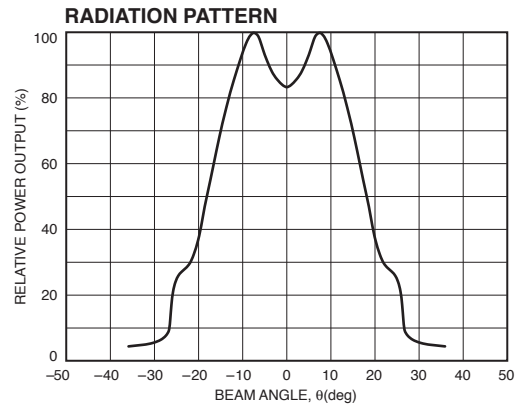
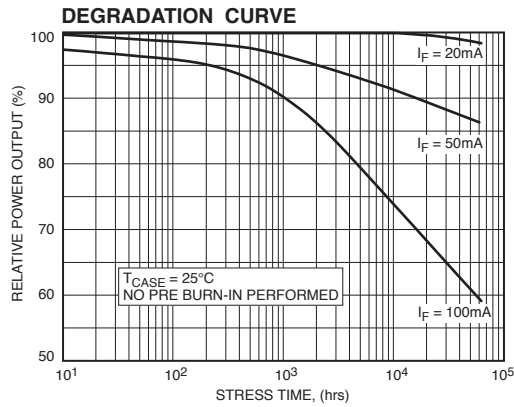
THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R_{THJA} ¹	400°C/W Typical
Thermal Resistance, R_{THJA} ²	135°C/W Typical

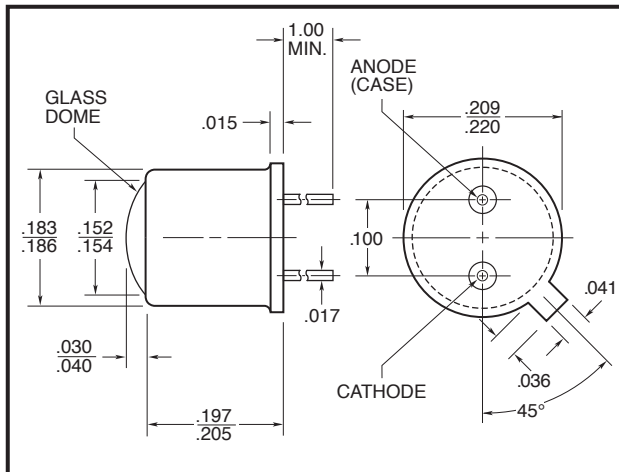
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FEATURES

- High reliability liquid-phase epitaxially grown GaAIAs
- 880nm peak emission for optimum matching with ODD-45W photodiode
- Wide range of linear power output
- Hermetically sealed TO-46 package
- Narrow angle for long distance applications
- OD-880F1 selected to meet minimum radiant intensity

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	OD-880F OD-880F1 $I_F = 100\text{mA}$	15	17 8		mW
Radiant Intensity, I_e	OD-880F OD-880F1 $I_F = 100\text{mA}$	120	135 160		mW/sr
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ				8	
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.55	1.9	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Capacitance, C	$V_R = 0\text{V}$		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	190mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 400Hz) ²	3A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C to 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R_{THJA} ¹	350°C/W Typical
Thermal Resistance, R_{THJA} ²	115°C/W Typical

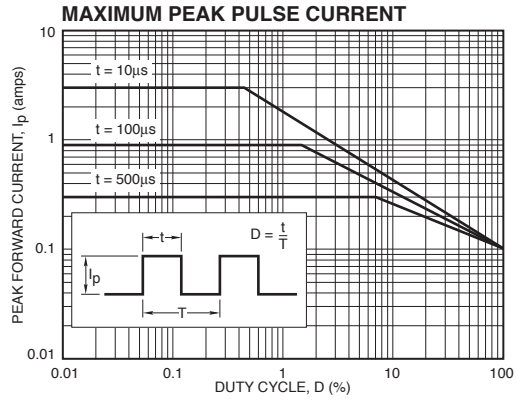
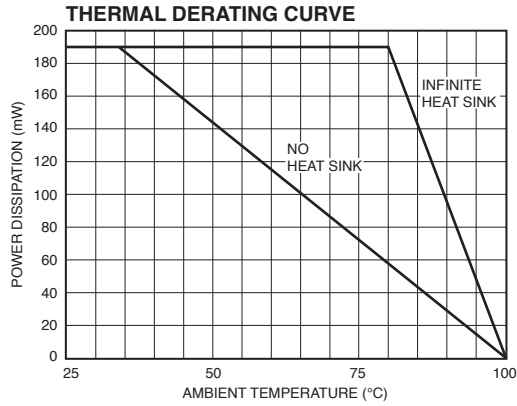
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

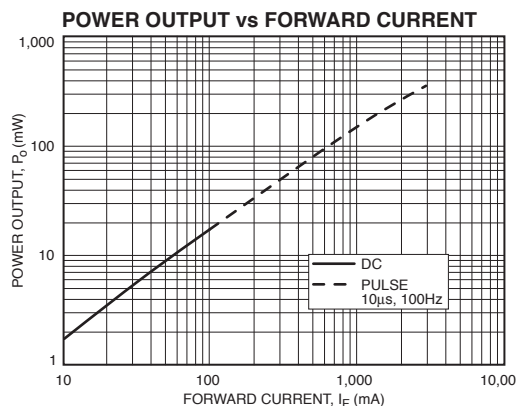
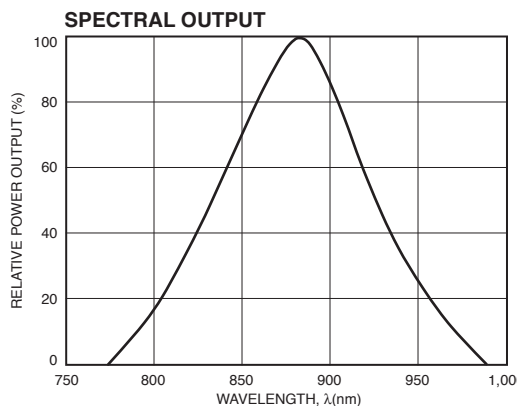
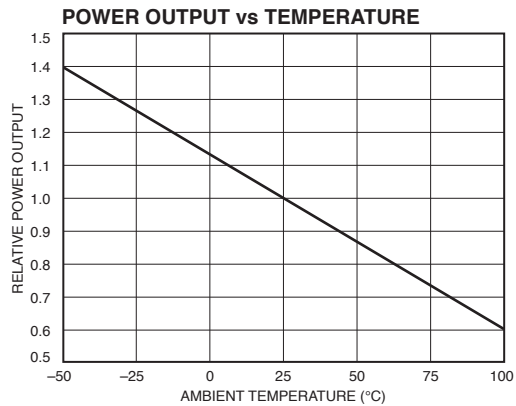
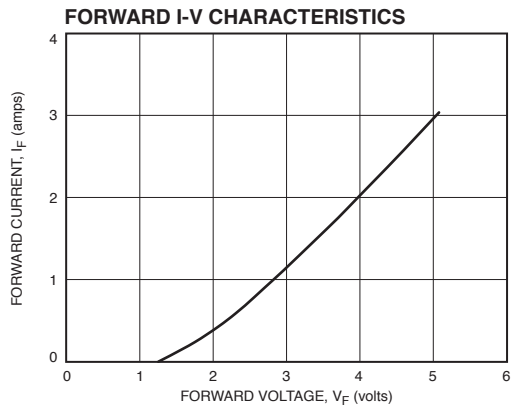
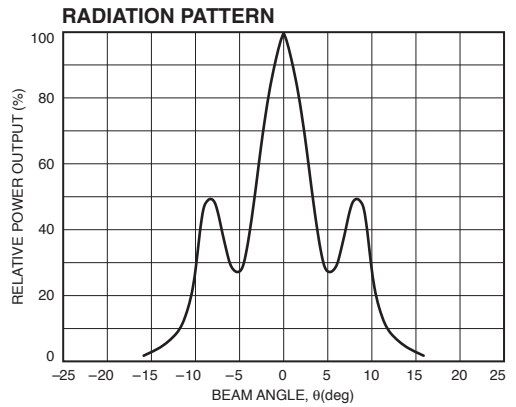
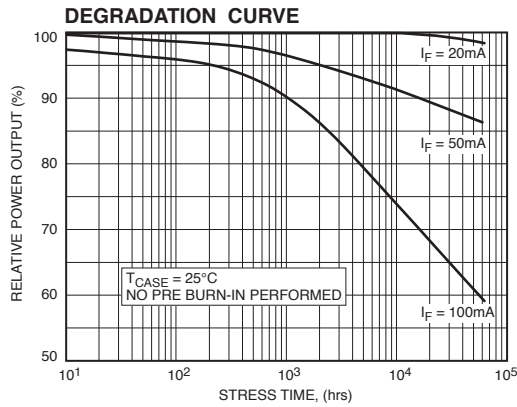


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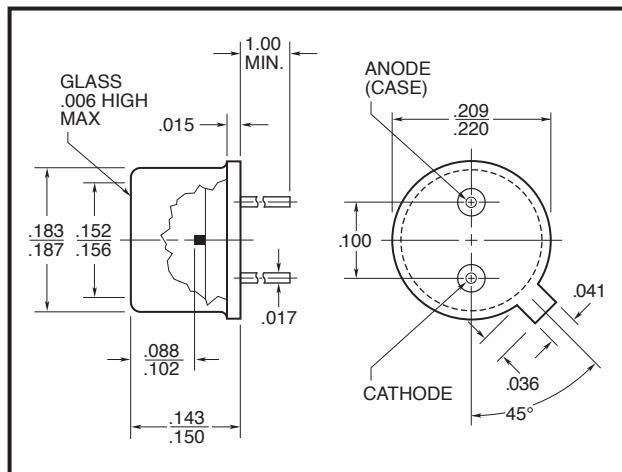
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TYPICAL CHARACTERISTICS



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FEATURES

- Open center of emission
- High reliability liquid-phase epitaxially grown GaAlAs
- Hermetically sealed TO-46 package
- OD-148-C chip used

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_O	$I_F = 100\text{mA}$	8	10		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ				95	
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.55	1.9	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Capacitance, C	$V_R = 0\text{V}$		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	190mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 400Hz) ²	3A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R_{THJA} ¹	400°C/W Typical
Thermal Resistance, R_{THJA} ²	135°C/W Typical

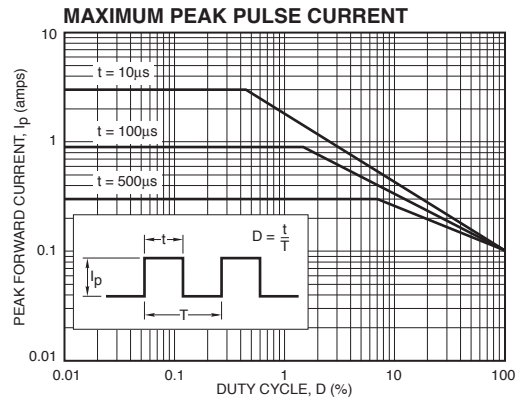
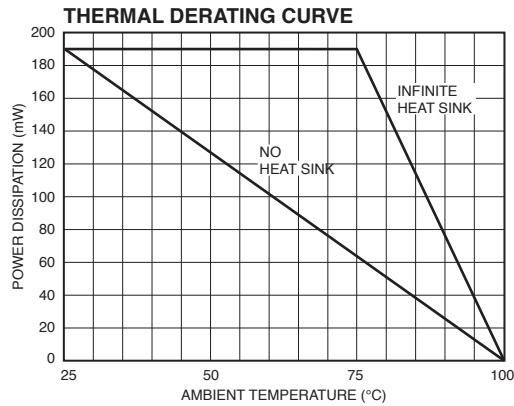
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

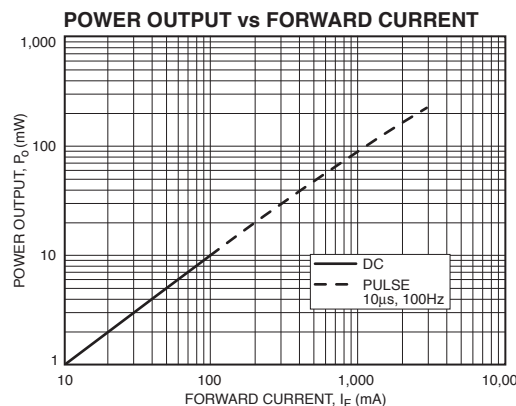
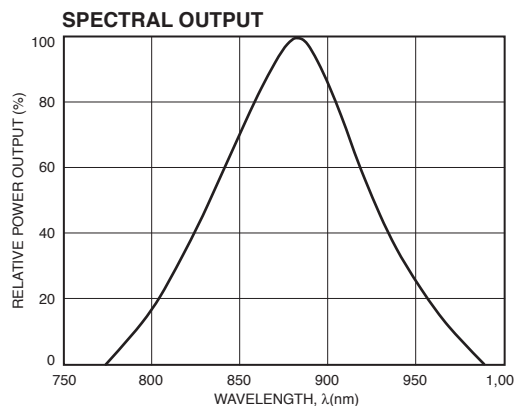
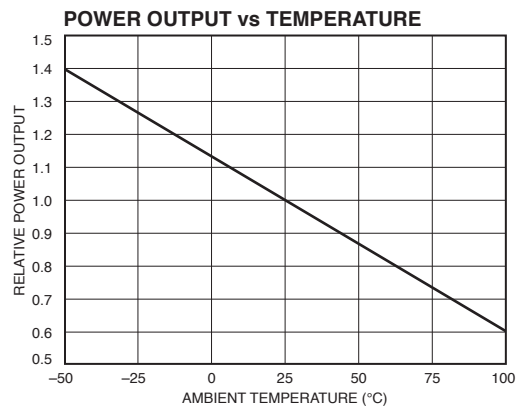
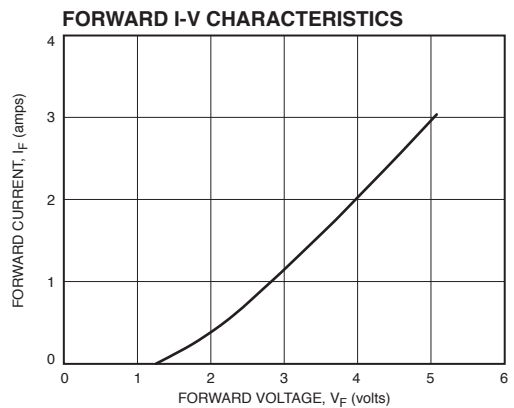
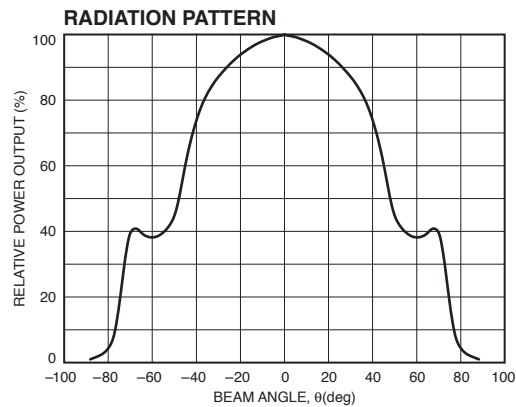
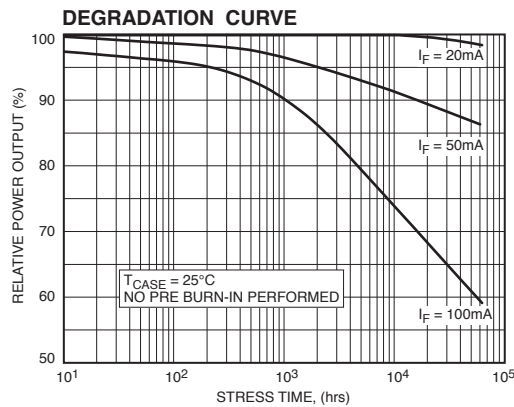


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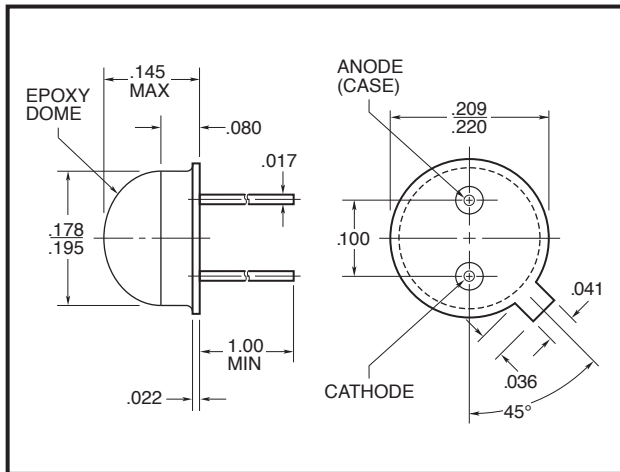
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- High reliability liquid-phase epitaxially grown GaAlAs
- 880nm peak emission
- High uniform output
- TO-46 Header

All dimensions are nominal in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	20	30		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ				90	
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.55	1.9	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Capacitance, C	$V_R = 0\text{V}$		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	190mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 400Hz) ²	3A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R_{THJA} ¹	400°C/W Typical
Thermal Resistance, R_{THJA} ²	135°C/W Typical

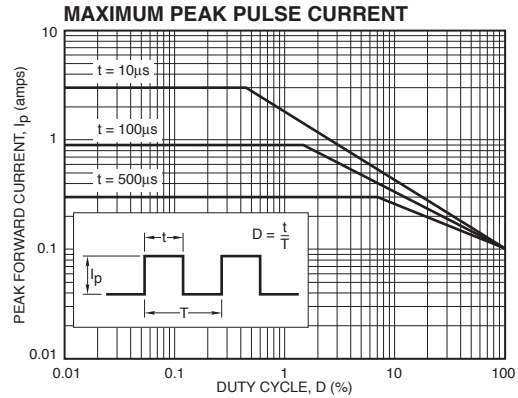
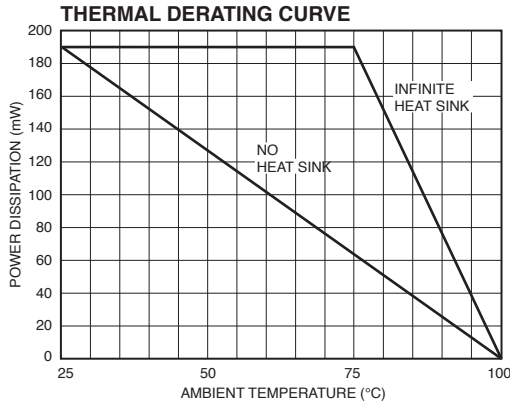
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

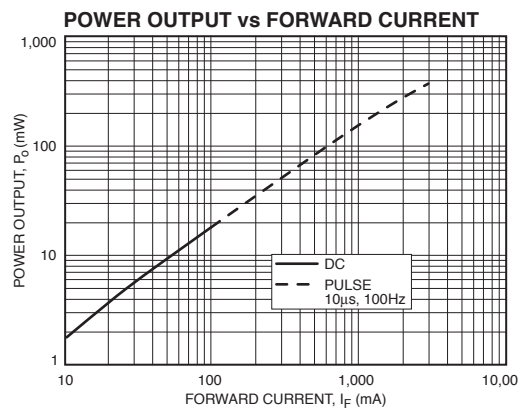
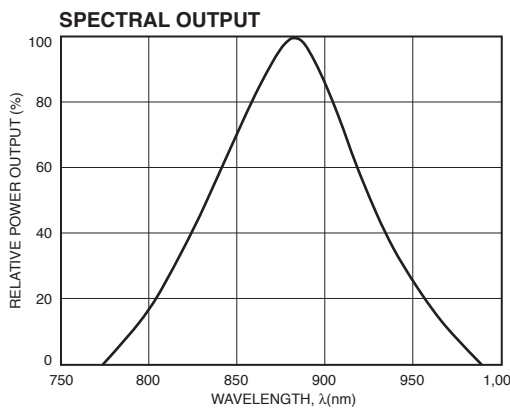
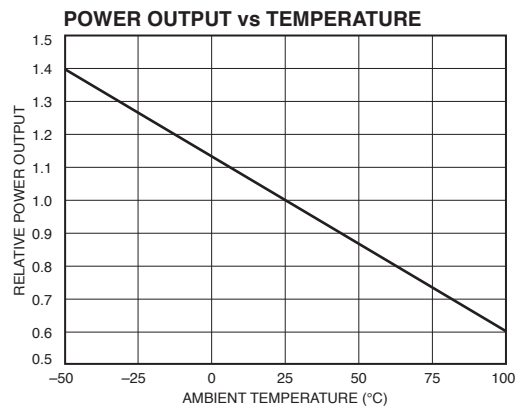
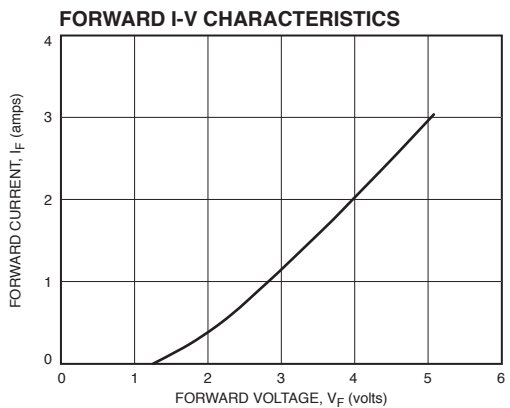
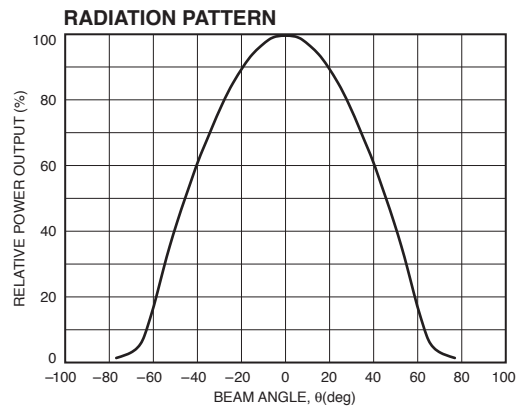
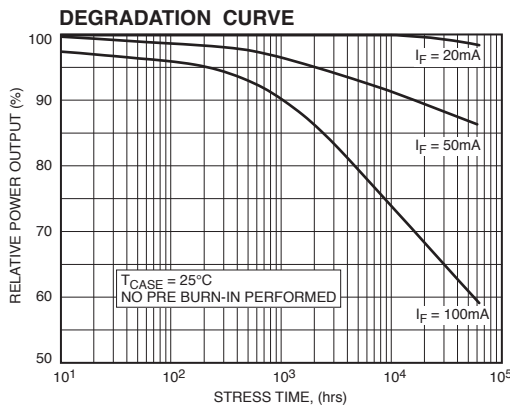


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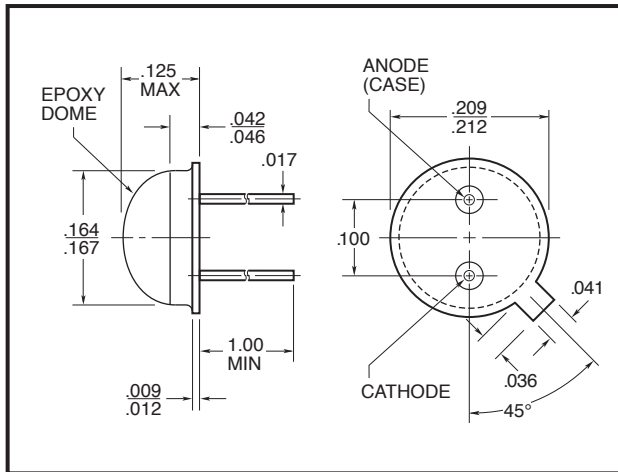
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- Very high power output
- Wide angle of emission
- High reliability liquid-phase epitaxially grown GaAlAs
- TO-46 Header

All metal surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P _o	I _F = 100mA	25	30		mW
Peak Emission Wavelength, λ _p	I _F = 50mA		880		nm
Spectral Bandwidth at 50%, Δλ			80		nm
Half Intensity Beam Angle, θ			80		Deg
Forward Voltage, V _F	I _F = 100mA		1.55	1.9	Volts
Reverse Breakdown Voltage, V _R	I _R = 10μA	5	30		Volts
Capacitance, C	V _R = 0V		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	190mW
Continuous Forward Current	100mA
Peak Forward Current (10μs, 400Hz) ²	3A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R _{THJA} ¹	400°C/W Typical
Thermal Resistance, R _{THJA} ²	135°C/W Typical

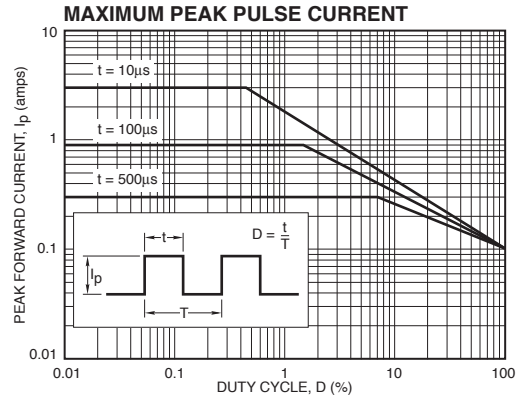
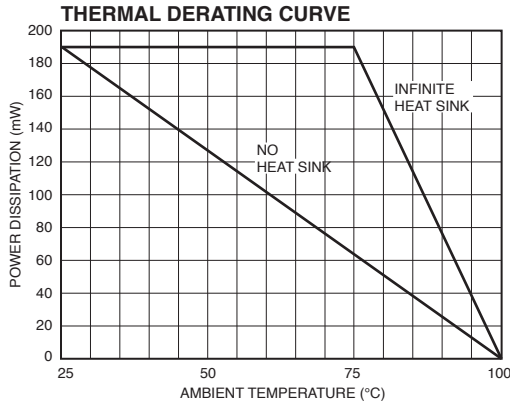
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

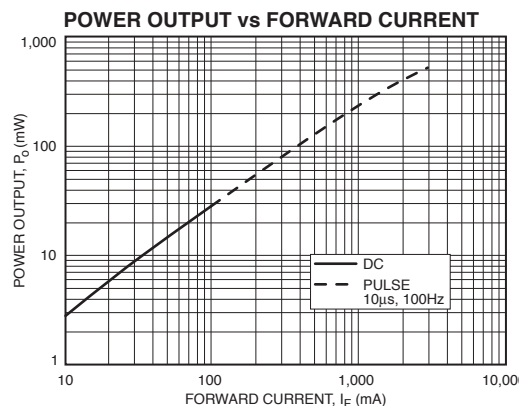
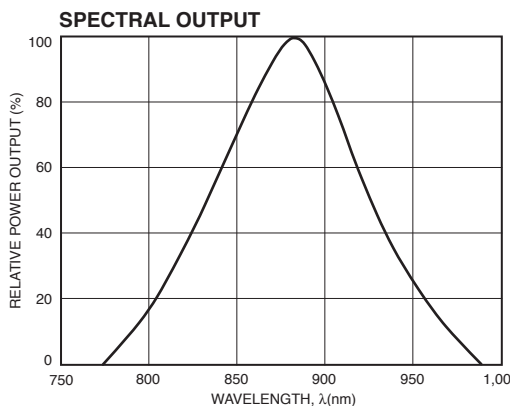
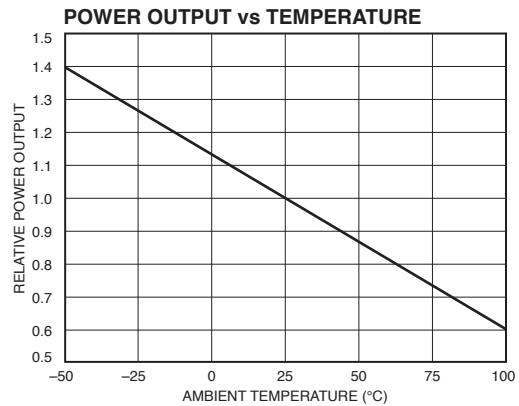
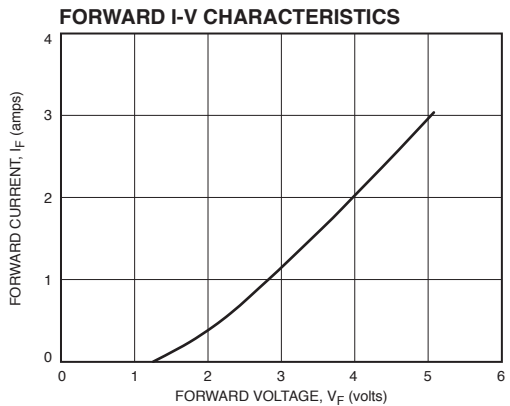
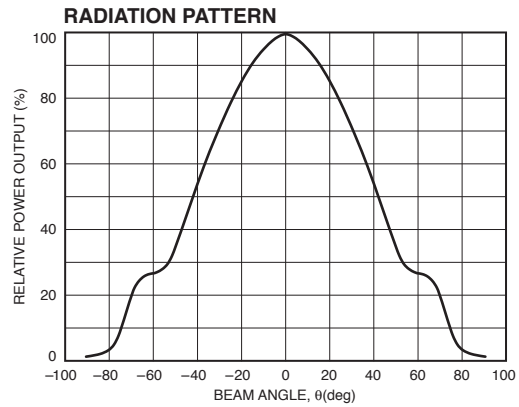
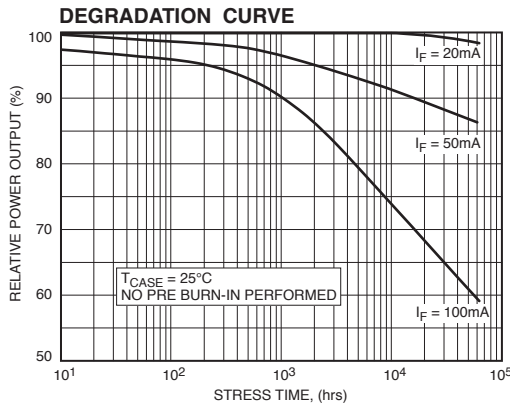


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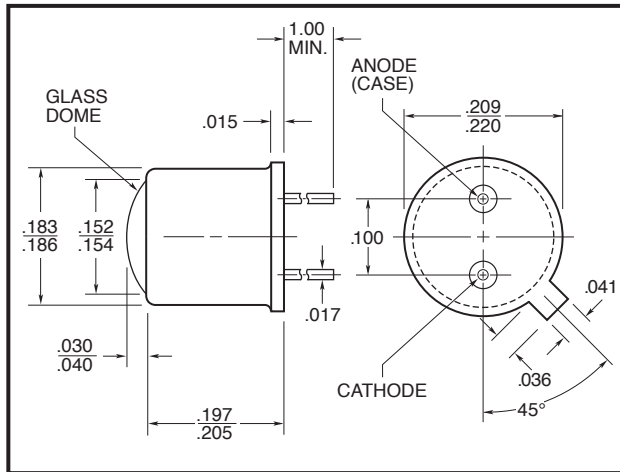
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- High current capability
- 880nm peak emission for optimum matching with ODD-45W photodiode
- Hermetically sealed TO-46 package
- Narrow angle of emission

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 200\text{mA}$	20	25		mW
Radiant Intensity, I_e			220		mW/sr
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ			8		Deg
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.5	1.8	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Capacitance, C	$V_R = 0\text{V}$		60		pF
Rise Time			0.7		μsec
Fall Time			0.7		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	360mW
Continuous Forward Current	200mA
Peak Forward Current (10 μs , 230Hz) ²	7A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R_{THJA} ¹	350°C/W Typical
Thermal Resistance, R_{THJA} ²	115°C/W Typical

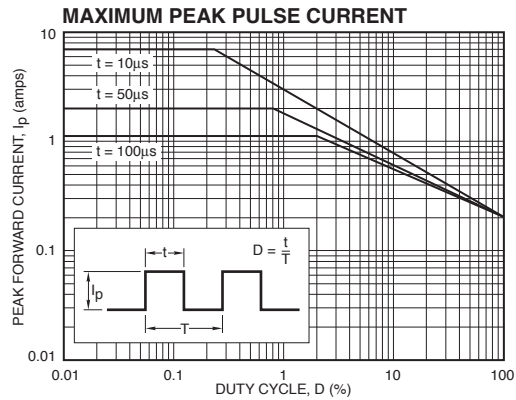
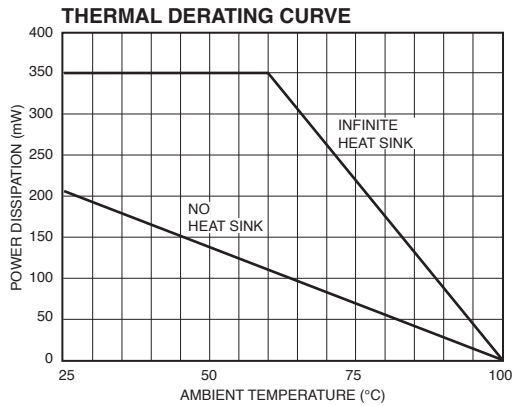
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

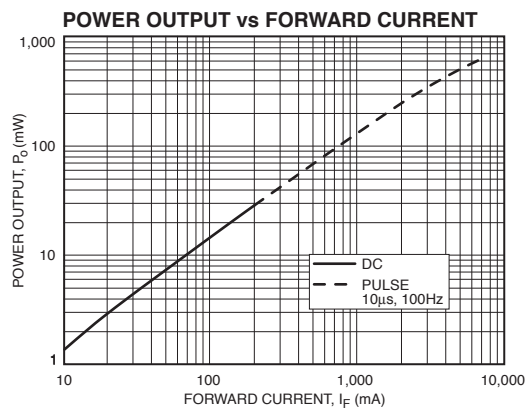
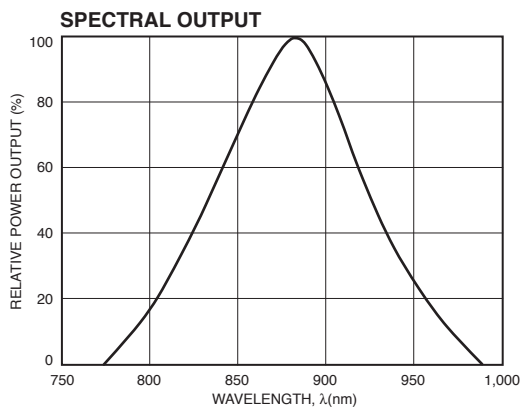
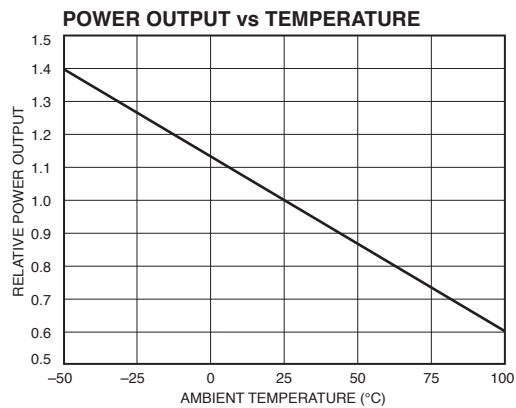
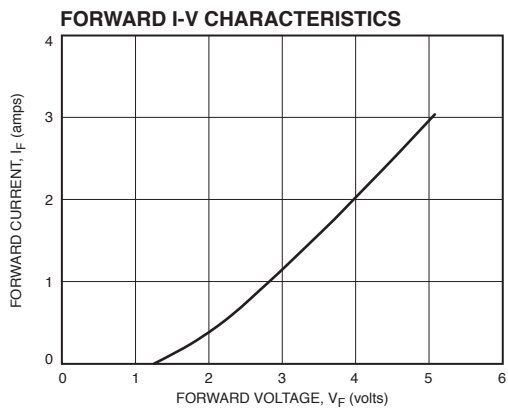
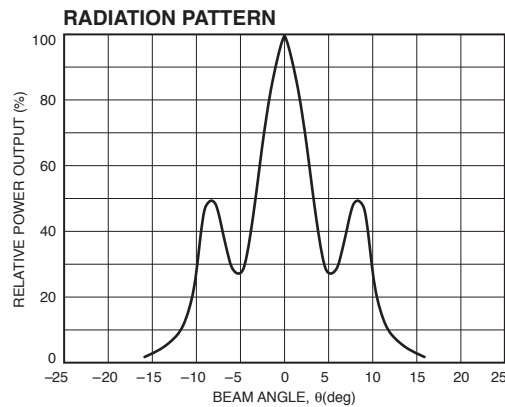


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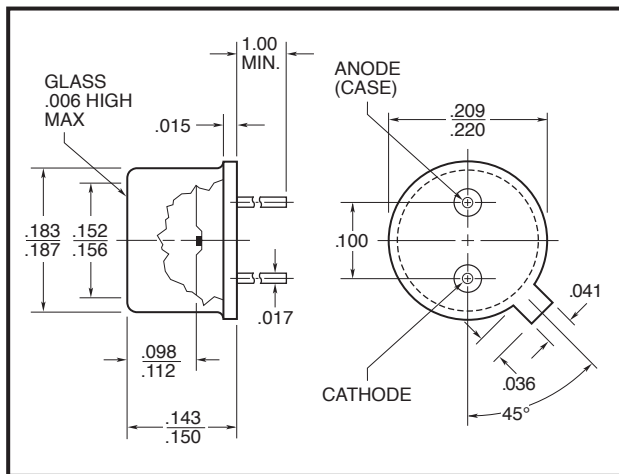
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- Extended operating temperature range
- No internal coatings
- No derating or heat sink required to 80°C

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	7	9		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ				80	
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.55	1.9	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Capacitance, C	$V_R = 0\text{V}$		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	190mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 300Hz) ²	3A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-65°C TO 150°C
Maximum Junction Temperature	150°C
Thermal Resistance, R_{THJA} ¹	370°C/W Typical
Thermal Resistance, R_{THJA} ²	120°C/W Typical

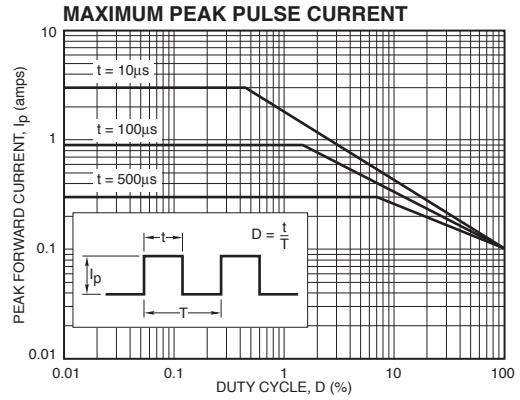
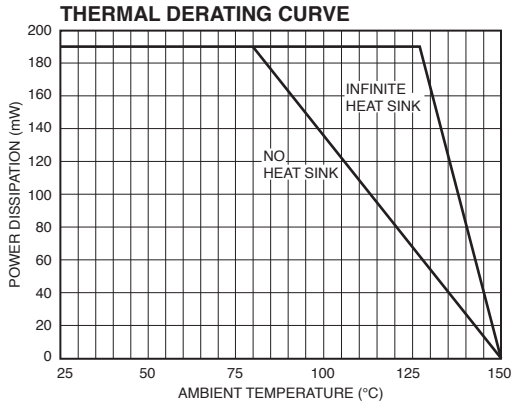
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

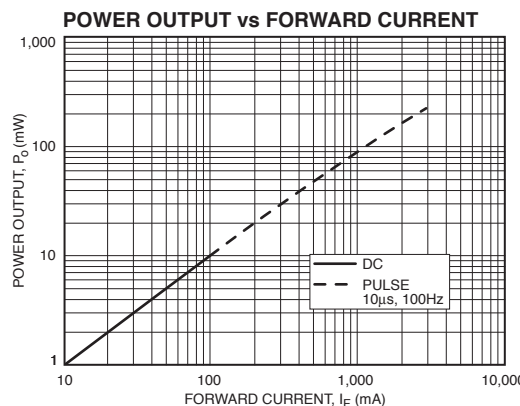
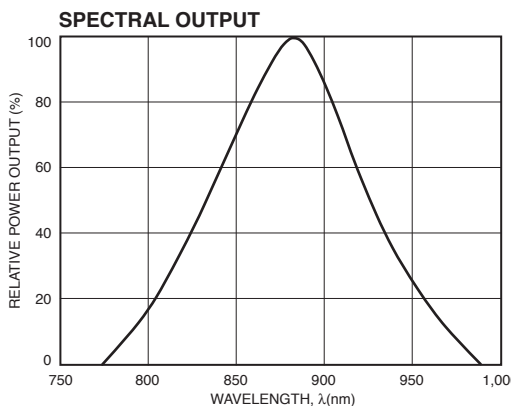
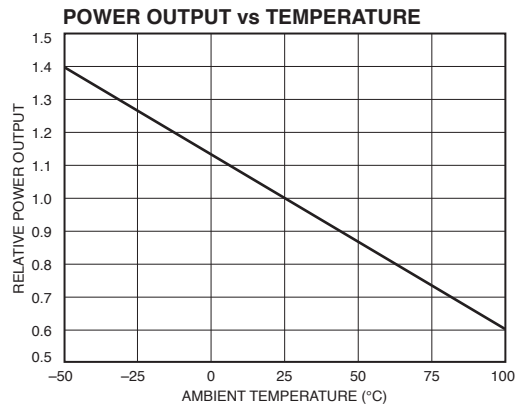
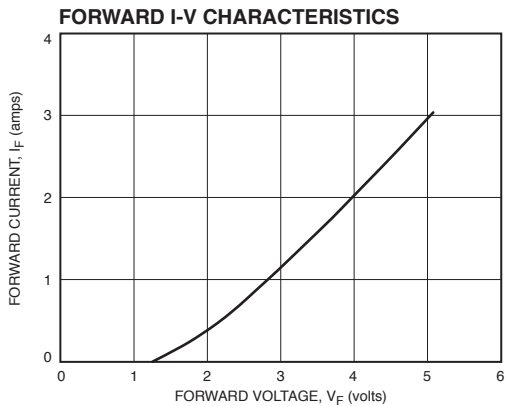
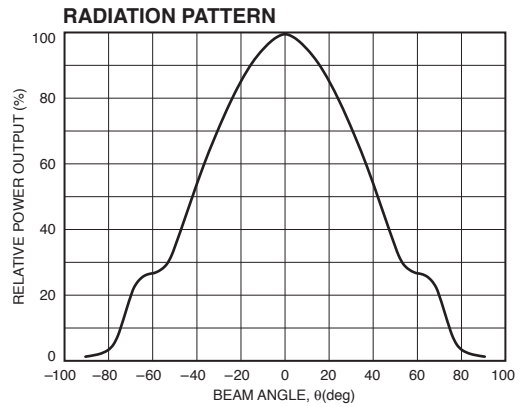
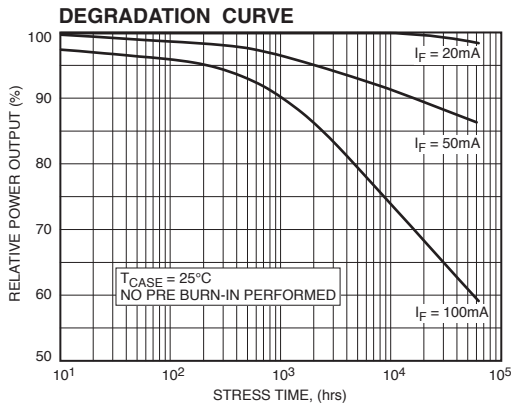


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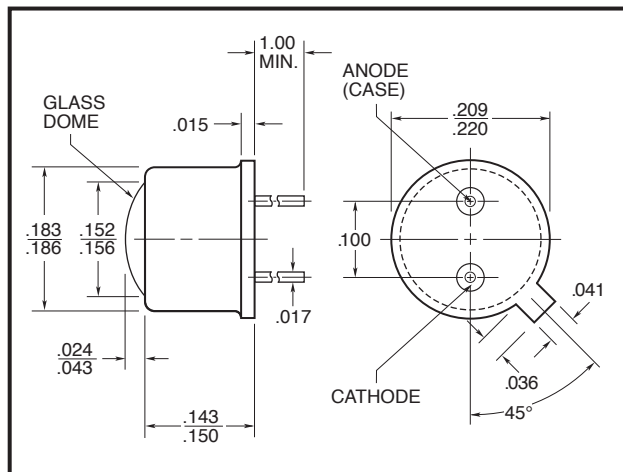
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- Extended operating temperature range
- No internal coatings
- No derating or heat sink required to 80°C

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	6	8.5		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ				35	
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.55	1.9	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Capacitance, C	$V_R = 0\text{V}$		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	190mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 400Hz) ²	3A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-65°C TO 150°C
Maximum Junction Temperature	150°C
Thermal Resistance, R_{THJA} ¹	370°C/W Typical
Thermal Resistance, R_{THJA} ²	120°C/W Typical

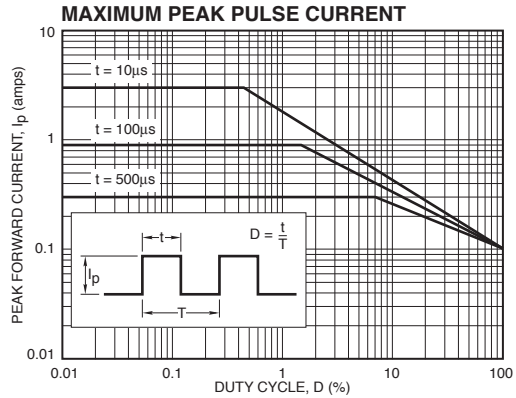
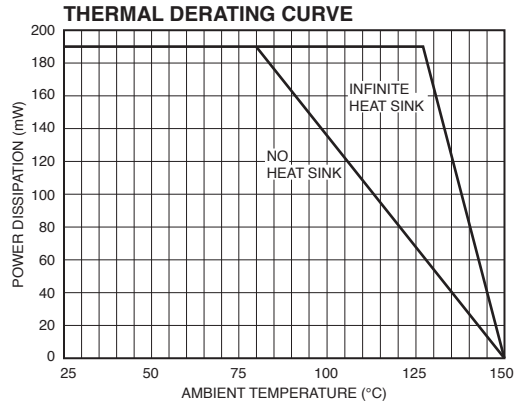
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

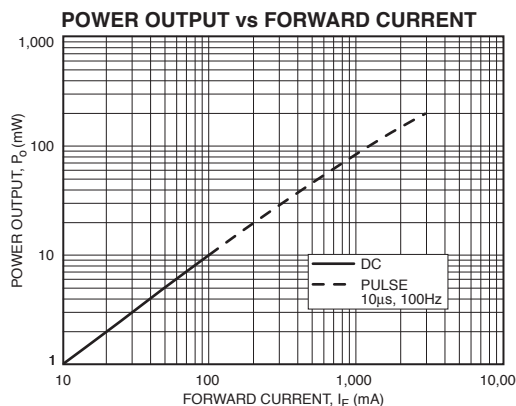
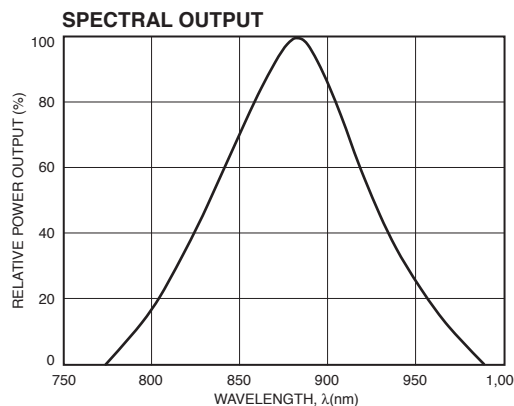
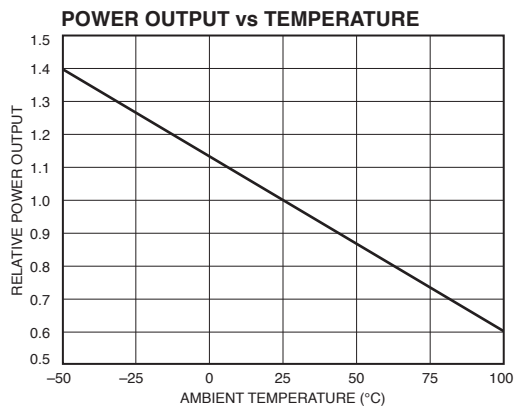
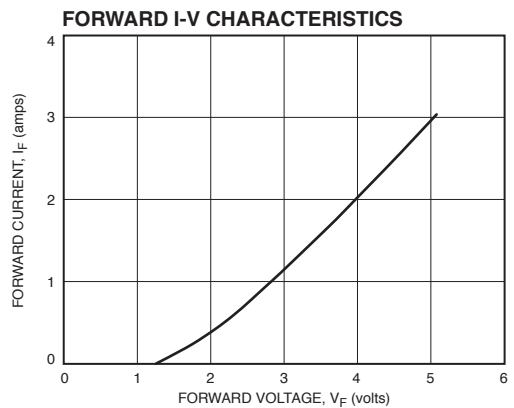
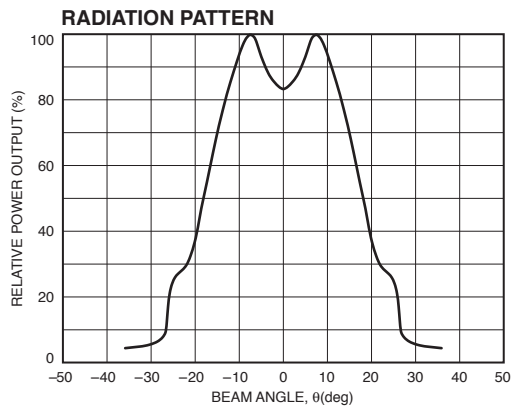
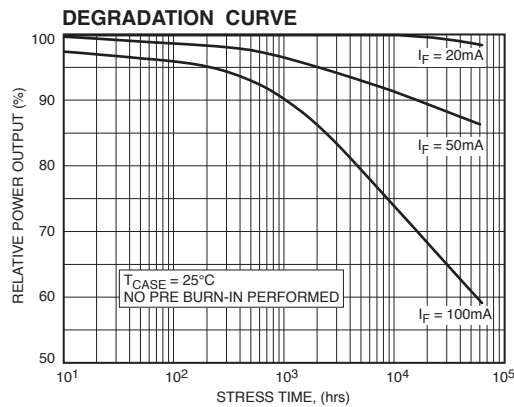


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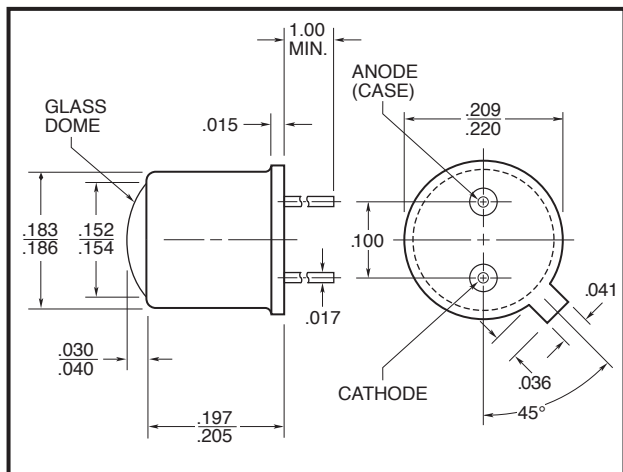
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- Extended operating temperature range
- No internal coatings
- No derating or heat sink required to 80°C

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	6	8		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ				8	
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.55	1.9	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Capacitance, C	$V_R = 0\text{V}$		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	190mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 400Hz) ²	3A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-65°C TO 150°C
Maximum Junction Temperature	150°C
Thermal Resistance, R_{THJA} ¹	370°C/W Typical
Thermal Resistance, R_{THJA} ²	120°C/W Typical

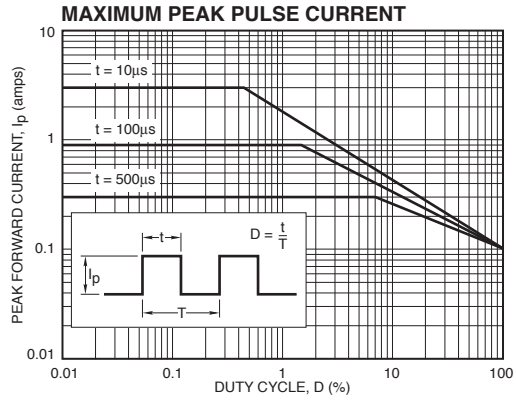
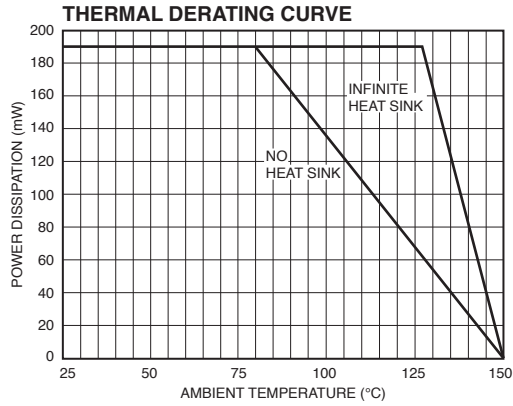
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

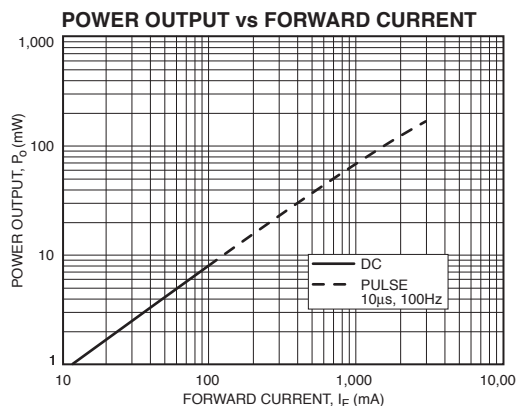
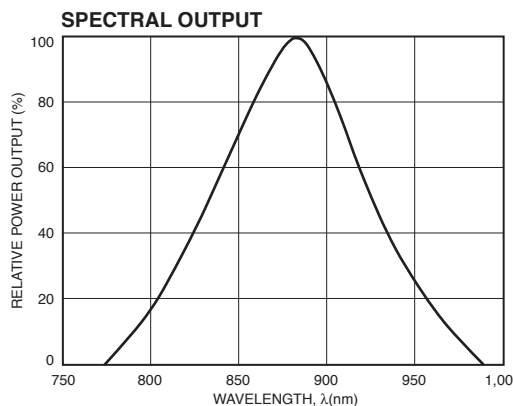
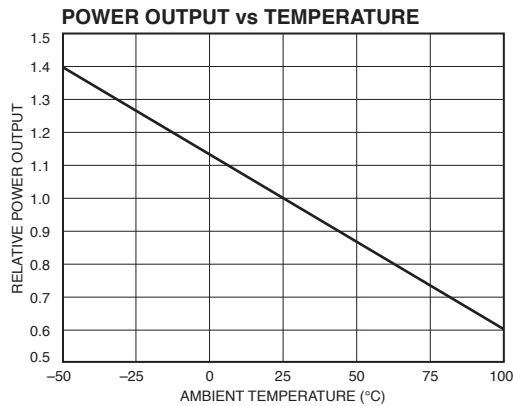
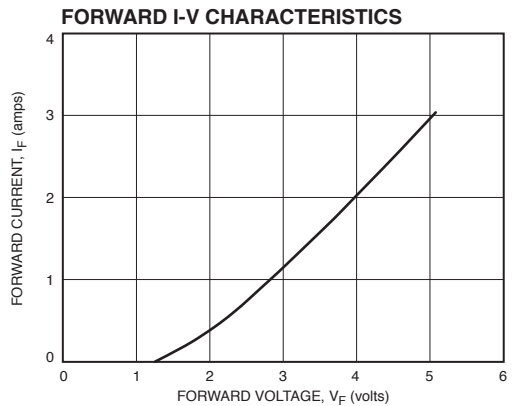
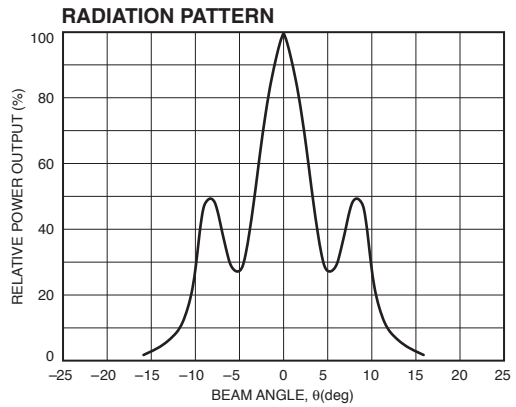
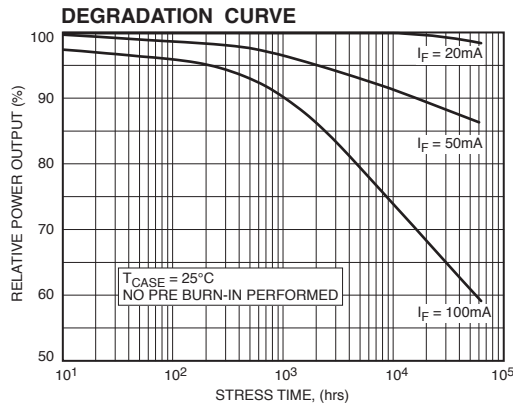


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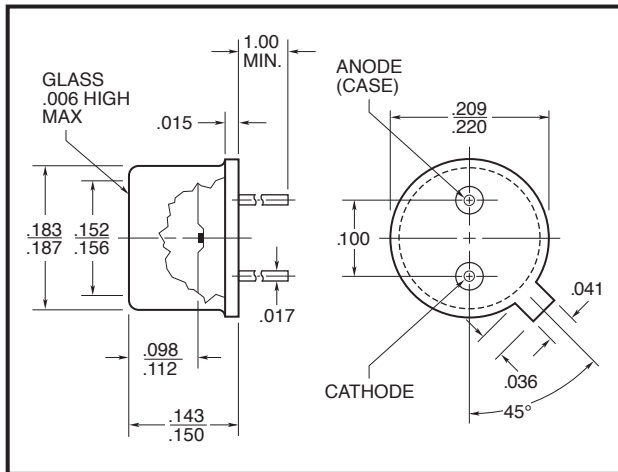
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- High reliability LPE grown GaAlAs
- High power output
- Fast response
- Wide range of linear power output
- Custom packages available
- Custom spectral emissions available from 780nm -870nm

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	4.5	5.5		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		870		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			50		nm
Half Intensity Beam Angle, θ				80	
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.5	1.8	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	2	5		Volts
Capacitance, C	$V_R = 0\text{V}$		150		pF
Rise Time			15		nsec
Fall Time			15		nsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	180mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 200Hz) ²	3A
Reverse Voltage	2V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

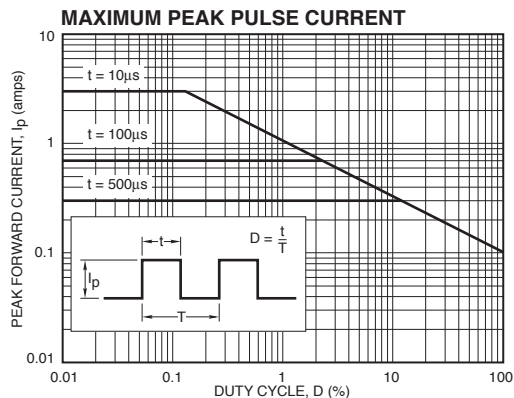
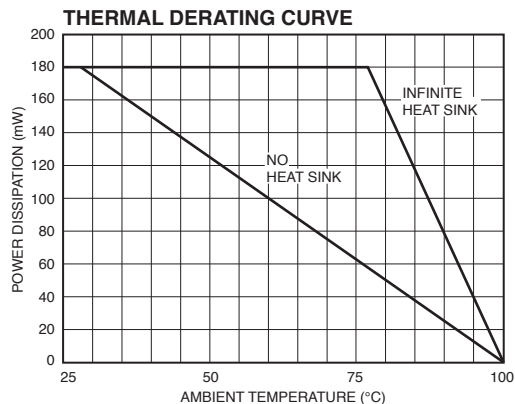
¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

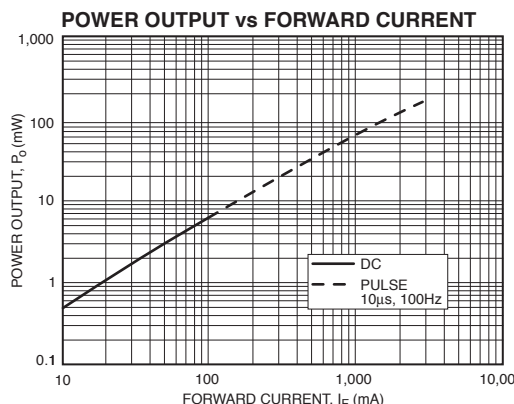
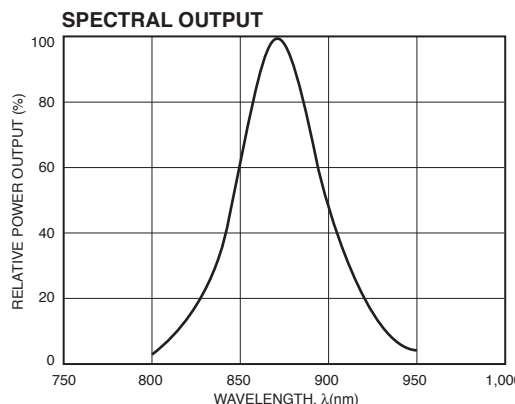
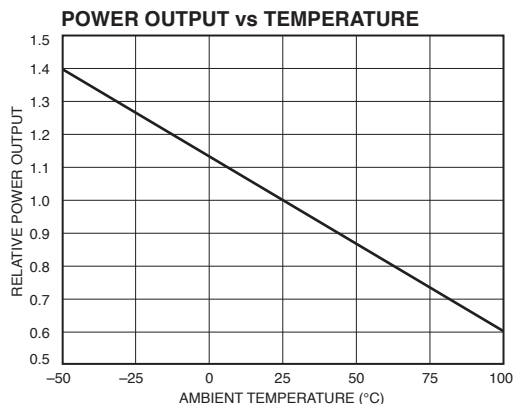
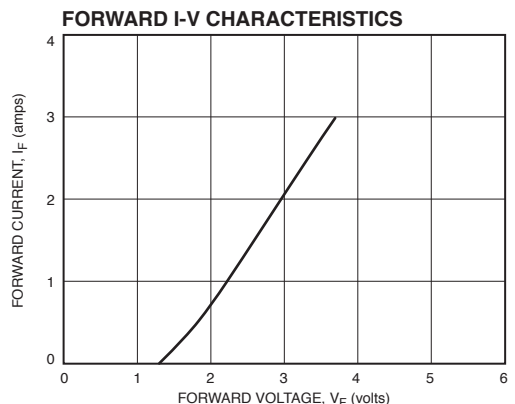
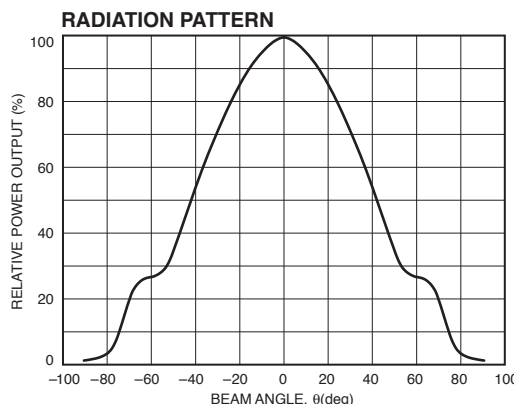
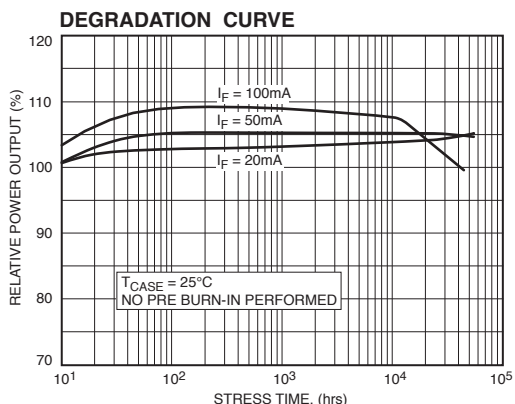
THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R_{THJA} ¹	400°C/W Typical
Thermal Resistance, R_{THJA} ²	135°C/W Typical

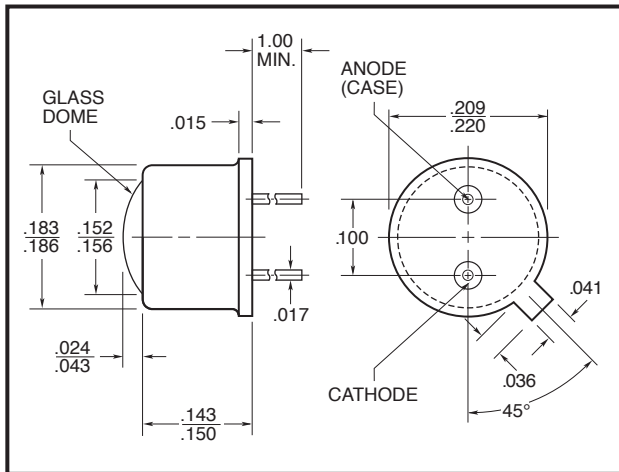
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- High reliability LPE grown GaAlAs
- High power output
- Fast response
- Wide range of linear power output
- Custom packages available
- Custom spectral emission from 780-870nm available

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	4	5		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		870		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			50		nm
Half Intensity Beam Angle, θ				35	
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.5	1.8	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	2	5		Volts
Capacitance, C	$V_R = 0\text{V}$		150		pF
Rise Time			15		nsec
Fall Time			15		nsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	180mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 200Hz) ²	3A
Reverse Voltage	2V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R_{THJA} ¹	400°C/W Typical
Thermal Resistance, R_{THJA} ²	135°C/W Typical

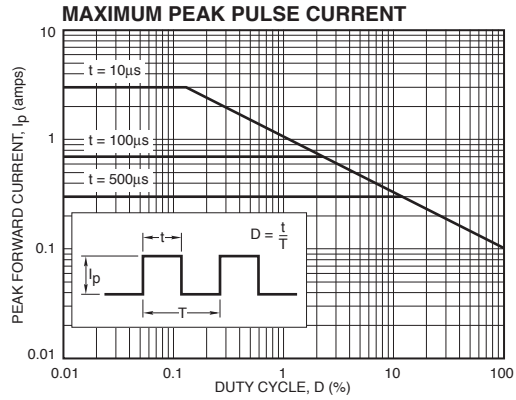
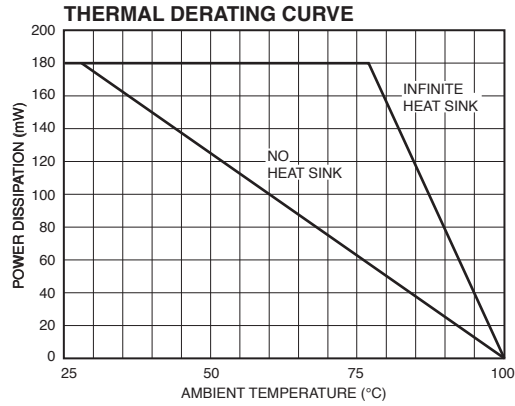
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

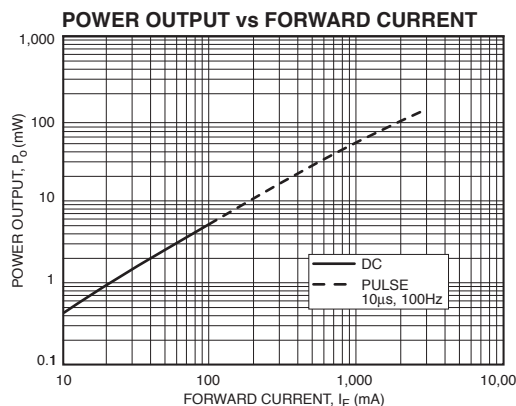
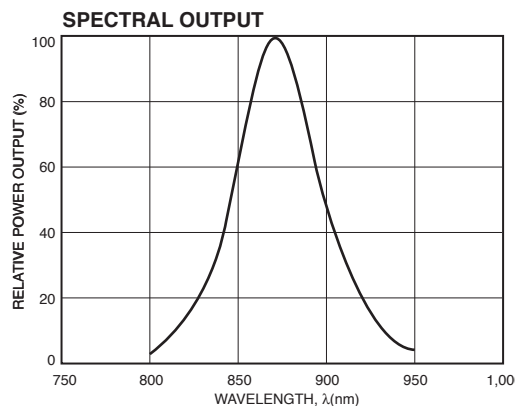
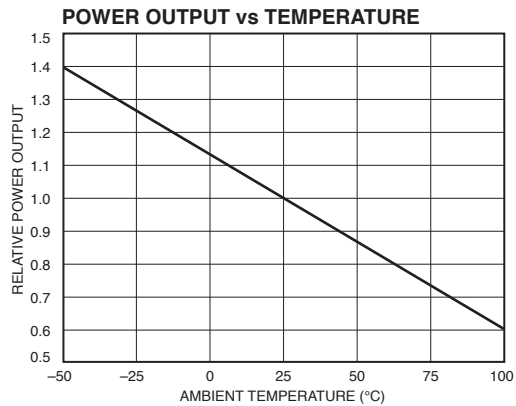
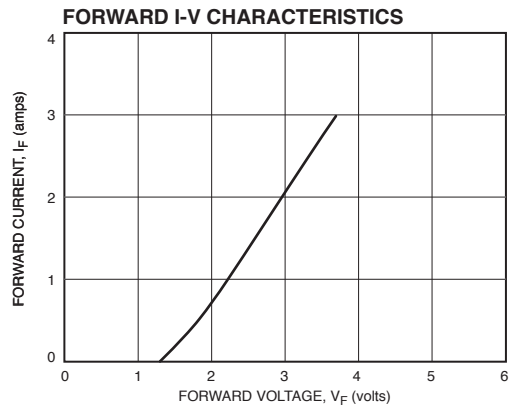
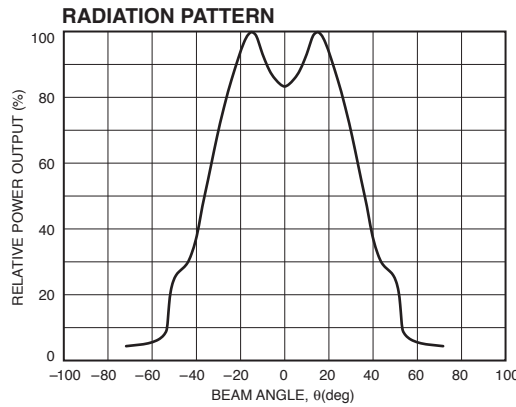
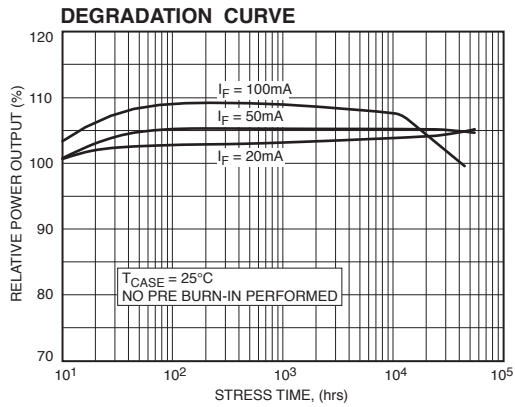


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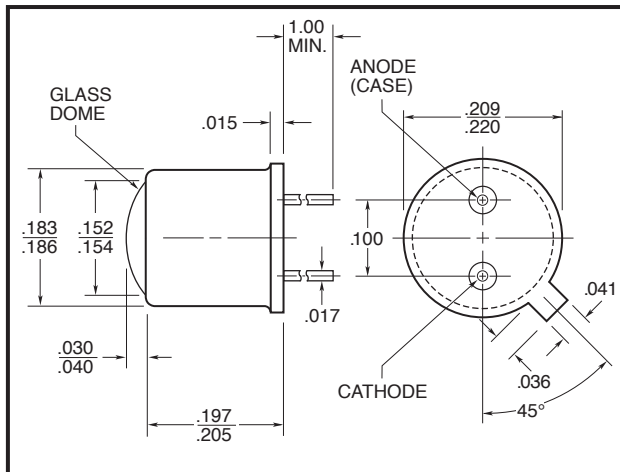
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TYPICAL CHARACTERISTICS



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ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P _o	I _F = 100mA	3.5	4.5		mW
Peak Emission Wavelength, λ _p	I _F = 50mA		870		nm
Spectral Bandwidth at 50%, Δλ			50		nm
Half Intensity Beam Angle, θ			8		Deg
Forward Voltage, V _F	I _F = 100mA		1.5	1.8	Volts
Reverse Breakdown Voltage, V _R	I _R = 10μA	2	5		Volts
Capacitance, C	V _R = 0V		150		pF
Rise Time			15		nsec
Fall Time			15		nsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	180mW
Continuous Forward Current	100mA
Peak Forward Current (10μs, 200Hz) ²	3A
Reverse Voltage	2V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R _{THJA} ¹	400°C/W Typical
Thermal Resistance, R _{THJA} ²	135°C/W Typical

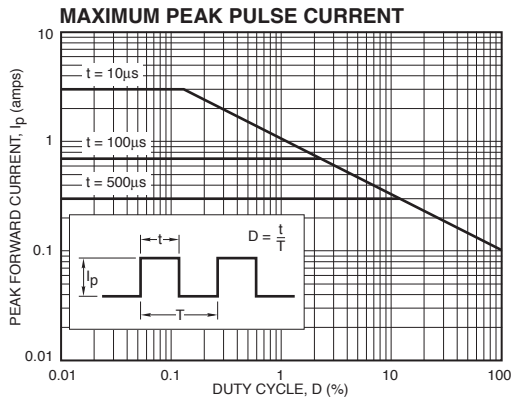
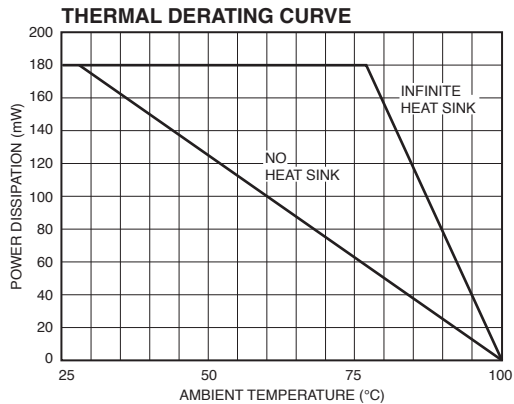
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

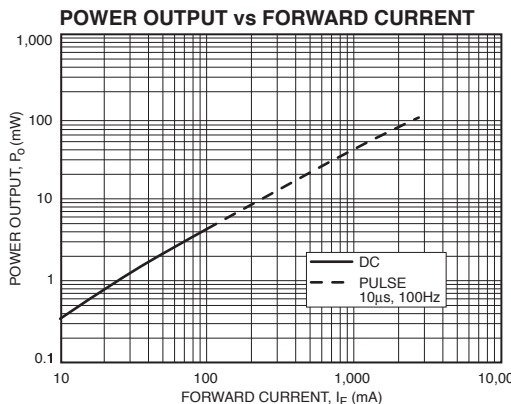
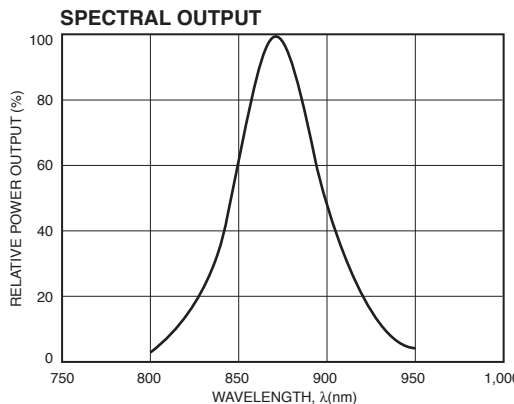
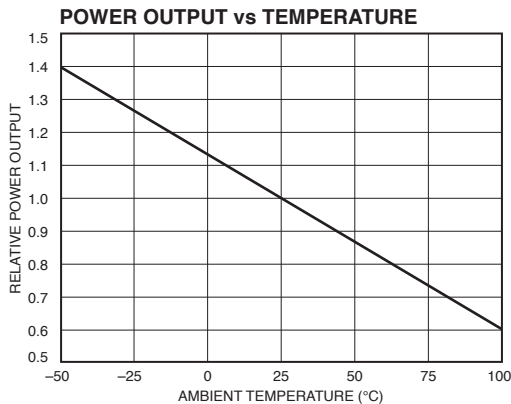
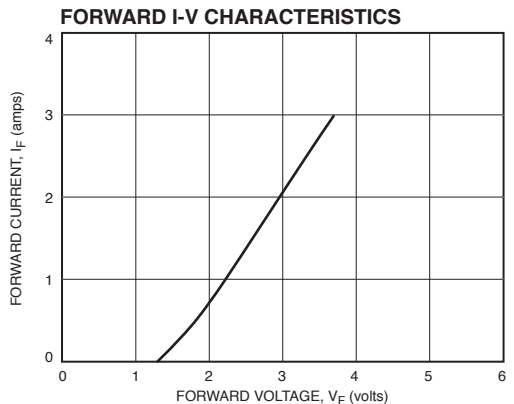
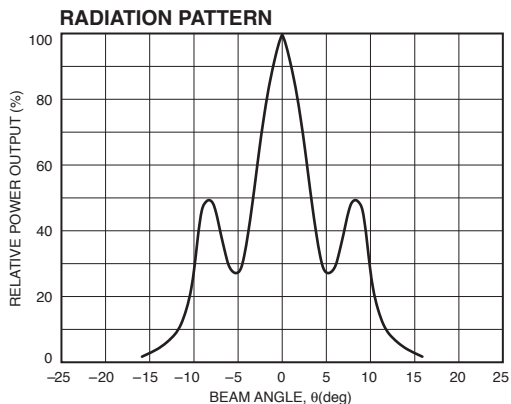
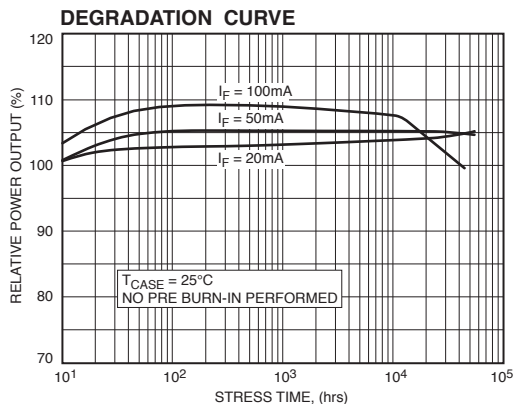


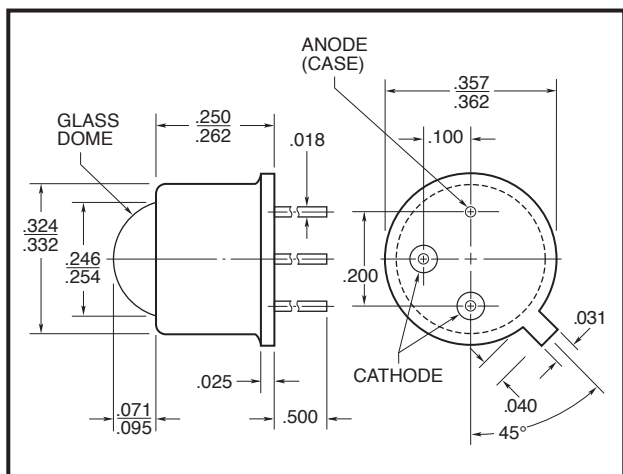
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MAXIMUM RATINGS



TYPICAL CHARACTERISTICS





FEATURES

- Ultra high power output
- Four wire bonds on die corners
- Very narrow optical beam
- Standard 3-lead TO-39 hermetic package
- Chip size .030 x .030 inches

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Two cathode pins **must be** externally connected together.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P _o	I _F = 500mA I _F = 10A	40	50 600		mW
Radiant Intensity, I _e	I _F = 500mA		500		mW/sr
Peak Emission Wavelength, λ _p			880		nm
Spectral Bandwidth at 50%, Δλ	I _F = 50mA		80		nm
Half Intensity Beam Angle, θ			7		Deg
Forward Voltage, V _F	I _F = 500mA		1.65	2	Volts
Reverse Breakdown Voltage, V _R	I _R = 10μA	5	30		Volts
Capacitance, C	V _R = 0V		90		pF
Rise Time			0.7		μsec
Fall Time			0.7		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	1000mW
Continuous Forward Current	500mA
Peak Forward Current (10μs, 400Hz) ²	10A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C to 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R _{THJA} ¹	150°C/W Typical
Thermal Resistance, R _{THJA} ²	60°C/W Typical

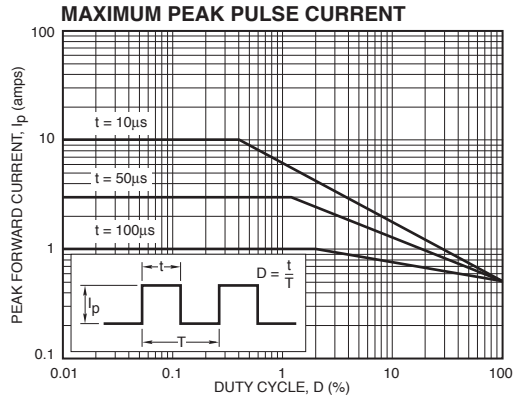
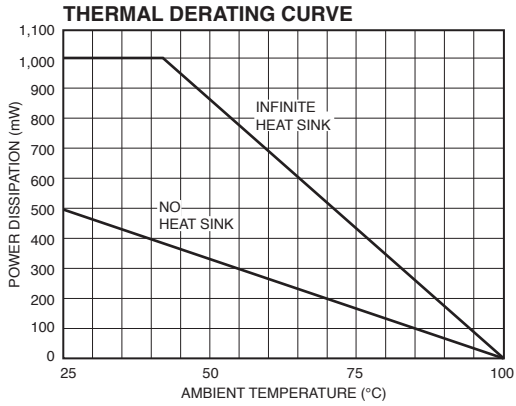
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

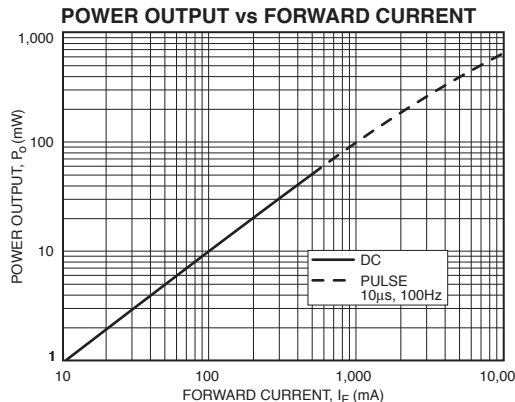
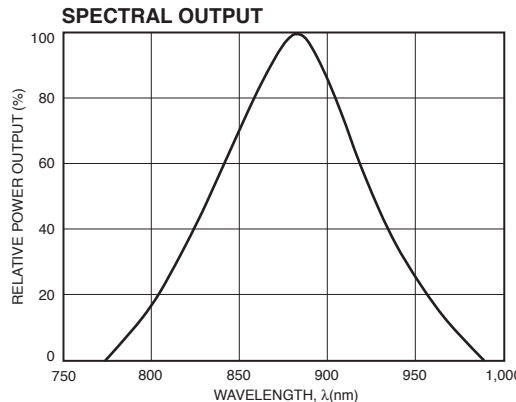
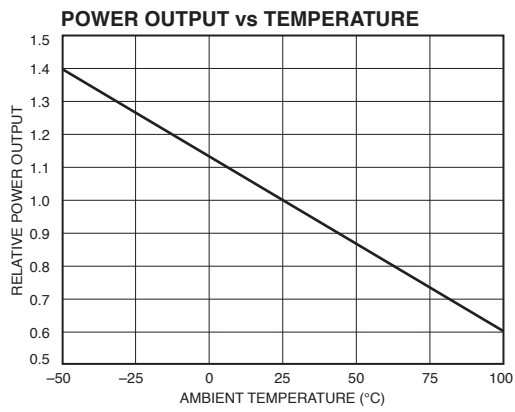
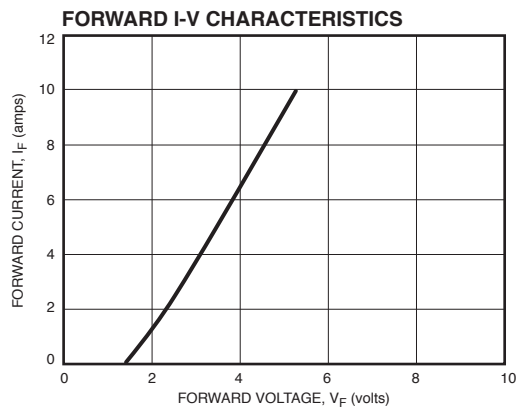
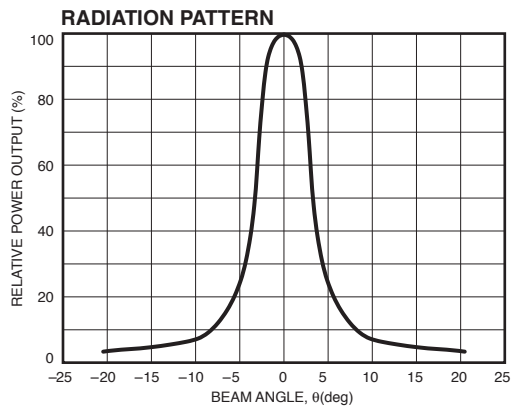
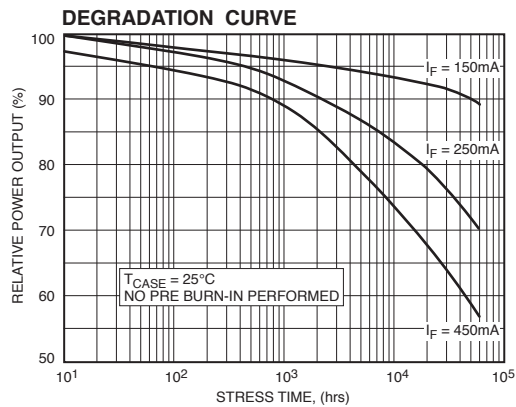


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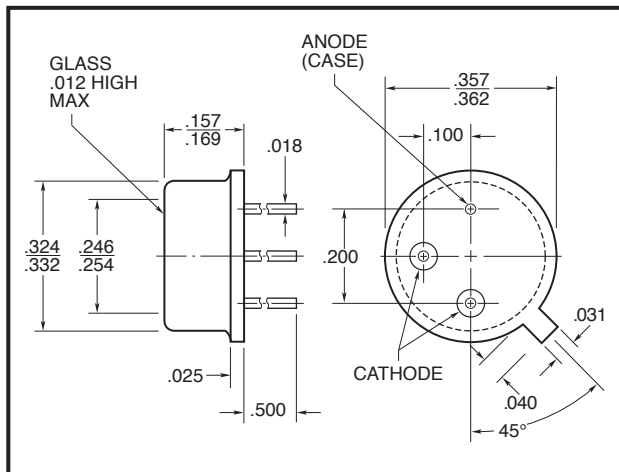
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P _o	I _F = 500mA I _F = 10A	60	75 1000		mW
Radiant Intensity, I _e	I _F = 500mA		60		mW/sr
Peak Emission Wavelength, λ _p			880		nm
Spectral Bandwidth at 50%, Δλ	I _F = 50mA		80		nm
Half Intensity Beam Angle, θ			110		Deg
Forward Voltage, V _F	I _F = 500mA		1.65	2	Volts
Reverse Breakdown Voltage, V _R	I _R = 10μA	5	30		Volts
Capacitance, C	V _R = 0V		90		pF
Rise Time			0.7		μsec
Fall Time			0.7		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	1000mW
Continuous Forward Current	500mA
Peak Forward Current (10μs, 400Hz) ²	10A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C to 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R _{THJA} ¹	145°C/W Typical
Thermal Resistance, R _{THJA} ²	75°C/W Typical

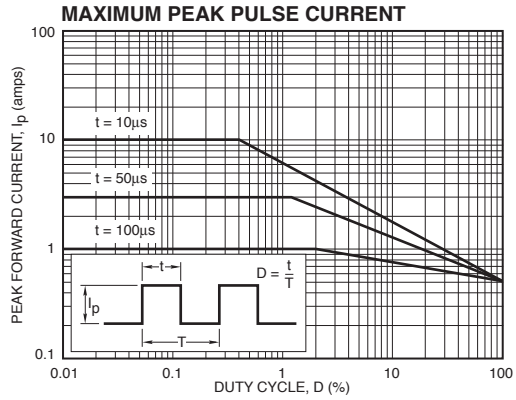
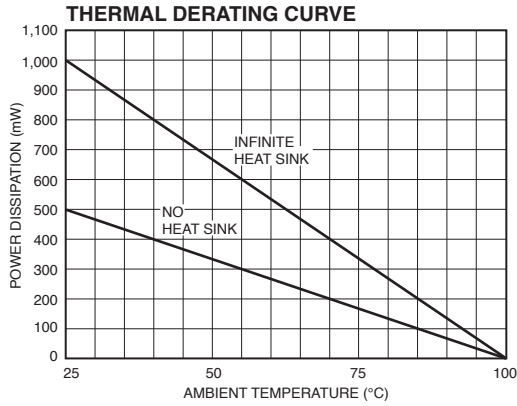
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

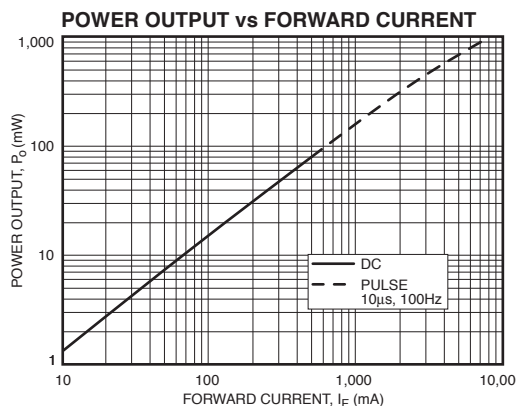
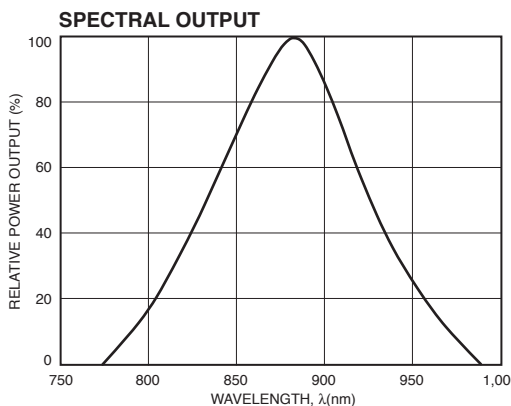
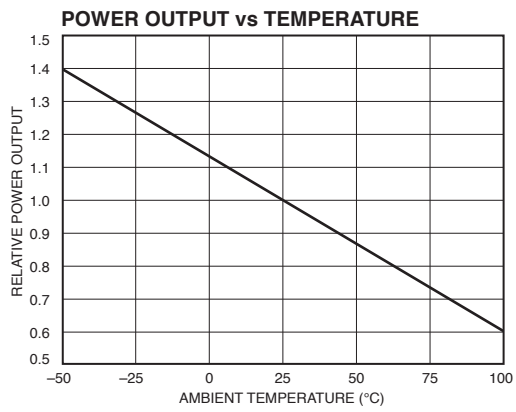
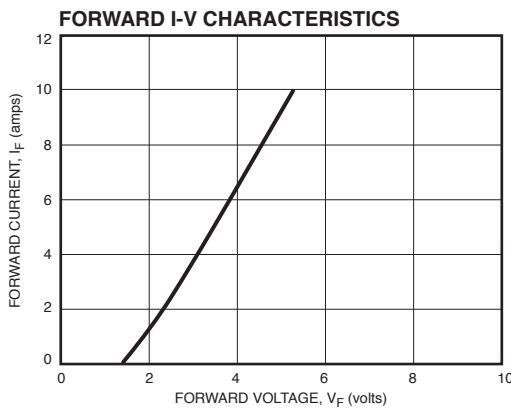
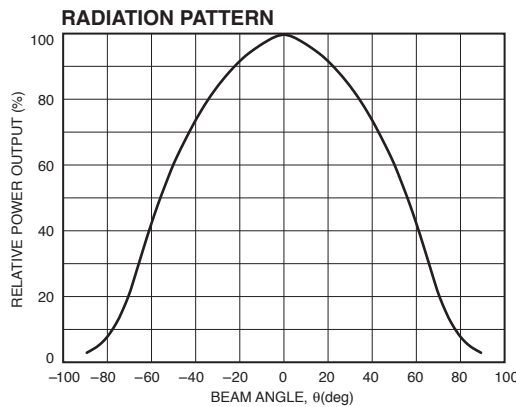
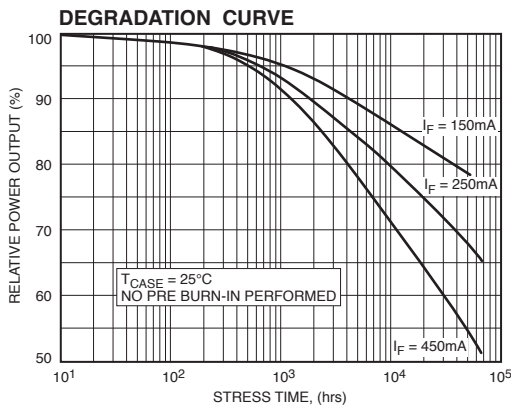


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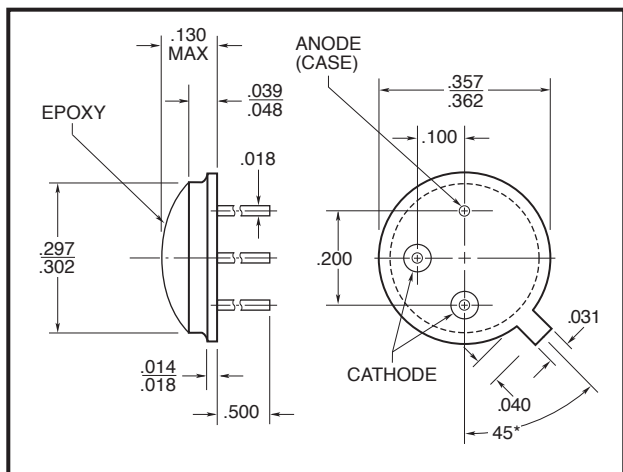
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- Ultra high power output
- Four wire bonds on die corners
- Very uniform optical beam
- Standard 3-lead TO-39 hermetic package
- Chip size .030 x .030 inches

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Two cathode pins **must be** externally connected together.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS	
Total Power Output, P _o	I _F = 500mA I _F = 10A	80	100 1300		mW	
Radiant Intensity, I _e	I _F = 500mA		60		mW/sr	
Peak Emission Wavelength, λ _p	I _F = 50mA		880		nm	
Spectral Bandwidth at 50%, Δλ			80		nm	
Half Intensity Beam Angle, θ				110		Deg
Forward Voltage, V _F		I _F = 500mA		1.65	2	Volts
Reverse Breakdown Voltage, V _R	I _R = 10μA	5	30		Volts	
Capacitance, C	V _R = 0V		90		pF	
Rise Time			0.7		μsec	
Fall Time			0.7		μsec	

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	1000 mW
Continuous Forward Current	500mA
Peak Forward Current (10μs, 400Hz) ²	10A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C to 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R _{THJA} ¹	145°C/W Typical
Thermal Resistance, R _{THJA} ²	75°C/W Typical

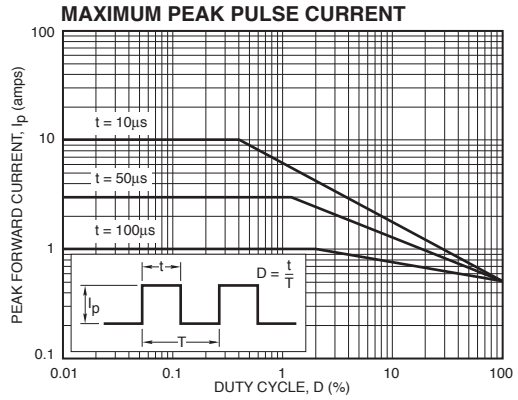
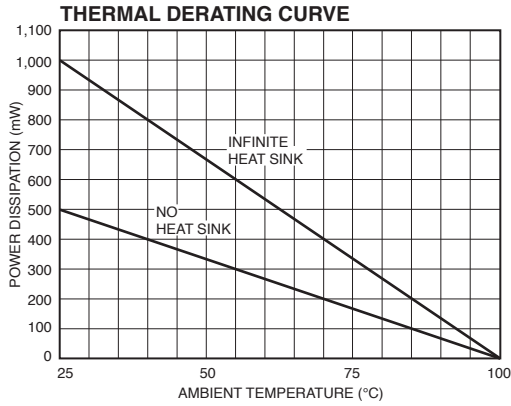
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

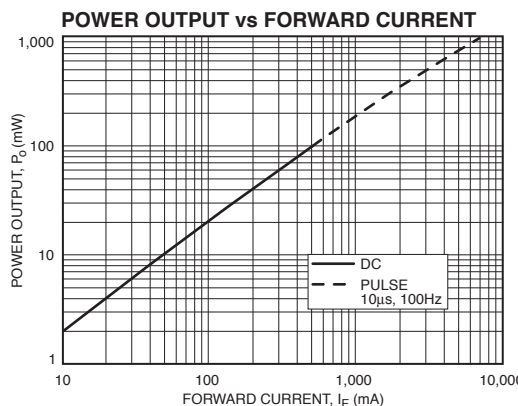
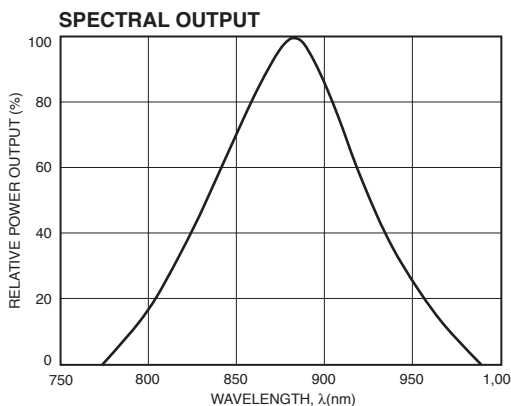
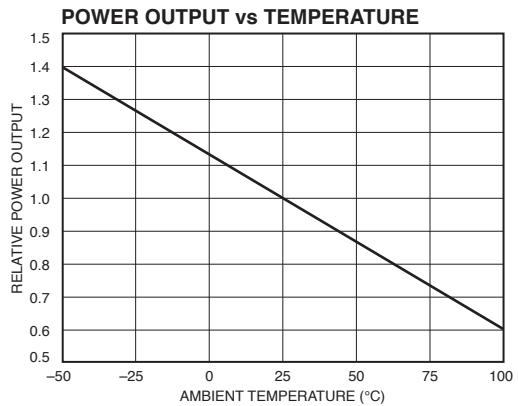
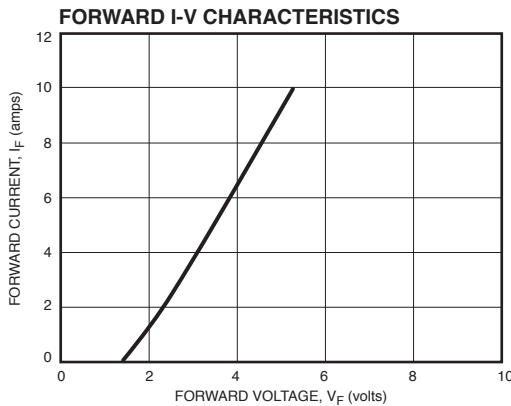
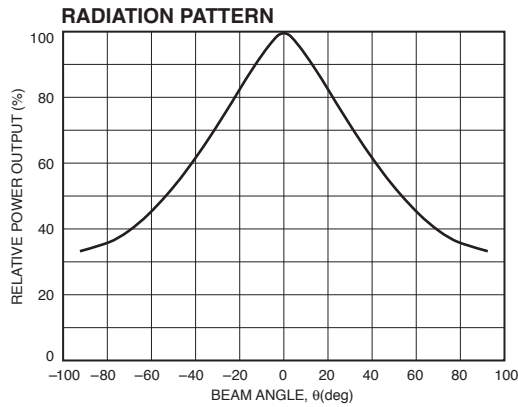
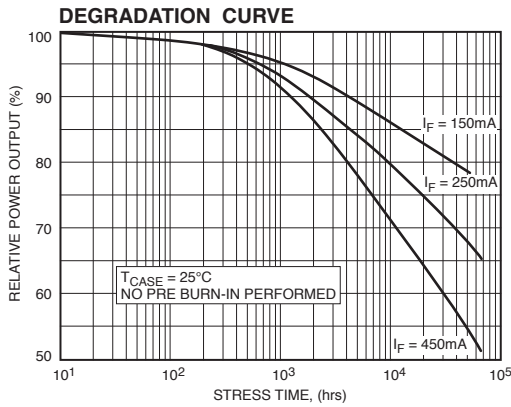


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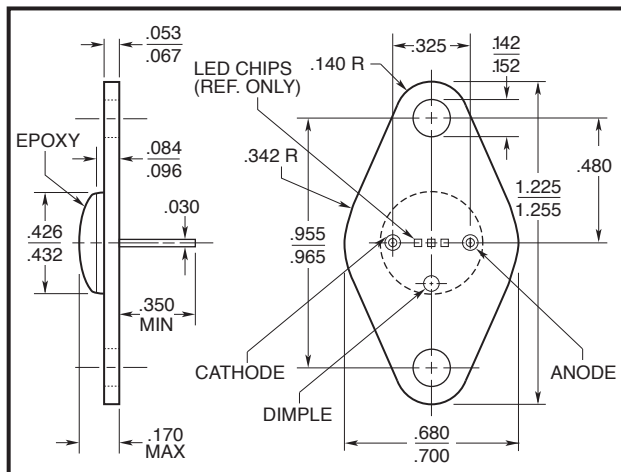
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- Super high power output
- 880nm peak emission
- Three chips connected in series
- TO-66 header for good heat dissipation
- 100% tested for power output
- Electrically isolated case

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 300\text{mA}$ $I_F = 8\text{A}$	150	170 3500		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ				120	
Forward Voltage, V_F	$I_F = 300\text{mA}$		4.5	5	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Capacitance, C	$V_R = 0\text{V}$		30		pF
Rise Time			1		μsec
Fall Time			1		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	2W
Continuous Forward Current	400mA
Peak Forward Current (10 μs , 400Hz) ²	8A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C to 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R_{THJA} ¹	60°C/W Typical
Thermal Resistance, R_{THJA} ²	16°C/W Typical

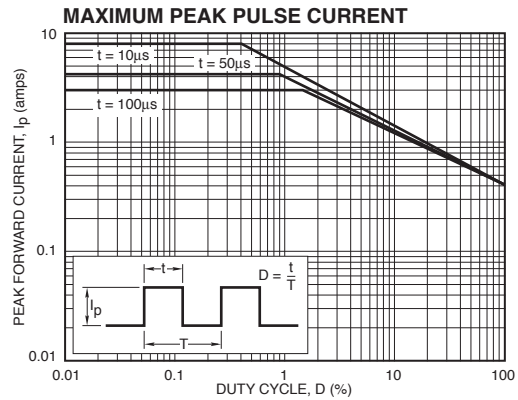
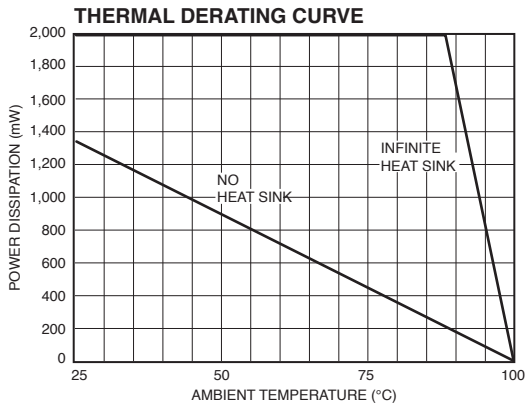
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

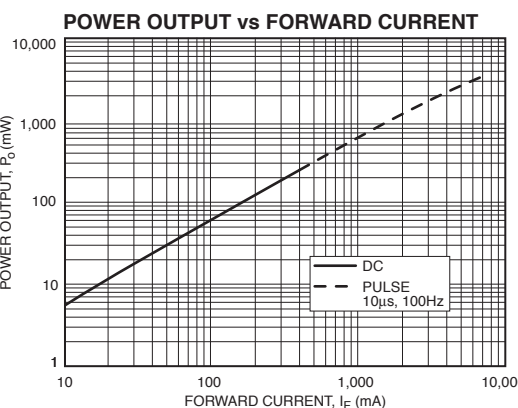
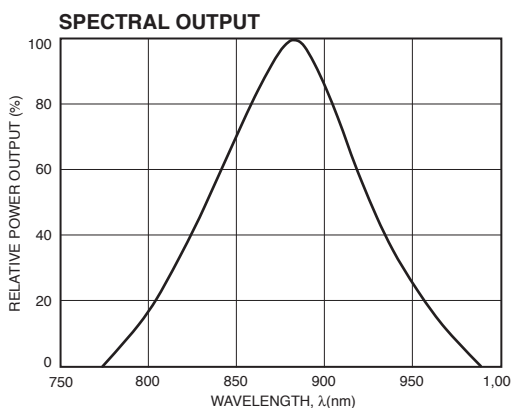
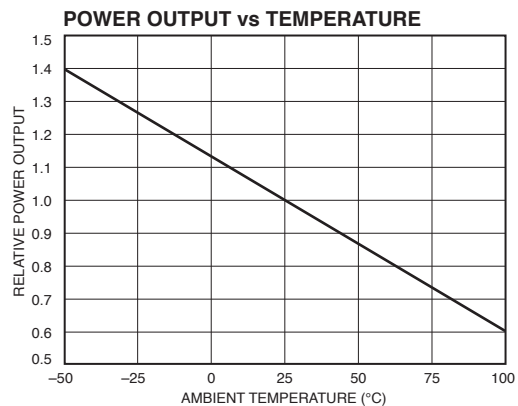
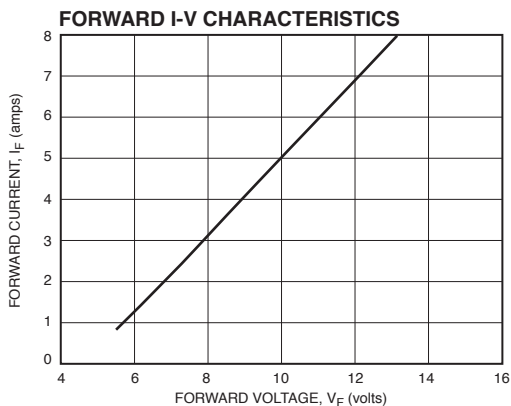
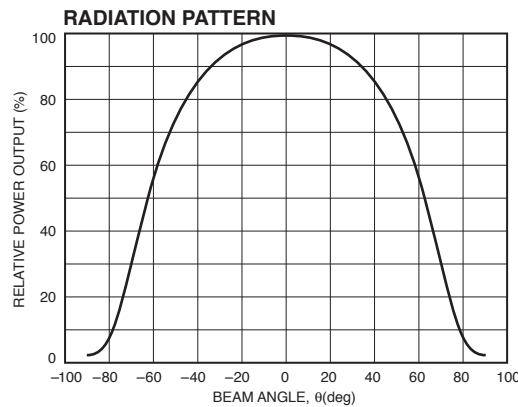
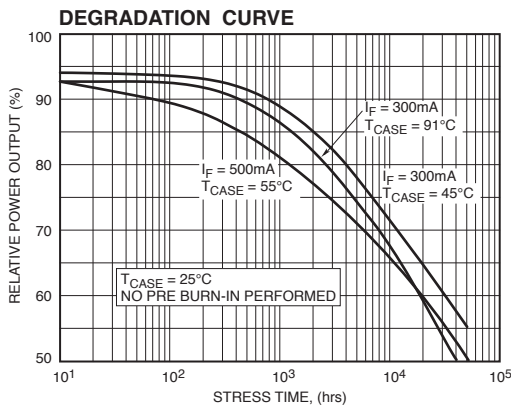


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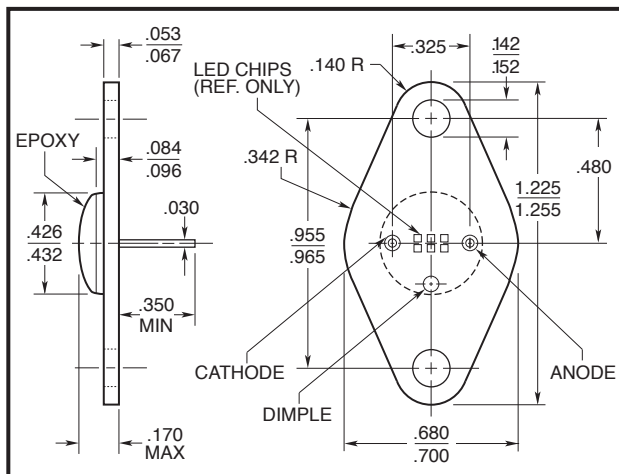
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- High reliability LPE GaAlAs IRLEDs
- Ultra high power output
- 880nm peak emission
- Six chips connected in series
- Very wide angle of emission
- Electrically isolated case

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 300\text{mA}$ $I_F = 6\text{A}$	300	330 5000		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ				120	
Forward Voltage, V_F	$I_F = 300\text{mA}$		9	10	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Capacitance, C	$V_R = 0\text{V}$		15		pF
Rise Time			2		μsec
Fall Time			2		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	4W
Continuous Forward Current	400mA
Peak Forward Current (10 μs , 400Hz) ²	6A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C to 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R_{THJA} ¹	60°C/W Typical
Thermal Resistance, R_{THJA} ²	16°C/W Typical

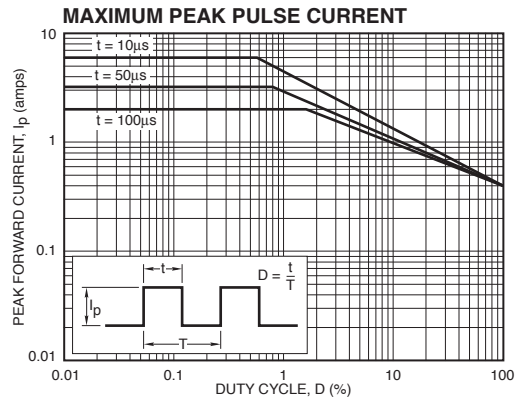
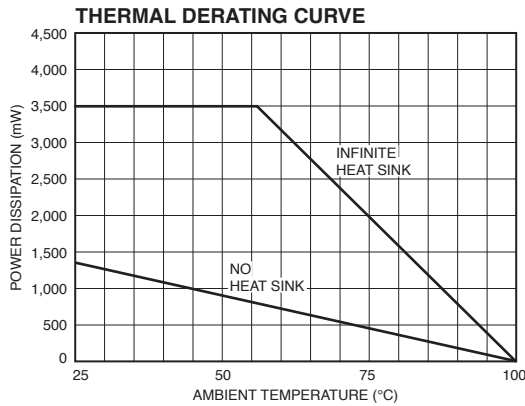
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

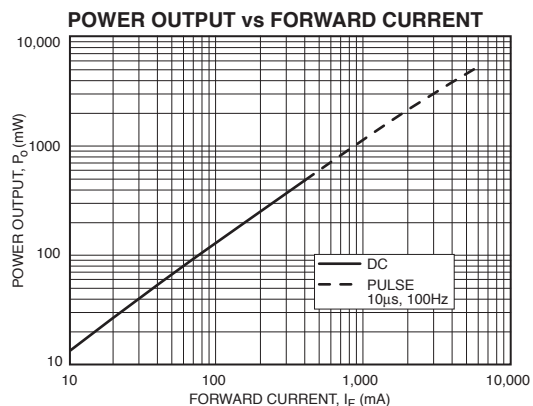
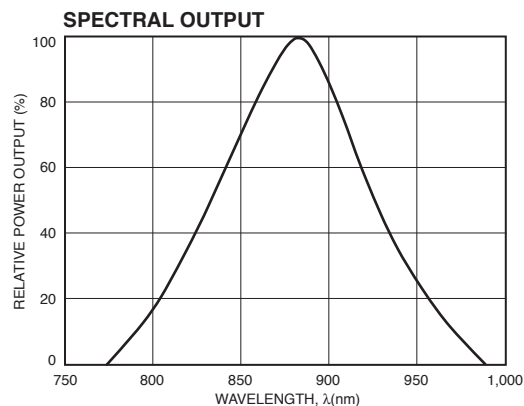
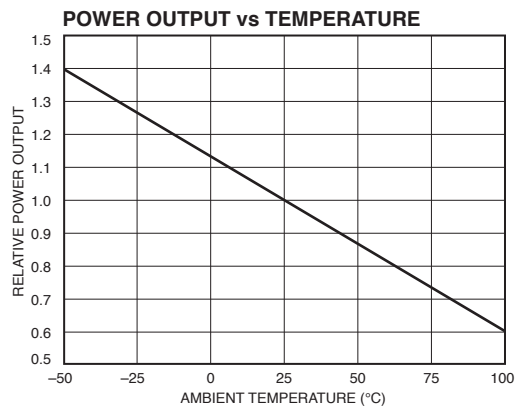
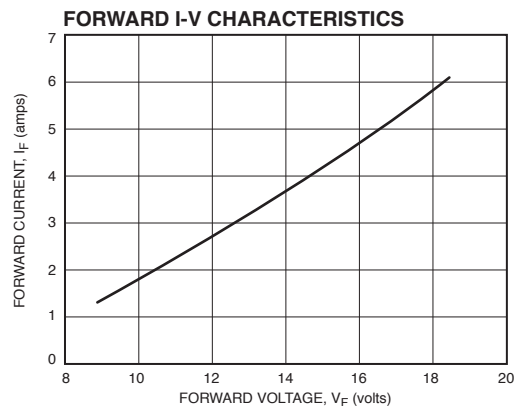
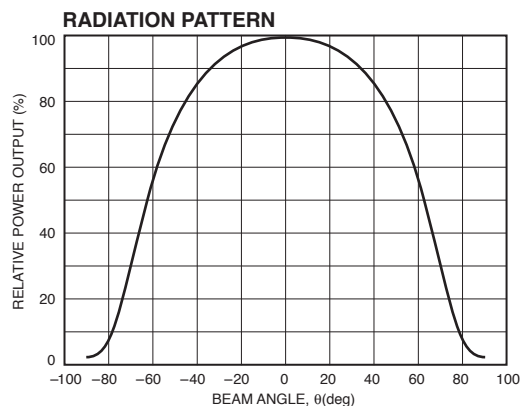
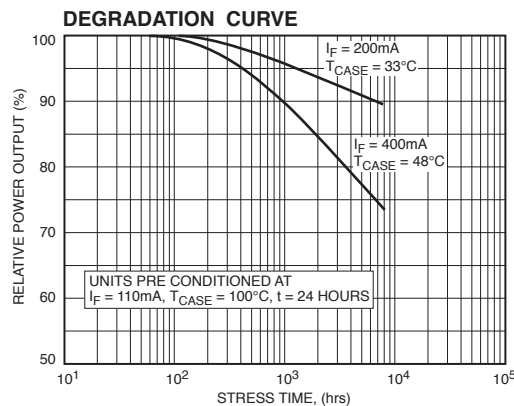


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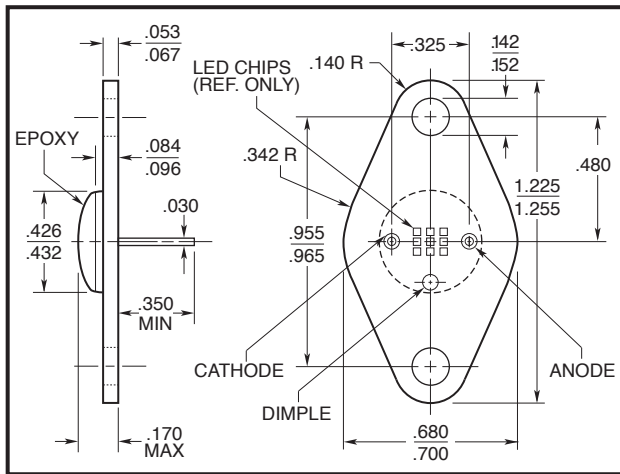
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- Highest power output available
- 880nm peak emission
- Nine chips connected in series
- Very wide angle of emission
- Electrically isolated case

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 300\text{mA}$ $I_F = 5\text{A}$	390	500 6500		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ				120	
Forward Voltage, V_F	$I_F = 300\text{mA}$		13.5	15	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Capacitance, C	$V_R = 0\text{V}$		11		pF
Rise Time			3		μsec
Fall Time			3		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	6W
Continuous Forward Current	400mA
Peak Forward Current (10 μs , 400Hz) ²	5A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C to 100°C
Maximum Junction Temperature	100°C
Thermal Resistance, R_{THJA} ¹	60°C/W Typical
Thermal Resistance, R_{THJA} ²	16°C/W Typical

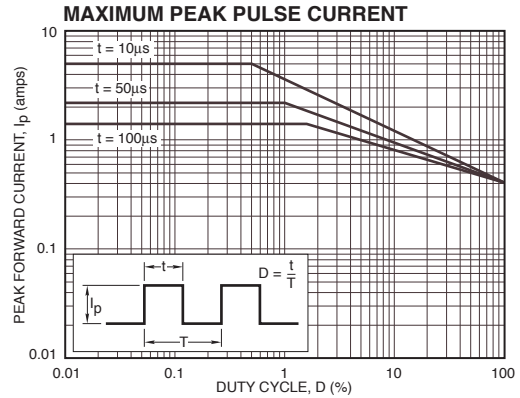
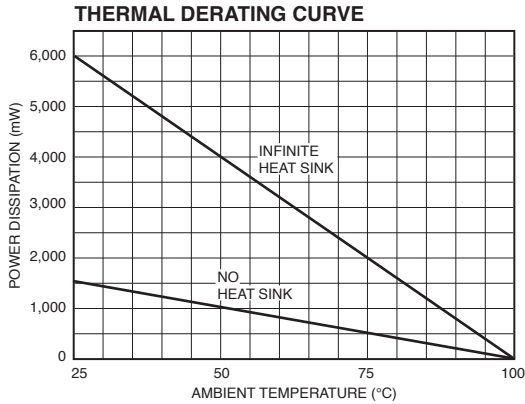
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

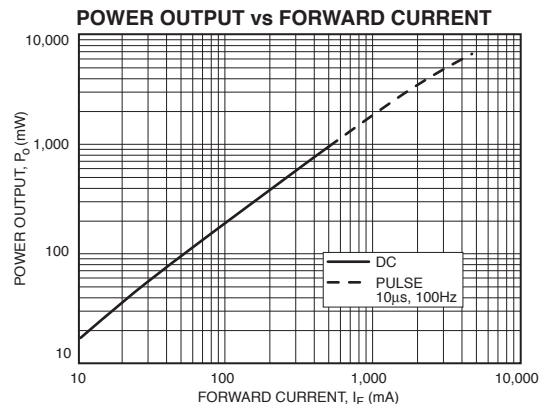
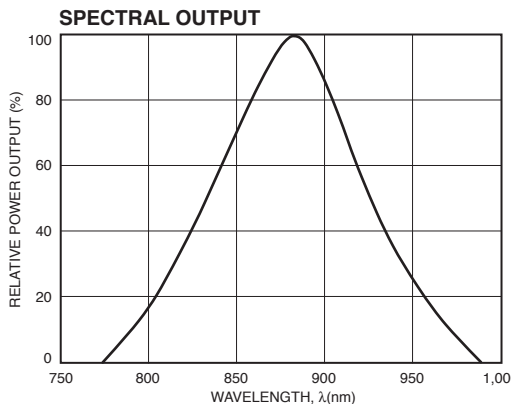
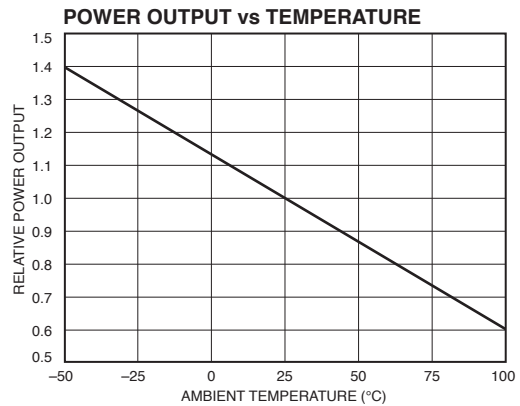
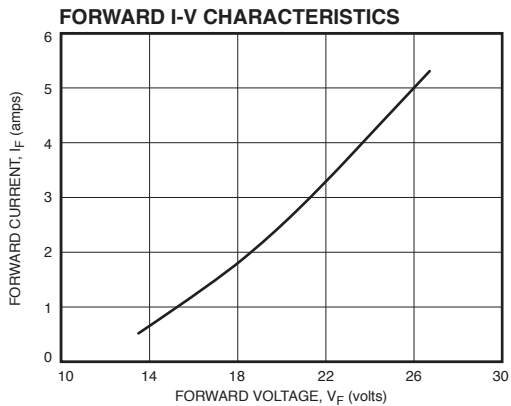
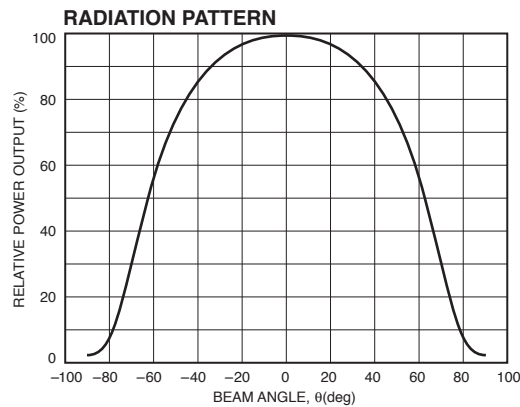
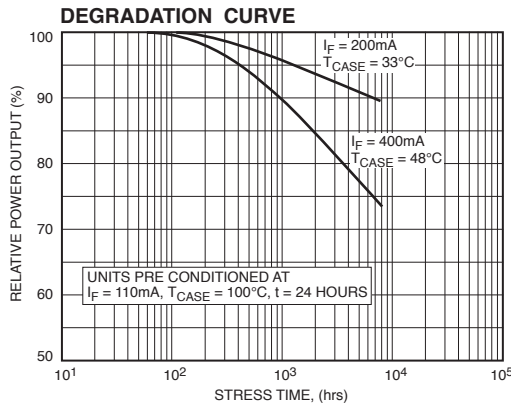


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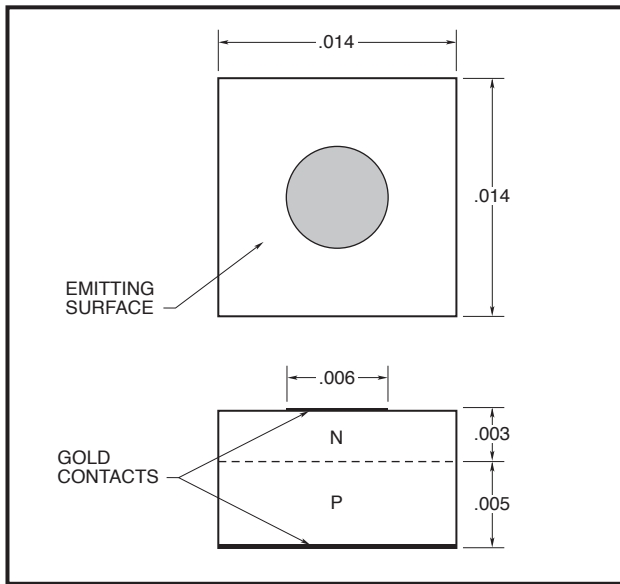
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- High reliability LPE GaAIAs IRLED chips
- Graded-bandgap LED structure for high radiant power output
- 880nm peak emission
- Good ohmic contacts (gold alloys)
- Good bondability

All dimensions are nominal values in inches unless otherwise specified.



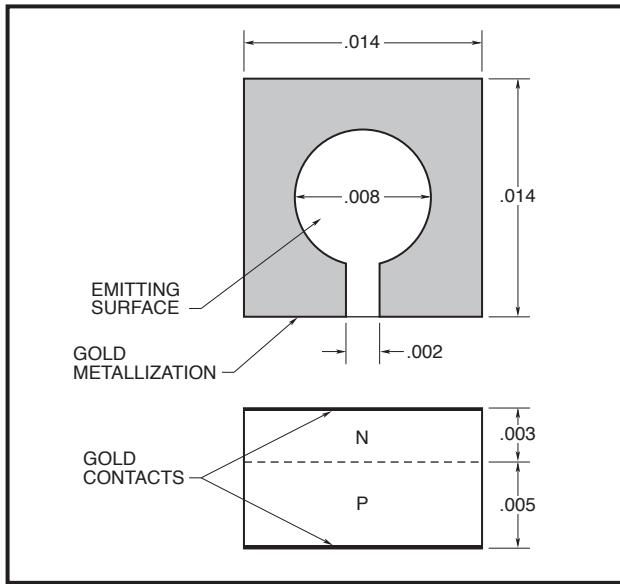
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P _o	I _F = 100mA I _F = 20mA	8	14 2		mW
Peak Emission Wavelength, λ _p	I _F = 50mA		880		nm
Spectral Bandwidth at 50%, Δλ			80		nm
Forward Voltage, V _F	I _F = 100mA		1.55	1.9	Volts
Reverse Breakdown Voltage, V _R	I _R = 10μA	5	30		Volts
Capacitance, C	V _R = 0V		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C

Power Dissipation	190mW
Continuous Forward Current	100mA
Peak Forward Current (10μs, 300 Hz)	3A
Reverse Voltage	5V
Storage and Operating Temperature Range	-65°C to 150°C
Maximum Junction Temperature	150°C

The exact performance data depends on your package configuration and technique. Data listed in this specification is for the chip mounted on a TO-46 header using silver epoxy as the die attach material. All sales are final after 60 days from the shipment date. Opto Diode must be notified of any discrepancies within this period.



FEATURES

- High reliability LPE GaAIAs IRLED chips
- Open center emission for imaging applications
- High output uniformity from emitting surfaces
- Gold contacts for high reliability bonding

All dimensions are nominal values in inches unless otherwise specified.



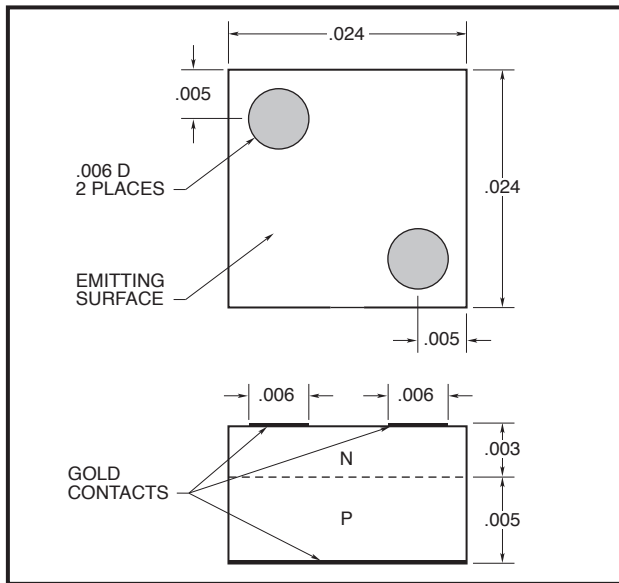
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P _o	I _F = 100mA	6	8		mW
Peak Emission Wavelength, λ _p	I _F = 50mA		880		nm
Spectral Bandwidth at 50%, Δλ			80		nm
Forward Voltage, V _F	I _F = 100mA		1.55	1.9	Volts
Reverse Breakdown Voltage, V _R	I _R = 10μA	5	30		Volts
Capacitance, C	V _R = 0V		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C

Power Dissipation	190mW
Continuous Forward Current	100mA
Peak Forward Current (10μs, 300 Hz)	3A
Reverse Voltage	5V
Storage and Operating Temperature Range	-65°C to 150°C
Maximum Junction Temperature	150°C

The exact performance data depends on your package configuration and technique. Data listed in this specification is for the chip mounted on a TO-46 header using silver epoxy as the die attach material. All sales are final after 60 days from the shipment date. Opto Diode must be notified of any discrepancies within this period.



FEATURES

- High current capability
- 2 bond pads for uniform output
- Gold contacts for high reliability bonding
- High reliability LPE GaAIAs IRLED chips

All dimensions are nominal values in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P _O	I _F = 100mA	7	10		mW
Peak Emission Wavelength, λ _p	I _F = 50mA		880		nm
Spectral Bandwidth at 50%, Δλ			80		nm
Forward Voltage, V _F	I _F = 200mA		1.6	2	Volts
Reverse Breakdown Voltage, V _R	I _R = 10μA	5	30		Volts
Capacitance, C	V _R = 0V		60		pF
Rise Time			0.7		μsec
Fall Time			0.7		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C

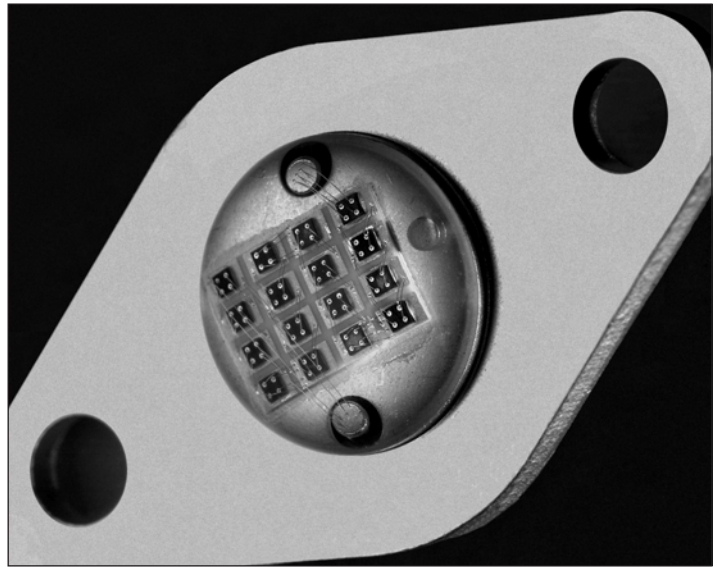
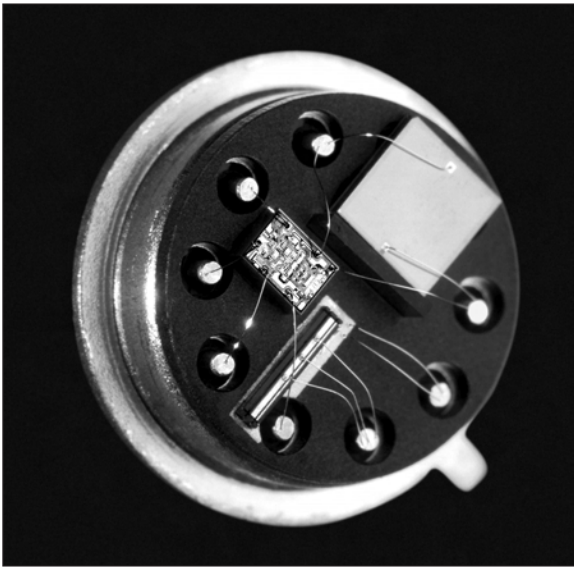
Power Dissipation	400mW
Continuous Forward Current	200mA
Peak Forward Current (10μs, 300 Hz)	7A
Reverse Voltage	5V
Storage and Operating Temperature Range	-65°C to 150°C
Maximum Junction Temperature	150°C

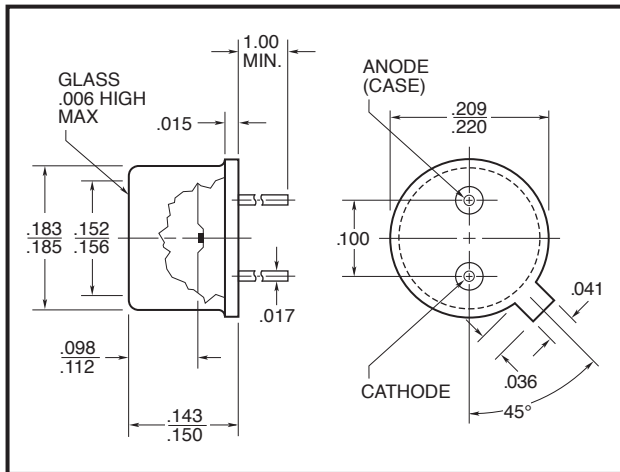
The exact performance data depends on your package configuration and technique. Data listed in this specification is for the chip mounted on a TO-46 header using silver epoxy as the die attach material. All sales are final after 60 days from the shipment date. Opto Diode must be notified of any discrepancies within this period.

CUSTOM PRODUCTS

Opto Diode's design and manufacturing emphasis is on making LED's and Detectors for specific customer applications. To achieve this, it is important to be flexible in terms of packaging, die sizes and shapes, and wavelengths. At the present time, our technology for emitters allows us to fabricate peak wavelengths from 750nm to 940nm. The size of the emitting surfaces can range from 0.004" diameter to more than 0.100" on a side. We have the capability to produce monolithic linear or matrix arrays, and line sources.

The following pages detail some of the custom products we have made for other customers over the years. If you can't find what you want in the standard product section of this catalog, call us with your custom requirements. Our technology usually allows us to turn around specific wavelength or emitting size requirements in 4 weeks or less at a cost much lower than found within the industry.





FEATURES

- Selected wavelength range
- Optimized for highest power output
- Other custom wavelengths available
- Very narrow spectral width

All dimensions are nominal values in inches unless otherwise specified.

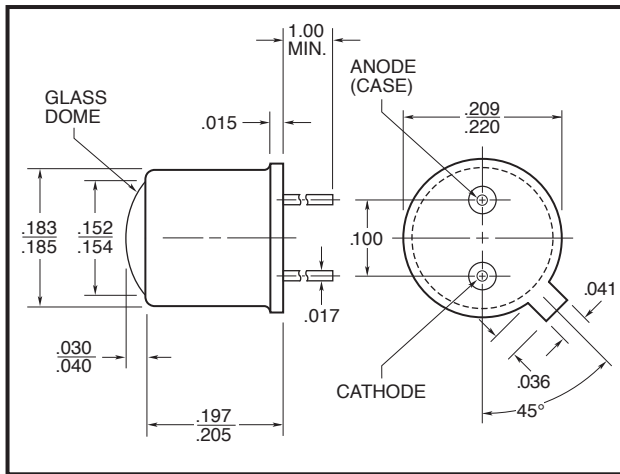


ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	10	15		mW
Peak Emission Wavelength, λ_p	$I_F = 20\text{mA}$	770	780	800	nm
Spectral Bandwidth at 50%, $\Delta\lambda$			25		nm
Half Intensity Beam Angle, θ				80	
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.4	1.8	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	2	5		Volts
Rise Time, T_R			70		nsec
Fall Time, T_F			70		nsec

ABSOLUTE MAXIMUM RATINGS AT 25°C

Power Dissipation	180mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 400 Hz)	500mA
Reverse Voltage	2V
Storage and Operating Temperature Range	-55°C to 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature (1/16" from case for 10 sec)	260°C



FEATURES

- Hermetically sealed TO-46 package
- Very narrow beam angle
- Ideal for light curtains

All dimensions are nominal values in inches unless otherwise specified.



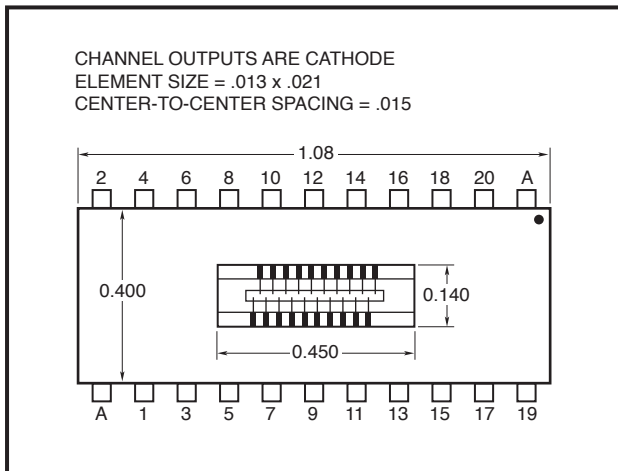
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Radiant Intensity I_e^*	$I_F = 100\text{mA}$	60	120		mW/sr
Peak Emission Wavelength, λ_p	$I_F = 20\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ			3	4	Deg
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.6	1.9	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Rise Time, T_R			0.5		μsec
Fall Time, T_F			0.5		μsec

* As measured into a 5.6° cone angle

ABSOLUTE MAXIMUM RATINGS AT 25°C

Power Dissipation	190mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 400 Hz)	2.5A
Reverse Voltage	5V
Storage and Operating Temperature Range	-65°C to 150°C
Maximum Junction Temperature	150°C
Lead Soldering Temperature (1/16" from case for 10 sec)	260°C



FEATURES

- Monolithic construction for accurate center-to-center spacing
- Dip package for easy PCB mounting
- Other custom sizes available

All dimensions are nominal values in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	4	6		mW
Uniformity of Power Output	$I_F = 50\text{mA}$		10	30	%
Peak Emission Wavelength, λ_p			880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$				80	
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.5	1.9	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	3	30		Volts
Rise Time, T_R			0.5		μsec
Fall Time, T_F			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C

Power Dissipation	190mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 400 Hz)	3A
Reverse Voltage	5V
Storage and Operating Temperature Range	-55°C to 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature (1/16" from case for 10 sec)	240°C

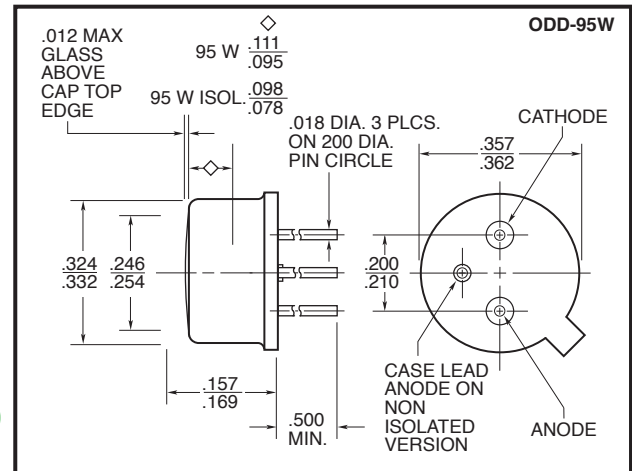
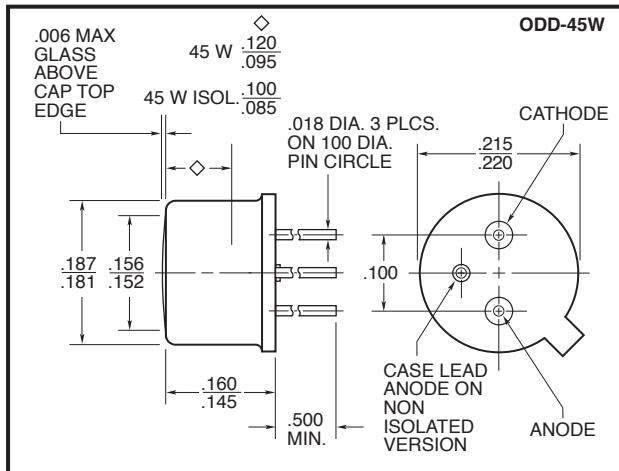
DETECTORS

Opto Diode has developed the first commercially available GaAlAs detectors that can compete with standard silicon photodiodes in terms of size, cost, responsivity and noise.

These detectors have the added benefit of a responsivity range that is nearly identical to the emission spectrum of GaAlAs 880nm IRLED's. This narrow detector band gives a ratio between LED emission generated current and background ambient tungsten lighting that is 16 times better than unfiltered silicon photodiodes and 3 times better than silicon photodiodes using RG850 glass! Similar or better results are noted in fluorescent and sunlight illuminated areas.

Our standard detector sizes have active areas 1mm^2 and 5mm^2 that are housed in a TO-18 and TO-5 package respectively. Please call us if you have a special interest in coarse geometry linear arrays, bi-cells, quad cells, or special single element sizes.

If you would like to learn more about this unique technology and how it might help to eliminate your signal to ambient light current problems, please call and ask for our detector application note.

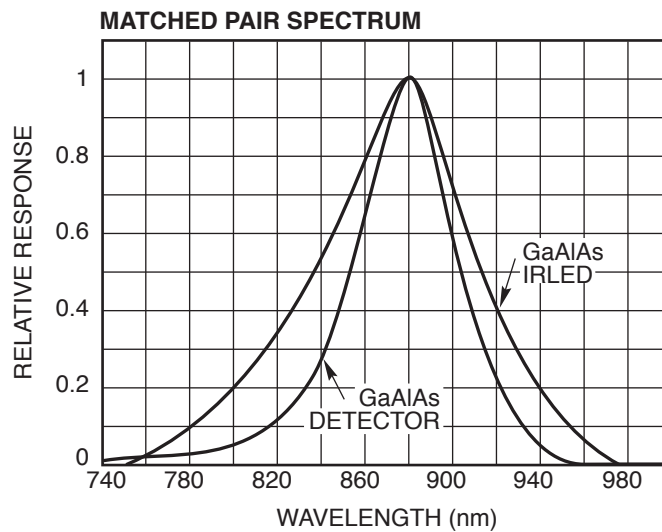
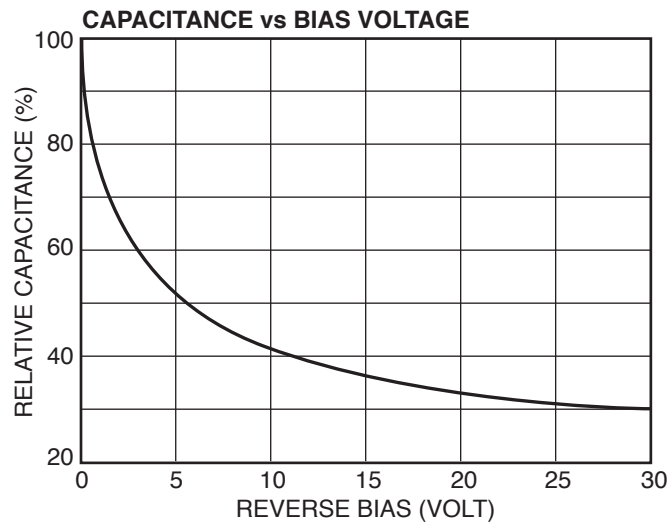
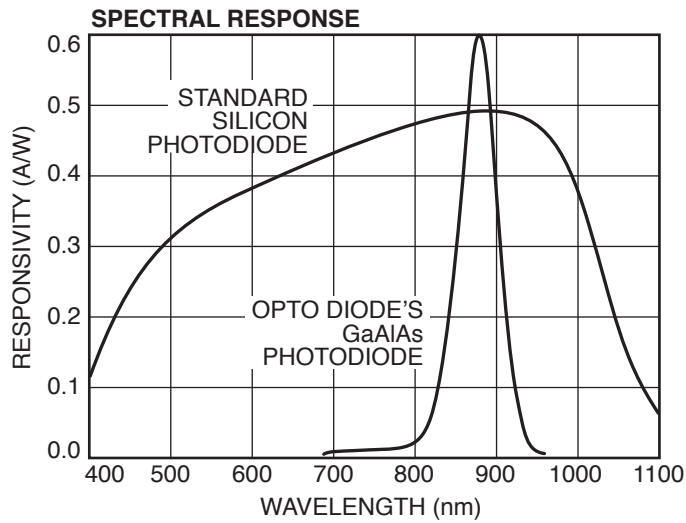


ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS		TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	45W			1		mm ²
	95W			5		mm ²
Peak Sensitivity		$V_R = 0V$		880		nm
Responsivity at 880nm			0.5	0.6		A/W
Responsivity at 750nm				0.01		A/W
Responsivity at 650nm				0.005		A/W
Spectral Bandwidth at 50%					60	
Dark Current	45W	$V_R = 5V$		0.4	2	nA
	95W	$V_R = 5V$		1	5	nA
Shunt Resistance	45W	$V_R = 10\text{ mV}$		3		Gohm
	95W	$V_R = 10\text{ mV}$		1		Gohm
Response Time	45W	$V_R = 5V, R_L = 50\Omega$		1		μsec
	95W	$V_R = 5V, R_L = 50\Omega$		1		μsec
Breakdown Voltage	45W	$I_R = 10\mu A$	20	30		V
	95W	$I_R = 10\mu A$	5	10		V
Capacitance	45W	$V_R = 0V$		170		pF
	45W	$V_R = 5V$		90		pF
	95W	$V_R = 0V$		700		pF
	95W	$V_R = 5V$		350		pF

ABSOLUTE MAXIMUM RATINGS AT 25°C

Storage and Operating Temperature Range	-55°C to 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature (1/16" from case for 10 sec)	260°C



**HI-REL INFRARED EMITTING DIODES
FOR
SPACE AND MILITARY APPLICATIONS**



OPTO DIODE CORP.

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HI-REL INFRARED EMITTING DIODES

The recommended testing program for all hi-rel IRLEDs follows the general requirements of Mil-S-19500. The customer may specify the testing program(s) outlined on the next two pages, or supply us with a detailed specification. When specifying our program, indicate if screening alone or screening with a combination of Group A, B and C inspections is required.

SCREENING REQUIREMENTS

STEPS	SCREEN	MIL-STD-750		
		METHOD	CONDITIONS	LTPD
1	Internal visual (precap) inspection	–	Per our specification	100%
2	High temp life (stabilization bake)	1032	T_A = max storage temp t = 24 hours minimum	100%
3	Thermal shock (temp cycling)	1051	Min to max storage temp, 20 cycles, 10 minute dwell at each extreme	100%
4	Constant acceleration	2006	Y1 dir., 20,000 Gs min	100%
5	Fine leak test	1071H	Per specification	100%
6	Gross leak test	1071C or E	Per specification	100%
7	Interim electrical measurements	–	Read & record P_O	100%
8	Power burn-in	1038	I_F = max current T_C = 25°C (or T_A as applicable) t = 96 hours minimum	100%
9	End point measurements	–	Read & record P_O read V_F & V_R	100%
10	Delta endpoint of P_O	–	P_O = +30%/–15%	100%

GROUP A INSPECTION

STEPS	TEST	MIL-STD-750		
		METHOD	CONDITIONS	LTPD
1	<u>Subgroup 1</u>			15
	Visual and mechanical inspection	2071	Per mechanical drawing, I.D. damage, lens cracks, etc.	
2	<u>Subgroup 2</u>			5
	Radiant power output	–	T_A = 25°C, I_F per spec	
	Forward voltage	4011	T_A = 25°C, I_F per spec	
	Reverse breakdown	4016	T_A = 25°C, I_R per spec	

HI-REL INFRARED EMITTING DIODES

GROUP B INSPECTION

STEPS	TEST	MIL-STD-750		
		METHOD	CONDITIONS	LTPD
1	<u>Subgroup 1</u>			15
	Solderability	2026		
2	<u>Subgroup 2</u>			10
	Thermal shock	1051	Min to max storage temp, 25 cycles, 10 minute dwell at each extreme	
	Fine leak test	1071H	Per specification	
	Gross leak test	1071 C or E		
	End point measurements	-	Read & record P_0 , V_F , V_R	
6	<u>Subgroup 3</u>			5
	Beginning point measurements	-	Read & record P_0	
	Steady state life test	1038	I_F = max current T_C = 25°C (or T_A as applicable) t = 340 hours minimum	
	End point measurements	-	Read & record P_0 , V_F , V_R	
9	Delta endpoint of P_0	-	P_0 = +30% / -15%	
10	<u>Subgroup 4**</u>			20
	Decap internal visual	2075	1 device/0 failures	
11	Bond strength	2037	As specified, 0 failures allowed	
12	<u>Subgroup 6</u>			7
	Beginning point measurements	-	Read & record P_0	
	High temp life (non-operating)	1032	T_A = max storage temp t = 340 hours minimum	
	End point measurements	-	Read & record P_0 , V_F , V_R	

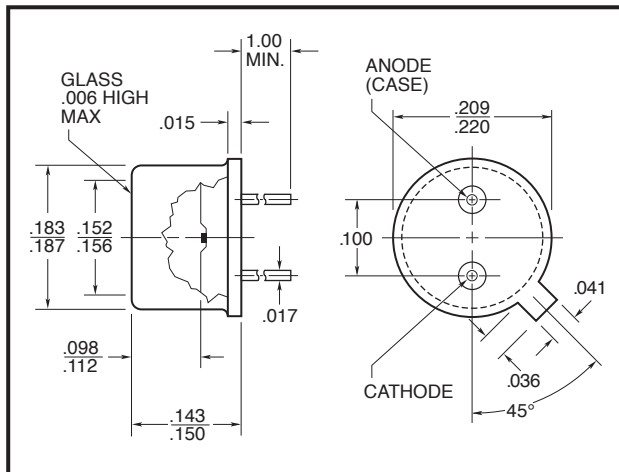
GROUP C INSPECTION

STEPS	TEST	MIL-STD-750		
		METHOD	CONDITIONS	LTPD
1	<u>Subgroup 1</u>			15
	Physical dimensions	2026	Per Mechanical drawing	
2	<u>Subgroup 2</u>			10
	Thermal shock (glass strain)	1056A		
	Fine leak test	1071H	Per specification	
	Gross leak test	1071 C or E		
	Moisture resistance	1021	Omit initial conditioning	
	External visual	1071	I.D. damage, lens cracks, etc.	
	End point measurements	-	Read & record P_0 , V_F , V_R	
8	<u>Subgroup 3</u>			10
	Shock	2016	Non-operating, 1500 Gs, 0.5ms, 5 blows ea. dir.	
	Vibration, variable frequency	2056		
	Constant acceleration	2006	One minute each X1, Y1, and Z1 axes, 20K Gs min.	
11	End point measurements	-	Read & record P_0 , V_F , V_R	
12	<u>Subgroup 4**</u>			15
	Salt atmosphere	1041		
13	<u>Subgroup 6</u>			10
	Beginning point measurements	-	Read & record P_0	
	Steady state life test	1026	I_F = max current T_C = 25°C (or T_A as applicable) t = 1000 hours minimum	
	End point measurements	-	Read & record P_0 , V_F , V_R	
	Delta endpoint of P_0	-	P_0 = +30% / -15%	

**Except for pill packages



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FEATURES

- Designed for high radiation tolerance
- Excellent power degradation characteristics
- High power output
- Fast response
- Hermetically sealed metal package
- MIL-S-19500 screening available
- No internal coatings

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	2	3		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		810		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			50		nm
Half Intensity Beam Angle, θ			80		Deg
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.45	1.8	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	3	4		Volts
Capacitance, C	$V_R = 0\text{V}$		150		pF
Rise Time			60		nsec
Fall Time			60		nsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	180mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 150Hz) ²	3A
Reverse Voltage	3V
Lead Soldering Temperature (1/16" from case for 10sec)	240°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-65°C TO 150°C
Maximum Junction Temperature	150°C
Thermal Resistance, R_{THJA} ¹	400°C/W Typical
Thermal Resistance, R_{THJA} ²	135°C/W Typical

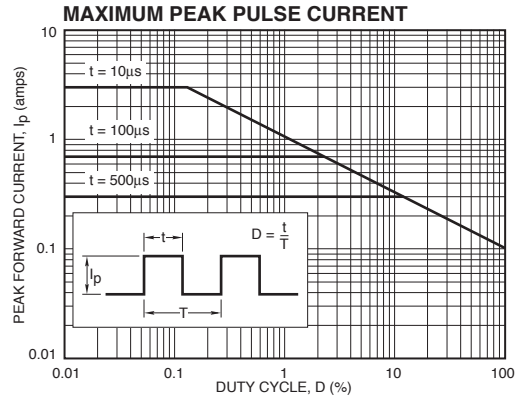
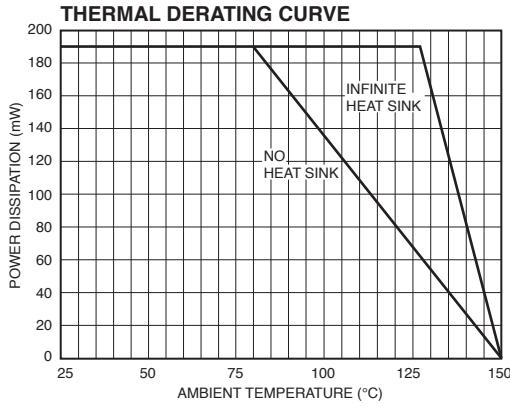
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

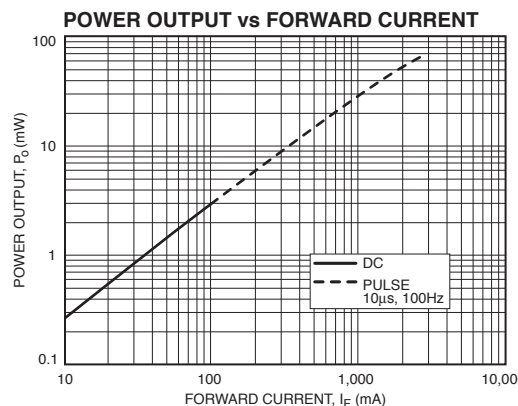
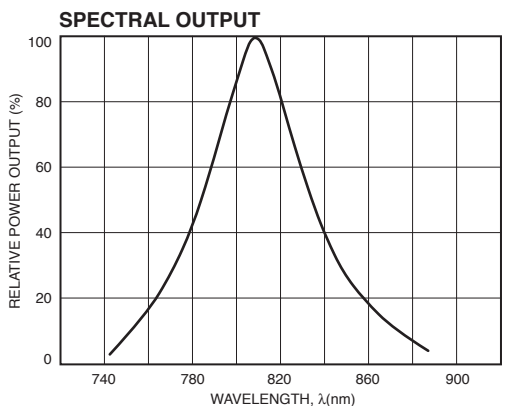
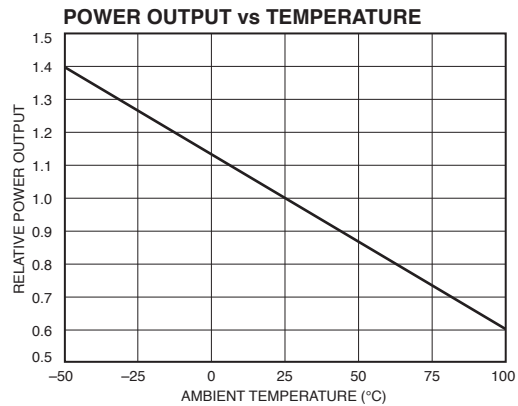
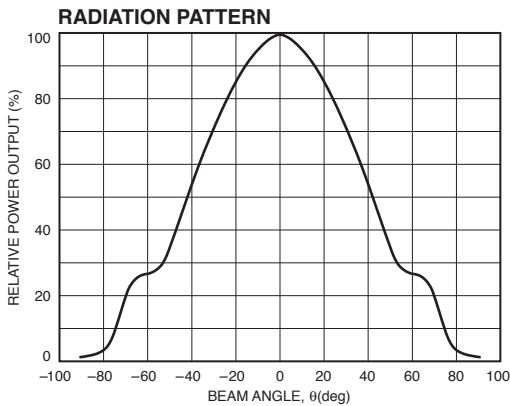
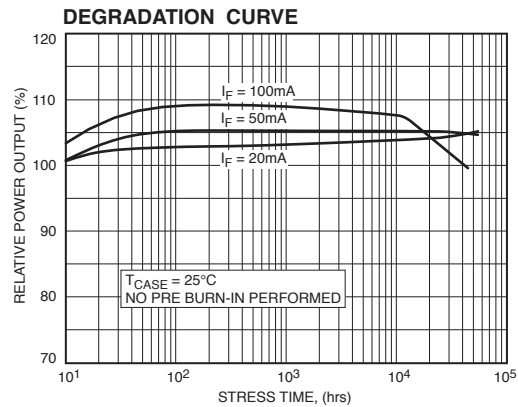
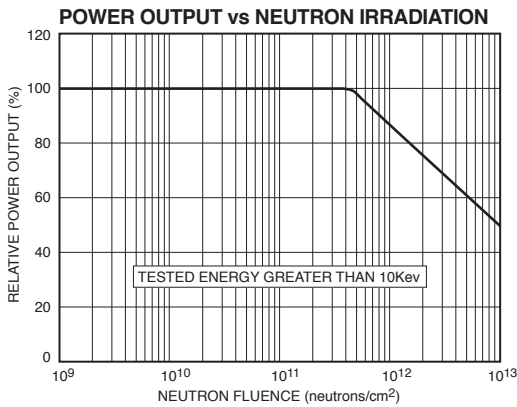


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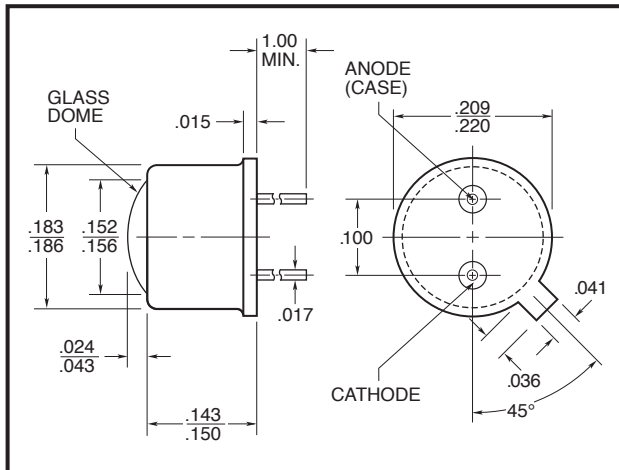
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- Designed for high radiation tolerance
- Excellent power degradation characteristics
- High power output
- Fast response
- Hermetically sealed metal package
- MIL-S-19500 screening available
- No internal coatings

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	2	3		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		810		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			50		nm
Half Intensity Beam Angle, θ				35	
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.45	1.8	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	3	4		Volts
Capacitance, C	$V_R = 0\text{V}$		150		pF
Rise Time			60		nsec
Fall Time			60		nsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	180mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 150Hz) ²	3A
Reverse Voltage	3V
Lead Soldering Temperature (1/16" from case for 10sec)	240°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

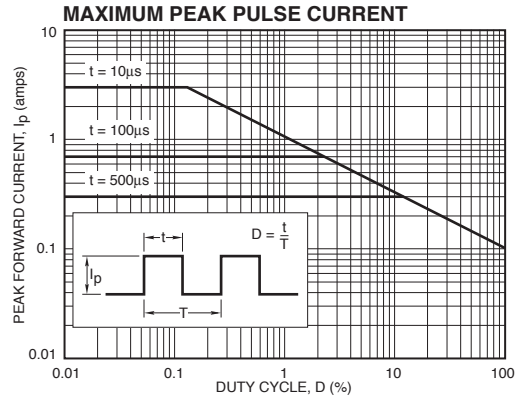
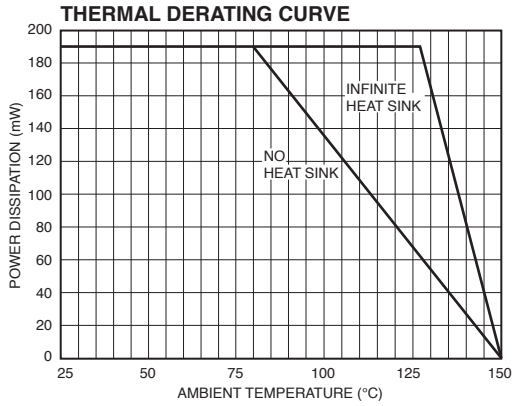
THERMAL PARAMETERS

Storage and Operating Temperature Range	-65°C TO 150°C
Maximum Junction Temperature	150°C
Thermal Resistance, R_{THJA} ¹	400°C/W Typical
Thermal Resistance, R_{THJA} ²	135°C/W Typical

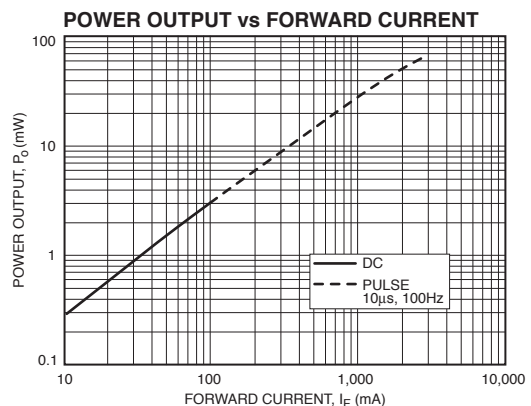
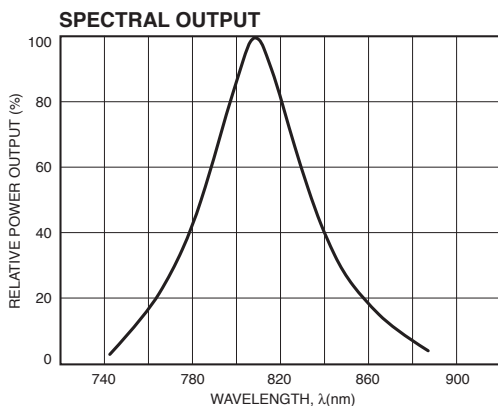
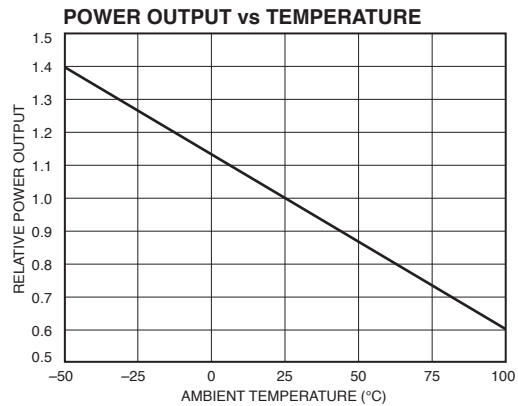
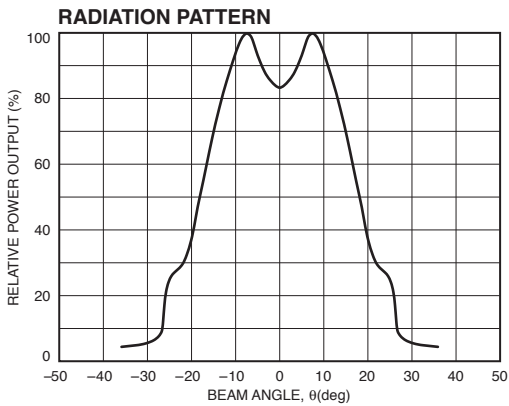
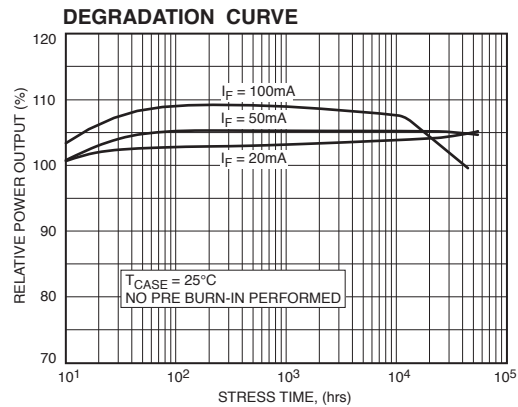
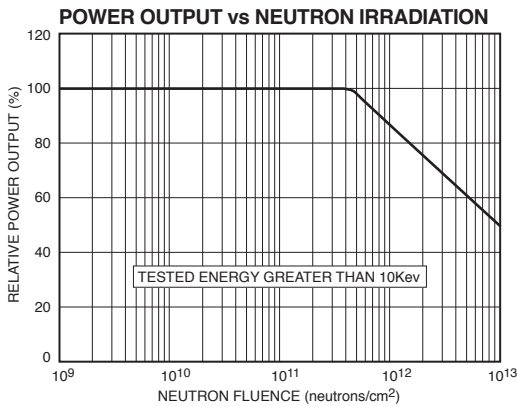
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²Air circulating at a rapid rate to keep case temperature at 25°C

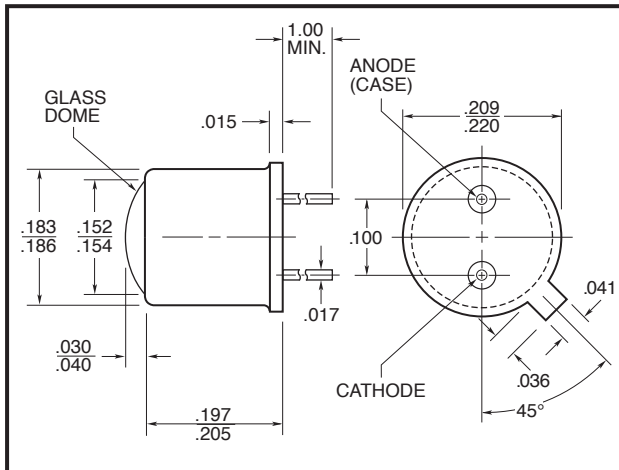
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	1.5	3		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		810		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			50		nm
Half Intensity Beam Angle, θ			8		Deg
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.45	1.8	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	3	4		Volts
Capacitance, C	$V_R = 0\text{V}$		150		pF
Rise Time			60		nsec
Fall Time			60		nsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	180mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 150Hz) ²	3A
Reverse Voltage	3V
Lead Soldering Temperature (1/16" from case for 10sec)	240°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

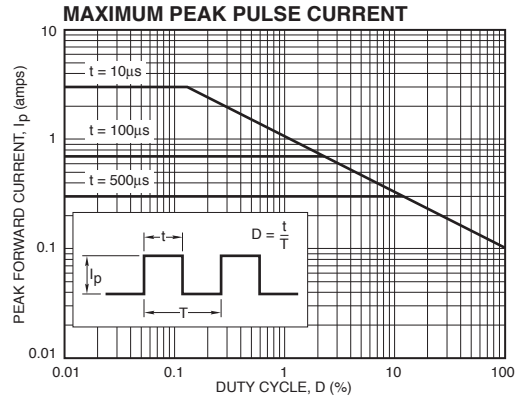
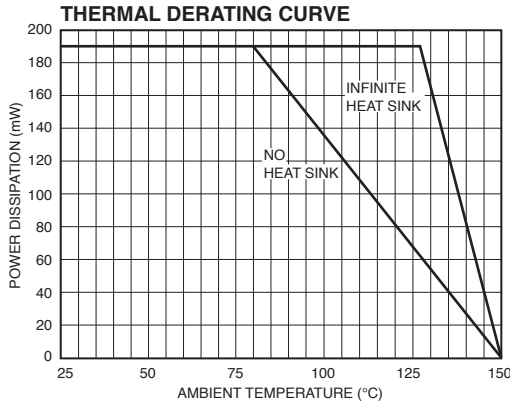
THERMAL PARAMETERS

Storage and Operating Temperature Range	-65°C TO 150°C
Maximum Junction Temperature	150°C
Thermal Resistance, R_{THJA} ¹	400°C/W Typical
Thermal Resistance, R_{THJA} ²	135°C/W Typical

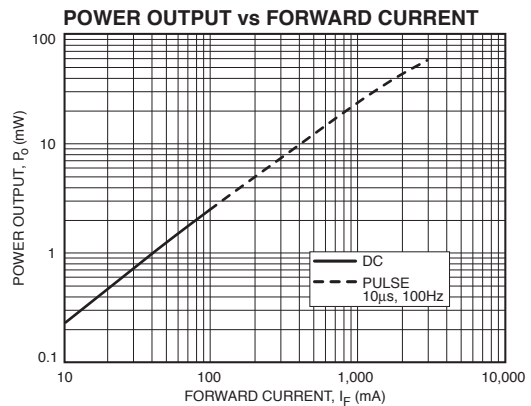
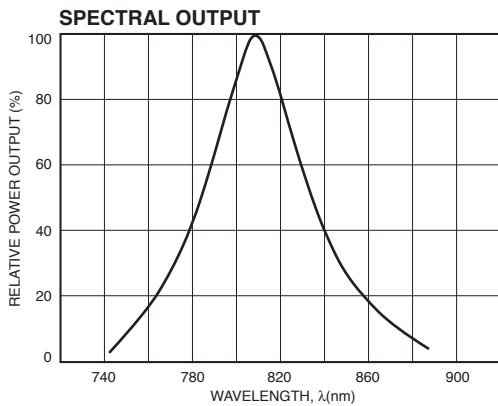
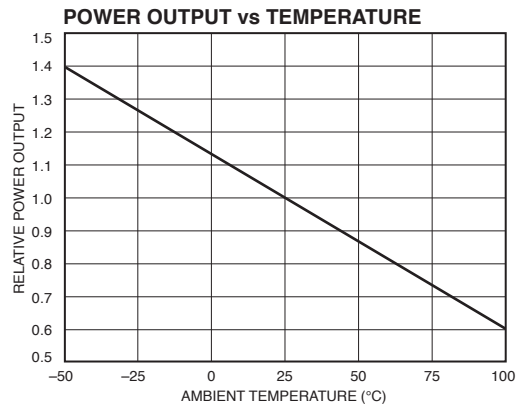
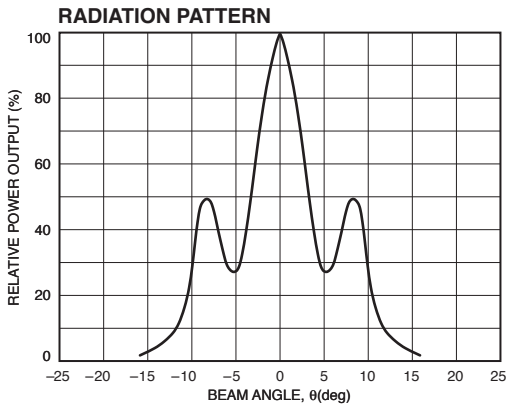
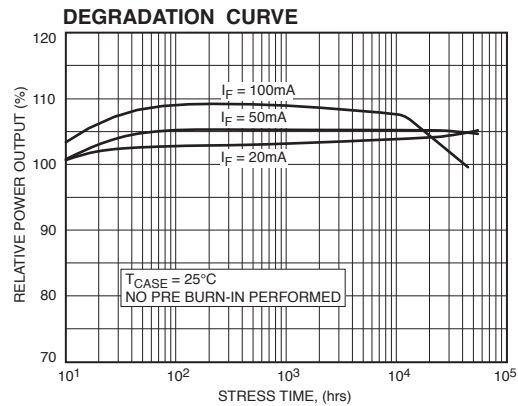
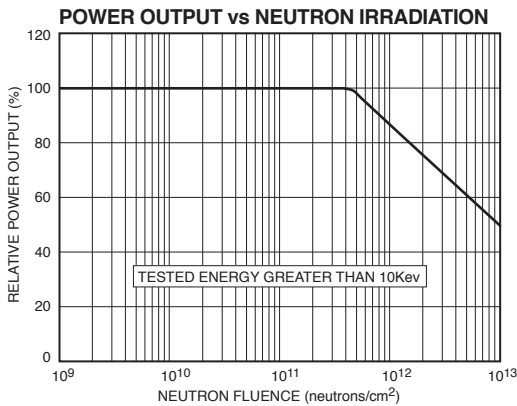
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

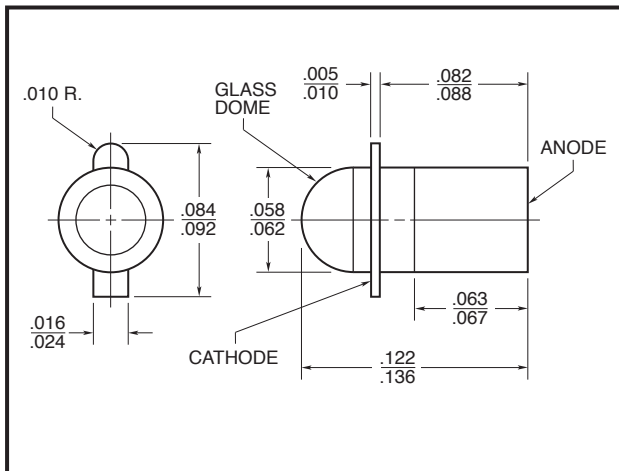
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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 Email: sales@optodiode.com, Website: www.optodiode.com



FEATURES

- Designed for high radiation tolerance
- Super high reliability
- High power output
- Fast response
- Hermetically sealed miniature pill package
- MIL-S-19500 screening available
- No internal coatings

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 50\text{mA}$	0.5	0.8		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		810		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			50		nm
Half Intensity Beam Angle, θ			25		Deg
Forward Voltage, V_F	$I_F = 50\text{mA}$		1.4	1.6	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	3	4		Volts
Capacitance, C	$V_R = 0\text{V}$		150		pF
Rise Time			60		nsec
Fall Time			60		nsec

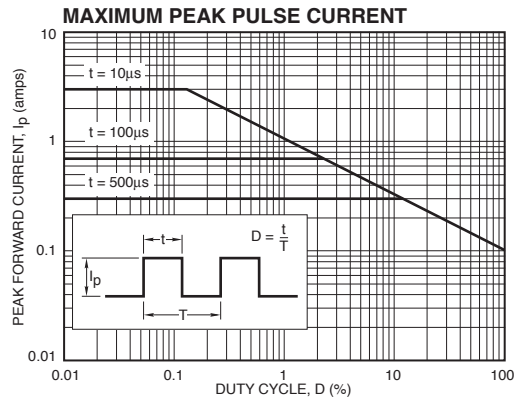
ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	180mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 150Hz) ²	3A
Reverse Voltage	3V
Lead Soldering Temperature	240°C
Storage and Operating Temperature Range	-55°C to 125°C

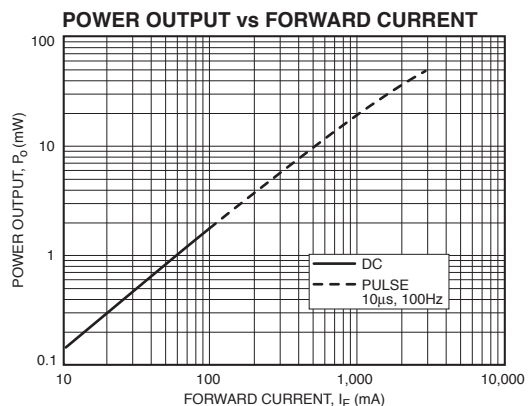
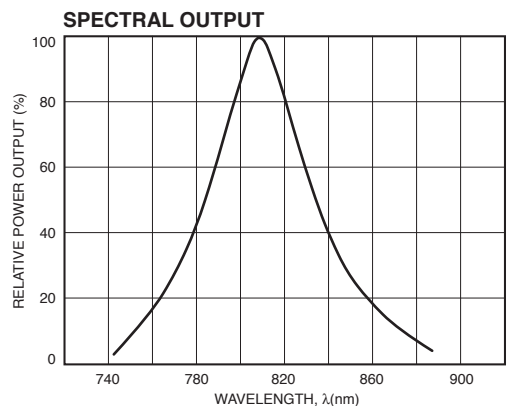
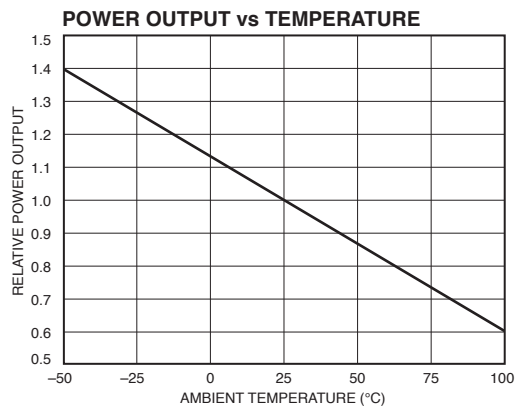
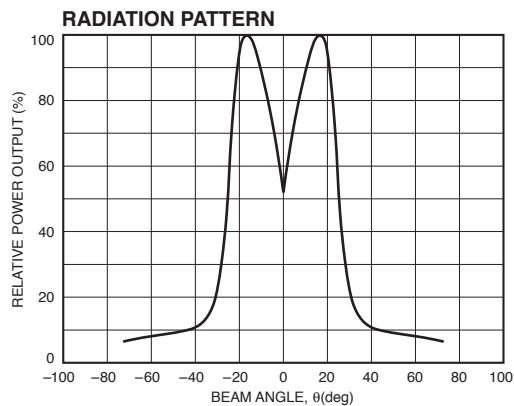
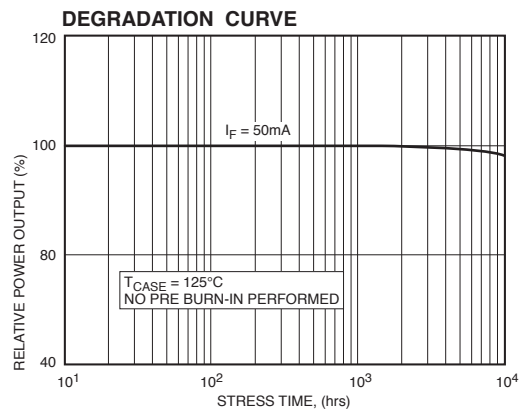
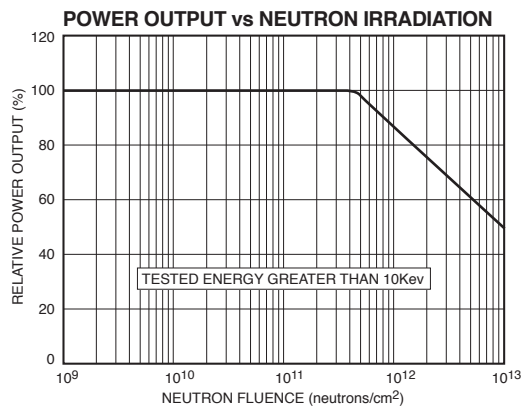
¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

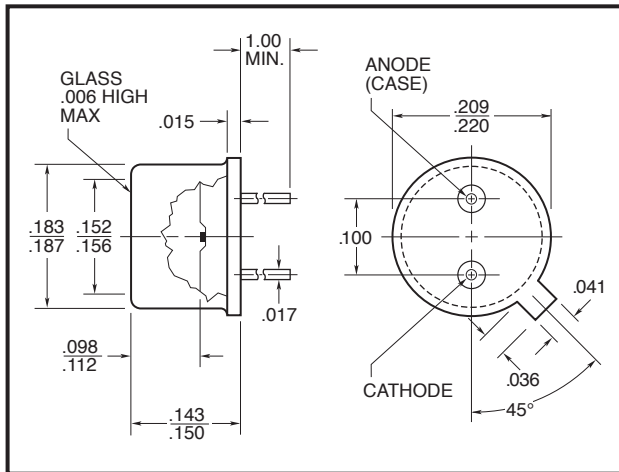
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- High reliability LPE GaAlAs IRLEDs
- High power output
- 880nm peak emission
- Hermetically sealed TO-46 package
- MIL-S-19500 screening available
- No internal coatings

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P _O	I _F = 100mA	7	9		mW
Peak Emission Wavelength, λ _p	I _F = 50mA		880		nm
Spectral Bandwidth at 50%, Δλ			80		nm
Half Intensity Beam Angle, θ				80	
Forward Voltage, V _F	I _F = 100mA		1.55	1.9	Volts
Reverse Breakdown Voltage, V _R	I _R = 10μA	5	30		Volts
Capacitance, C	V _R = 0V		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	190mW
Continuous Forward Current	100mA
Peak Forward Current (10μs, 400Hz) ²	3A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	240°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-65°C TO 150°C
Maximum Junction Temperature	150°C
Thermal Resistance, R _{THJA} ¹	400°C/W Typical
Thermal Resistance, R _{THJA} ²	160°C/W Typical

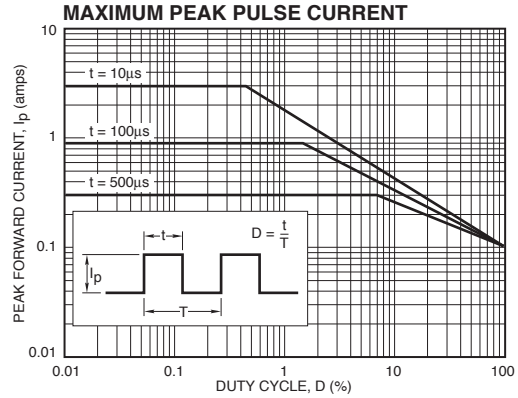
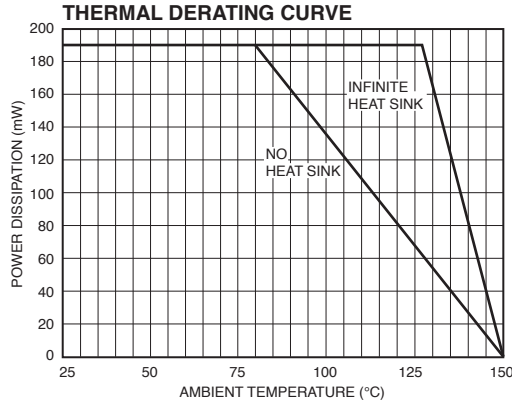
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

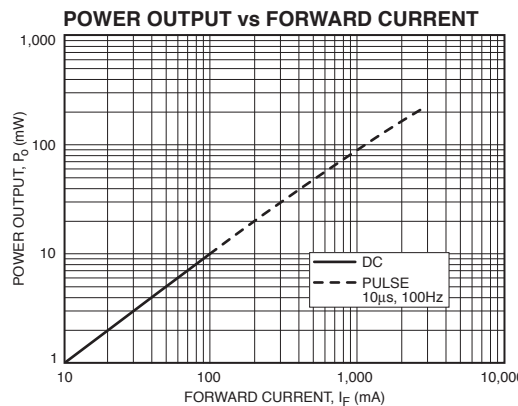
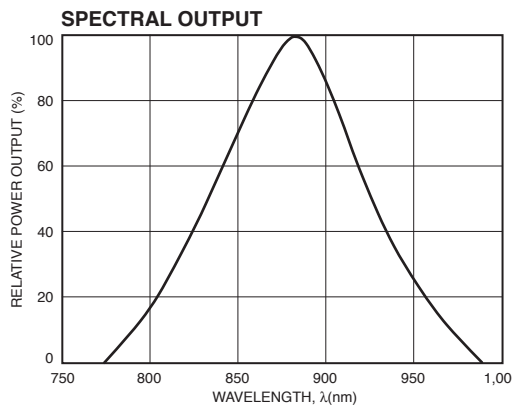
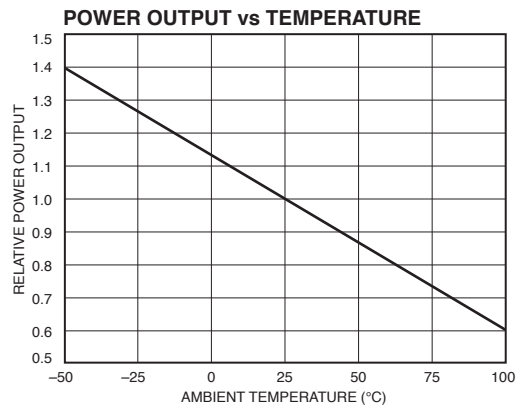
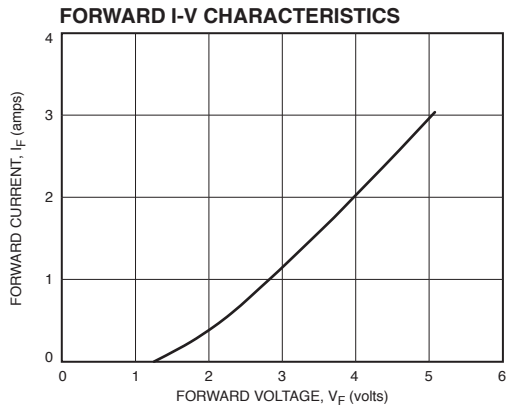
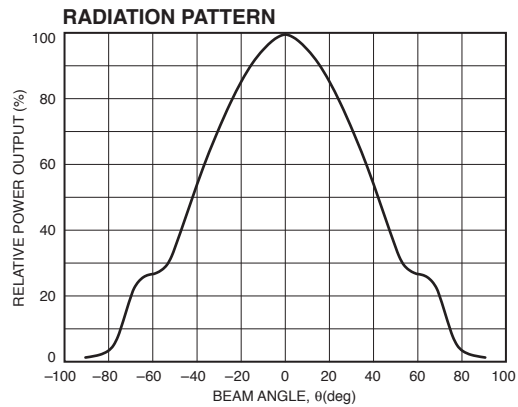
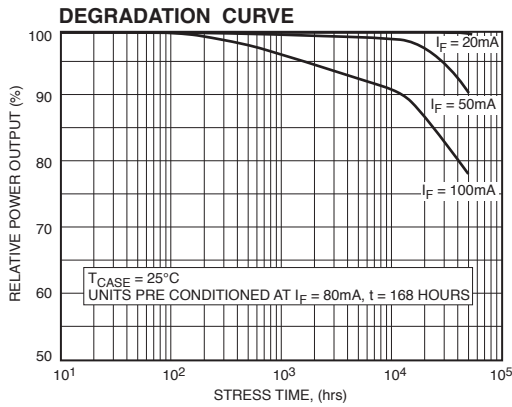


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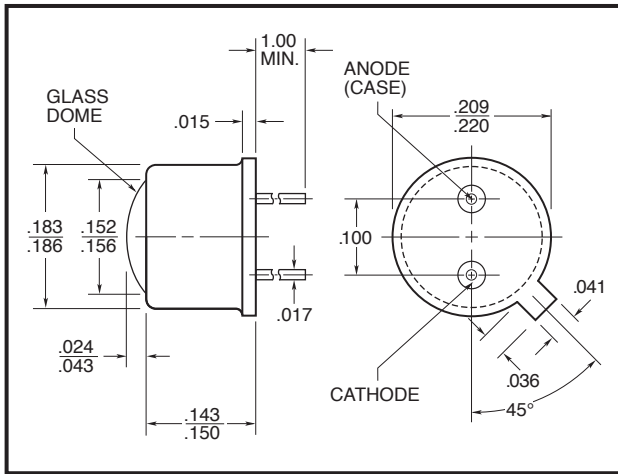
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- High reliability LPE GaAlAs IRLEDs
- High power output
- 880nm peak emission
- Hermetically sealed TO-46 package
- MIL-S-19500 screening available
- No internal coatings

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 100\text{mA}$	6	8.5		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ				35	
Forward Voltage, V_F	$I_F = 100\text{mA}$		1.55	1.9	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	30		Volts
Capacitance, C	$V_R = 0\text{V}$		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	190mW
Continuous Forward Current	100mA
Peak Forward Current (10 μs , 400Hz) ²	3A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	240°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-65°C TO 150°C
Maximum Junction Temperature	150°C
Thermal Resistance, R_{THJA} ¹	370°C/W Typical
Thermal Resistance, R_{THJA} ²	120°C/W Typical

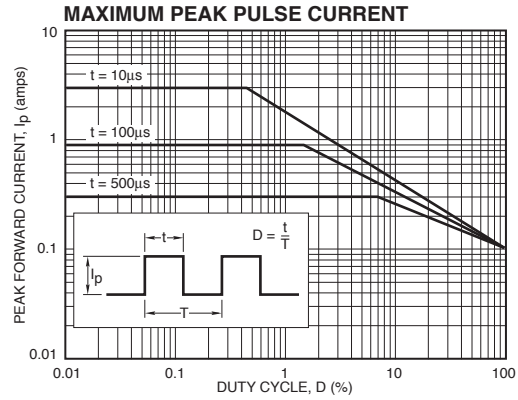
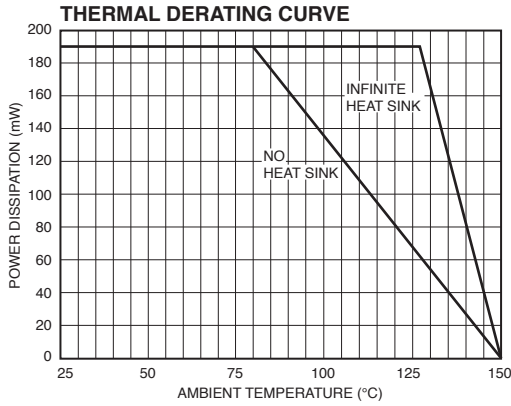
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

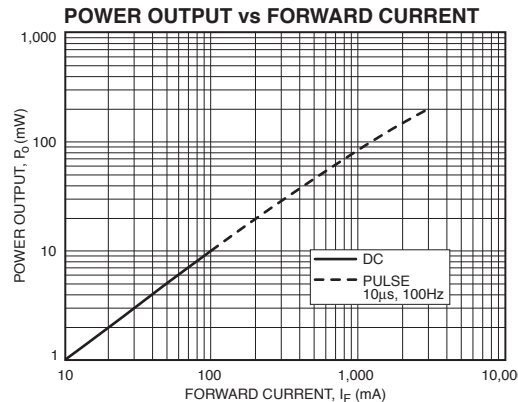
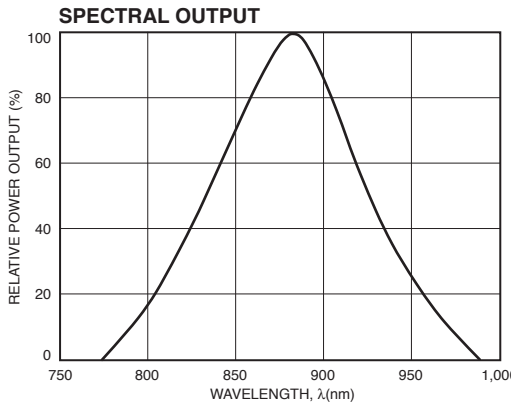
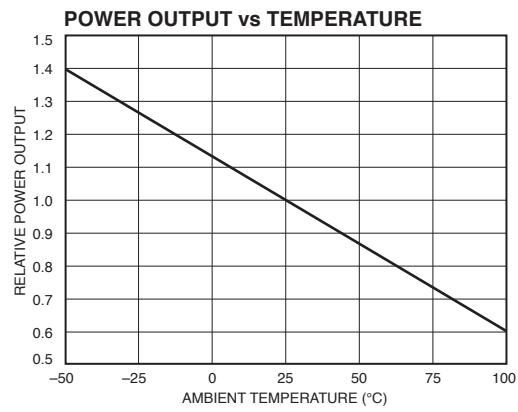
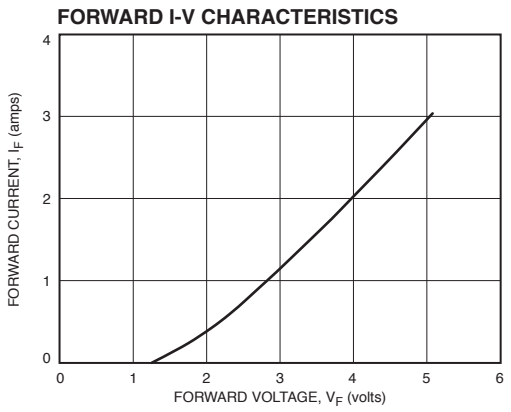
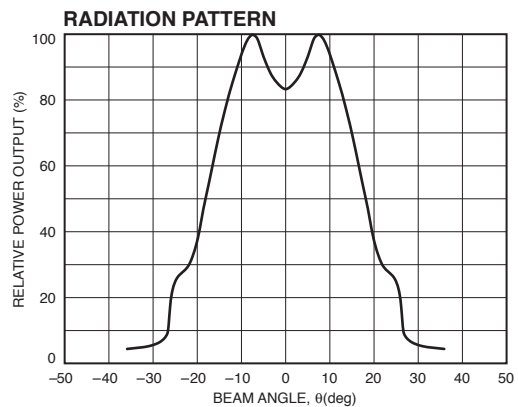
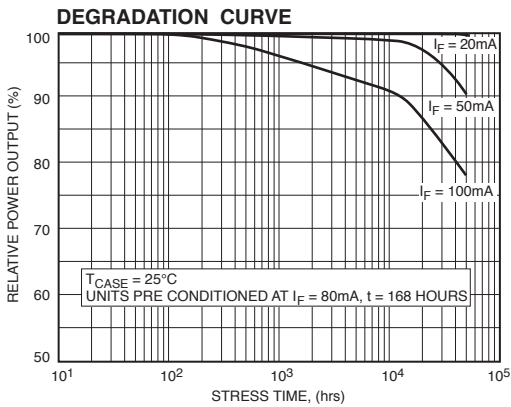


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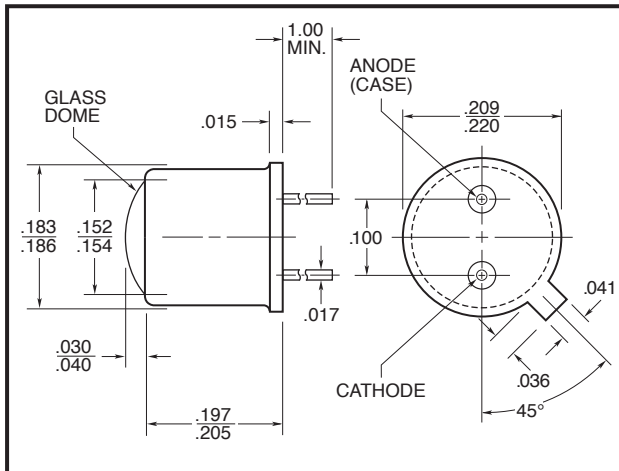
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- High reliability LPE GaAlAs IRLEDs
- High power output
- 880nm peak emission
- Hermetically sealed TO-46 package
- MIL-S-19500 screening available
- No internal coatings

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P _O	I _F = 100mA	6	8		mW
Peak Emission Wavelength, λ _p	I _F = 50mA		880		nm
Spectral Bandwidth at 50%, Δλ			80		nm
Half Intensity Beam Angle, θ			8		Deg
Forward Voltage, V _F	I _F = 100mA		1.55	1.9	Volts
Reverse Breakdown Voltage, V _R	I _R = 10μA	5	30		Volts
Capacitance, C	V _R = 0V		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	190mW
Continuous Forward Current	100mA
Peak Forward Current (10μs, 400Hz) ²	3A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	240°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-65°C TO 150°C
Maximum Junction Temperature	150°C
Thermal Resistance, R _{THJA} ¹	370°C/W Typical
Thermal Resistance, R _{THJA} ²	120°C/W Typical

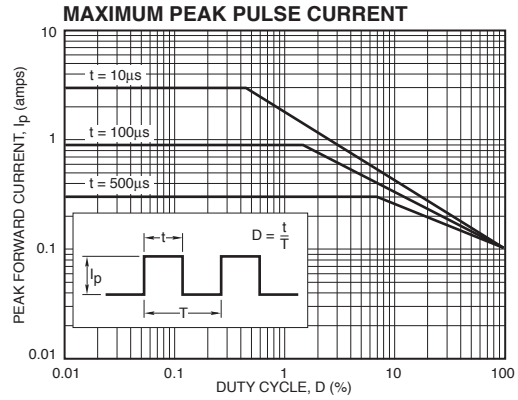
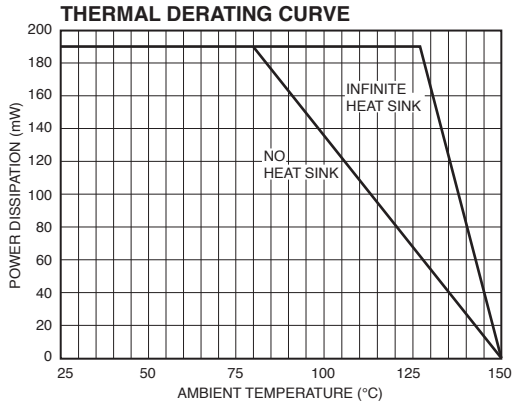
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

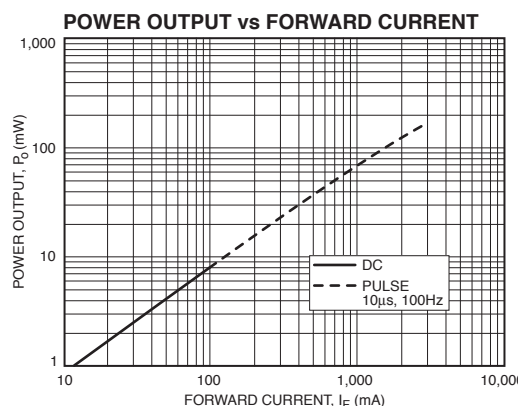
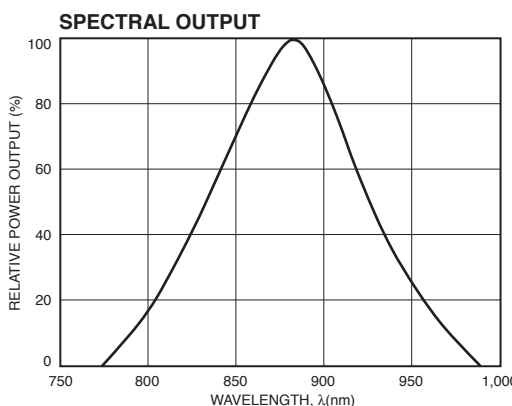
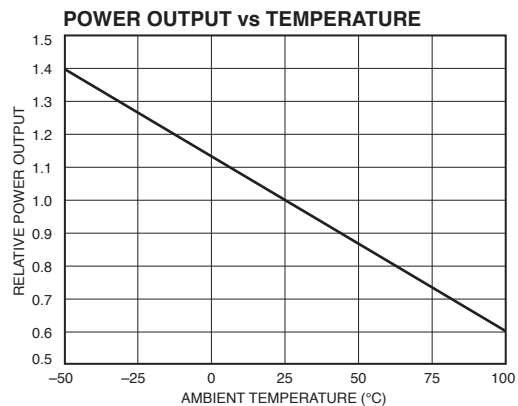
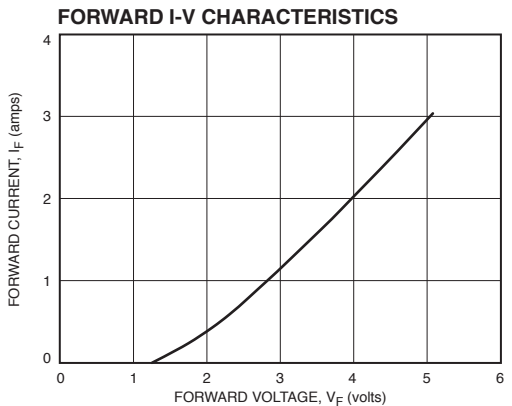
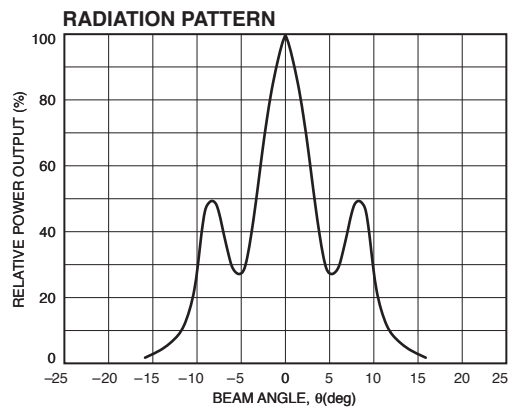
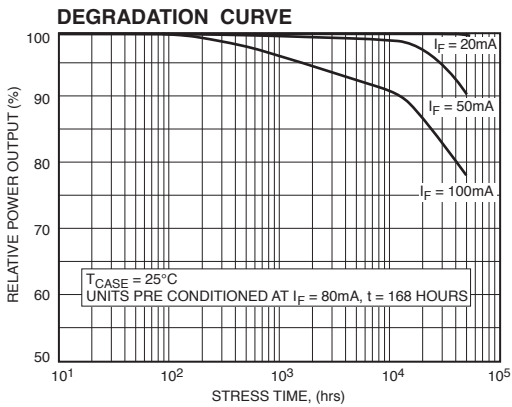


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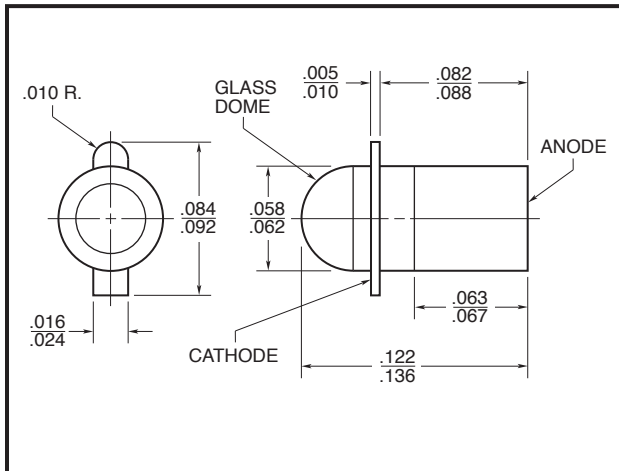
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



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FEATURES

- High reliability LPE GaAlAs IRLEDs
- High power output
- 880nm peak emission
- Hermetically sealed miniature pill package
- MIL-S-19500 screening available
- No internal coatings

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P _o	I _F = 50mA	2	2.2		mW
Peak Emission Wavelength, λ _p	I _F = 50mA		880		nm
Spectral Bandwidth at 50%, Δλ			80		nm
Half Intensity Beam Angle, θ			25		Deg
Forward Voltage, V _F	I _F = 50mA		1.4	1.6	Volts
Reverse Breakdown Voltage, V _R	I _R = 10μA	5	30		Volts
Capacitance, C	V _R = 0V		17		pF
Rise Time			0.5		μsec
Fall Time			0.5		μsec

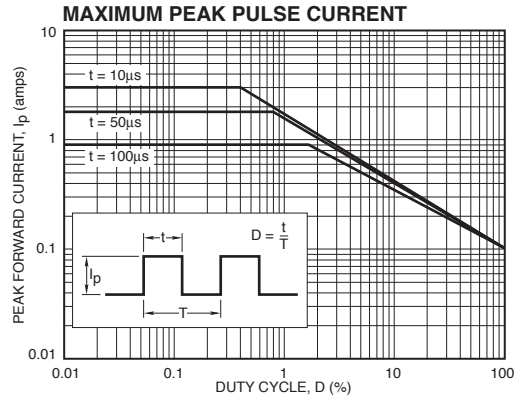
ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	190mW
Continuous Forward Current	100mA
Peak Forward Current (10μs, 400Hz) ²	3A
Reverse Voltage	5V
Lead Soldering Temperature (10sec)	240°C
Storage and Operating Temperature Range	-55°C to 125°C

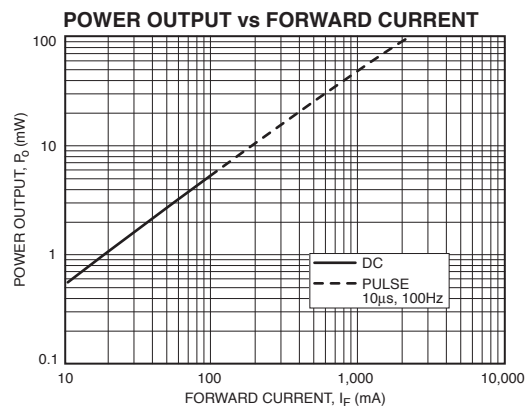
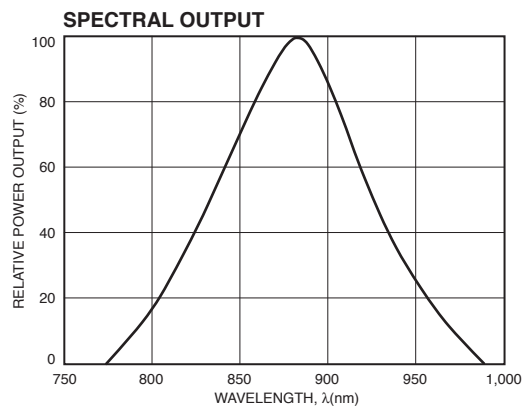
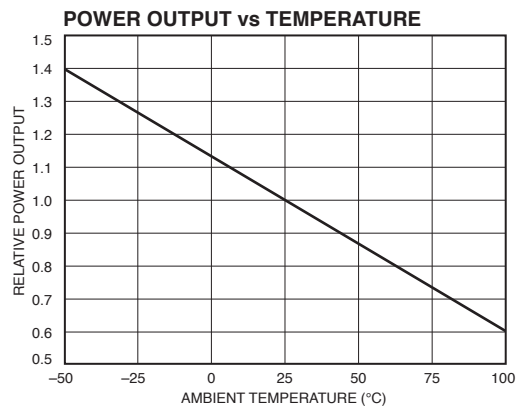
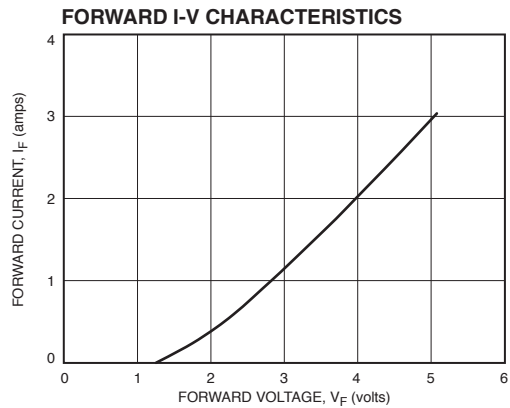
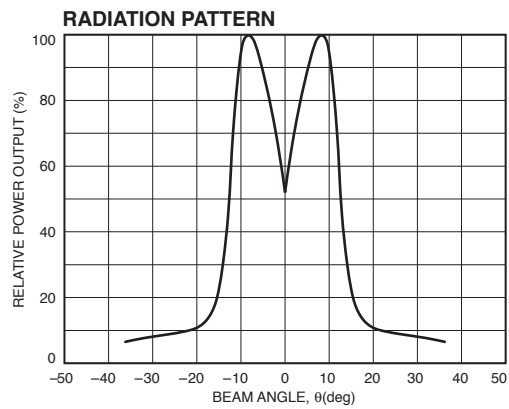
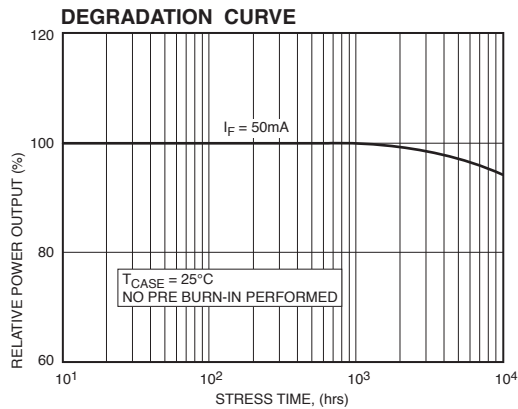
¹Derate per Thermal Derating Curve above 25°C

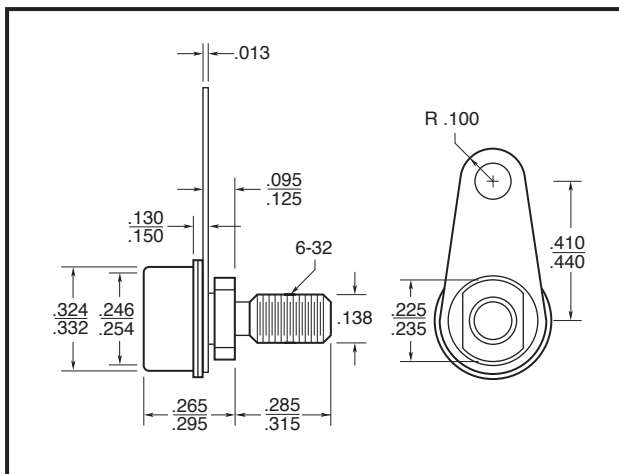
²Derate linearly above 25°C

MAXIMUM RATINGS



TYPICAL CHARACTERISTICS





FEATURES

- High reliability LPE GaAlAs IRLEDs
- High power output
- 880nm peak emission
- Four wire bonds on chip corners
- Hermetically sealed stud package
- MIL-S-19500 screening available
- No internal coatings

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified. Window caps are welded to the case.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 300\text{mA}$	20	25		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		880		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			80		nm
Half Intensity Beam Angle, θ				115	
Forward Voltage, V_F	$I_F = 300\text{mA}$		1.5	1.8	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	5	40		Volts
Capacitance, C	$V_R = 0\text{V}$		90		pF
Rise Time			0.7		μsec
Fall Time			0.7		μsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	900mW
Continuous Forward Current	450mA
Peak Forward Current (10 μs , 700Hz) ²	12A
Reverse Voltage	5V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per Thermal Derating Curve above 25°C

²Derate linearly above 25°C

THERMAL PARAMETERS

Storage and Operating Temperature Range	-65C TO 150°C
Maximum Junction Temperature	150°C
Thermal Resistance, R_{THJA} ¹	120°C/W Typical
Thermal Resistance, R_{THJA} ²	35°C/W Typical

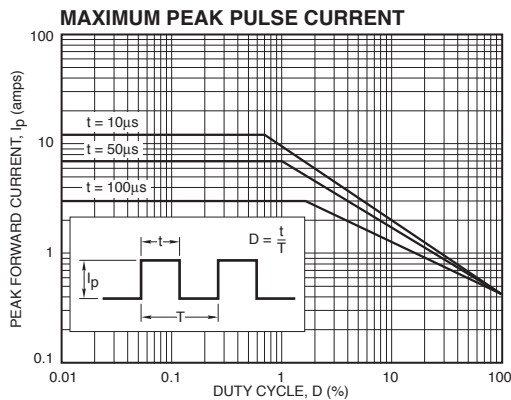
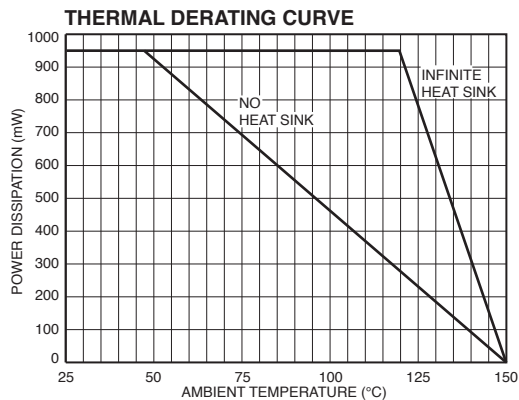
¹Heat transfer minimized by measuring in still air with minimum heat conducting through leads

²Air circulating at a rapid rate to keep case temperature at 25°C

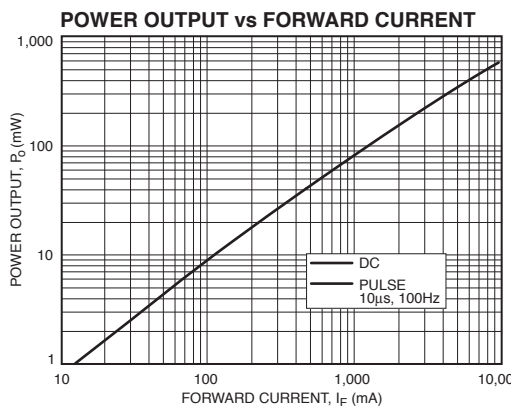
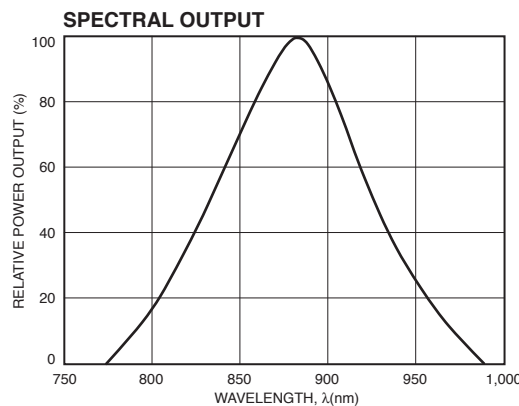
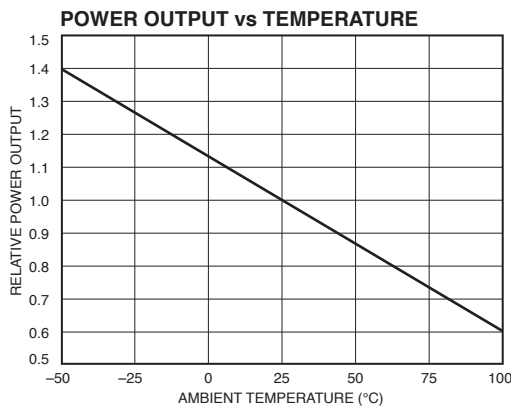
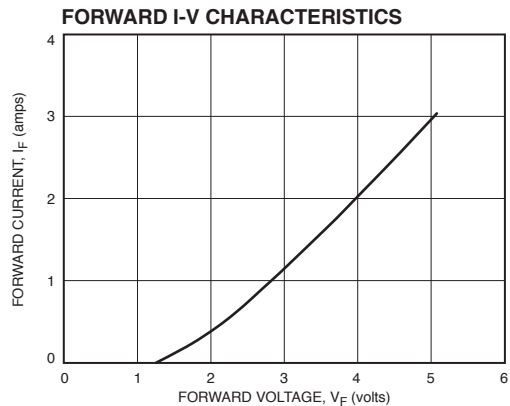
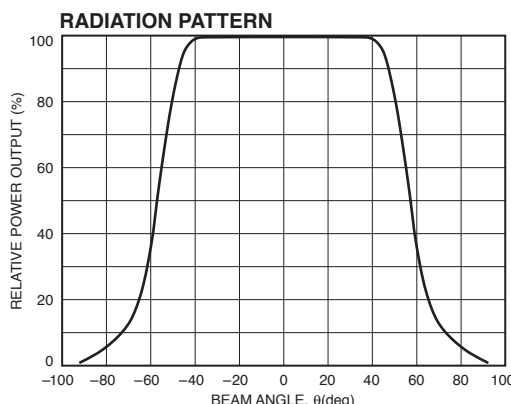
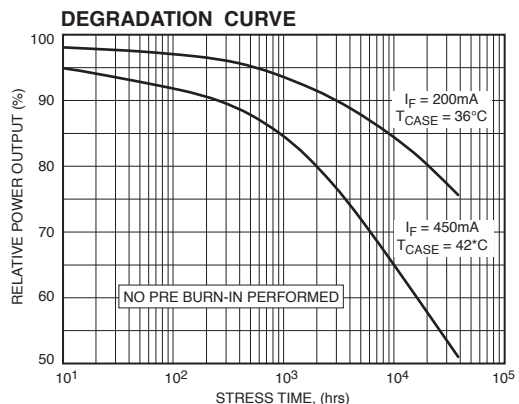


750 Mitchell Road, Newbury Park, California 91320
 Phone: (805) 499-0335, Fax: (805) 499-8108
 Email: sales@optodiode.com, Website: www.optodiode.com

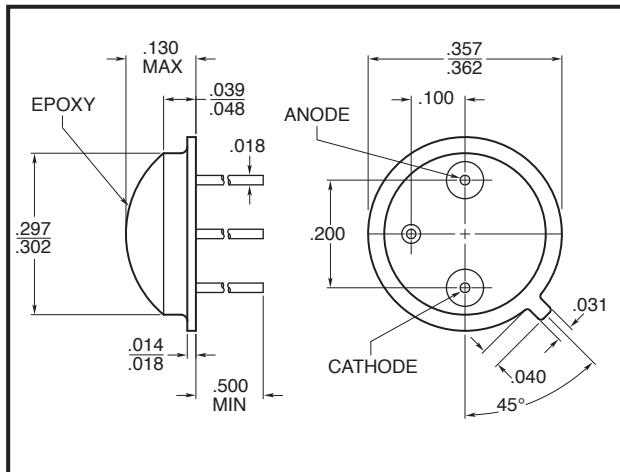
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



750 Mitchell Road, Newbury Park, California 91320
 Phone: (805) 499-0335, Fax: (805) 499-8108
 Email: sales@optodiode.com, Website: www.optodiode.com



FEATURES

- High power output
- Standard 3-lead TO-39 package
- Chip size .050 x .050 inches
- Case isolated

Dimensions are nominal values in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 300\text{mA}$	45	55		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$	462	470	475	nm
Spectral Bandwidth at 50%, $\Delta\lambda$			40		nm
Half Intensity Beam Angle, θ				110	
Forward Voltage, V_F	$I_F = 300\text{mA}$		3.6	4	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	2	5		Volts
Rise and Fall Time, t_r, t_f	$I_F = 50\text{mA}$		175		nsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	1000mW
Continuous Forward Current ¹	300mA
Reverse Voltage	2V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per appropriate thermal dissipation value above 25°C.

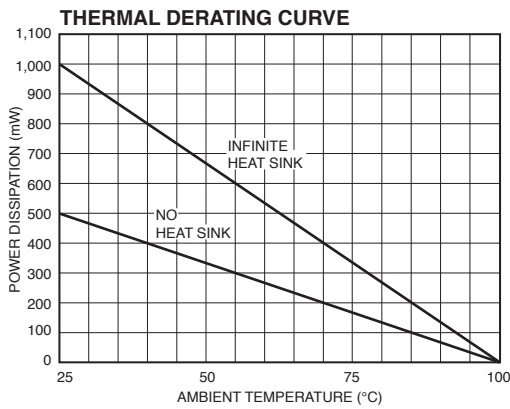
THERMAL PARAMETERS

Storage and Operating Temperature Range	-40°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Dissipation Junction-Case	75°C/W Typical
Thermal Dissipation Junction-Air	145°C/W Typical

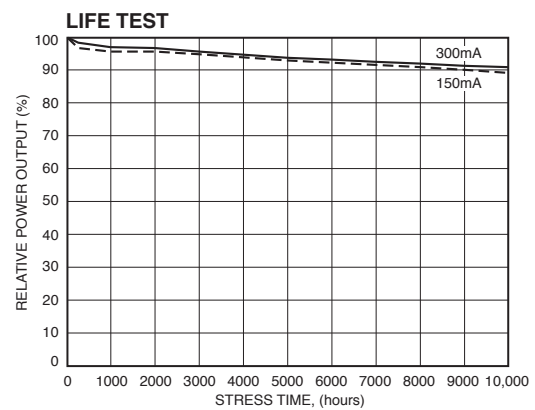
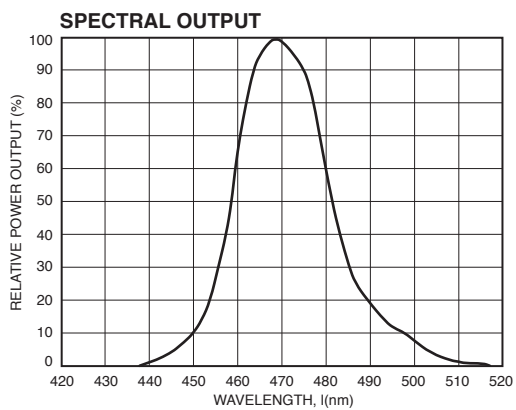
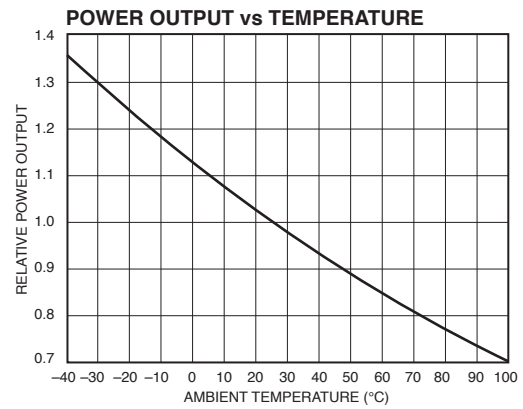
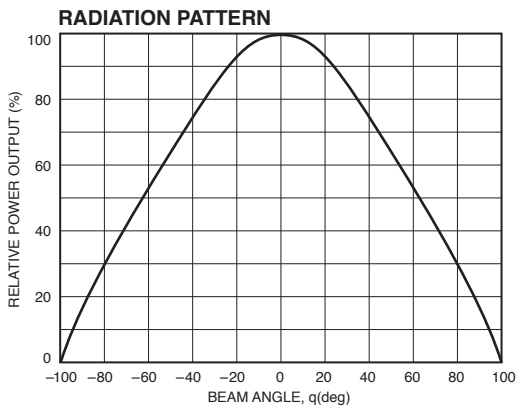
¹ Derate per appropriate thermal dissipation value above 25°C.

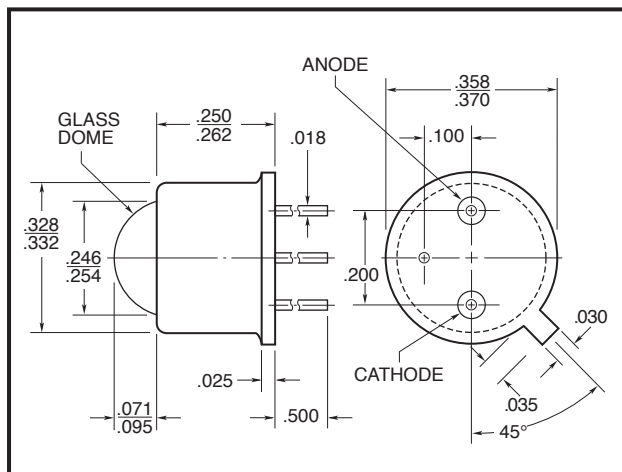
Class 1 ESD sensitive. Observe appropriate precautions during handling.

MAXIMUM RATINGS



TYPICAL CHARACTERISTICS





FEATURES

- Metal package for heatsinking
- Very narrow output beam
- Case electrically isolated

Dimensions are nominal values in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_O	$I_F = 300\text{mA}$	14	20		mW
Luminous Intensity ¹			16		cd
Radiant Intensity ¹ , I_e				150	
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$	462	470	475	nm
Spectral Bandwidth at 50%, $\Delta\lambda$			40		nm
Half Intensity Beam Angle, θ				7	
Forward Voltage, V_F	$I_F = 300\text{mA}$		3.6	4.0	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	2	5		Volts

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ²	1200mW
Continuous Forward Current ²	300mA
Reverse Voltage	2V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

THERMAL PARAMETERS

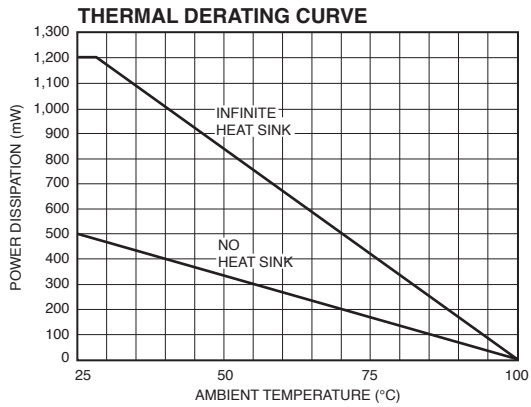
Storage and Operating Temperature Range	-40°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Dissipation Junction-Case	60°C/W Typical
Thermal Dissipation Junction-Air	150°C/W Typical

¹ As measured within a 2.0° field of view.

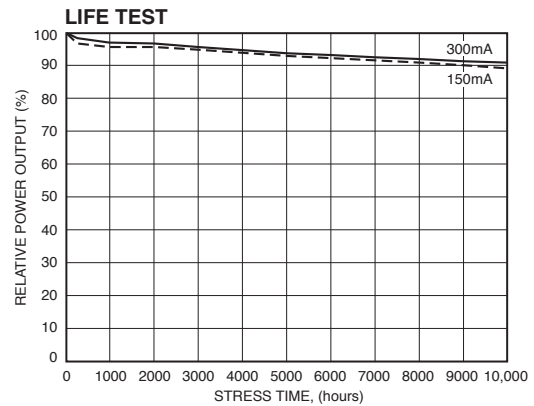
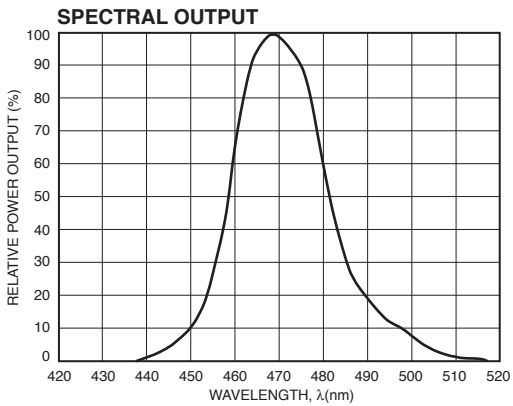
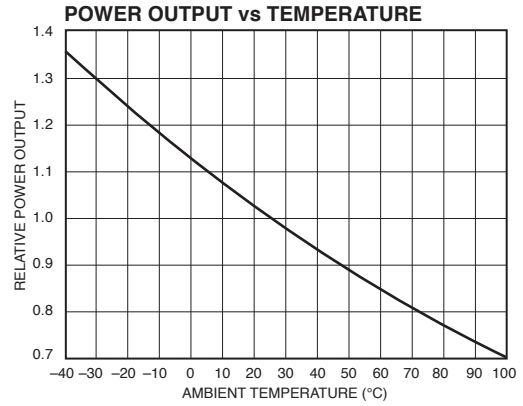
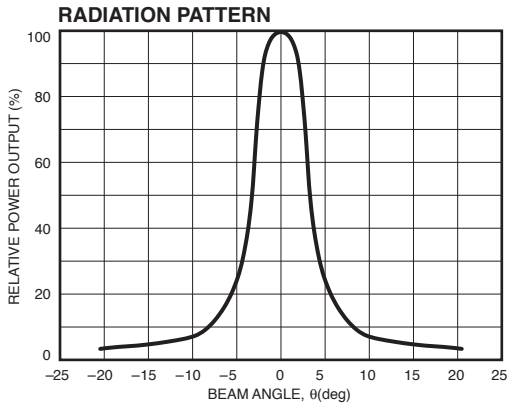
² Derate per appropriate thermal dissipation value above 25°C.

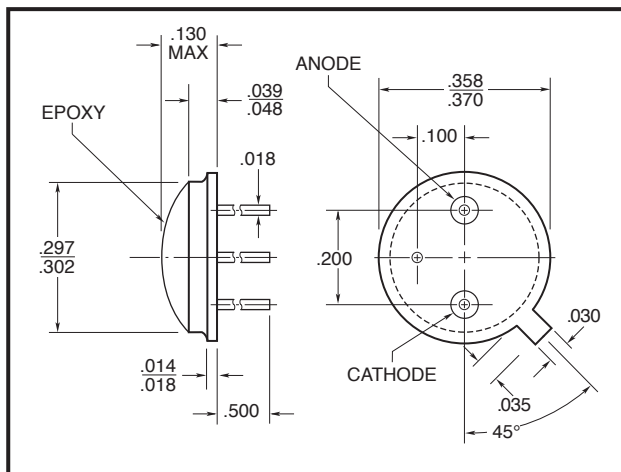
Class 1 ESD sensitive. Observe appropriate precautions during handling.

MAXIMUM RATINGS



TYPICAL CHARACTERISTICS





FEATURES

- Wide angle of emission
- Metal package for heatsinking
- 32 mW output
- Case electrically isolated

Dimensions are nominal values in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 300\text{mA}$	28	32		mW
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$	515	520	525	nm
Spectral Bandwidth at 50%, $\Delta\lambda$			40		nm
Half Intensity Beam Angle, θ				110	
Forward Voltage, V_F	$I_F = 300\text{mA}$		3.6	4.0	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	2	5		Volts
Rise and Fall Time, t_r, t_f	$I_F = 50\text{mA}$		175		nsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	1000mW
Continuous Forward Current ¹	300mA
Reverse Voltage	2V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

¹Derate per appropriate thermal dissipation value above 25°C.

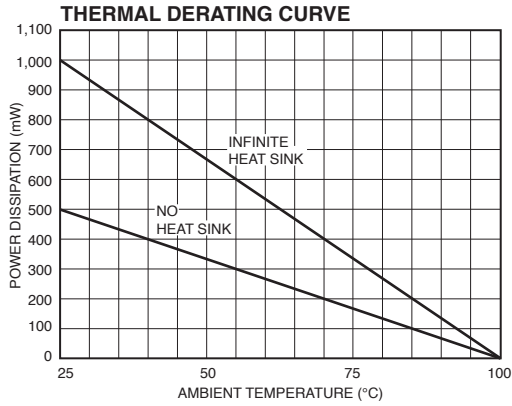
THERMAL PARAMETERS

Storage and Operating Temperature Range	-40°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Dissipation Junction-Case	75°C/W Typical
Thermal Dissipation Junction-Air	145°C/W Typical

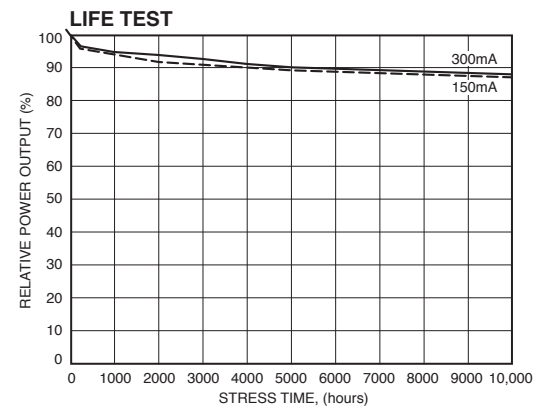
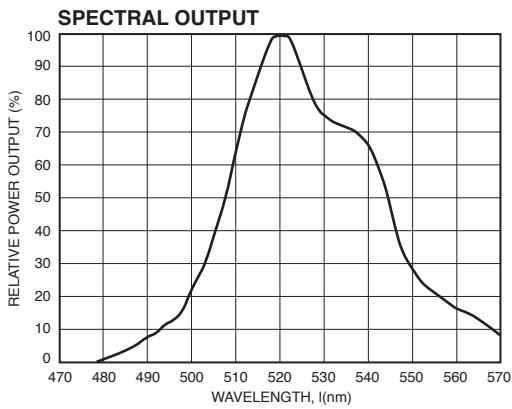
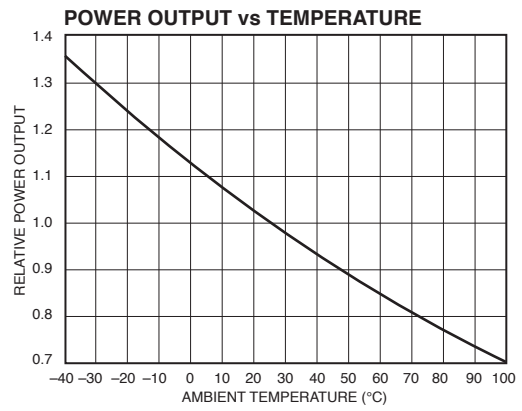
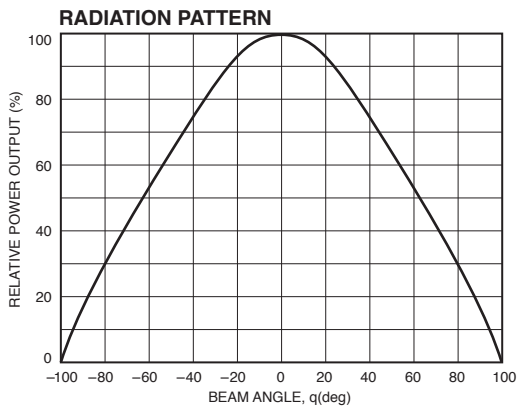
¹ Derate per appropriate thermal dissipation value above 25°C.

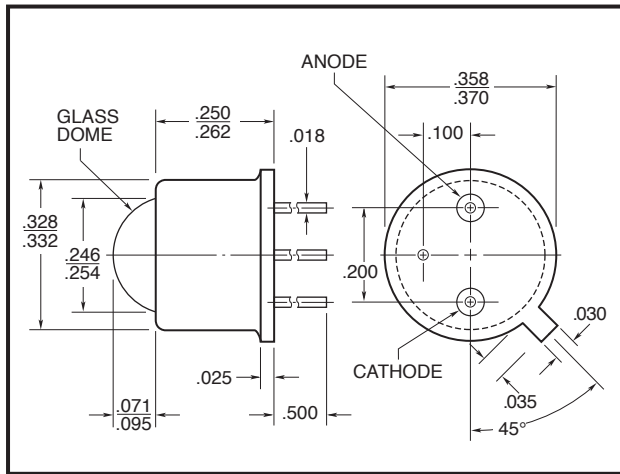
Class 1 ESD sensitive. Observe appropriate precautions during handling.

MAXIMUM RATINGS



TYPICAL CHARACTERISTICS





FEATURES

- Metal package for heatsinking
- Very narrow output beam
- Case electrically isolated

Dimensions are nominal values in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_O	$I_F = 300\text{mA}$	10	12		mW
Luminous Intensity ¹			30		cd
Radiant Intensity ¹ , I_e				80	
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$	515	520	525	nm
Spectral Bandwidth at 50%, $\Delta\lambda$			40		nm
Half Intensity Beam Angle, θ				7	
Forward Voltage, V_F	$I_F = 300\text{mA}$		3.6	4.0	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	2	5		Volts

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ²	1200mW
Continuous Forward Current ²	300mA
Reverse Voltage	2V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

THERMAL PARAMETERS

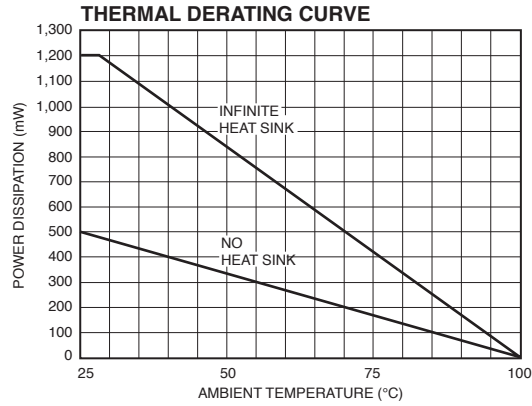
Storage and Operating Temperature Range	-40°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Dissipation Junction-Case	60°C/W Typical
Thermal Dissipation Junction-Air	150°C/W Typical

¹ As measured within a 2.0° field of view.

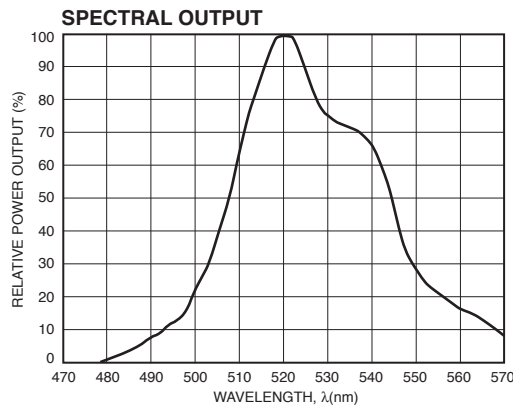
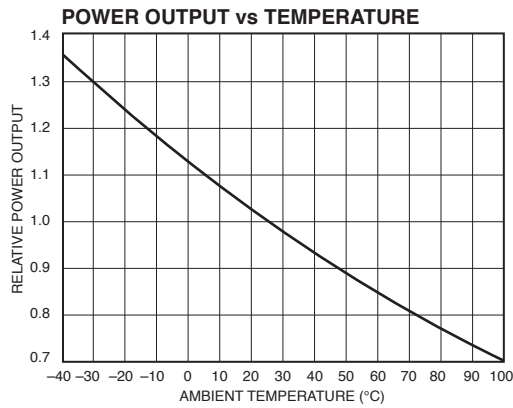
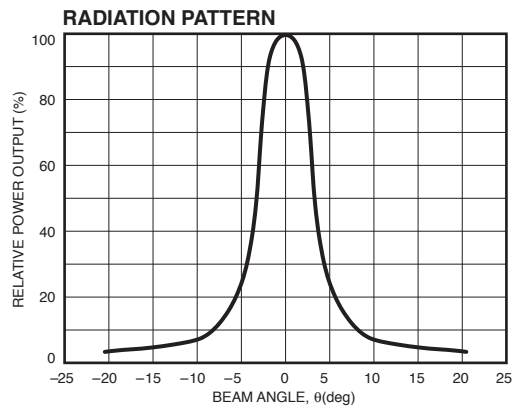
² Derate per appropriate thermal dissipation value above 25°C.

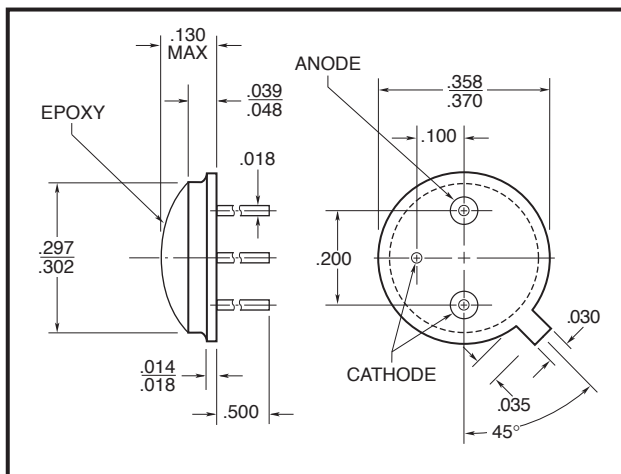
Class 1 ESD sensitive. Observe appropriate precautions during handling.

MAXIMUM RATINGS



TYPICAL CHARACTERISTICS





FEATURES

- Wide angle of emission
- Metal package for heatsinking
- 50 mW output

All surfaces are gold plated. Dimensions are nominal values in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_O	$I_F = 300\text{mA}$	40	50		mW
Luminous Output	300mA		12		Lumens
Luminous Intensity	300mA, 2° FOV		4		Cd
Peak Emission Wavelength, λ_P	$I_F = 50\text{mA}$		620		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			25		nm
Half Intensity Beam Angle, θ			110		Deg
Forward Voltage, V_F	$I_F = 300\text{mA}$		2.2	2.5	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	2	5		Volts
Rise and Fall Time, t_r, t_f	$I_F = 50\text{mA}$		100		nsec

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ¹	750mW
Continuous Forward Current ¹	300mA
Reverse Voltage	2V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

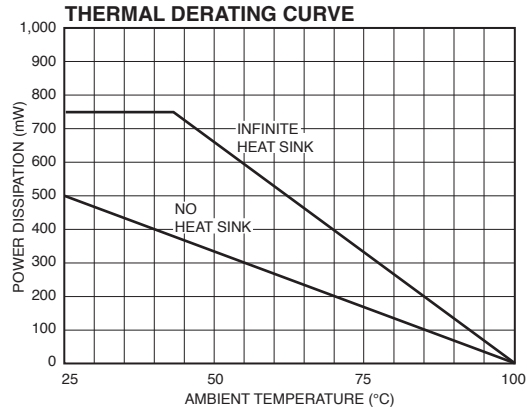
¹ Derate per appropriate thermal dissipation value above 25°C.

THERMAL PARAMETERS

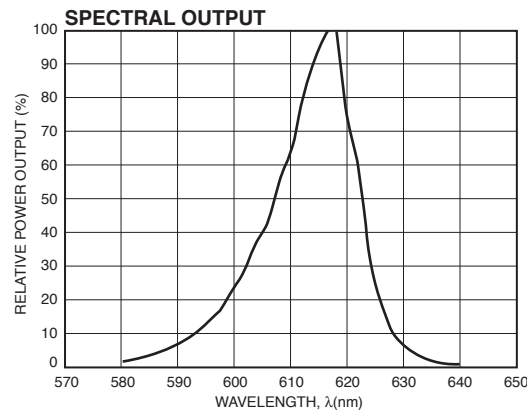
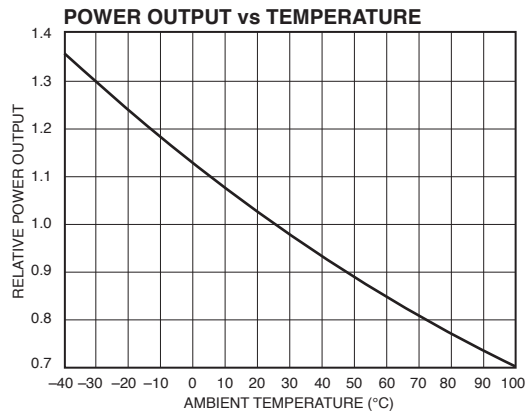
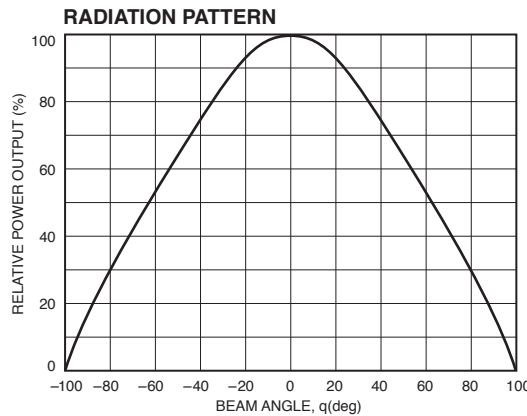
Storage and Operating Temperature Range	-40°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Dissipation Junction-Case	75°C/W Typical
Thermal Dissipation Junction-Air	145°C/W Typical

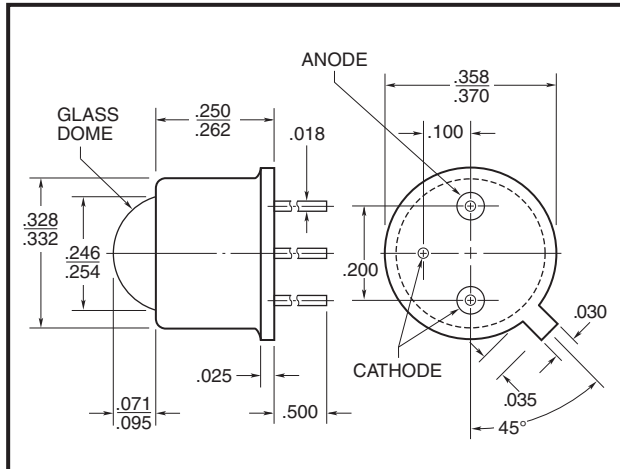
¹ Derate per appropriate thermal dissipation value above 25°C.

MAXIMUM RATINGS



TYPICAL CHARACTERISTICS





FEATURES

- Metal package for heatsinking
- Very narrow output beam

Dimensions are nominal values in inches unless otherwise specified.



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Total Power Output, P_o	$I_F = 300\text{mA}$	18	23		mW
Luminous Intensity ¹	$I_F = 300\text{mA}$, 2.0° FOV		65		cd
Radiant Intensity ¹ , I_e	$I_F = 300\text{mA}$		80		mW/sr
Peak Emission Wavelength, λ_p	$I_F = 50\text{mA}$		620		nm
Spectral Bandwidth at 50%, $\Delta\lambda$			25		nm
Half Intensity Beam Angle, θ			7		Deg
Forward Voltage, V_F	$I_F = 300\text{mA}$		2.2	2.5	Volts
Reverse Breakdown Voltage, V_R	$I_R = 10\mu\text{A}$	2	5		Volts

ABSOLUTE MAXIMUM RATINGS AT 25°C CASE

Power Dissipation ²	750mW
Continuous Forward Current ²	300mA
Reverse Voltage	2V
Lead Soldering Temperature (1/16" from case for 10sec)	260°C

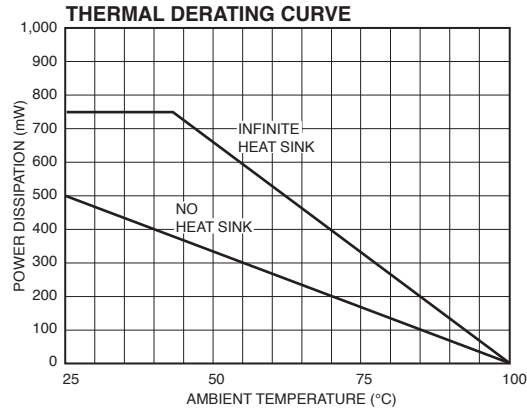
THERMAL PARAMETERS

Storage and Operating Temperature Range	-40°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Dissipation Junction-Case	60°C/W Typical
Thermal Dissipation Junction-Air	150°C/W Typical

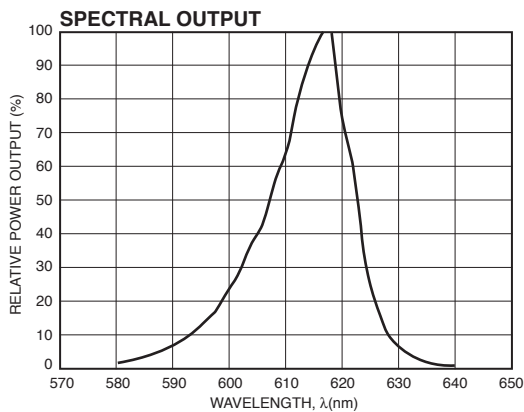
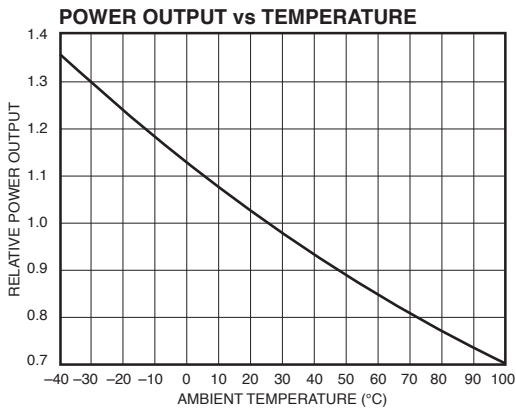
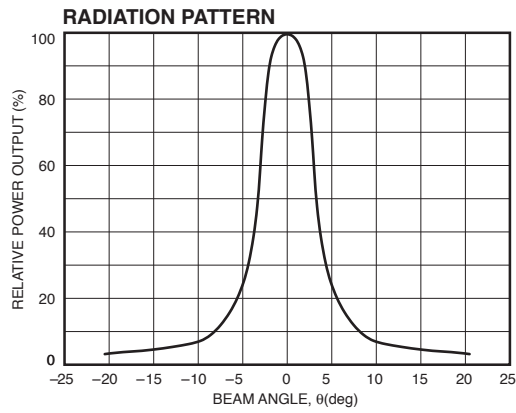
¹ As measured within a 2.0° field of view.

² Derate per appropriate thermal dissipation value above 25°C.

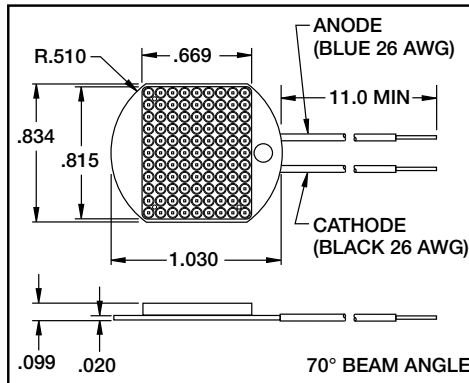
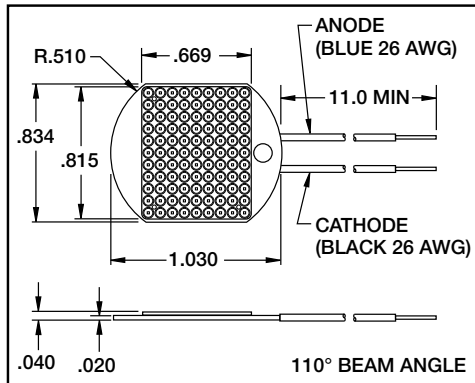
MAXIMUM RATINGS



TYPICAL CHARACTERISTICS



99 DIE LED ARRAY



FEATURES

- 110° and 70° beam angles
- Excellent thermal conductivity
- Available wavelengths from 405 to 870nm
- Higher temperature versions available

ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

Part Number	Power Output (mW)		Luminous Output (Lumens)	Forward Voltage (Vf)@0.5A		Wavelength (nm)@0.5A	Radiation Beam Angle (Deg.)	Rise Time (nsec)
	Min	Typ	Typ	Typ	Max	Typ	Typ	Typ
OD-405-99-110	1300 ¹	1700 ¹		11.0	13.0	405	110	40
OD-405-99-070	1300 ¹	1700 ¹		11.0	13.0	405	70	40
OD-470-99-110	1900 ¹	2100 ¹		11.0	13.0	470	110	50
OD-470-99-070	1900 ¹	2100 ¹		11.0	13.0	470	70	50
OD-525-99-110	900 ¹	1200 ¹	250	11.0	13.0	525	110	50
OD-525-99-070	900 ¹	1200 ¹	250	11.0	13.0	525	70	50
OD-610-99-110	560 ¹	675 ¹	180	6.0	7.5	610	110	80
OD-610-99-070	560 ¹	675 ¹	180	6.0	7.5	610	70	80
OD-830-99-110	2800 ²	3300 ²		4.5	6.0	830	110	60
OD-830-99-070	2800 ²	3300 ²		4.5	6.0	830	70	60
OD-870-99-110	2800 ²	3300 ²		4.5	6.0	870	110	60
OD-870-99-070	2800 ²	3300 ²		4.5	6.0	870	70	60

ABSOLUTE MAXIMUM RATINGS AT 25°C³

Part Number	Power Dissipation (Watts)	Max Current (A)
OD-405-99-110	19.5	1.5
OD-405-99-070	19.5	1.5
OD-470-99-110	19.5	1.5
OD-470-99-070	19.5	1.5
OD-525-99-110	19.5	1.5
OD-525-99-070	19.5	1.5
OD-610-99-110	11.3	1.5
OD-610-99-070	11.3	1.5
OD-830-99-110	18.0	3.0
OD-830-99-070	18.0	3.0
OD-870-99-110	18.0	3.0
OD-870-99-070	18.0	3.0

THERMAL PARAMETERS

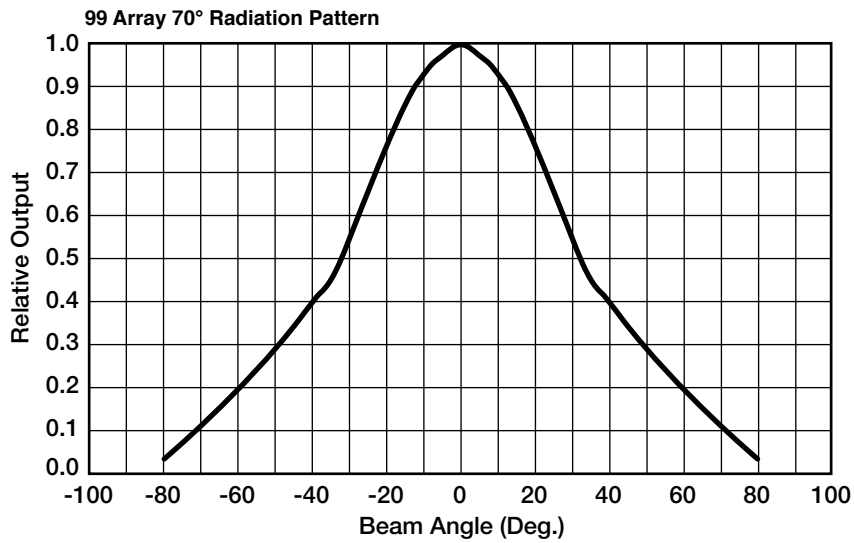
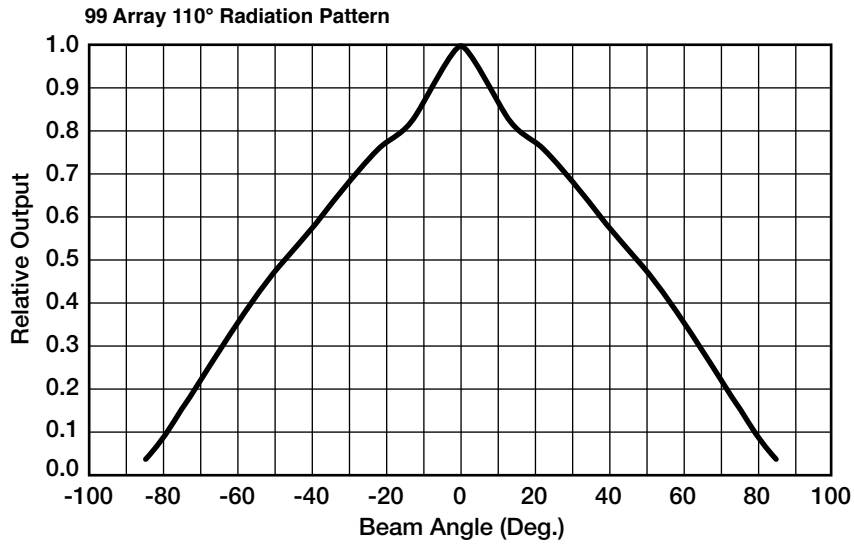
Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Resistance J-C	3°C/W Typical

¹ @1.5 ADC

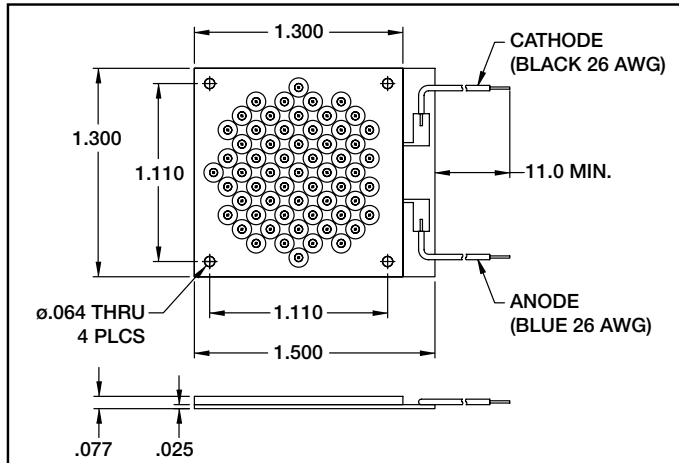
² @3.0 ADC

³ Unit must be bonded to an appropriate heat sink using adhesive, < 0.002" thick, with Thermal Conductivity of 29W/mK or better.

99 DIE LED ARRAY



60 DIE LED ARRAY



FEATURES

- 40° beam angle
- Excellent thermal conductivity
- Available wavelengths from 405 to 870nm
- Higher temperature versions available

ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

Part Number	Power Output (mW)		Luminous Output (Lumens)	Forward Voltage (Vf)@0.5A		Wavelength (nm)@0.5A	Radiation Beam Angle (Deg)	Rise Time (nsec)
	Min	Typ	Typ	Typ	Max	Typ	Typ	Typ
OD-405-60-040	900 ¹	1150 ¹		11.0	13.0	405	40	40
OD-470-60-040	1300 ¹	1400 ¹		11.0	13.0	470	40	50
OD-525-60-040	600 ¹	900 ¹	170 ¹	11.0	13.0	525	40	50
OD-610-60-040	350 ²	430 ²	120 ²	12.0	15.0	610	40	80
OD-830-60-040	1900 ¹	2200 ¹		9.0	12.0	830	40	60
OD-870-60-040	1900 ¹	2200 ¹		9.0	12.0	870	40	60

ABSOLUTE MAXIMUM RATINGS AT 25°C³

Part Number	Power Dissipation (W)	Max Current (A)
OD-405-60-040	13.00	1.00
OD-470-60-040	13.00	1.00
OD-525-60-040	13.00	1.00
OD-610-60-040	7.50	0.50
OD-830-60-040	12.00	1.00
OD-870-60-040	12.00	1.00

THERMAL PARAMETERS

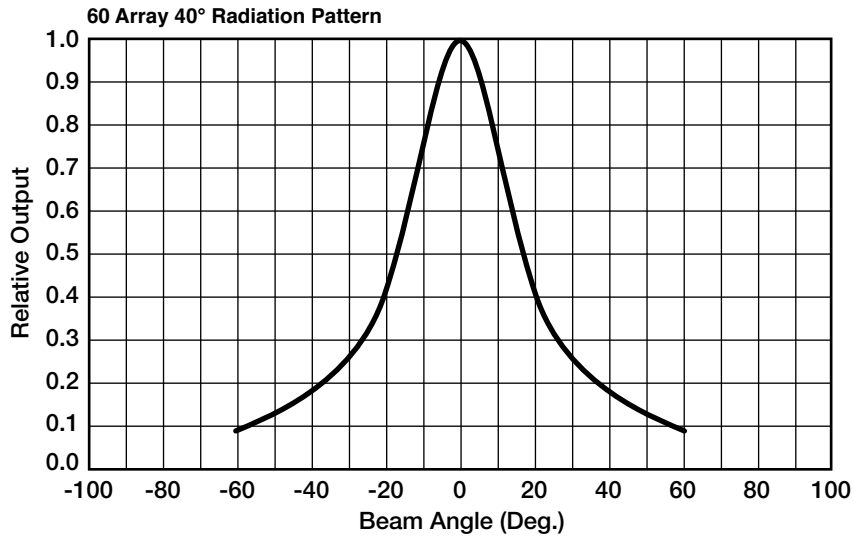
Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Thermal Resistance J-C	3°C/W Typical

¹ @1.0 ADC

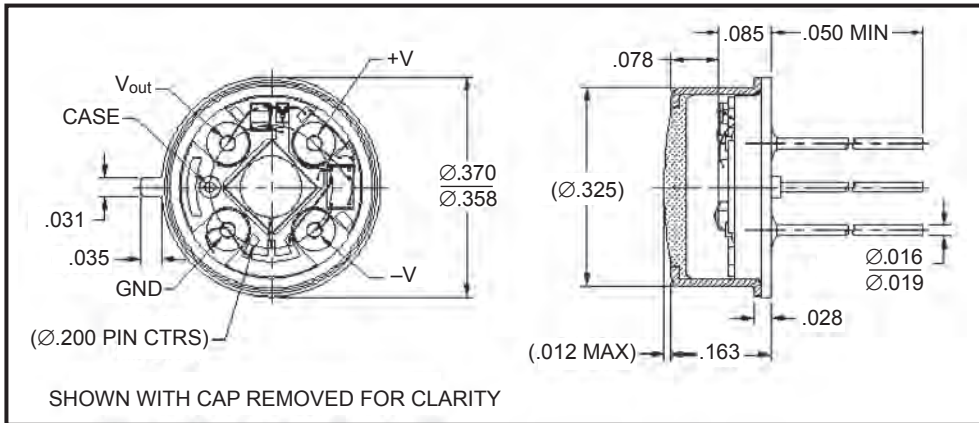
² @0.50 ADC

³ Unit must be bonded to an appropriate heat sink using adhesive, < 0.002" thick, with Thermal Conductivity of 29W/mK or better.

60 DIE LED ARRAY

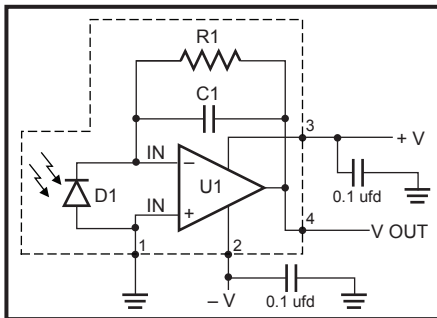


NIR/RED ENHANCED 5 mm² PHOTODIODE-PREAMPLIFIER ODA-5W-100K



FEATURES

- Large active area
- Low noise
- High sensitivity
- Custom gains available
- Hermetically sealed TO-39



ELECTRO-OPTICAL CHARACTERISTICS AT 23°C

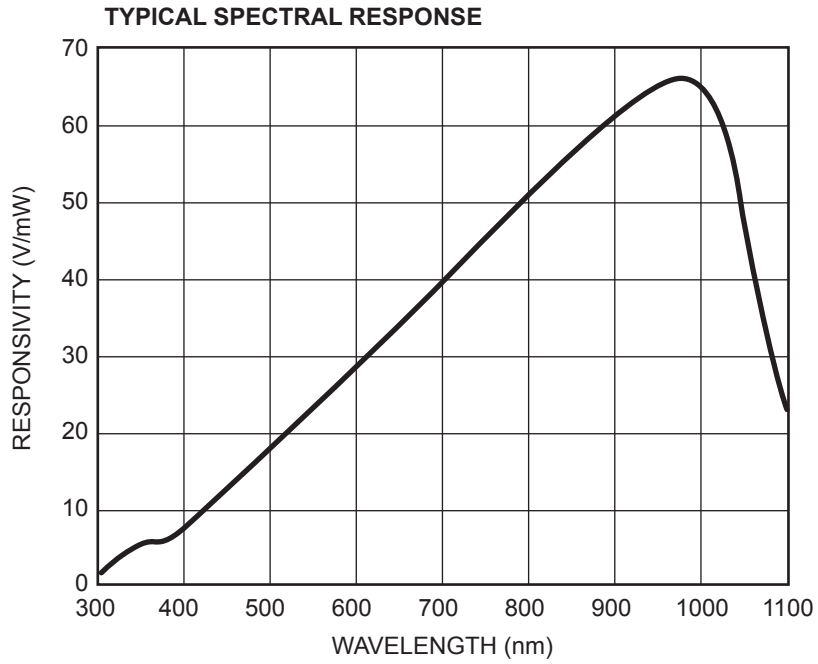
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Dark Offset	$V_s = \pm 15 \text{ V}$			± 1.0	mV
Dark Offset Noise	$V_s = \pm 15$ BW = 0.1 to 800 kHz		477	1000	$\mu\text{V rms}$
Sensitivity	$V_s = \pm 15$ $\lambda = 940 \text{ nm}$	55	63		V/mW
Frequency Response (-3 db)	$V_s = \pm 15$ $\lambda = 940 \text{ nm}$	500	800		kHz
NEP	$\lambda = 940 \text{ nm}$		6.76		pW/√Hz
Transimpedance Gain			100		kΩ
Supply Current	$V_s = \pm 15 \text{ V}$		6.2	7.5	mA

THERMAL PARAMETERS

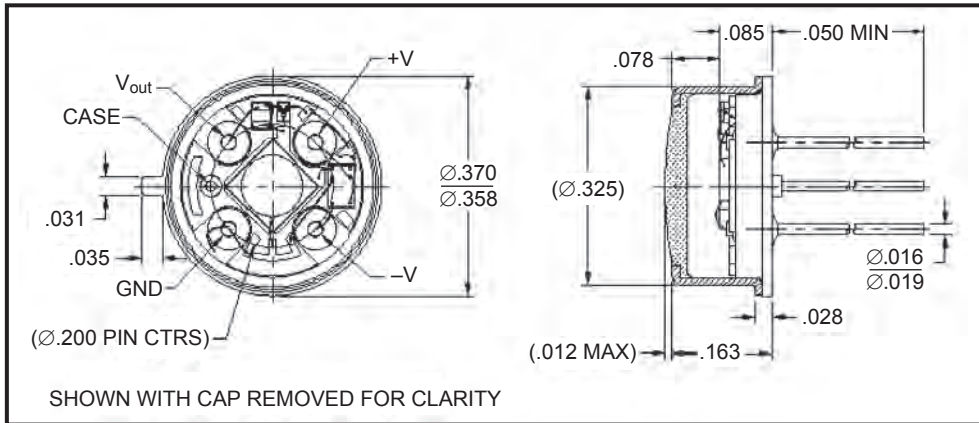
Voltage Supplies	$\pm 5 \text{ to } \pm 15\text{V}$
Power Dissipation	225 mW
Storage and Operating Temperature	-25° to +100° C
Soldering Temperature (1/16" from case for 3 seconds max)	+260° C



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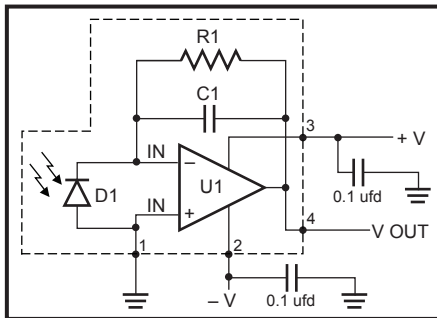


BLUE/GREEN ENHANCED 5 mm² PHOTODIODE-PREAMPLIFIER ODA-5WB-100K



FEATURES

- Large active area
- Low noise
- High sensitivity
- Custom gains available
- Hermetically sealed TO-39
- Blue enhanced detector



ELECTRO-OPTICAL CHARACTERISTICS AT 23°C

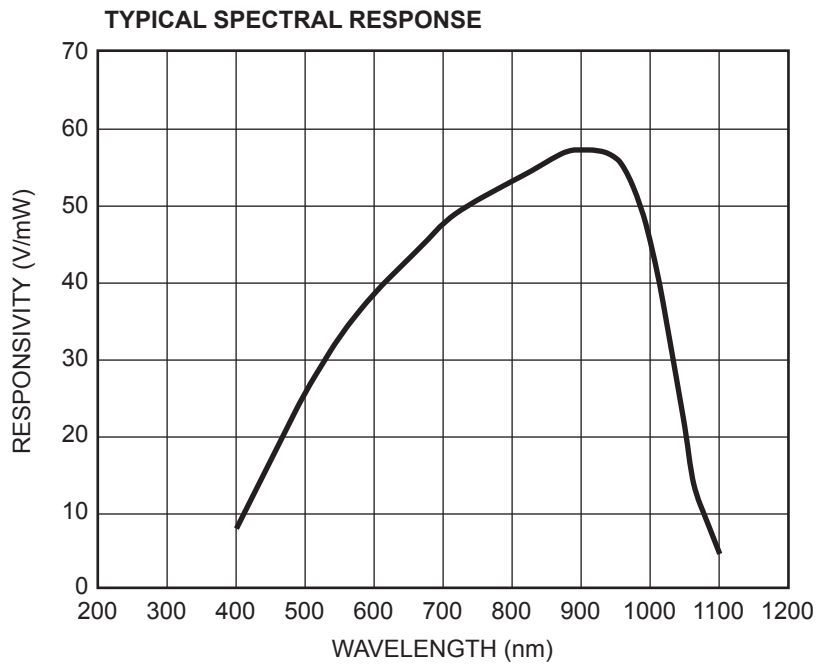
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Dark Offset	$V_s = \pm 15 \text{ V}$			± 1.0	mV
Dark Offset Noise	$V_s = \pm 15$ BW = 0.1 to 800 kHz		477	1000	$\mu\text{V rms}$
Sensitivity	$V_s = \pm 15$ $\lambda = 450 \text{ nm}$	20	28		V/mW
Frequency Response (-3 db)	$V_s = \pm 15$ $\lambda = 940 \text{ nm}$	500	800		kHz
NEP	$\lambda = 940 \text{ nm}$		6.76		$\text{pW}/\sqrt{\text{Hz}}$
Transimpedance Gain			100		$\text{k}\Omega$
Supply Current	$V_s = \pm 15 \text{ V}$		6.2	7.5	mA

THERMAL PARAMETERS

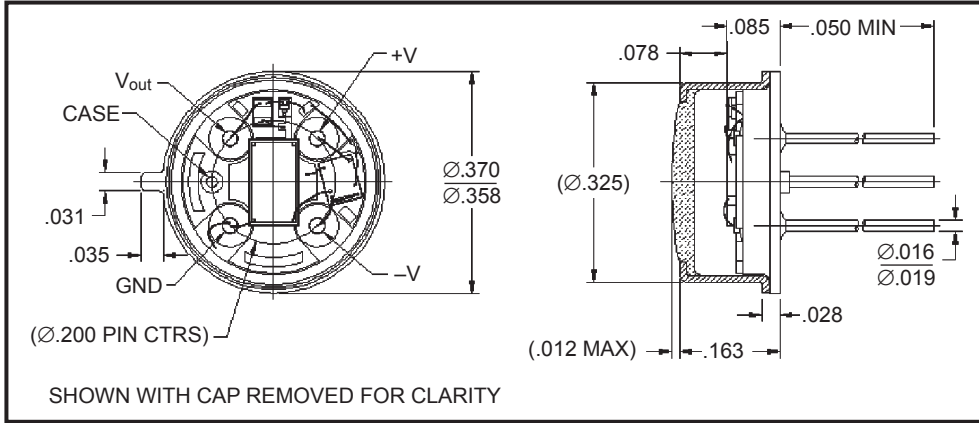
Voltage Supplies	$\pm 5 \text{ to } \pm 15\text{V}$
Power Dissipation	225 mW
Storage and Operating Temperature	$-25^\circ \text{ to } +100^\circ \text{ C}$
Soldering Temperature (1/16" from case for 3 seconds max)	$+260^\circ \text{ C}$



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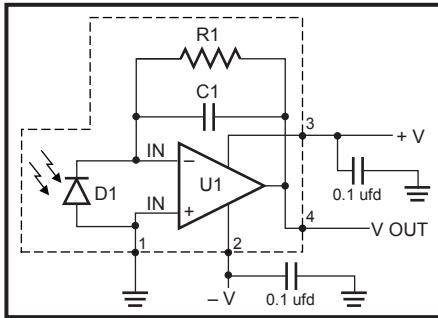


NIR/RED ENHANCED 6 mm² PHOTODIODE-PREAMPLIFIER ODA-6W-100M



FEATURES

- Large active area
- Low noise
- High sensitivity
- Custom gains available
- Hermetically sealed TO-39

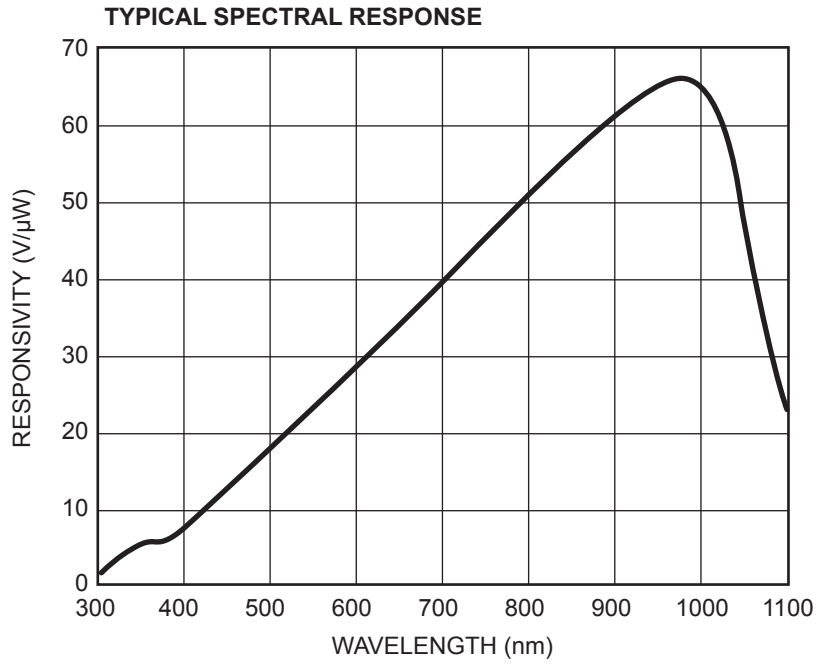


ELECTRO-OPTICAL CHARACTERISTICS AT 23°C

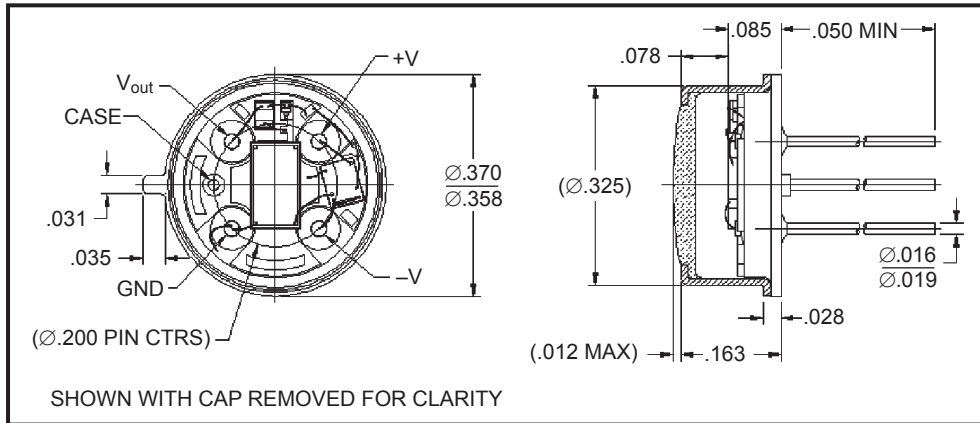
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Dark Offset	$V_s = \pm 5 V$		1.2	± 2	mV
Dark Offset Noise	$V_s = \pm 5$ BW = 0.1 to 1000 Hz		198	250	μV rms
Sensitivity	$V_s = \pm 5 V$ $\lambda = 940 \text{ nm}$	55	63		V/ μW
Frequency Response (-3 db)	$V_s = \pm 5 V$ $\lambda = 940 \text{ nm}$	900	1000		Hz
NEP	$\lambda = 940 \text{ nm}$		0.08		pW \sqrt{Hz}
Transimpedance Gain			100		M Ω
Supply Current			850	950	μA

THERMAL PARAMETERS

Voltage Supplies	± 5 to $\pm 15V$
Power Dissipation	30 mW
Storage and Operating Temperature	-25° to $+100^\circ C$
Soldering Temperature (1/16" from case for 3 seconds max)	$+260^\circ C$

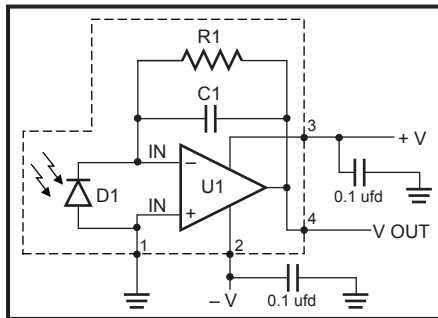


BLUE/GREEN ENHANCED 6 mm² PHOTODIODE-PREAMPLIFIER ODA-6WB-100M



FEATURES

- Large active area
- Low noise
- High sensitivity
- Custom gains available
- Hermetically sealed TO-39
- Blue enhanced detector



ELECTRO-OPTICAL CHARACTERISTICS AT 23°C

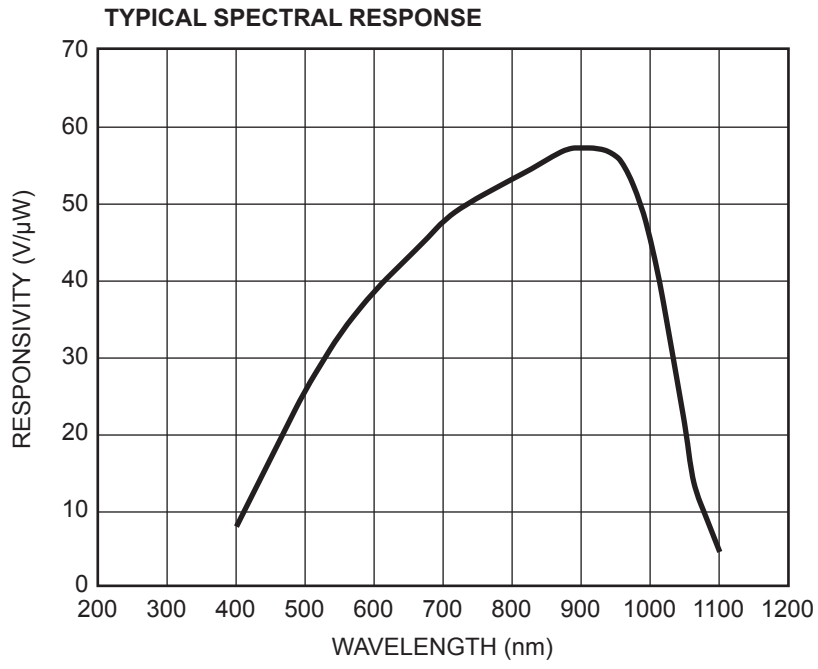
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Dark Offset	$V_s = \pm 5 V$		1.2	± 2	mV
Dark Offset Noise	$V_s = \pm 5$ BW = 0.1 to 1000 Hz		198	250	μV rms
Sensitivity	$V_s = \pm 5 V$ $\lambda = 450 \text{ nm}$	20	28		V/ μW
Frequency Response (-3 db)	$V_s = \pm 5 V$ $\lambda = 940 \text{ nm}$	900	1000		Hz
NEP	$\lambda = 940 \text{ nm}$		0.08		pW/ $\sqrt{\text{Hz}}$
Transimpedance Gain			100		M Ω
Supply Current			850	950	μA

THERMAL PARAMETERS

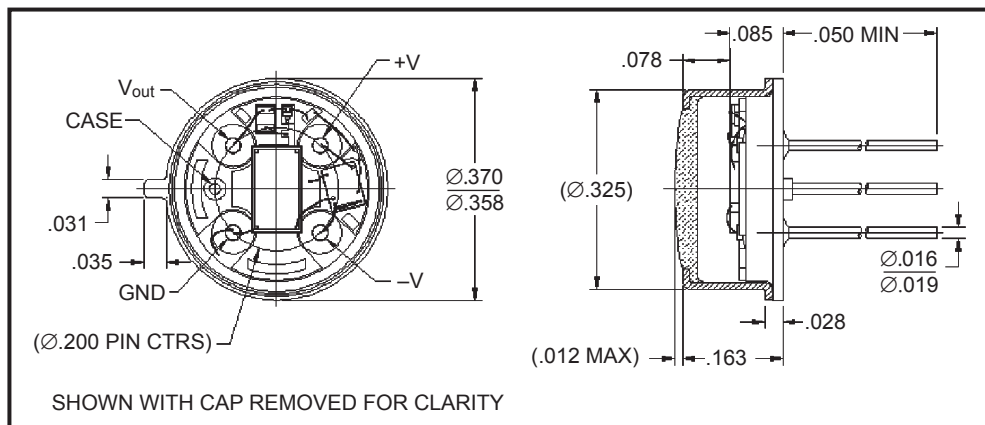
Voltage Supplies	± 5 to $\pm 15V$
Power Dissipation	30 mW
Storage and Operating Temperature	-25° to $+100^\circ C$
Soldering Temperature (1/16" from case for 3 seconds max)	$+260^\circ C$



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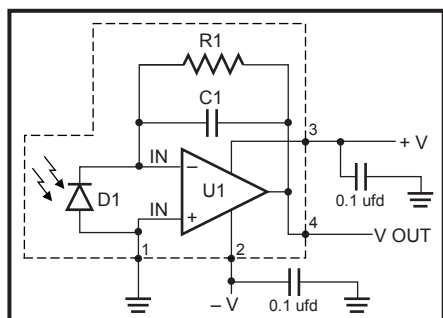


NIR/RED ENHANCED 6 mm² PHOTODIODE-PREAMPLIFIER ODA-6W-500M



FEATURES

- Large active area
- Low noise
- High sensitivity
- Custom gains available
- Hermetically sealed TO-39



ELECTRO-OPTICAL CHARACTERISTICS AT 23°C

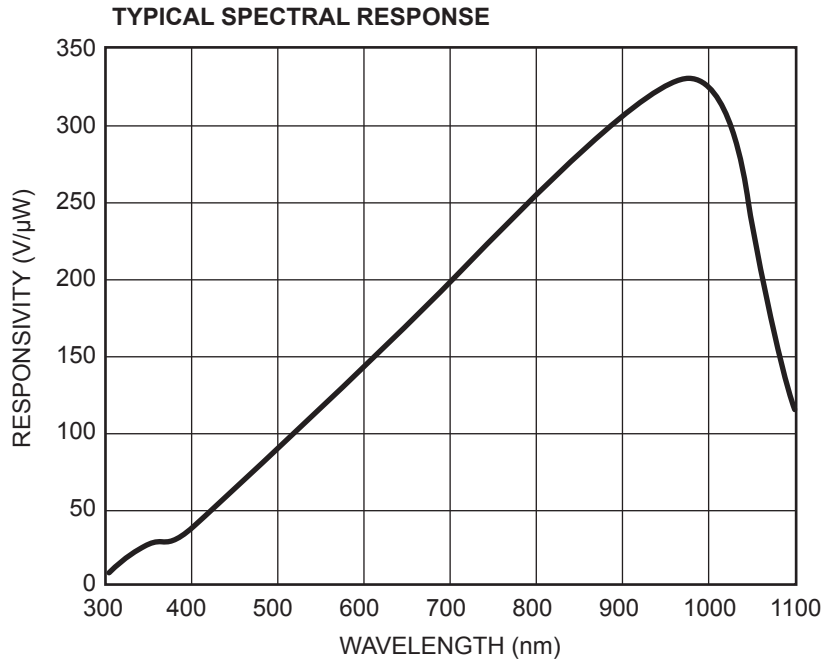
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Dark Offset	$V_s = \pm 5 V$		1	± 2	mV
Dark Offset Noise	$V_s = \pm 5$ BW = 0.1 to 135 Hz		283	500	μV rms
Sensitivity	$V_s = \pm 5 V$ $\lambda = 940 \text{ nm}$	290	315		V/ μW
Frequency Response (-3 db)	$V_s = \pm 5 V$ $\lambda = 940 \text{ nm}$	100	130		Hz
NEP	$\lambda = 940 \text{ nm}$		0.06		pW/ $\sqrt{\text{Hz}}$
Transimpedance Gain			500		M Ω
Supply Current			850	950	μA

THERMAL PARAMETERS

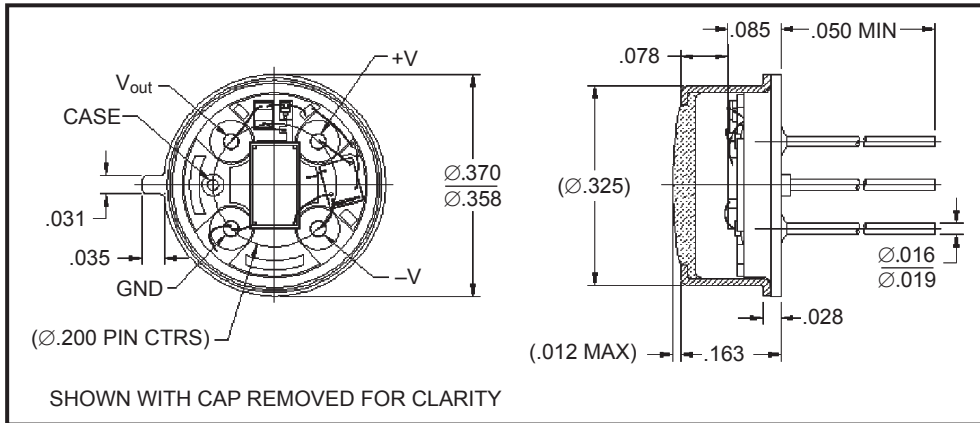
Voltage Supplies	± 5 to $\pm 15V$
Power Dissipation	30 mW
Storage and Operating Temperature	-25° to $+100^\circ C$
Soldering Temperature (1/16" from case for 3 seconds max)	$+260^\circ C$



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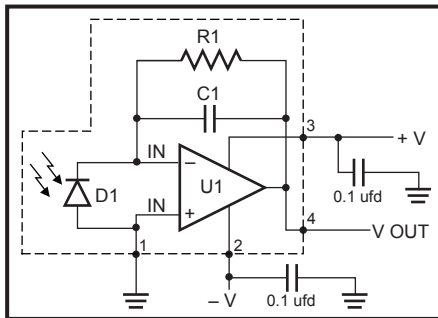


BLUE/GREEN ENHANCED 6 mm² PHOTODIODE-PREAMPLIFIER ODA-6WB-500M



FEATURES

- Large active area
- Low noise
- High sensitivity
- Custom gains available
- Hermetically sealed TO-39
- Blue enhanced detectors



ELECTRO-OPTICAL CHARACTERISTICS AT 23°C

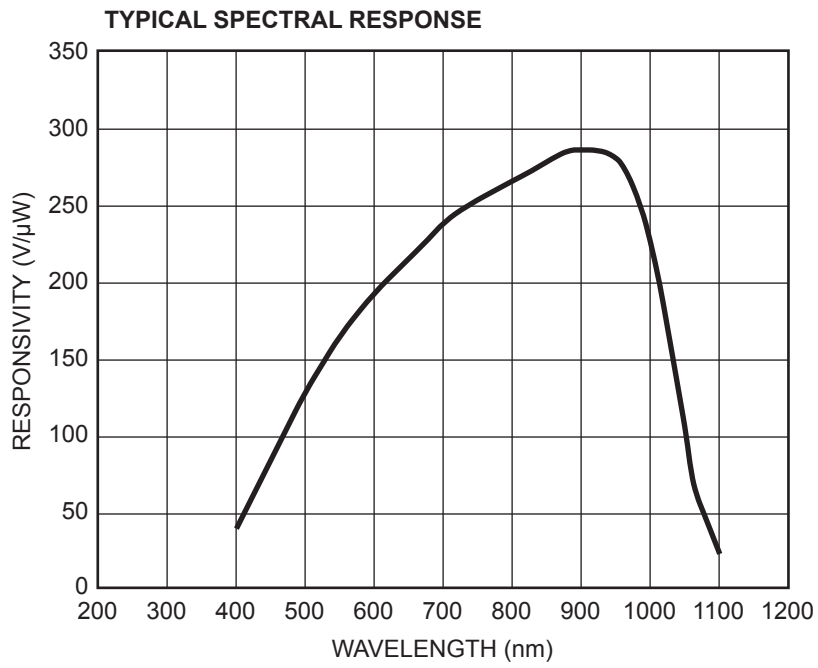
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Dark Offset	$V_s = \pm 5 V$		1	± 2	mV
Dark Offset Noise	$V_s = \pm 5$ BW = 0.1 to 135 Hz		283	500	μV rms
Sensitivity	$V_s = \pm 5 V$ $\lambda = 450 \text{ nm}$	100	140		$V/\mu W$
Frequency Response (-3 db)	$V_s = \pm 5 V$ $\lambda = 940 \text{ nm}$	100	130		Hz
NEP	$\lambda = 940 \text{ nm}$		0.06		pW/\sqrt{Hz}
Transimpedance Gain			500		$M\Omega$
Supply Current			850	950	μA

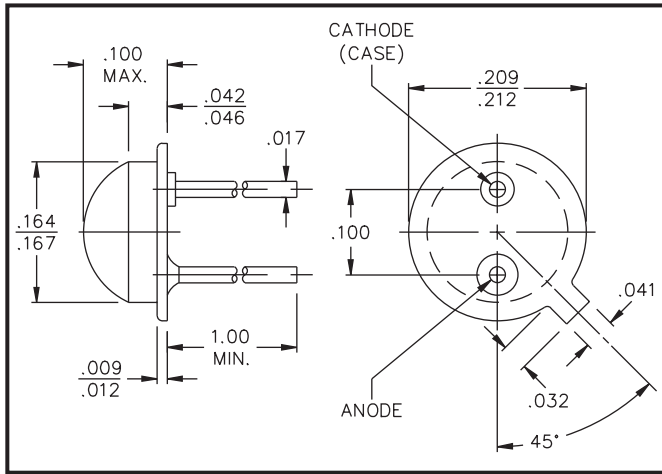
THERMAL PARAMETERS

Voltage Supplies	± 5 to $\pm 15V$
Power Dissipation	30 mW
Storage and Operating Temperature	-25° to $+100^\circ C$
Soldering Temperature (1/16" from case for 3 seconds max)	$+260^\circ C$



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FEATURES

- TO-18 package
- Low cost format
- Low dark current
- Low capacitance



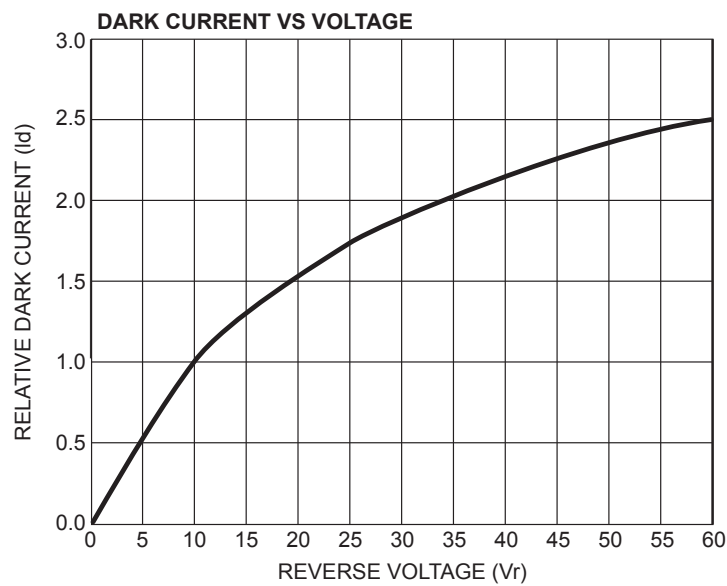
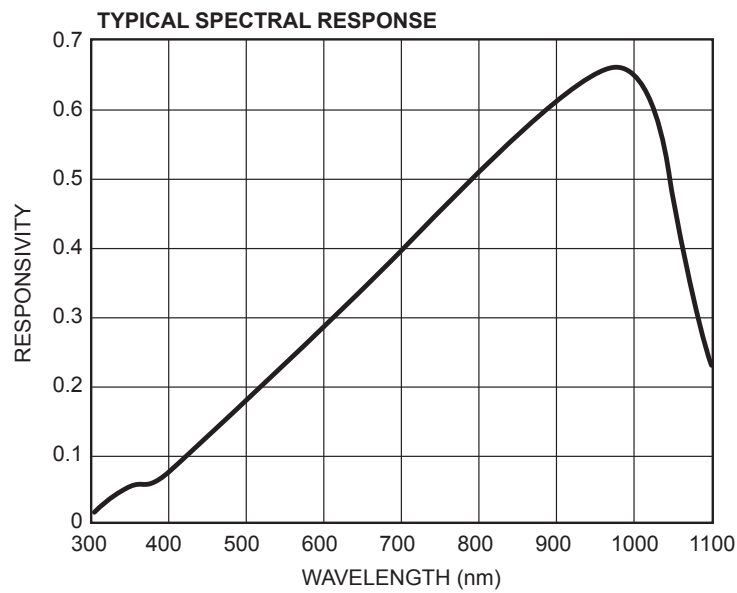
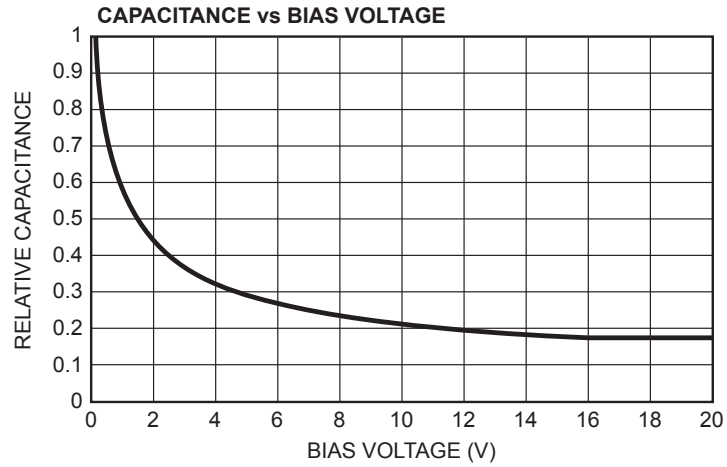
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

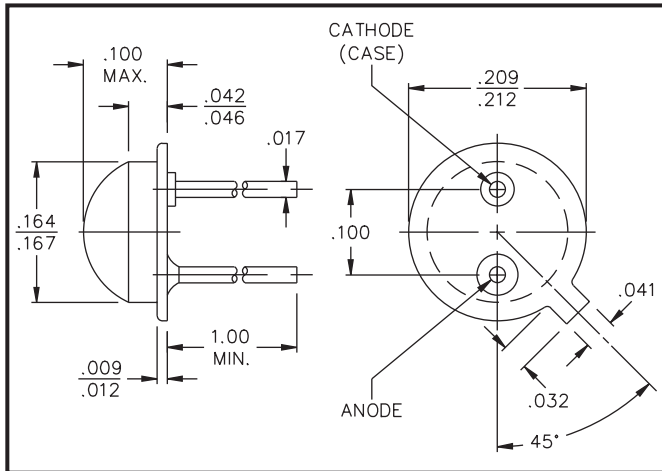
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	1.35mm x 0.76mm		1		mm ²
Responsivity, \mathcal{R}	@ 632nm	0.36	0.40		A/W
Dark Current, I_{dr}	$V_R = 10V$		0.2	1	nA
Reverse Breakdown Voltage, V_R	$I_R = 10A$	25	60		Volts
Capacitance, C	$V_R = 10V$		0.2	2	pF
Rise Time	$V_R = 10V$		8	15	nsec
Series Resistance	$V_f = 1V$		25	60	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°

¹1/16" from case for 10 seconds.





FEATURES

- TO-18 package
- Low cost format
- Low dark current
- Low capacitance



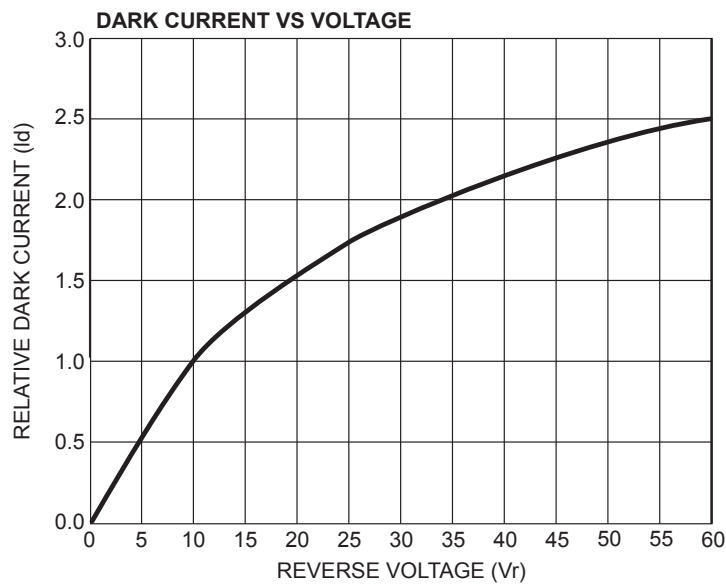
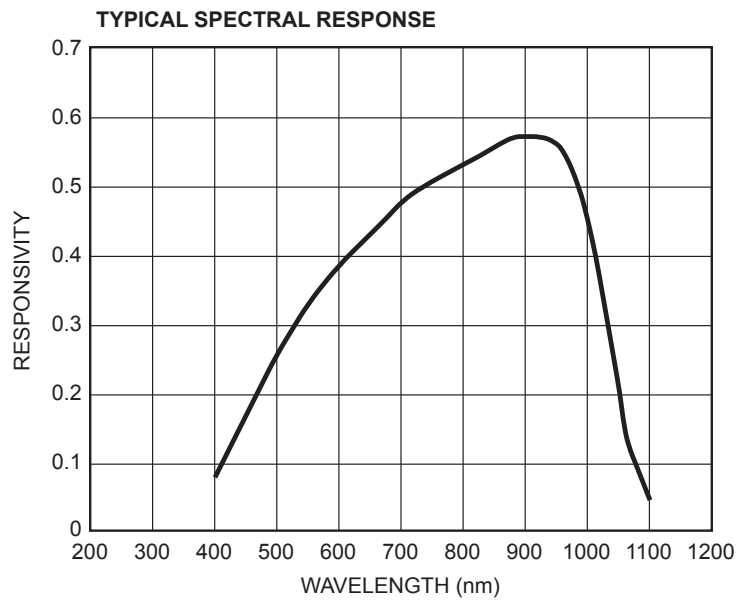
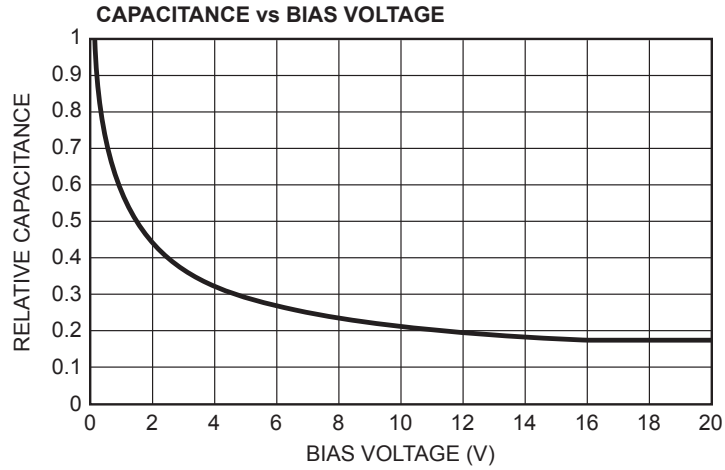
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

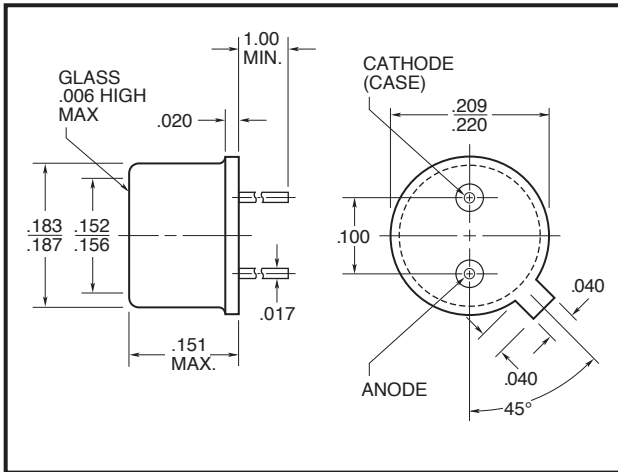
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	1.35mm x 0.76mm		1		mm ²
Responsivity, \mathcal{R}	@ 450nm	0.20	0.28		A/W
Dark Current, I_{dr}	$V_R = 10V$		0.2	1	nA
Reverse Breakdown Voltage, V_R	$I_R = 10A$	25	60		Volts
Capacitance, C	$V_R = 10V$		0.5	2	pF
Rise Time	$V_R = 10V$		8	15	nsec
Series Resistance	$V_f = 1V$		25	60	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°

¹1/16" from case for 10 seconds.





FEATURES

- TO-18 package
- Low cost format
- Low dark current
- Low capacitance



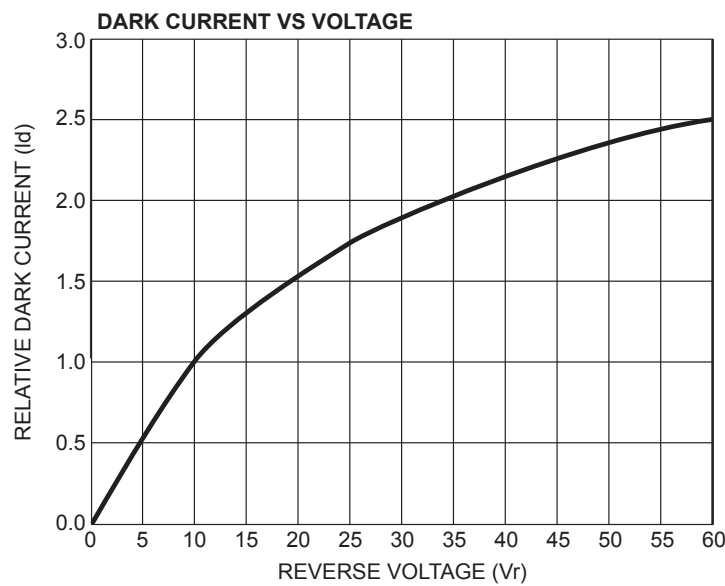
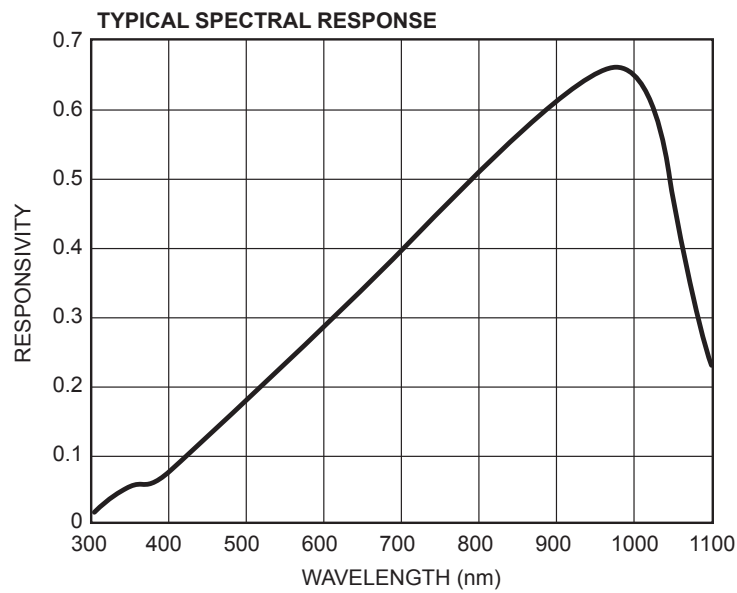
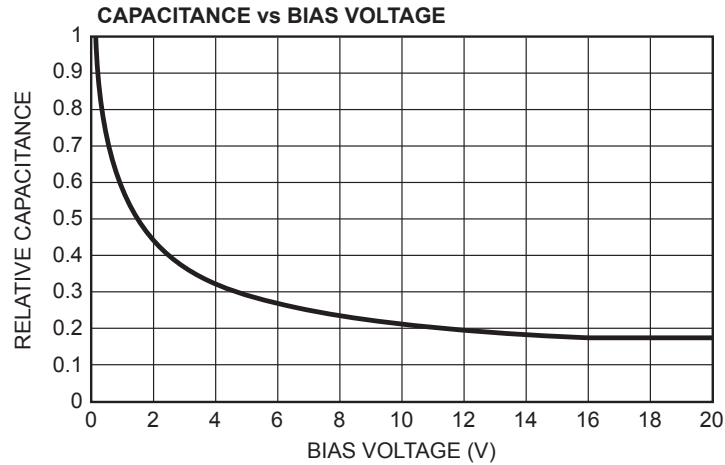
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

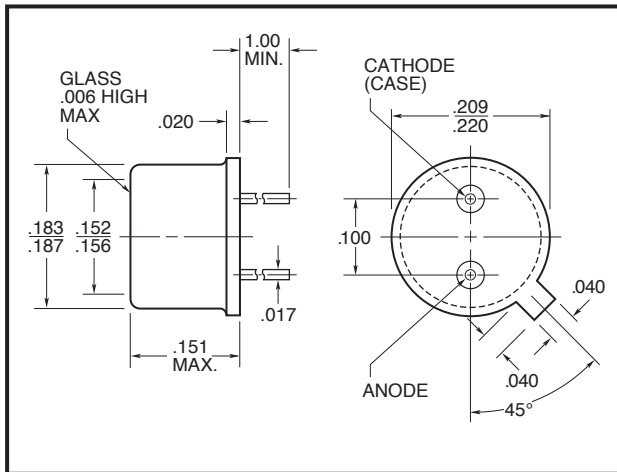
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	1.35mm x 0.76mm		1		mm ²
Responsivity, \mathcal{R}	@ 632nm	0.36	0.40		A/W
Dark Current, I_{dr}	$V_R = 10V$		0.2	1	nA
Reverse Breakdown Voltage, V_R	$I_R = 10A$	25	60		Volts
Capacitance, C	$V_R = 10V$		0.2	2	pF
Rise Time	$V_R = 10V$		8	15	nsec
Series Resistance	$V_f = 1V$		25	60	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°

¹1/16" from case for 10 seconds.





FEATURES

- TO-18 package
- Low cost format
- Low dark current
- Low capacitance



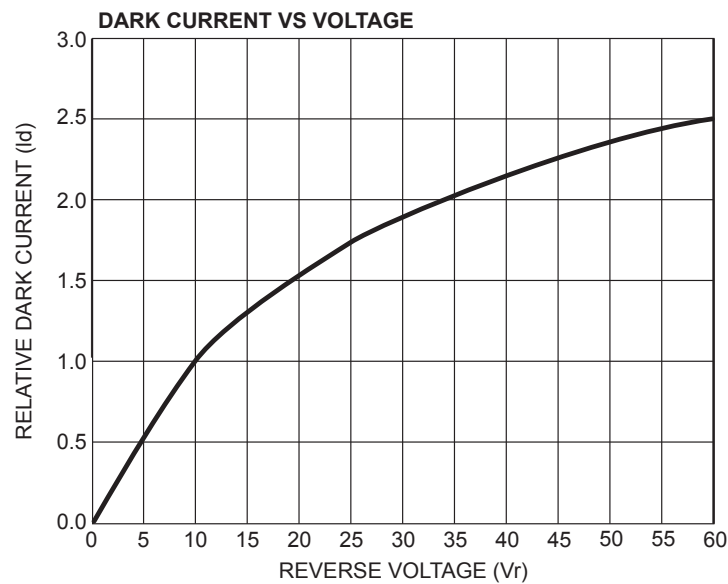
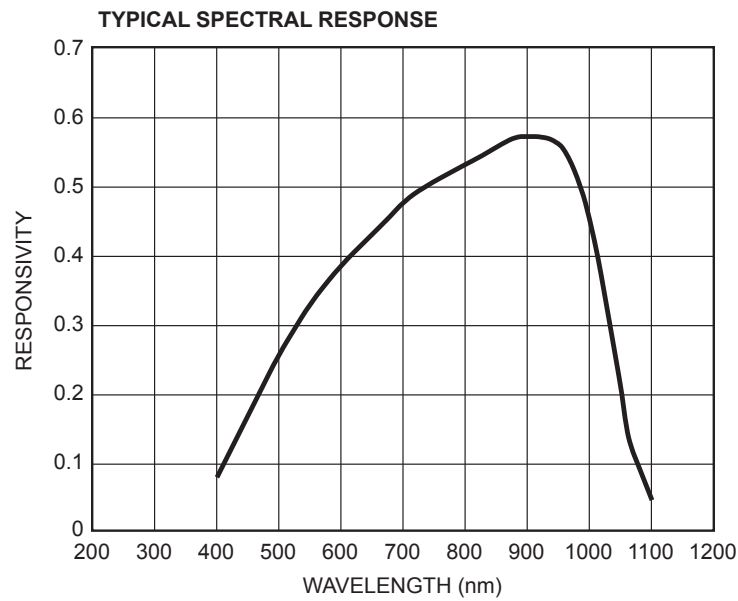
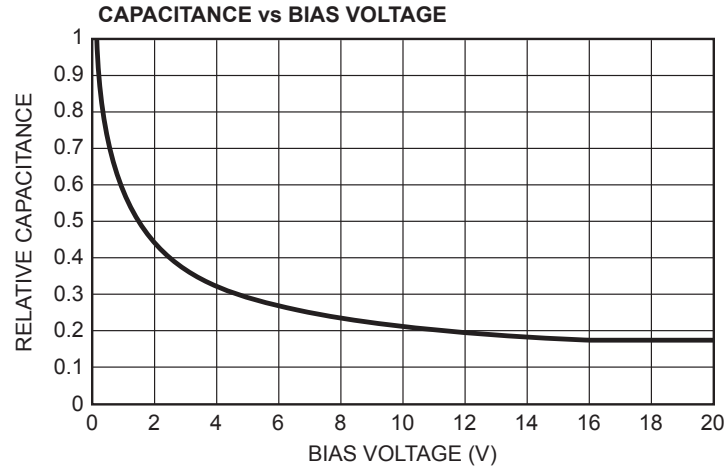
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

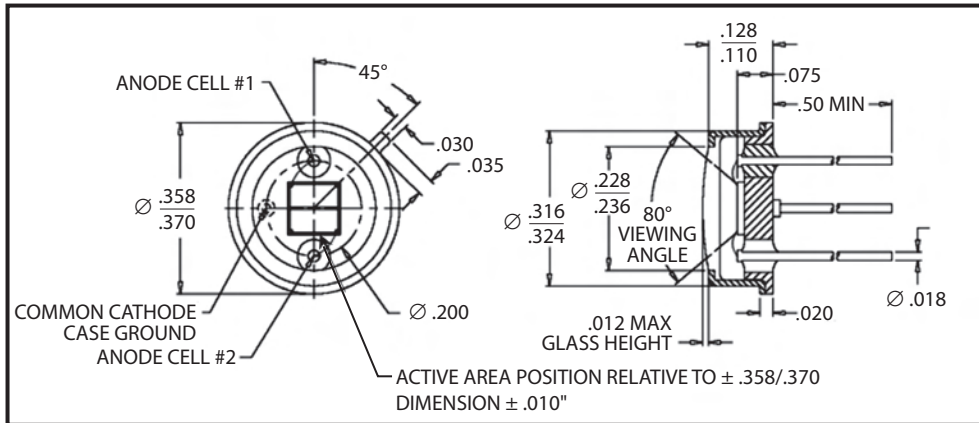
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	1.35mm x 0.76mm		1		mm ²
Responsivity, \mathcal{R}	@ 450nm	0.20	0.28		A/W
Dark Current, I_{dr}	$V_R = 10V$		0.2	1	nA
Reverse Breakdown Voltage, V_R	$I_R = 10A$	25	60		Volts
Capacitance, C	$V_R = 10V$		0.5	2	pF
Rise Time	$V_R = 10V$		8	15	nsec
Series Resistance	$V_f = 1V$		25	60	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°

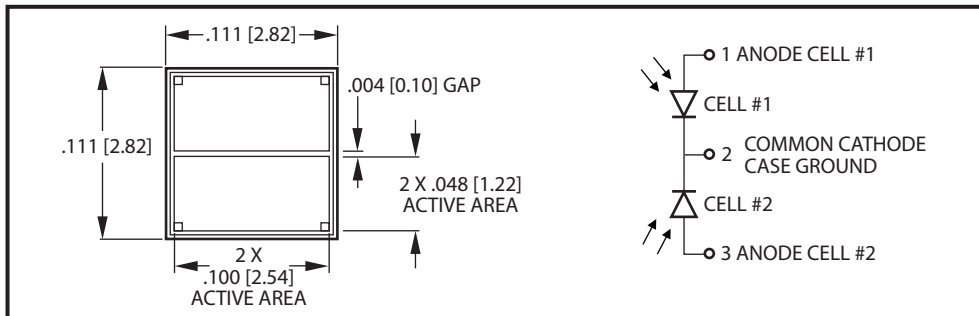
¹ 1/16" from case for 10 seconds.





FEATURES

- Red enhanced
- Low noise
- High response
- High shunt resistance
- Low profile TO-5 package



ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

CHARACTERISTIC	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Dark Current, I _D	V _R = 5 V		0.9	2.5	na
Shunt Resistance, R _{SH}	V _R = 10 mV		300		MΩ
Junction Capacitance, C _J	V _R = 0 V, f = 1 MHz		30		pF
Junction Capacitance, C _J	V _R = 10 V, f = 1 MHz		7.5		pF
Spectral Application Range, λ _{range}	Spot Scan	250		1100	nm
Responsivity, R	λ = 633 nm, V _R = 0 V	0.32	0.36		A/W
Responsivity, R	λ = 900 nm, V _R = 0 V	0.50	0.60		A/W
Breakdown Voltage, V _R	I _R = 10 μA		75		V
Noise Equivalent Power, NEP	V _R = 0 V, λ = 950 nm		2.5 x 10 ⁻¹⁴		W/√HZ
Response Time, t _r ¹	RL = 50 Ω, V _R = 0 V		190		nsec
Response Time, t _r ¹	RL = 50 Ω, V _R = 10 V		8		nsec

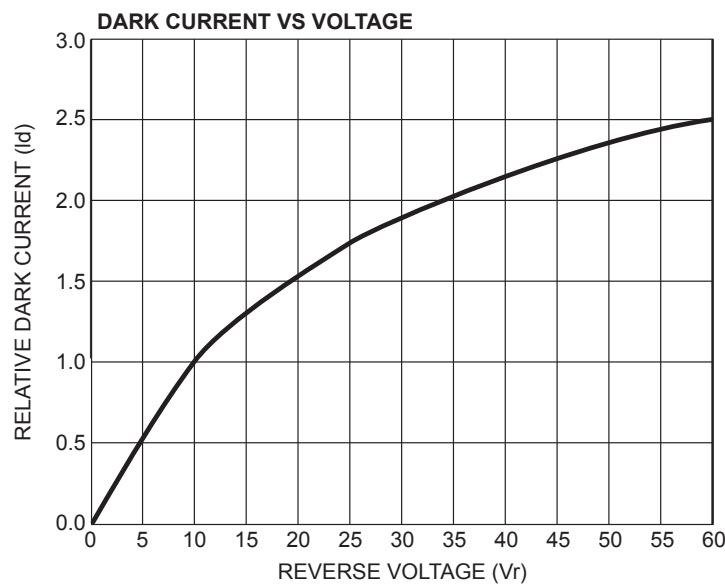
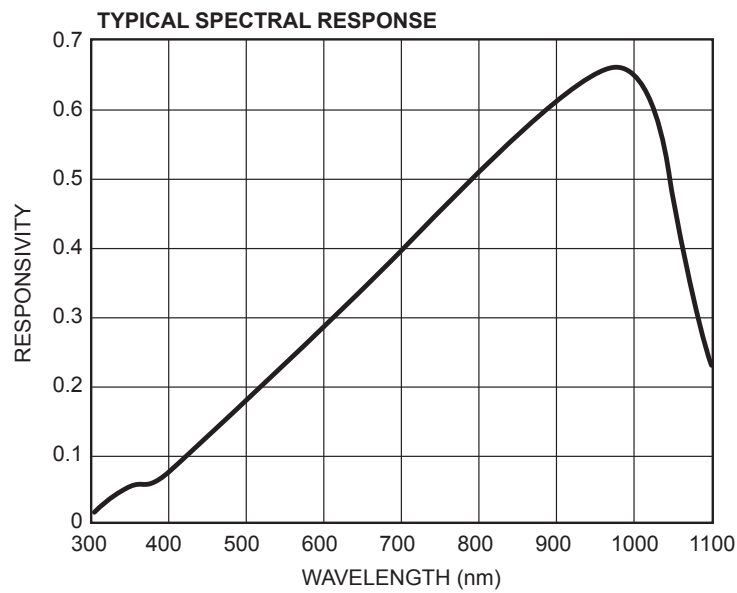
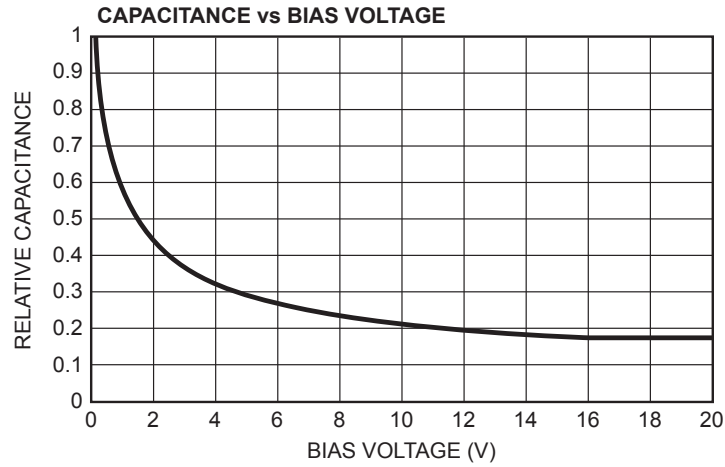
¹Response time of 10% to 90% is specified at 660 nm.

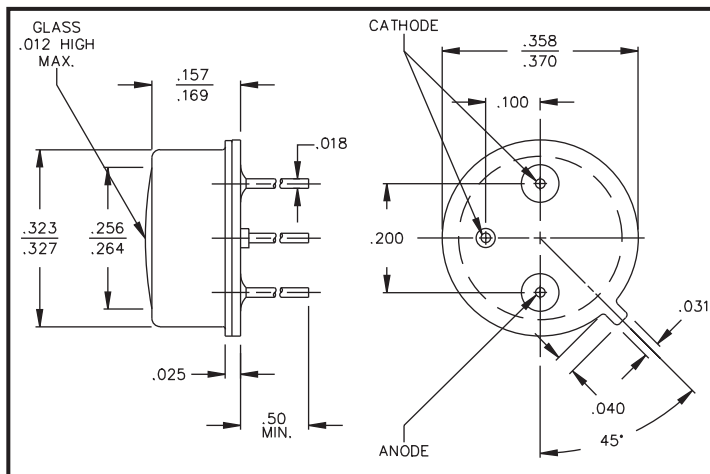
ABSOLUTE MAXIMUM RATINGS AT 25°C

PARAMETER	MIN	MAX	UNITS
Reverse Voltage, V _R		100	V
Storage Temperature, T _{STG}	- 55	+150	°C
Operating Temperature, T _O	- 40	+125	°C
Lead Soldering Temperature (1/16" from case for 3 sec)		+260	°C



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FEATURES

- TO-5 hermetic package
- Circular active area
- Low capacitance



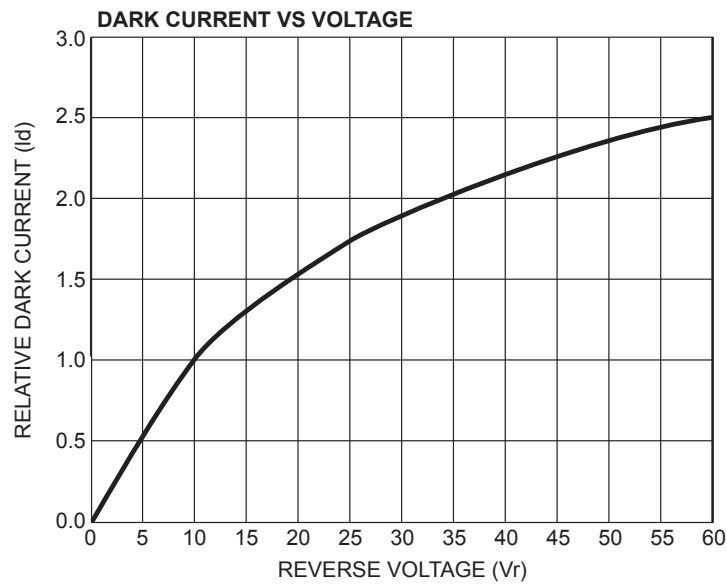
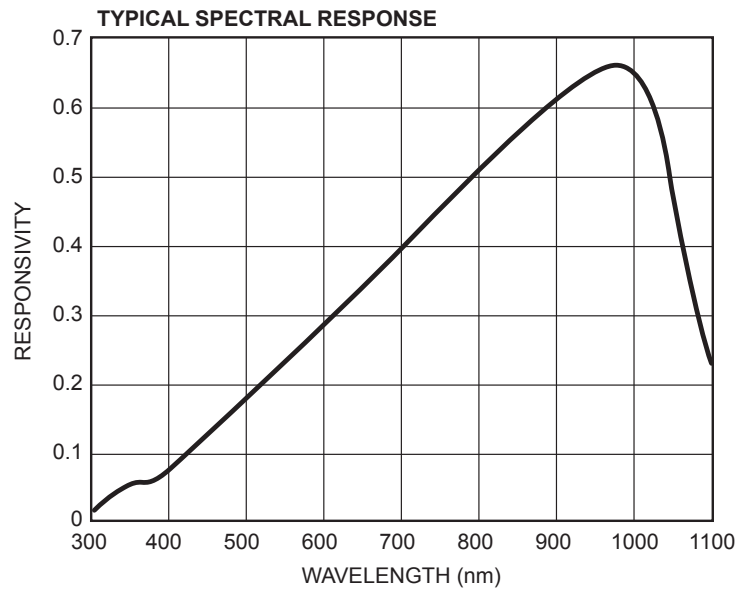
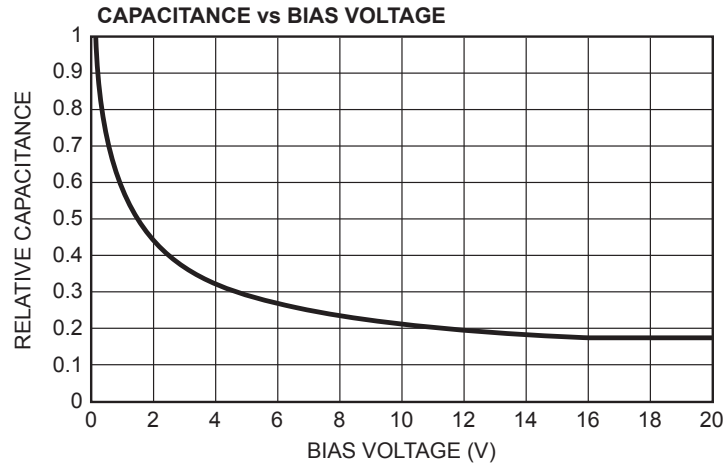
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

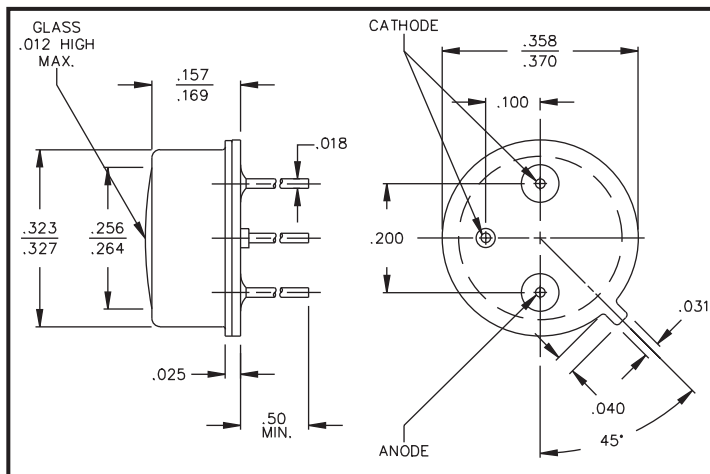
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	2.52mm DIA.		5		mm ²
Responsivity, \mathcal{R}	@ 632nm	0.35	0.40		A/W
Dark Current, I_{dr}	$V_R = 10V$		1	3	nA
Reverse Breakdown Voltage, V_R	$I_R = 10A$	25	60		Volts
Capacitance, C	$V_R = 10V$		11		pF
Rise Time	$V_R = 10V$		10		nsec
Series Resistance	$V_f = 1V$		35	100	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°0

¹1/16" from case for 10 seconds.





FEATURES

- TO-5 hermetic package
- Circular active area
- Low capacitance



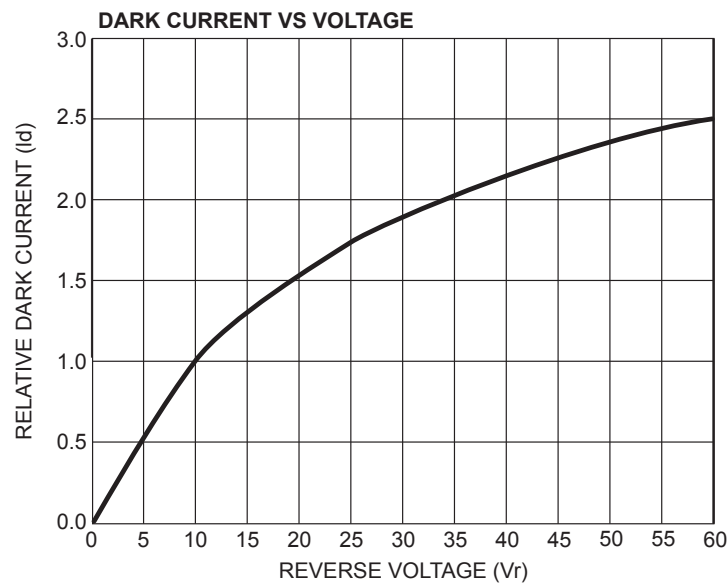
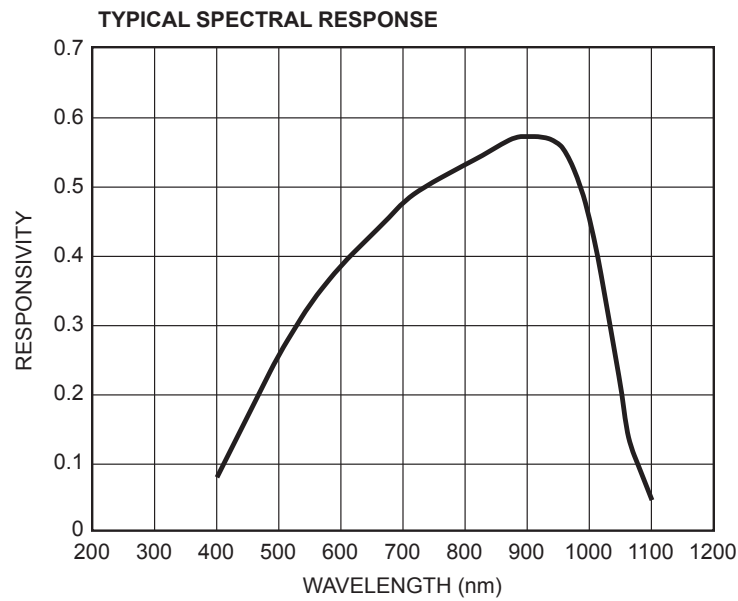
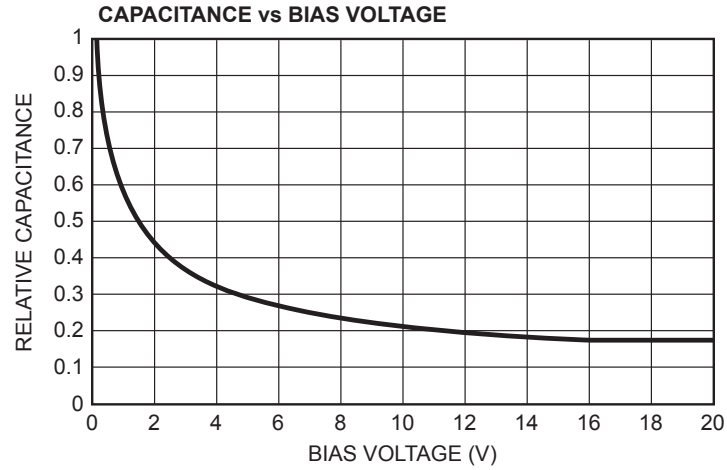
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

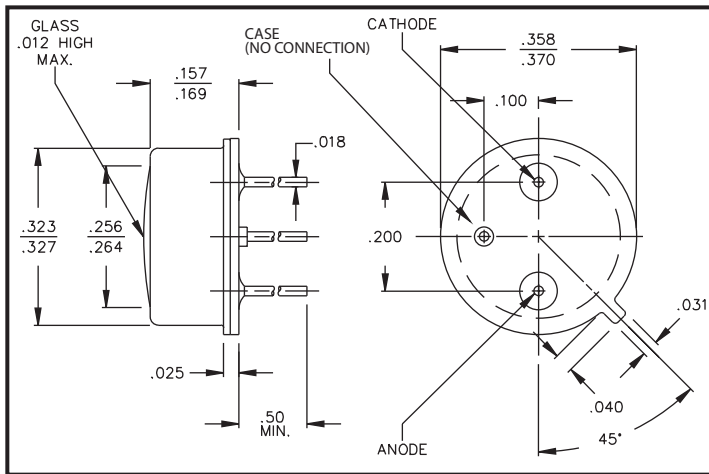
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	2.52mm DIA.		5		mm ²
Responsivity, \mathcal{R}	@ 632nm	0.35	0.40		A/W
Dark Current, I_{dr}	$V_R = 10V$		1	3	nA
Reverse Breakdown Voltage, V_R	$I_R = 10A$	25	60		Volts
Capacitance, C	$V_R = 10V$		11		pF
Rise Time	$V_R = 10V$		10		nsec
Series Resistance	$V_f = 1V$		35	100	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°0

¹1/16" from case for 10 seconds.





FEATURES

- TO-5 hermetic package
- Circular active area
- Low capacitance
- Isolated case



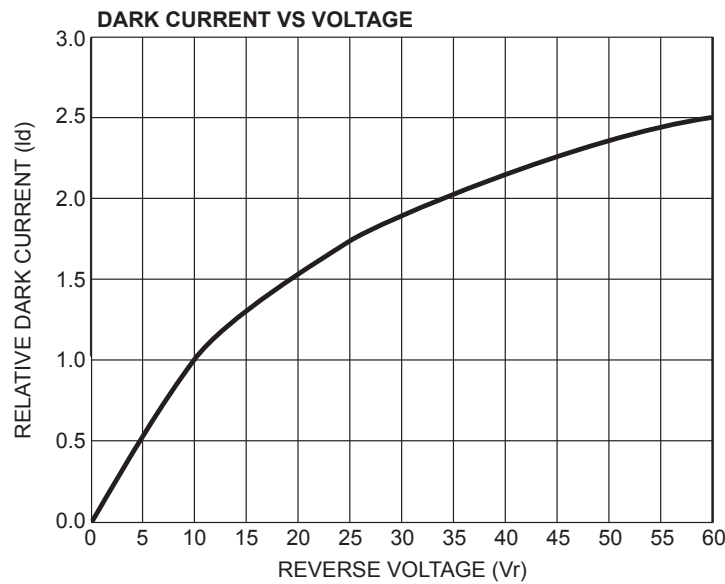
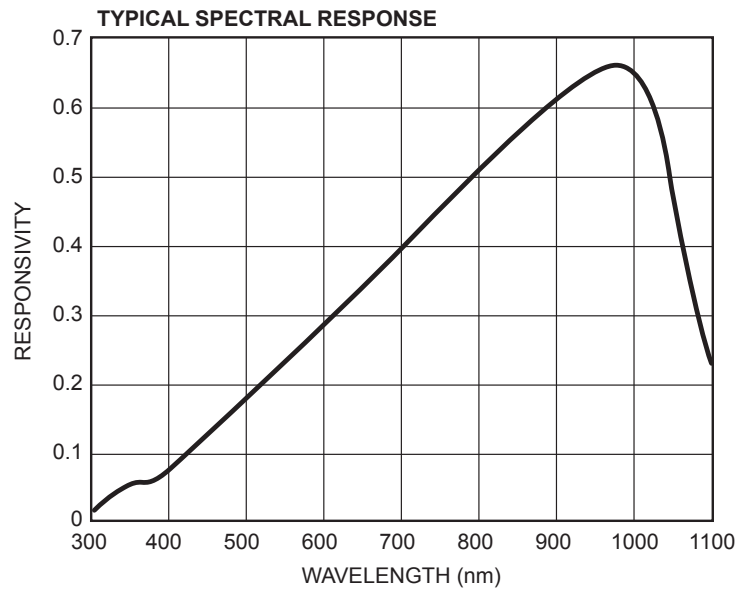
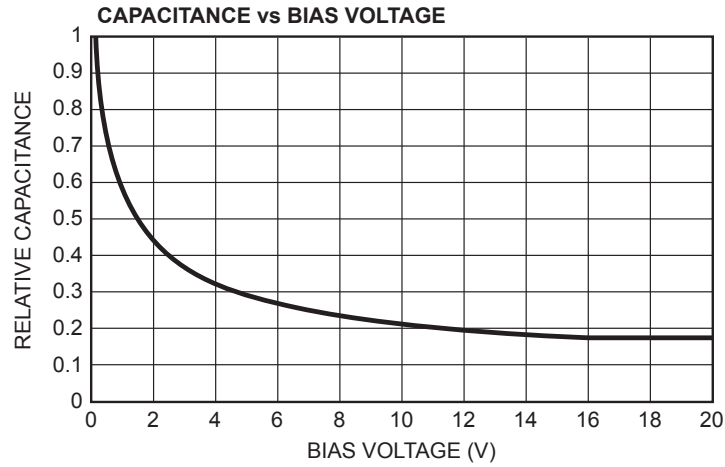
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

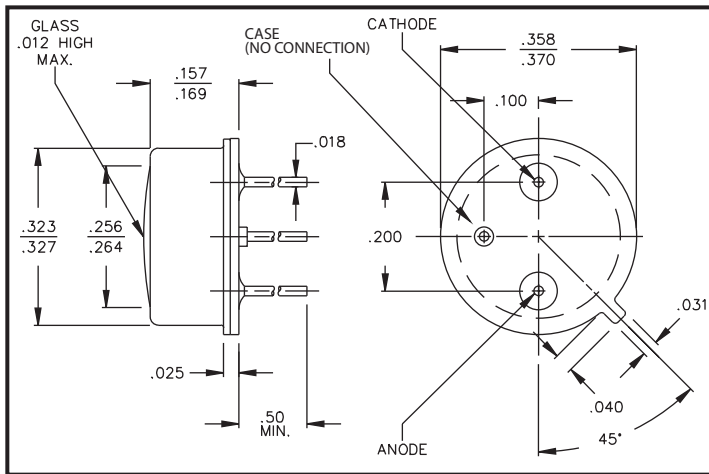
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	2.52mm DIA.		5		mm ²
Responsivity, \mathcal{R}	@ 632nm	0.35	0.40		A/W
Dark Current, I_{dr}	$V_R = 10V$		1	3	nA
Reverse Breakdown Voltage, V_R	$I_R = 10A$	25	60		Volts
Capacitance, C	$V_R = 10V$		11		pF
Rise Time	$V_R = 10V$		10		nsec
Series Resistance	$V_f = 1V$		35	100	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°

¹1/16" from case for 10 seconds.





FEATURES

- TO-5 hermetic package
- Circular active area
- Low capacitance
- Isolated case



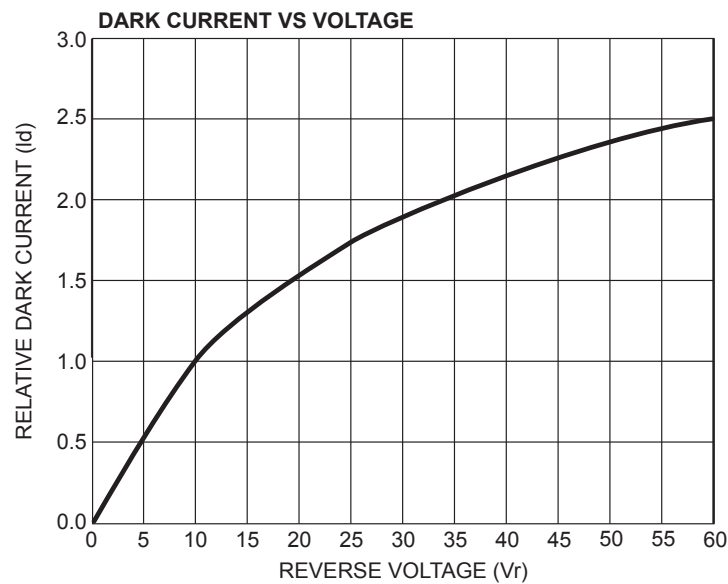
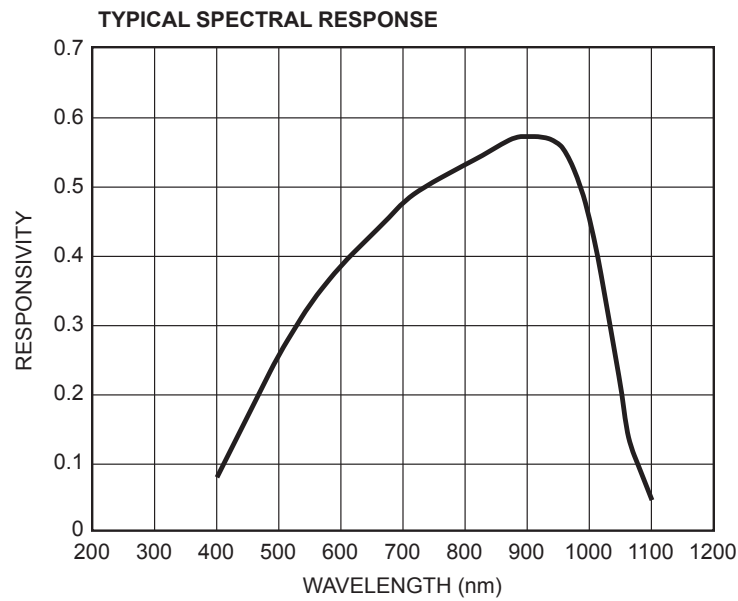
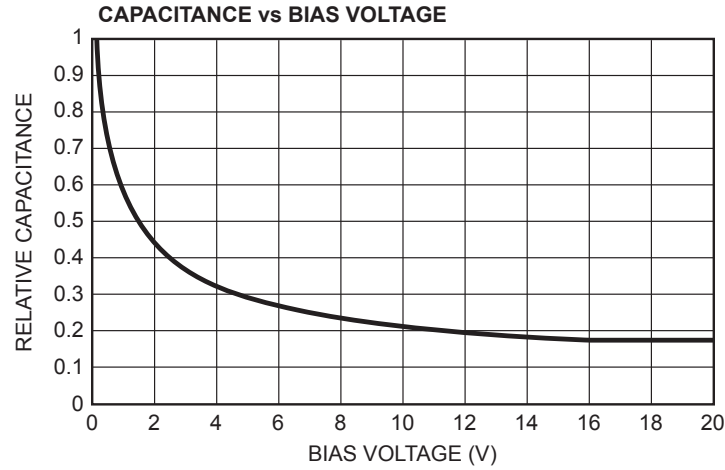
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

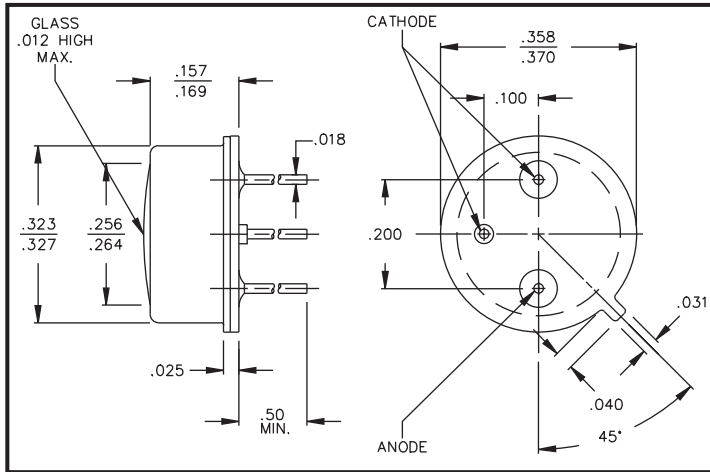
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	2.52mm DIA.		5		mm ²
Responsivity, \mathcal{R}	@ 632nm	0.35	0.40		A/W
Dark Current, I_{dr}	$V_R = 10V$		1	3	nA
Reverse Breakdown Voltage, V_R	$I_R = 10A$	25	60		Volts
Capacitance, C	$V_R = 10V$		11		pF
Rise Time	$V_R = 10V$		10		nsec
Series Resistance	$V_f = 1V$		35	100	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°

¹1/16" from case for 10 seconds.





FEATURES

- TO-5 hermetic package
- Optimized die size for maximum signal
- Low capacitance



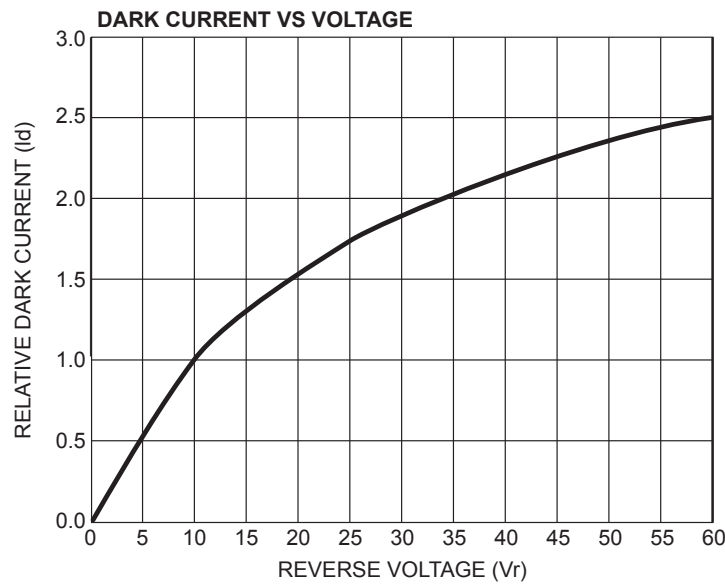
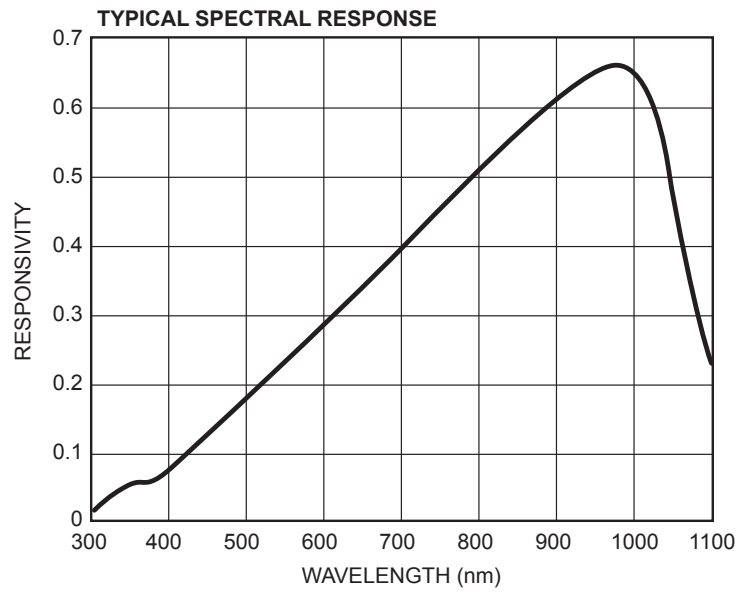
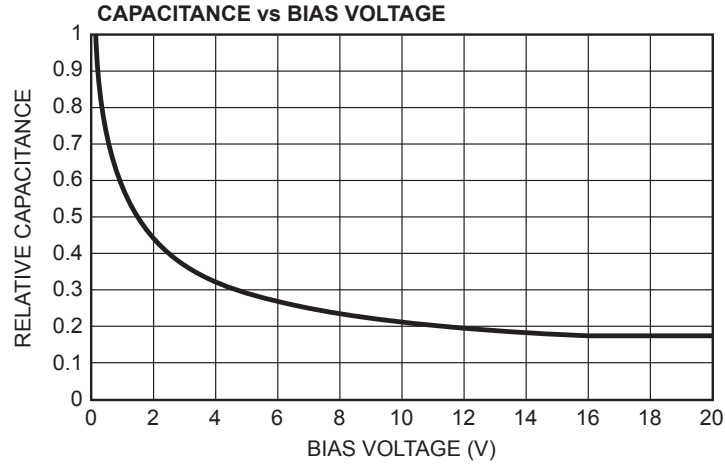
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

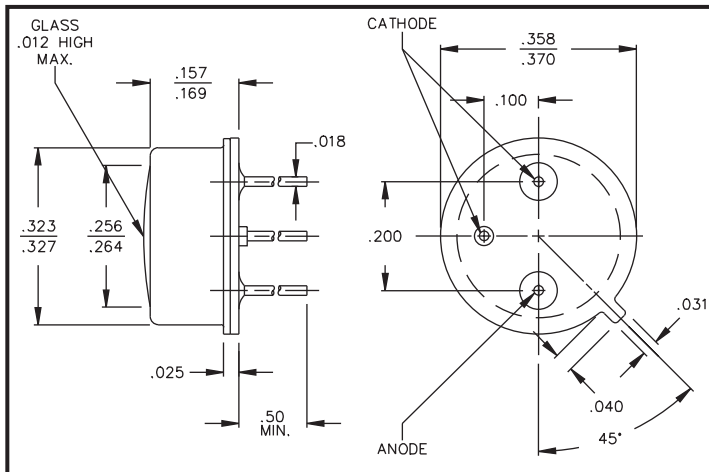
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	6.27mm x 2.52mm		15.8		mm ²
Responsivity, \mathcal{R}	@ 632nm	0.35	0.40		A/W
Dark Current, I_{dr}	$V_R = 10V$		4	10	nA
Reverse Breakdown Voltage, V_R	$I_R = 10A$	25	60		Volts
Capacitance, C	$V_R = 10V$		30		pF
Rise Time	$V_R = 10V$		20		nsec
Series Resistance	$V_f = 1V$		35	100	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°

¹1/16" from case for 10 seconds.





FEATURES

- TO-5 hermetic package
- Optimized die size for maximum signal
- Low capacitance



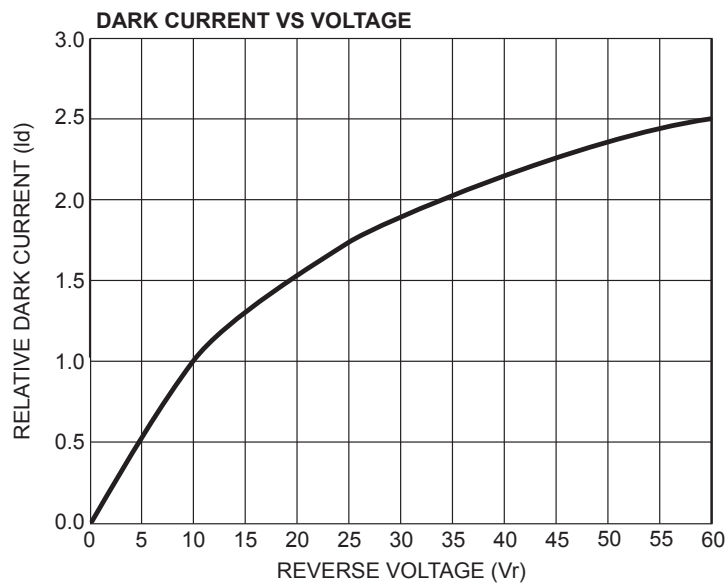
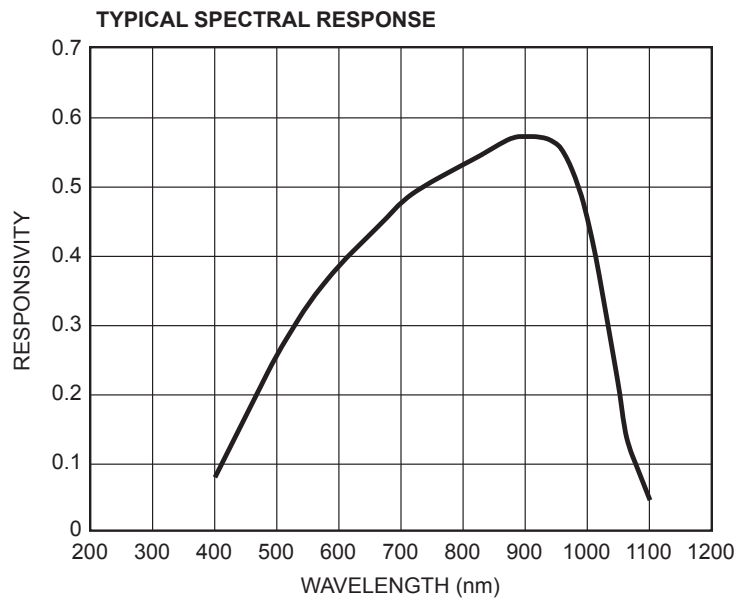
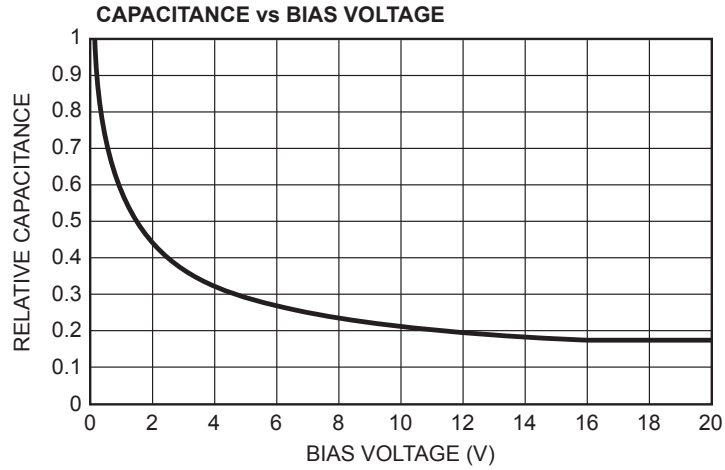
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

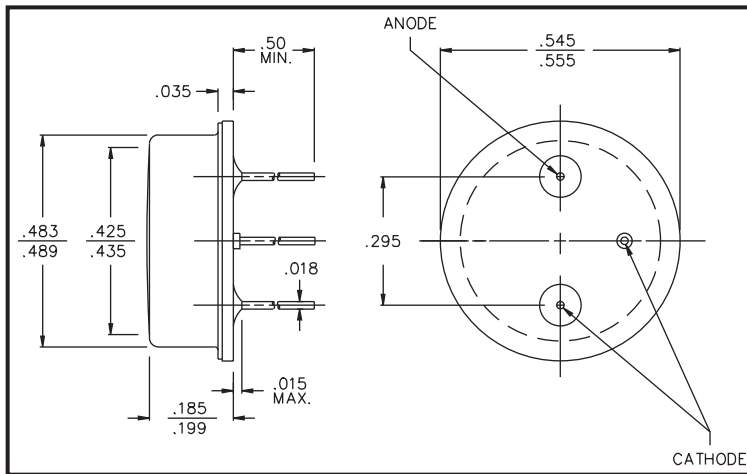
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	6.27mm x 2.52mm		15.8		mm ²
Responsivity, \mathcal{R}	@ 632nm	0.35	0.40		A/W
Dark Current, I_{dr}	$V_R = 10V$		4	10	nA
Reverse Breakdown Voltage, V_R	$I_R = 10A$	25	60		Volts
Capacitance, C	$V_R = 10V$		30		pF
Rise Time	$V_R = 10V$		20		nsec
Series Resistance	$V_f = 1V$		35	100	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°

¹1/16" from case for 10 seconds.





FEATURES

- TO-8 hermetic package
- Circular active area
- Low capacitance



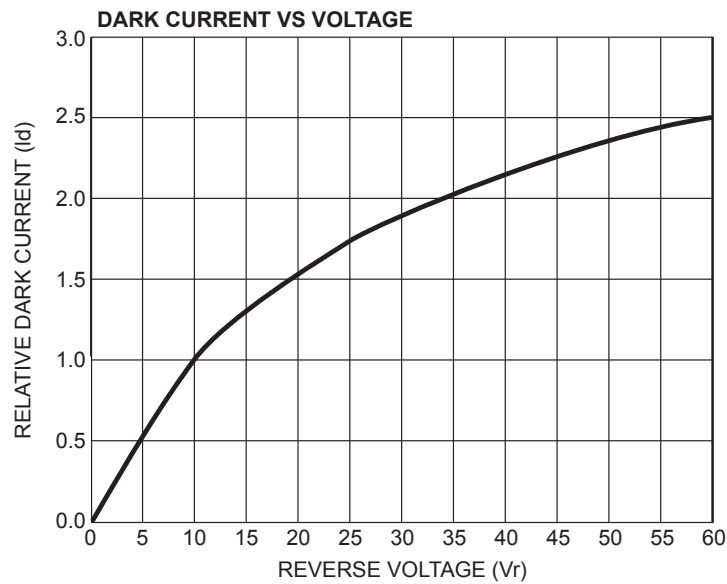
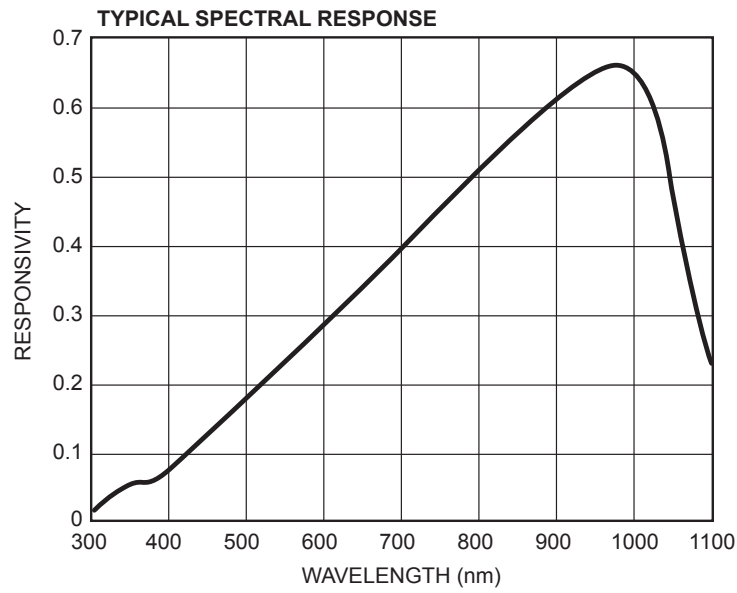
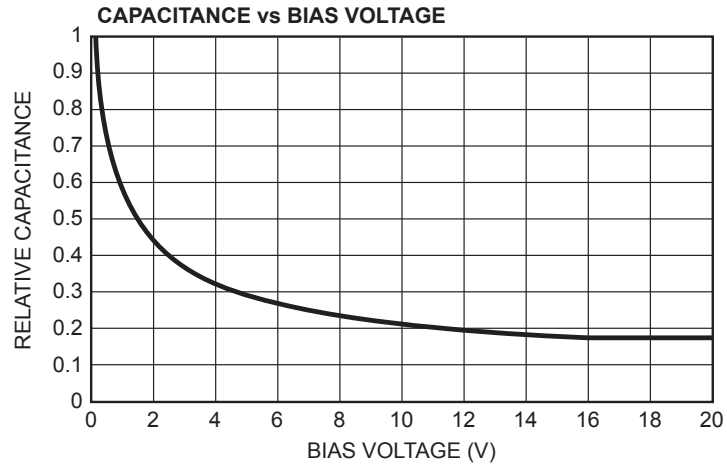
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

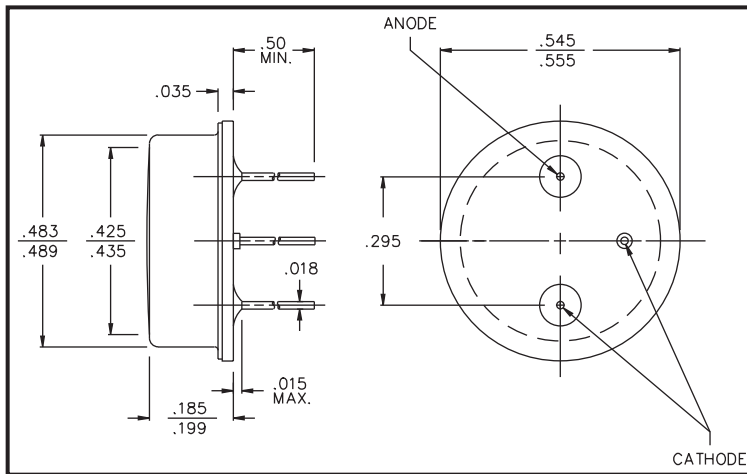
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	4mm DIA.		12		mm ²
Responsivity, \mathcal{R}	@ 632nm	0.35	0.40		A/W
Dark Current, I _{dr}	V _R = 10V		3	7	nA
Reverse Breakdown Voltage, V _R	I _R = 10A	25	60		Volts
Capacitance, C	V _R = 10V		25		pF
Rise Time	V _R = 10V		15		nsec
Series Resistance	V _f = 1V		35	100	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°

¹1/16" from case for 10 seconds.





FEATURES

- TO-8 hermetic package
- Circular active area
- Low capacitance



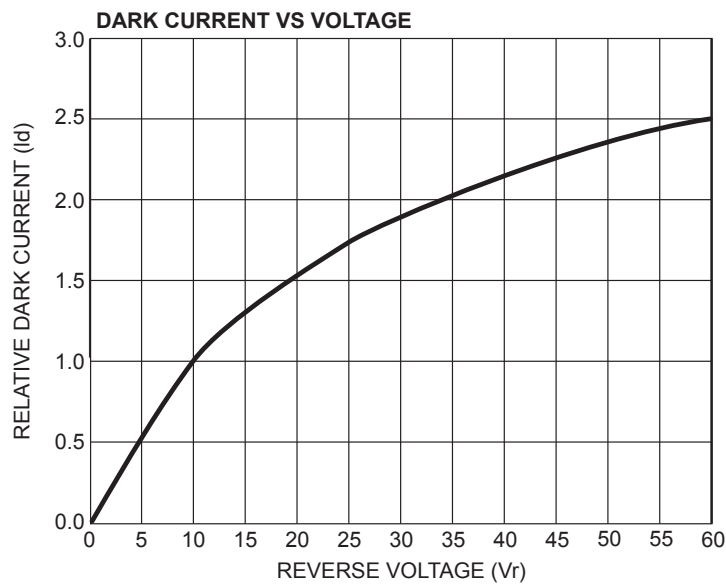
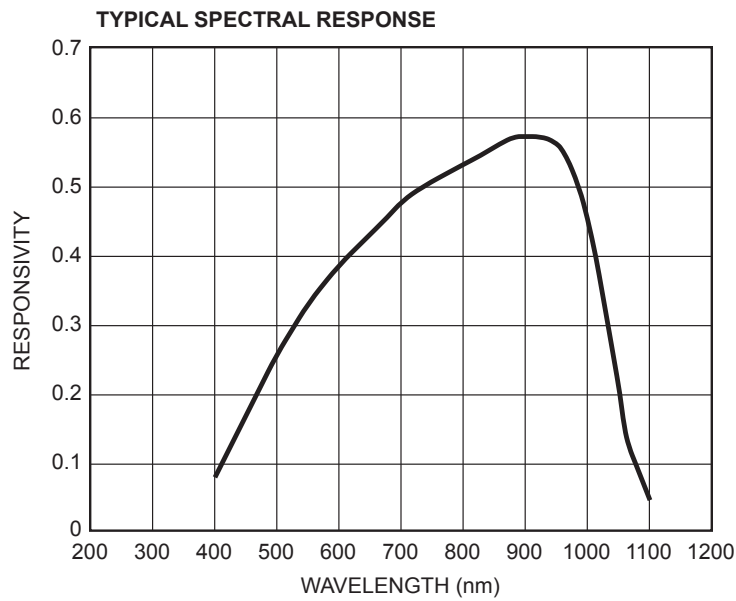
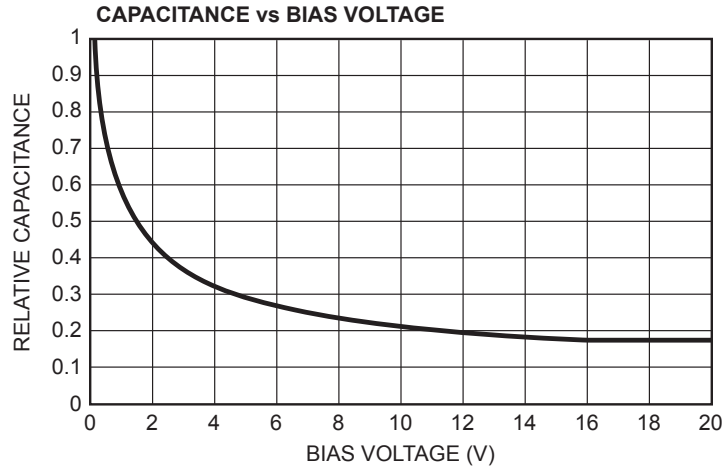
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

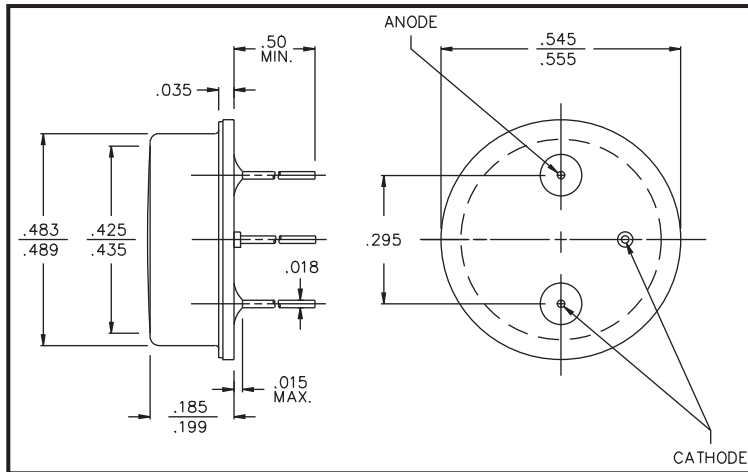
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	4mm DIA.		12		mm ²
Responsivity, \mathcal{R}	@ 632nm	0.35	0.40		A/W
Dark Current, I _{dr}	V _R = 10V		3	7	nA
Reverse Breakdown Voltage, V _R	I _R = 10A	25	60		Volts
Capacitance, C	V _R = 10V		25		pF
Rise Time	V _R = 10V		15		nsec
Series Resistance	V _f = 1V		35	100	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°

¹1/16" from case for 10 seconds.





FEATURES

- TO-8 hermetic package
- Optimized die size for maximum signal
- Low capacitance



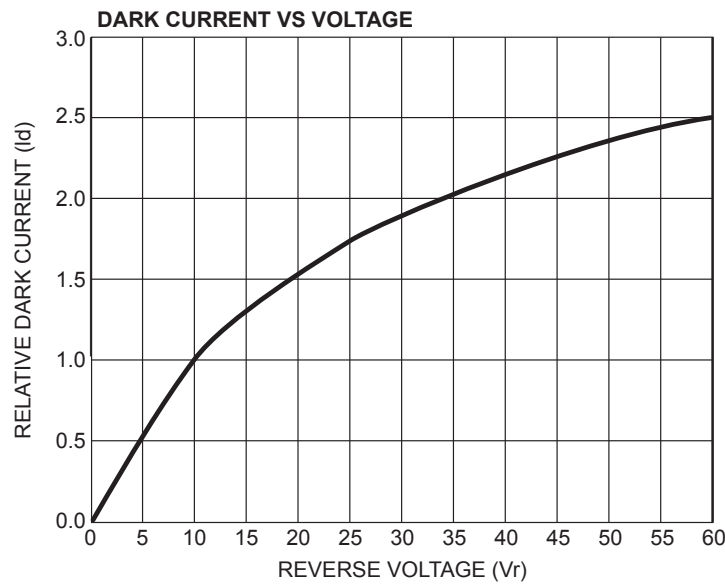
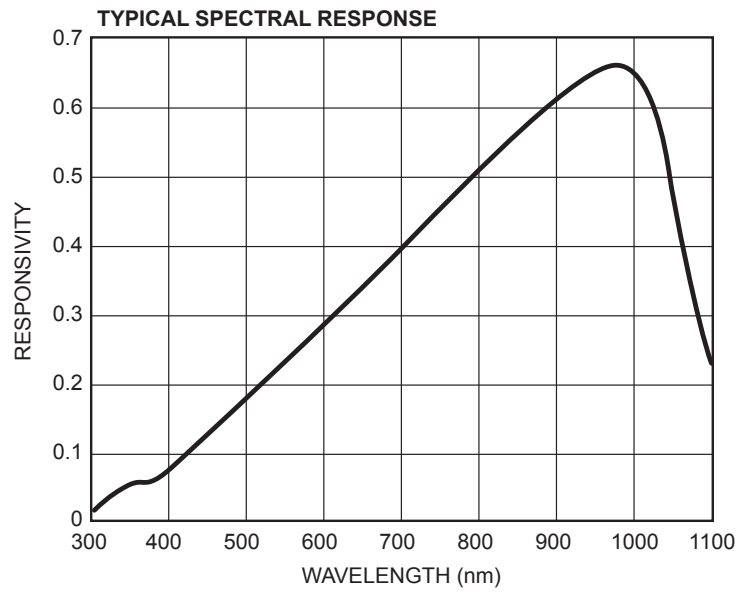
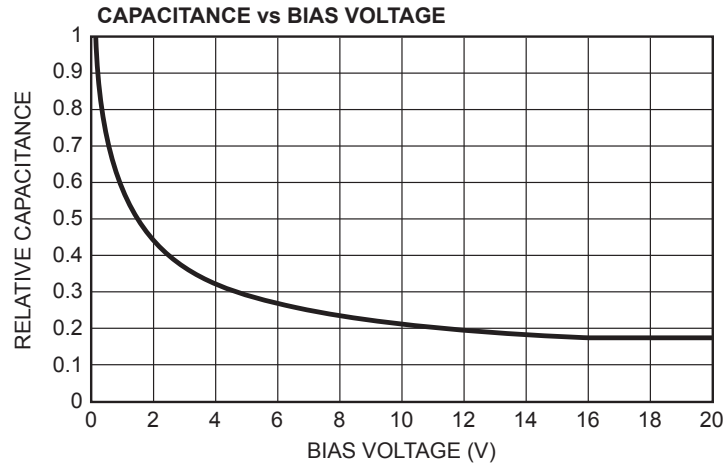
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

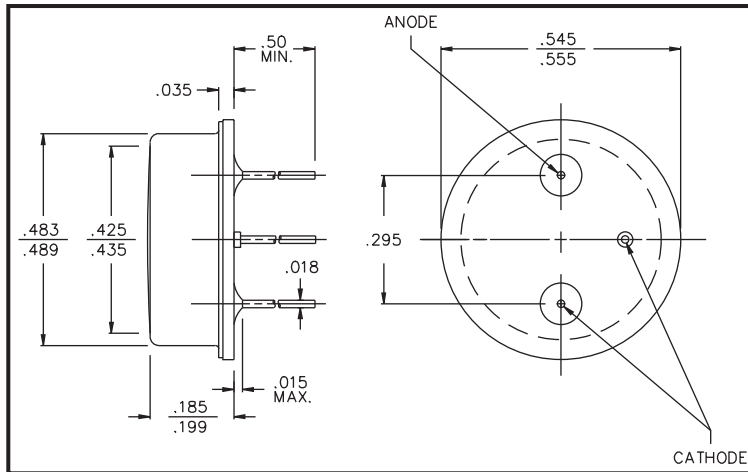
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	9.91mm x 4.28mm		42		mm ²
Responsivity, \mathcal{R}	@ 632nm	0.35	0.40		A/W
Dark Current, I_{dr}	$V_R = 10V$		11	25	nA
Reverse Breakdown Voltage, V_R	$I_R = 10A$	25	60		Volts
Capacitance, C	$V_R = 10V$		85		pF
Rise Time	$V_R = 10V$		30		nsec
Series Resistance	$V_f = 1V$		35	100	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°

¹1/16" from case for 10 seconds.





FEATURES

- TO-8 hermetic package
- Optimized die size for maximum signal
- Low capacitance



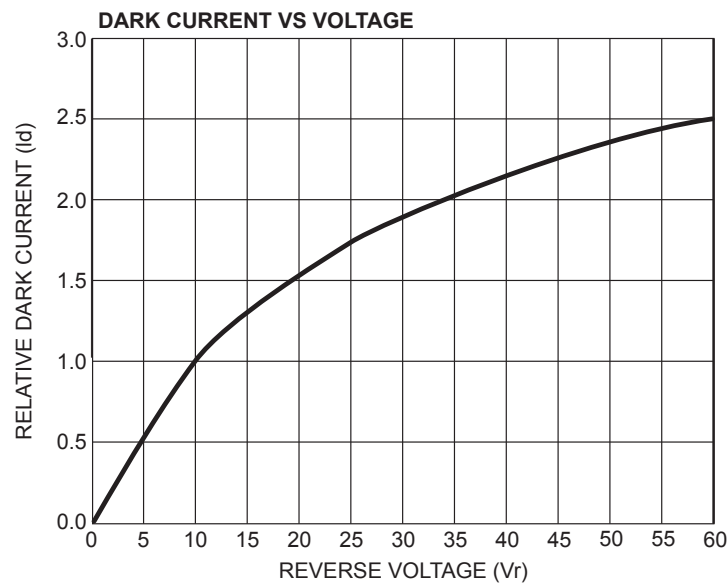
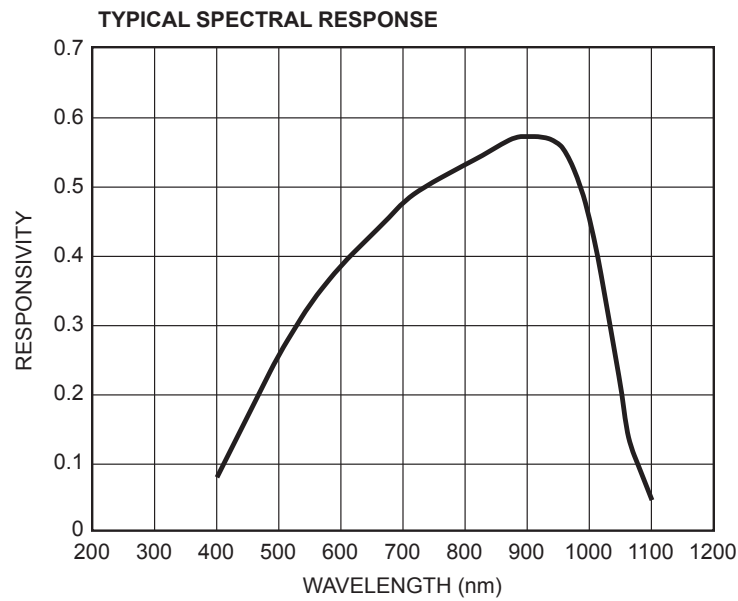
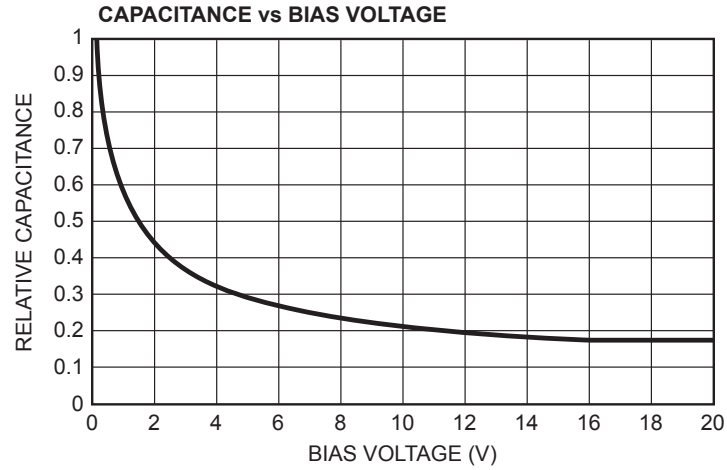
ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

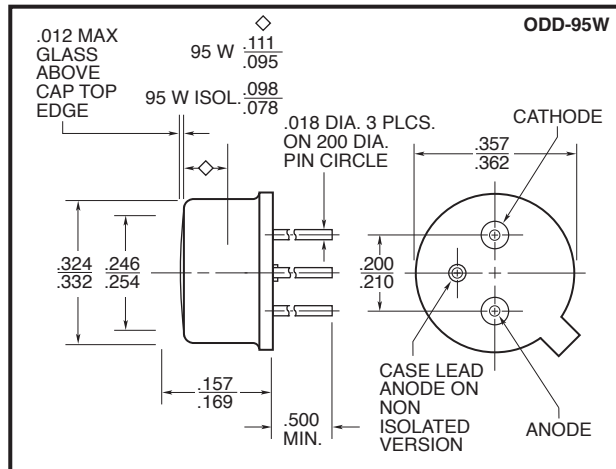
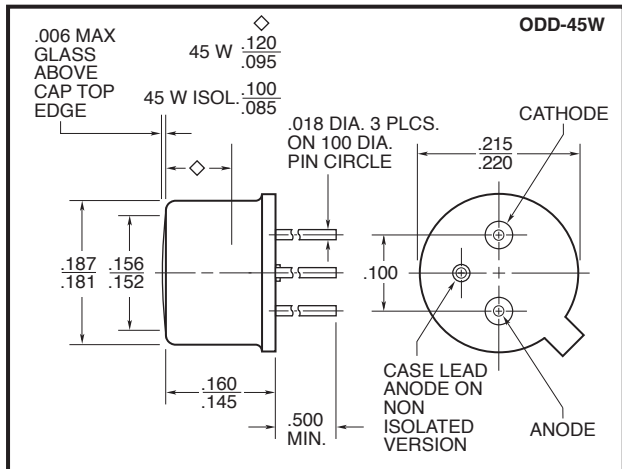
PARAMETERS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	9.91mm x 4.28mm		42		mm ²
Responsivity, \mathcal{R}	@ 632nm	0.35	0.40		A/W
Dark Current, I_{dr}	$V_R = 10V$		11	25	nA
Reverse Breakdown Voltage, V_R	$I_R = 10A$	25	60		Volts
Capacitance, C	$V_R = 10V$		85		pF
Rise Time	$V_R = 10V$		30		nsec
Series Resistance	$V_f = 1V$		35	100	Ohms

THERMAL PARAMETERS

Storage and Operating Temperature Range	-55°C TO 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature ¹	260°

¹1/16" from case for 10 seconds.





ELECTRO-OPTICAL CHARACTERISTICS AT 25°C

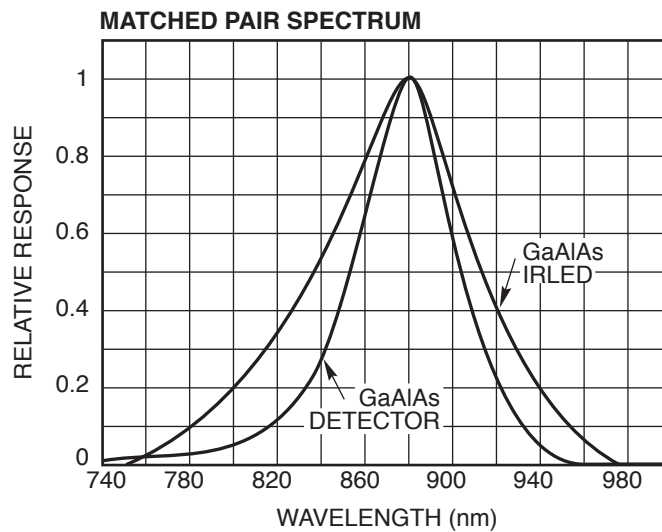
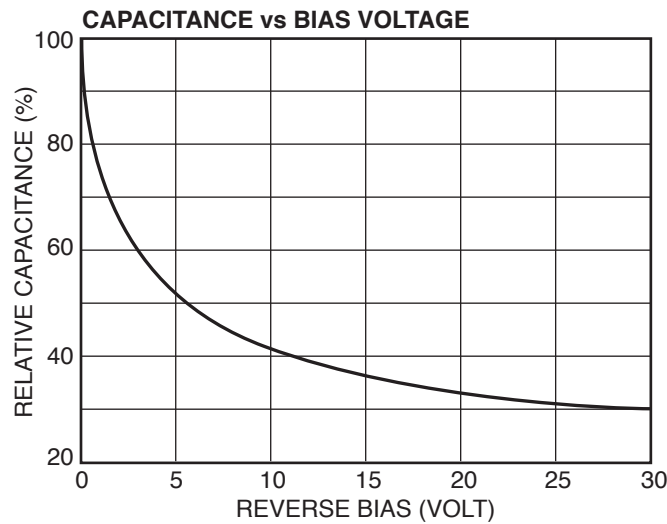
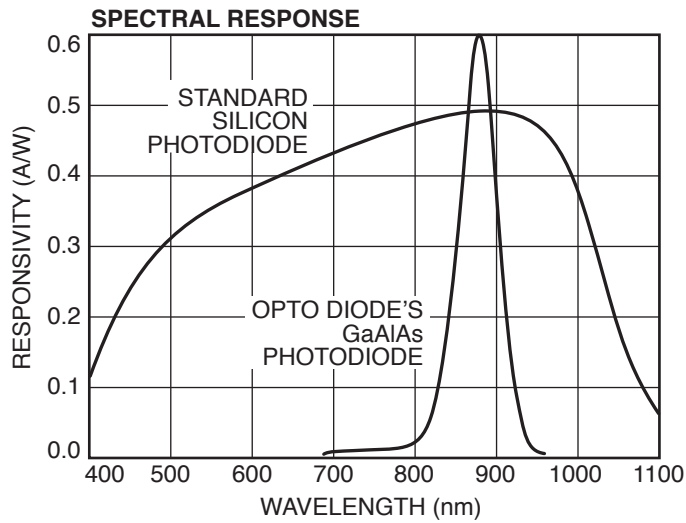
PARAMETERS		TEST CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	45W			1		mm ²
	95W			5		mm ²
Peak Sensitivity		$V_R = 0V$		880		nm
Responsivity at 880nm			0.5	0.6		A/W
Responsivity at 750nm				0.01		A/W
Responsivity at 650nm				0.005		A/W
Spectral Bandwidth at 50%					60	
Dark Current	45W	$V_R = 5V$		0.4	2	nA
	95W	$V_R = 5V$		1	5	nA
Shunt Resistance	45W	$V_R = 10\text{ mV}$		3		Gohm
	95W	$V_R = 10\text{ mV}$		1		Gohm
Response Time	45W	$V_R = 5V, R_L = 50\Omega$		1		μsec
	95W	$V_R = 5V, R_L = 50\Omega$		1		μsec
Breakdown Voltage	45W	$I_R = 10\mu A$	20	30		V
	95W	$I_R = 10\mu A$	5	10		V
Capacitance	45W	$V_R = 0V$		170		pF
	45W	$V_R = 5V$		90		pF
	95W	$V_R = 0V$		700		pF
	95W	$V_R = 5V$		350		pF

ABSOLUTE MAXIMUM RATINGS AT 25°C

Storage and Operating Temperature Range	-55°C to 100°C
Maximum Junction Temperature	100°C
Lead Soldering Temperature (1/16" from case for 10 sec)	260°C



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