

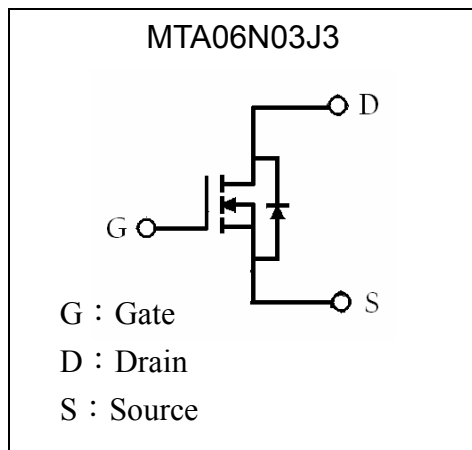
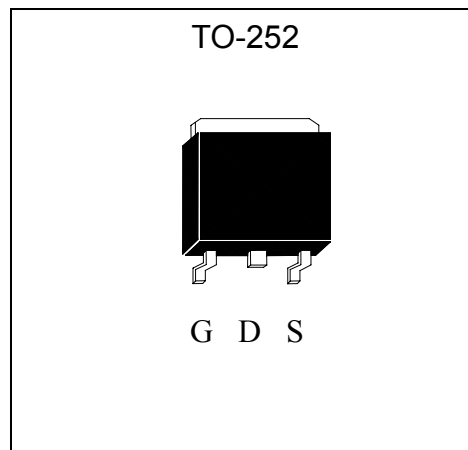
**N-Channel Enhancement Mode Power MOSFET**

# MTA06N03J3

$BV_{DSS}$	25V
$I_D$	80A
$R_{DS(ON)}$	6m $\Omega$

**Features**

- 100% UIS testing, @ $V_D=15V$ ,  $L=0.1mH$ ,  $V_G=10V$ ,  $I_L=40V$ , rated  $V_{DS}=25V$  N-CH
- Simple Drive Requirement
- Repetitive Avalanche Rated
- Fast Switching Characteristic
- RoHS compliant package & Halogen-free package

**Symbol**

**Outline**

**Absolute Maximum Ratings** ( $T_c=25^\circ C$ , unless otherwise noted)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	$V_{DS}$	25	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current @ $T_c=25^\circ C$	$I_D$	80	A
Continuous Drain Current @ $T_c=100^\circ C$	$I_D$	50	
Pulsed Drain Current (Note 1)	$I_{DM}$	170	
Avalanche Current	$I_{AS}$	53	
Avalanche Energy @ $L=0.1mH$ , $I_D=53A$ , $R_G=25\Omega$	$E_{AS}$	140	mJ
Repetitive Avalanche Energy @ $L=0.05mH$ (Note 2)	$E_{AR}$	40	
Total Power Dissipation @ $T_c=25^\circ C$	$P_d$	83	W
Total Power Dissipation @ $T_c=100^\circ C$		45	
Operating Junction and Storage Temperature Range	$T_j, T_{stg}$	-55~+175	$^\circ C$

Note : 1. Pulse width limited by maximum junction temperature  
 2. Duty cycle  $\leq 1\%$



**Thermal Data**

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	1.8	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	75	°C/W

**Characteristics (Tc=25°C, unless otherwise specified)**

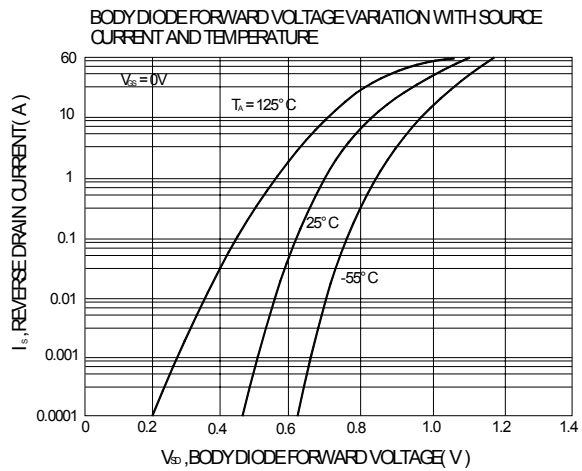
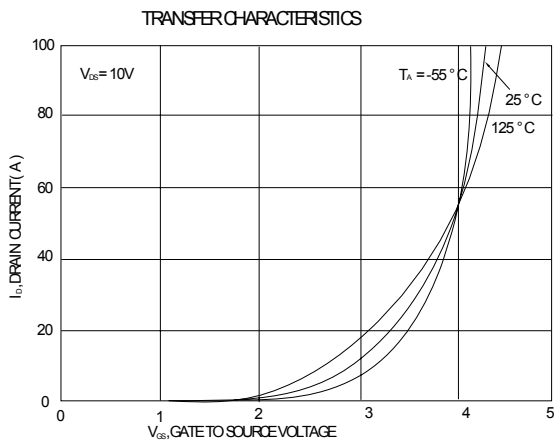
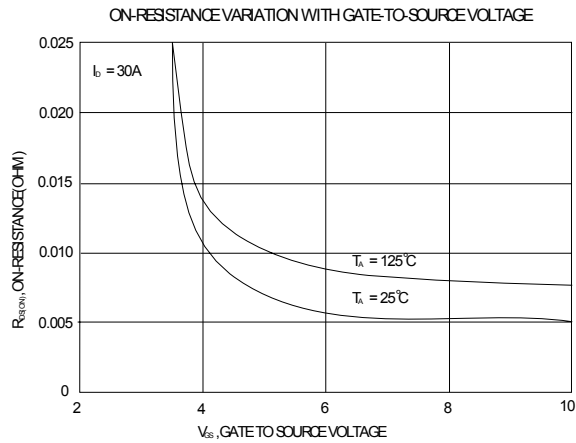
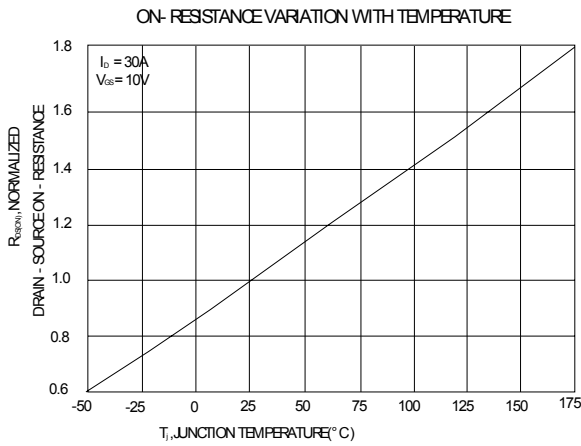
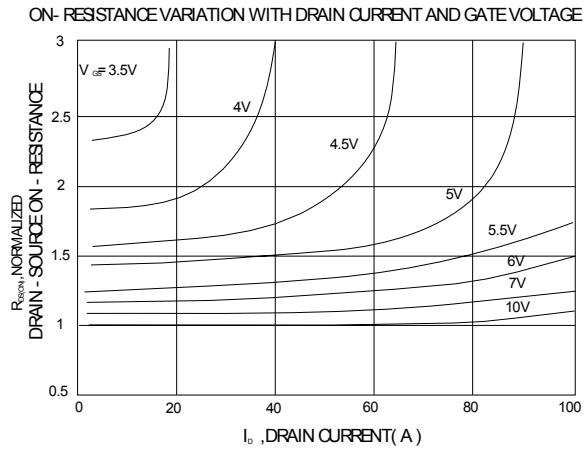
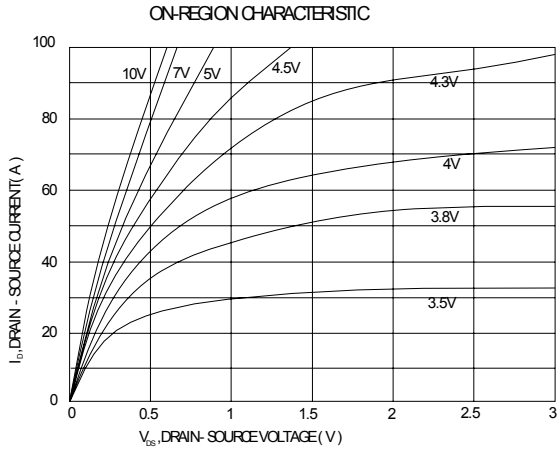
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
<b>Static</b>					
$BV_{DSS}$	25	-	-	V	$V_{GS}=0V, I_D=250\mu A$
$V_{GS(th)}$	1	1.5	3	V	$V_{DS} = V_{GS}, I_D=250\mu A$
$I_{GSS}$	-	-	±100	nA	$V_{GS}=\pm 20, V_{DS}=0V$
$I_{DSS}$	-	-	1	$\mu A$	$V_{DS} = 20V, V_{GS} = 0V$
	-	-	25		$V_{DS} = 20V, V_{GS} = 0V, T_j=125^\circ C$
* $I_{D(ON)}$	80	-	-	A	$V_{DS} = 10V, V_{GS} = 10V$
* $R_{DS(ON)}$	-	5.3	6	$m\Omega$	$V_{GS} = 10V, I_D=30A$
	-	7.6	9.5		$V_{GS} = 5V, I_D=24A$
* $G_{FS}$	-	25	-	S	$V_{DS} = 5V, I_D=24A$
<b>Dynamic</b>					
* $Q_g(V_{GS}=10V)$	-	53	-	nC	$I_D=30A, V_{DS}=15V, V_{GS}=10V$
* $Q_g(V_{GS}=5V)$	-	30	-		
* $Q_{gs}$	-	8	-		
* $Q_{gd}$	-	17	-		
* $t_{d(ON)}$	-	22	-	ns	$V_{DS}=15V, I_D=25A, V_{GS}=10V, R_{GS}=2.7\Omega$
* $t_r$	-	16	-		
* $t_{d(OFF)}$	-	65	-		
* $t_f$	-	10	-		
$C_{iss}$	-	4840	-	pF	$V_{GS}=0V, V_{DS}=15V, f=1MHz$
$C_{oss}$	-	620	-		
$C_{rSS}$	-	435	-		
$R_g$	-	1.2	-	$\Omega$	$V_{GS}=15mV, V_{DS}=0V, f=1MHz$
<b>Source-Drain Diode</b>					
* $I_S$	-	-	80	A	
* $I_{SM}$	-	-	170		
* $V_{SD}$	-	-	1.3	V	$I_F=I_S, V_{GS}=0V$
* $t_{rr}$	-	32	-	ns	$I_F=I_S, V_{GS}=0, dI_F/dt=100A/\mu s$
* $Q_{rr}$	-	12	-	nC	

\*Pulse Test : Pulse Width ≤300μs, Duty Cycles ≤2%

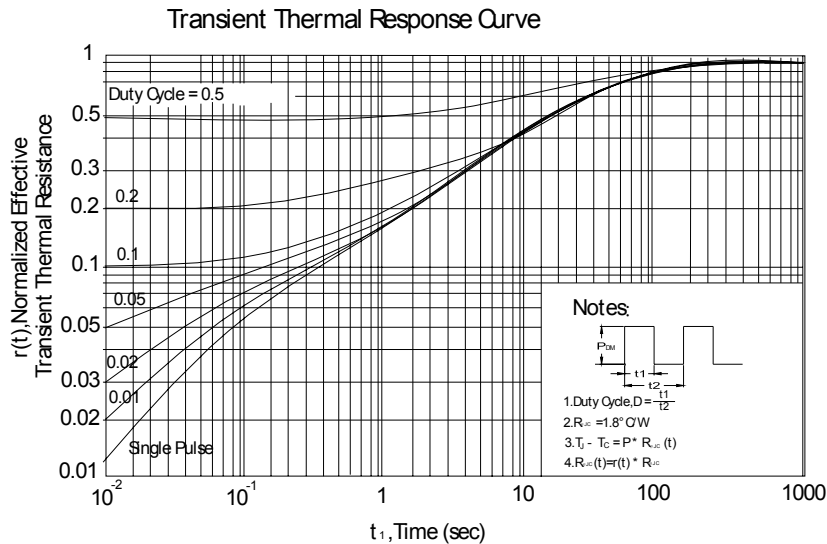
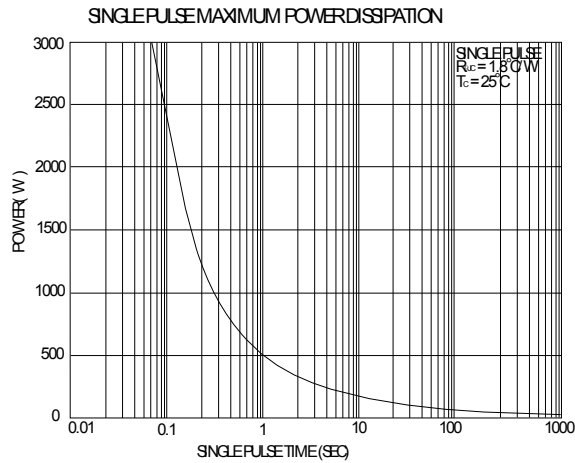
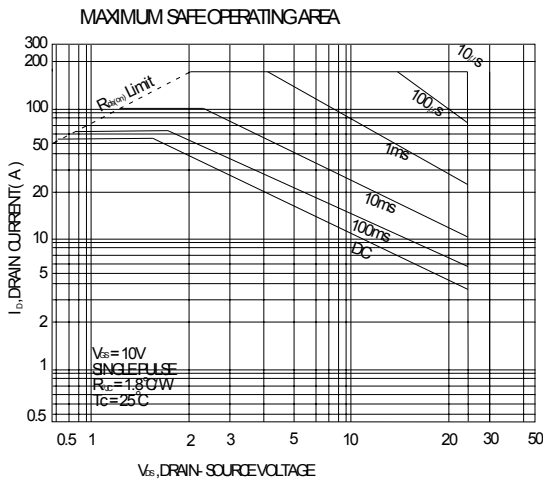
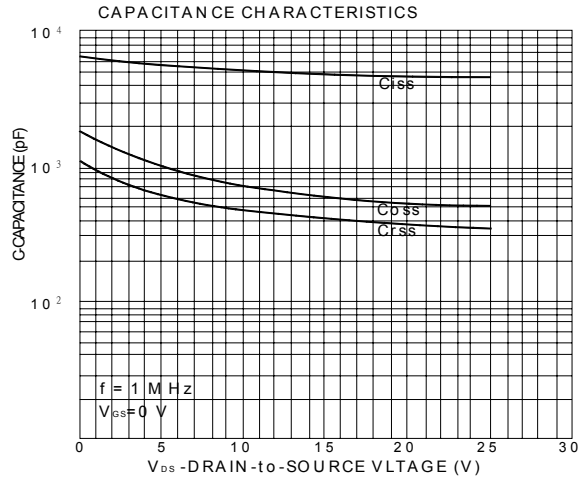
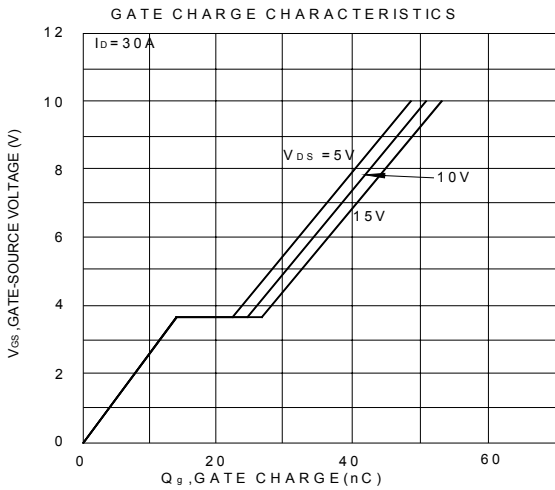
**Ordering Information**

Device	Package	Shipping	Marking
MTA06N03J3	TO-252 (RoHS compliant & Halogen-free)	2500 pcs / Tape & Reel	A06N03

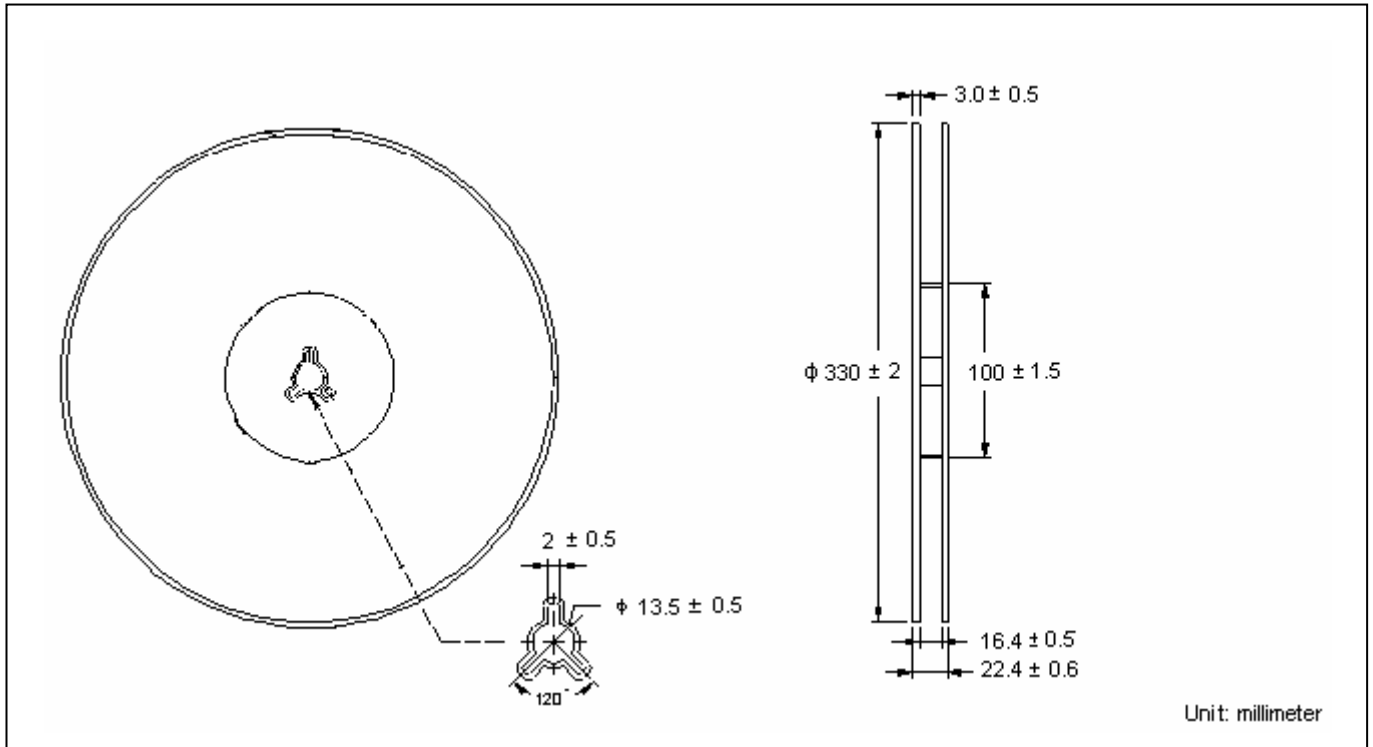
## Characteristic Curves



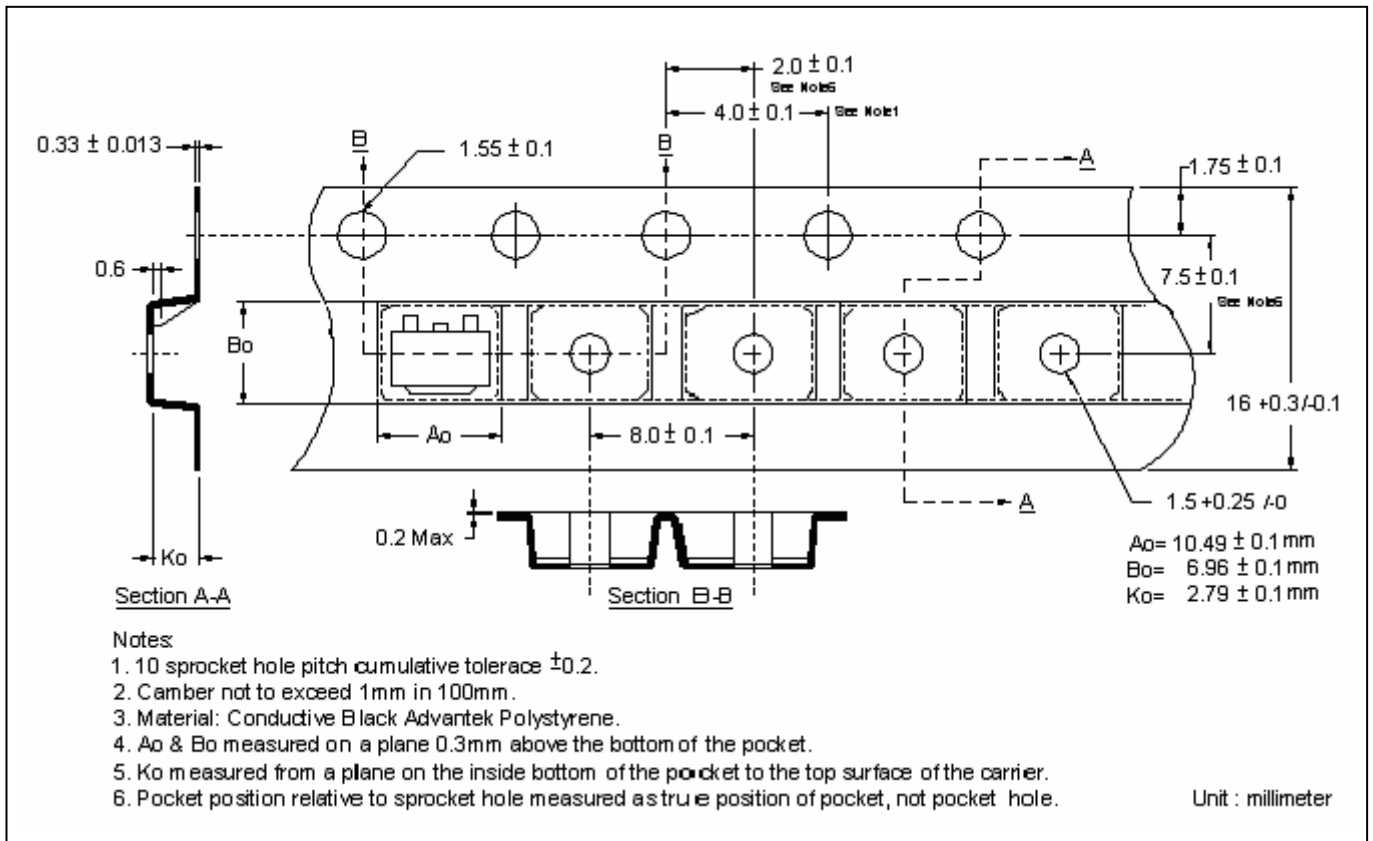
## Characteristic Curves(Cont.)



**Reel Dimension**



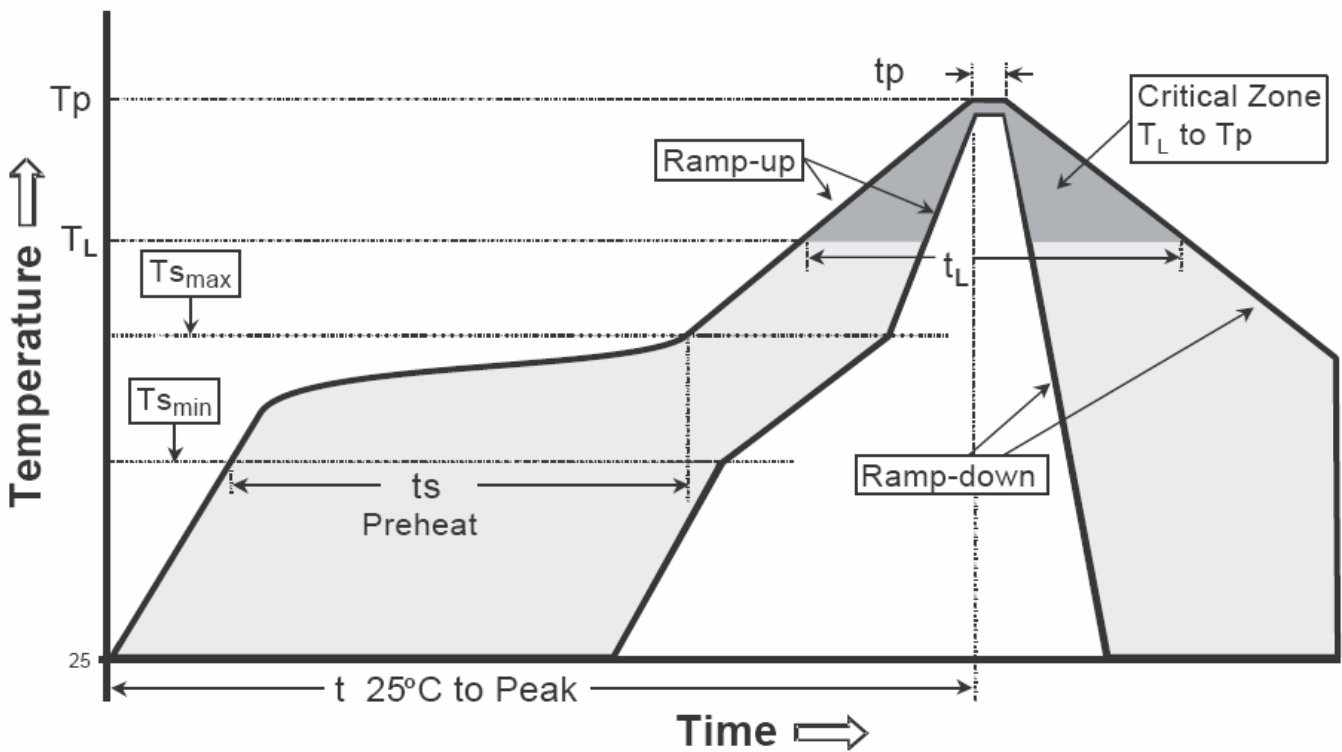
**Carrier Tape Dimension**



**Recommended wave soldering condition**

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

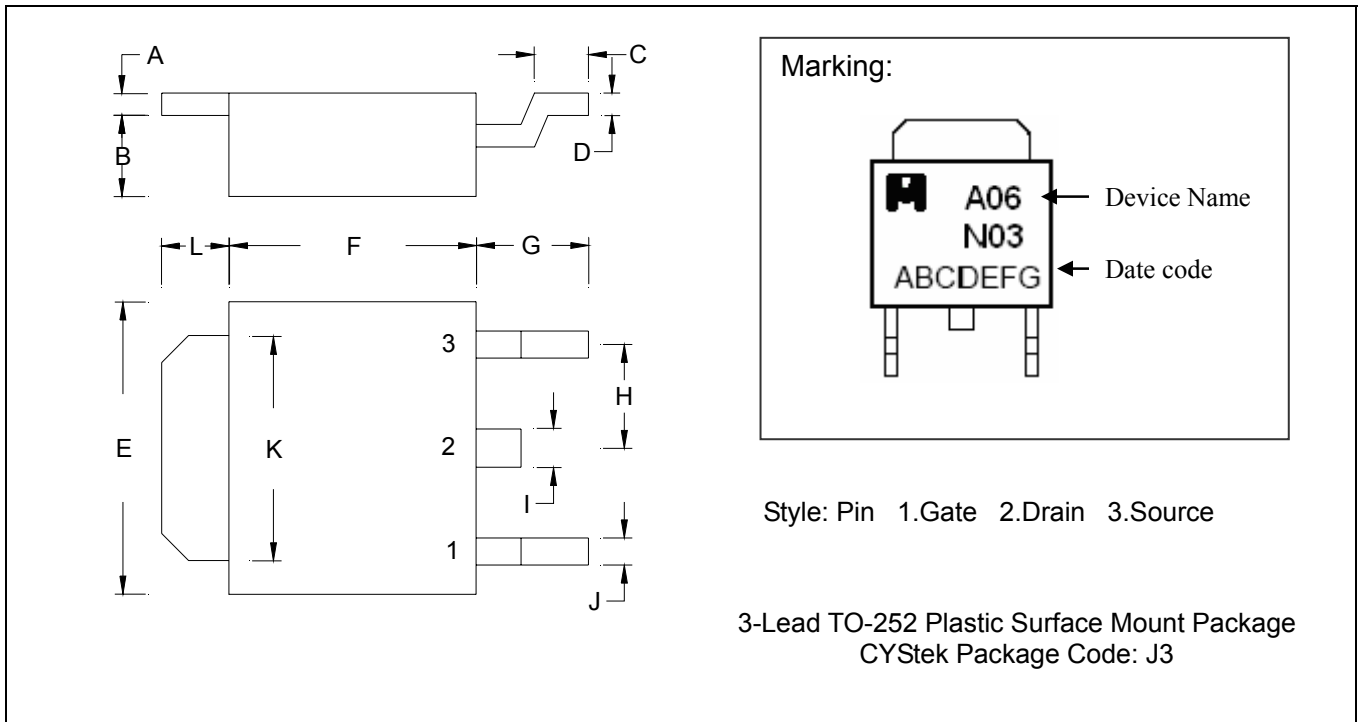
**Recommended temperature profile for IR reflow**



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate ( $T_{smax}$ to $T_p$ )	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min( $T_s$ min)	100°C	150°C
-Temperature Max( $T_s$ max)	150°C	200°C
-Time( $t_{s min}$ to $t_{s max}$ )	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature ( $T_L$ )	183°C	217°C
- Time ( $t_L$ )	60-150 seconds	60-150 seconds
Peak Temperature( $T_P$ )	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature( $t_p$ )	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

**TO-252 Dimension**



\*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0177	0.0217	0.45	0.55	G	0.0866	0.1102	2.20	2.80
B	0.0650	0.0768	1.65	1.95	H	-	*0.0906	-	*2.30
C	0.0354	0.0591	0.90	1.50	I	-	0.0449	-	1.14
D	0.0177	0.0236	0.45	0.60	J	-	0.0346	-	0.88
E	0.2441	0.2677	6.20	6.80	K	0.2047	0.2165	5.20	5.50
F	0.2125	0.2283	5.40	5.80	L	0.0551	0.0630	1.40	1.60

- Notes:**
- 1.Controlling dimension: millimeters.
  - 2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
  - 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

**Material:**

- Lead : KFC; pure tin plated
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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