



New Product

Si4411DY
Vishay Siliconix

P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
- 30	0.010 at $V_{GS} = - 10$ V	- 13
	0.0155 at $V_{GS} = - 4.5$ V	- 10

FEATURES

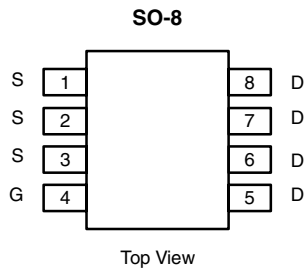
- TrenchFET[®] Power MOSFET

APPLICATIONS

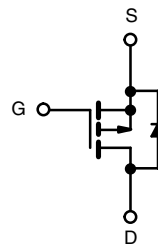
- Notebook
 - Load Switch
 - Battery Switch



RoHS*
COMPLIANT



Ordering Information: Si4411DY-T1
Si4411DY-T1-E3 (Lead (Pb)-free)



ABSOLUTE MAXIMUM RATINGS $T_A = 25$ °C, unless otherwise noted					
Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	- 30		V
Gate-Source Voltage		V_{GS}	± 20		
Continuous Drain Current ($T_J = 150$ °C) ^a	$T_A = 25$ °C	I_D	- 13	- 9	A
	$T_A = 70$ °C		- 10.5	- 7.5	
Pulsed Drain Current		I_{DM}	- 50		
Continuous Source Current (Diode Conduction) ^a		I_S	- 2.7	- 1.36	
Maximum Power Dissipation ^a	$T_A = 25$ °C	P_D	3.0	1.5	W
	$T_A = 70$ °C		1.9	0.95	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 150		°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	$t \leq 10$ sec	R_{thJA}	33	42	°C/W
	Steady State		70	85	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	16	21	

Notes

a. Surface Mounted on 1" x 1" FR4 Board.

* Pb containing terminations are not RoHS compliant, exemptions may apply.



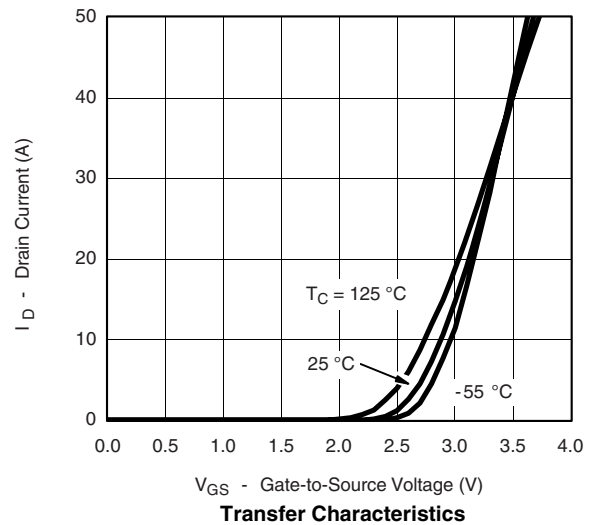
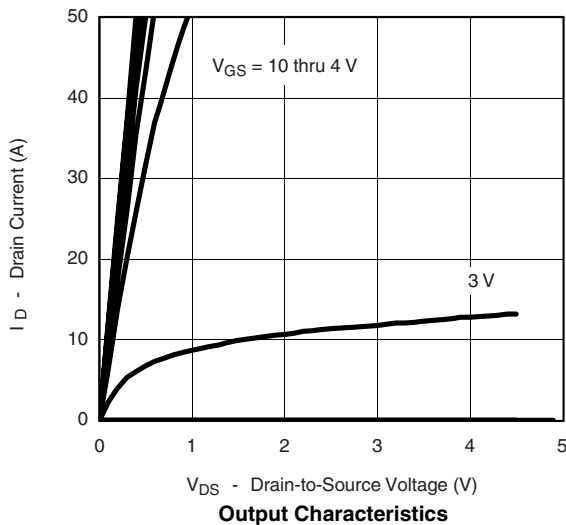
SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\text{ }\mu\text{A}$	-1.0		3.0	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -30\text{ V}, V_{GS} = 0\text{ V}$			-1	μA
		$V_{DS} = -30\text{ V}, V_{GS} = 0\text{ V}, T_J = 70\text{ }^\circ\text{C}$			-10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} = -5\text{ V}, V_{GS} = -10\text{ V}$	-30			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -13\text{ A}$		0.008	0.010	Ω
		$V_{GS} = -4.5\text{ V}, I_D = -10\text{ A}$		0.0125	0.0155	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -15\text{ V}, I_D = -13\text{ A}$		40		S
Diode Forward Voltage ^a	V_{SD}	$I_S = -2.7\text{ A}, V_{GS} = 0\text{ V}$		-0.74	-1.1	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = -15\text{ V}, V_{GS} = -5\text{ V}, I_D = -13\text{ A}$		43	65	nC
Gate-Source Charge	Q_{gs}			8.5		
Gate-Drain Charge	Q_{gd}			18.5		
Gate Resistance	R_g			3.4		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15\text{ V}, R_L = 15\text{ }\Omega$ $I_D \cong -1\text{ A}, V_{GEN} = -10\text{ V}, R_G = 6\text{ }\Omega$		18	30	ns
Rise Time	t_r			15	25	
Turn-Off Delay Time	$t_{d(off)}$			140	250	
Fall Time	t_f			75	120	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = -2.1\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		60	100	

Notes

- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.

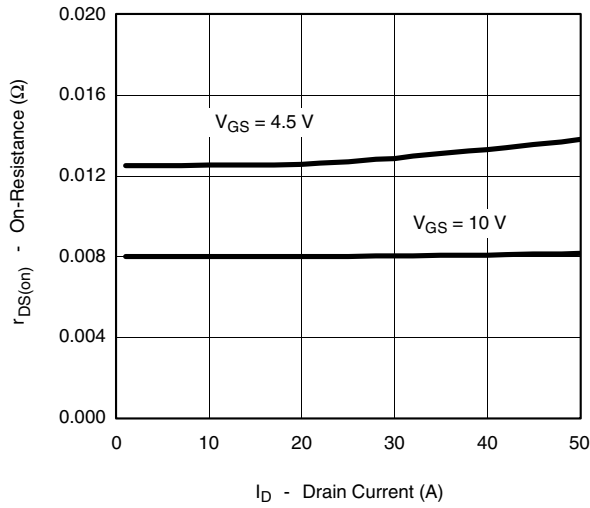
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS $25\text{ }^\circ\text{C}$, unless otherwise noted

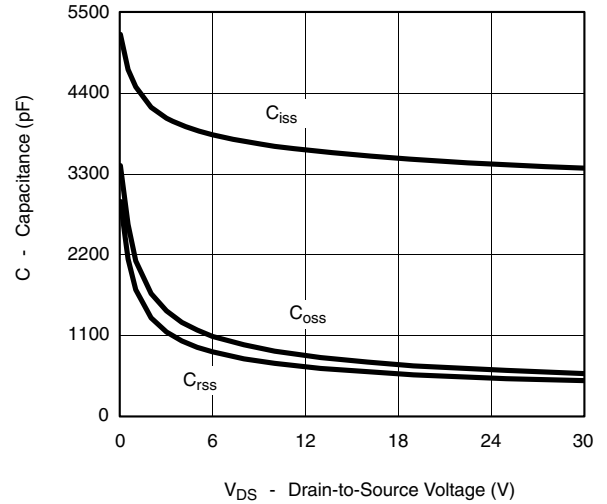




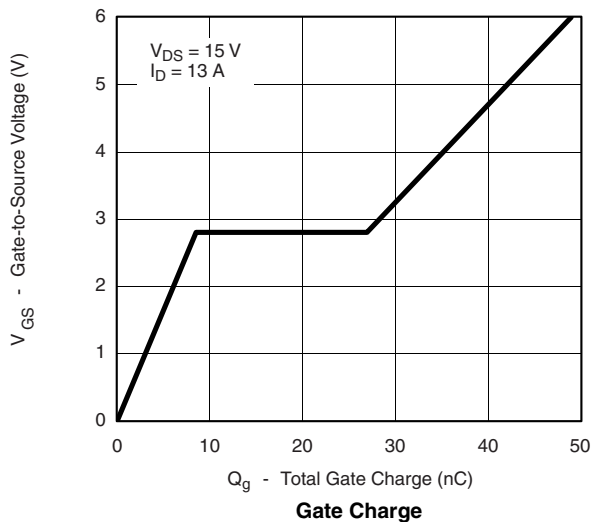
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



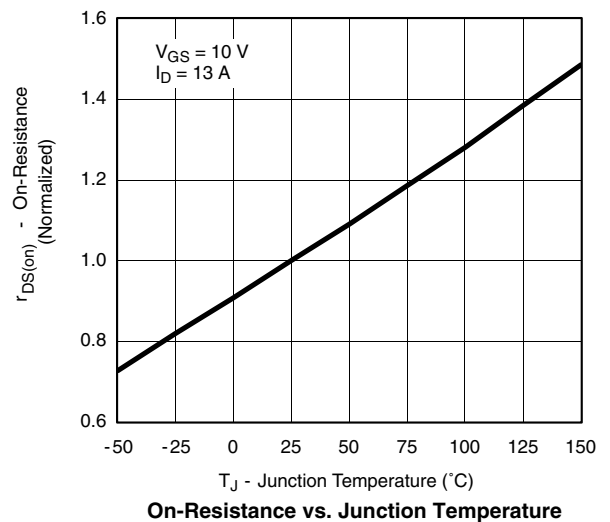
On-Resistance vs. Drain Current



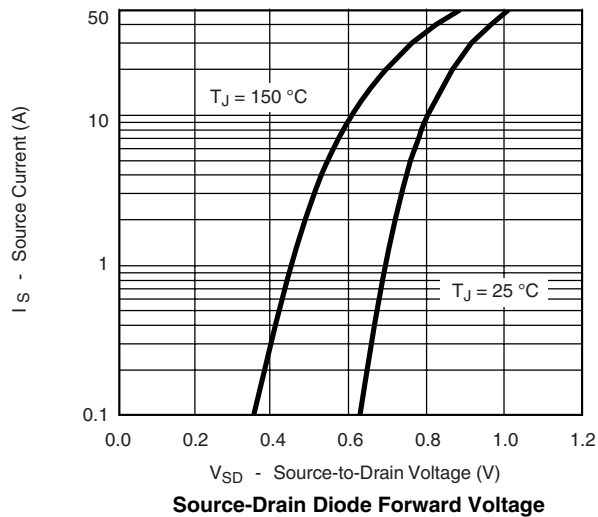
Capacitance



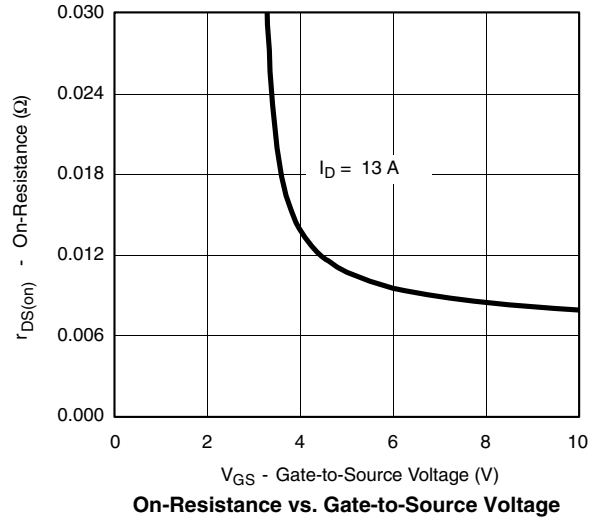
Gate Charge



On-Resistance vs. Junction Temperature



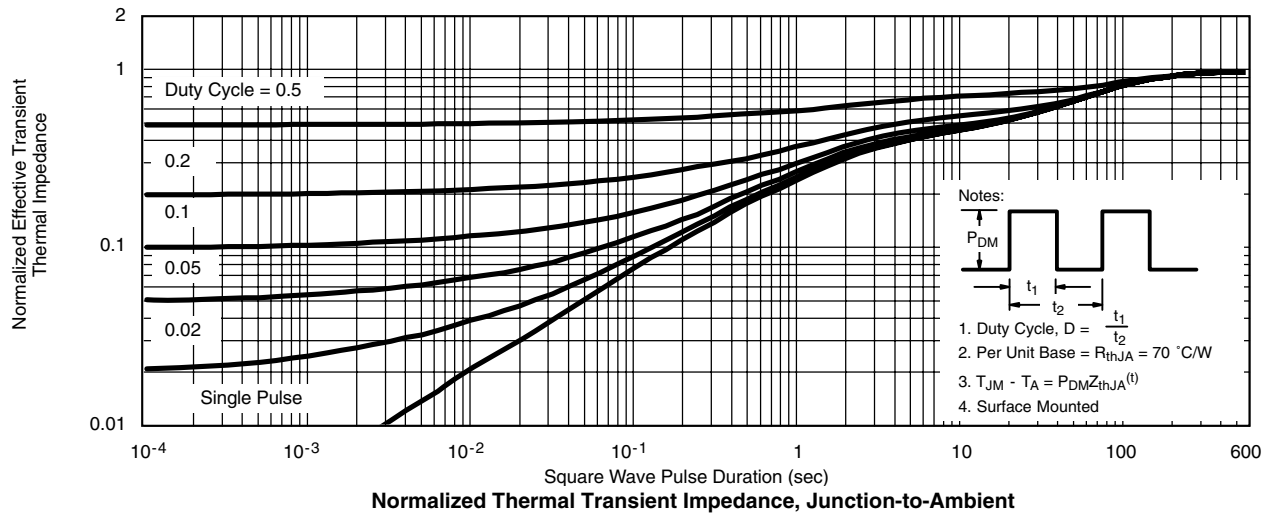
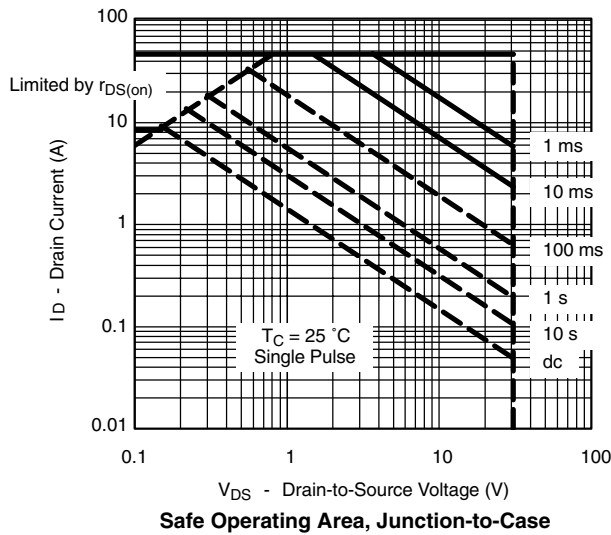
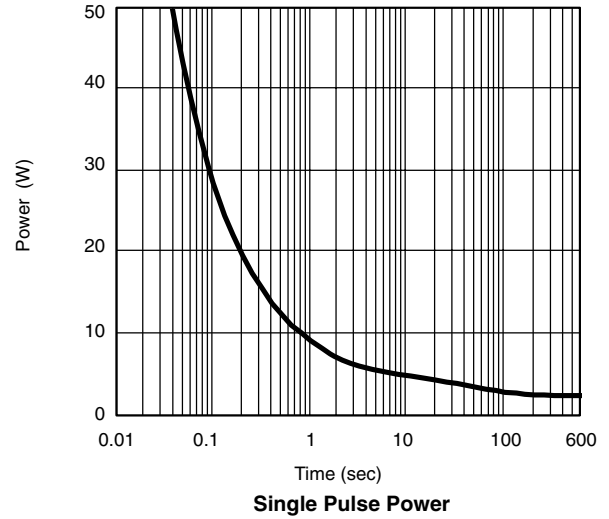
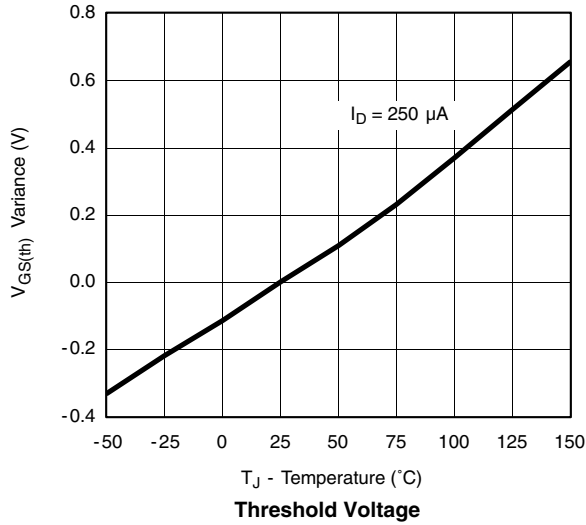
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

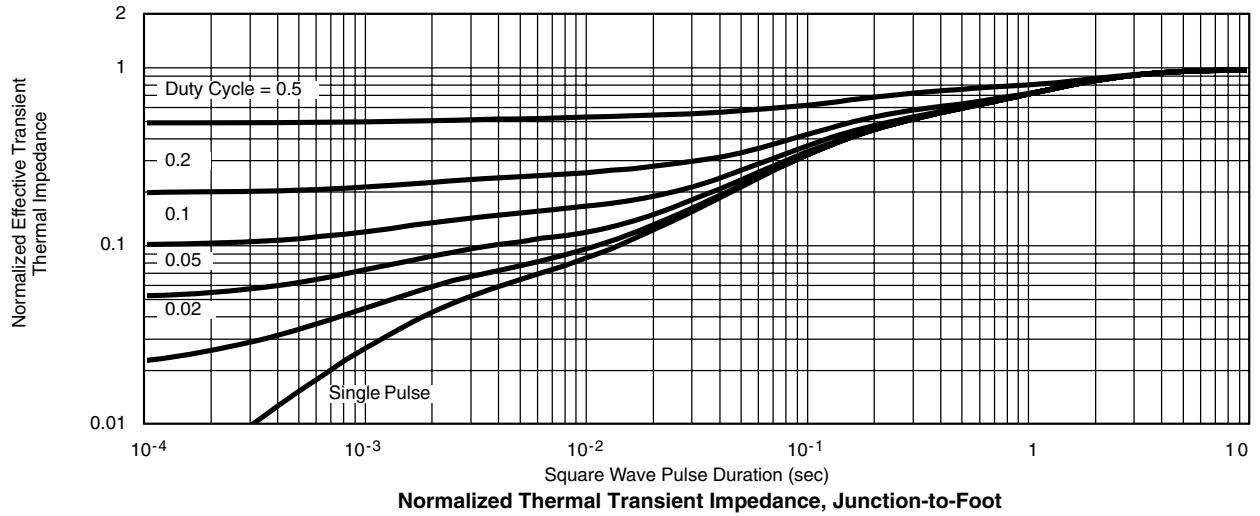


TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted





TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package/tape drawings, part marking, and reliability data, see <http://www.vishay.com/ppg?72149>.



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