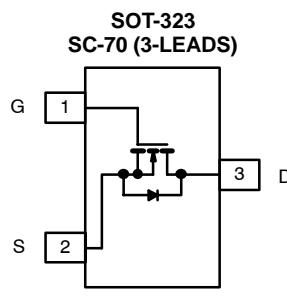


N-Channel 25-V (D-S) MOSFET

TrenchFET®
Power MOSFETs

PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)	Q_g (Typ)
25	0.350 @ $V_{GS} = 4.5$ V	0.75	1.3
	0.450 @ $V_{GS} = 2.5$ V	0.66	



Marking Code

 Lot Traceability and Date Code
 Part # Code

Top View

Ordering Information: Si1304DL-T1

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	5 secs	Steady State	Unit
Drain-Source Voltage	V_{DS}	25		V
Gate-Source Voltage	V_{GS}			
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	I_D	0.75	0.70	A
		0.60	0.56	
Pulsed Drain Current	I_{DM}	3.0		
Continuous Diode Current (Diode Conduction) ^a	I_S	0.28	0.24	
Maximum Power Dissipation ^a	P_D	0.33	0.29	W
		0.21	0.19	
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	R_{thJA}	315	375	°C/W
		380	450	
Maximum Junction-to-Foot (Drain)	R_{thJF}	285	340	

Notes

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

SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

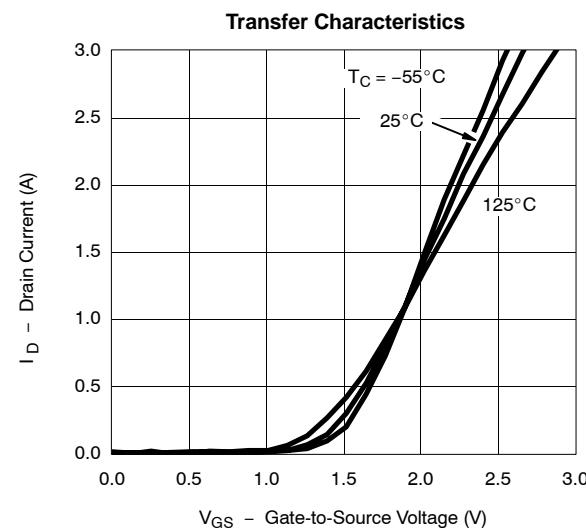
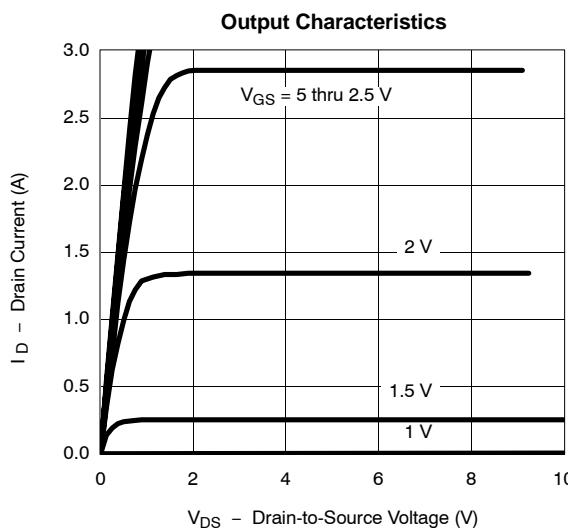
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	0.6		1.3	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 8 \text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 25 \text{ V}, V_{GS} = 0 \text{ V}$		1		μA
		$V_{DS} = 25 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 70^\circ\text{C}$		5		
On-State Drain Current ^a	$I_{D(\text{on})}$	$V_{DS} = 5 \text{ V}, V_{GS} = 4.5 \text{ V}$	3.0			A
Drain-Source On-State Resistance ^a	$r_{DS(\text{on})}$	$V_{GS} = 4.5 \text{ V}, I_D = 0.75 \text{ A}$		0.280	0.350	Ω
		$V_{GS} = 2.5 \text{ V}, I_D = 0.50 \text{ A}$		0.355	0.450	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15 \text{ V}, I_D = 0.75 \text{ A}$		1.5		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 0.24 \text{ A}, V_{GS} = 0 \text{ V}$		0.8	1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = 15 \text{ V}, V_{GS} = 4.5 \text{ V}, I_D = 0.75 \text{ A}$		1.3	2.0	nC
Gate-Source Charge	Q_{gs}			0.31		
Gate-Drain Charge	Q_{gd}			0.5		
Turn-On Delay Time	$t_{d(\text{on})}$	$V_{DD} = 15 \text{ V}, R_L = 20 \Omega$ $I_D \approx 0.75 \text{ A}, V_{GEN} = 4.5 \text{ V}, R_g = 6 \Omega$		11	20	ns
Rise Time	t_r			18	30	
Turn-Off Delay Time	$t_{d(\text{off})}$			17	30	
Fall Time	t_f			11	20	
Source-Drain Reverse Recovery Time	t_{rr}		$I_F = 0.24 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$	30	60	

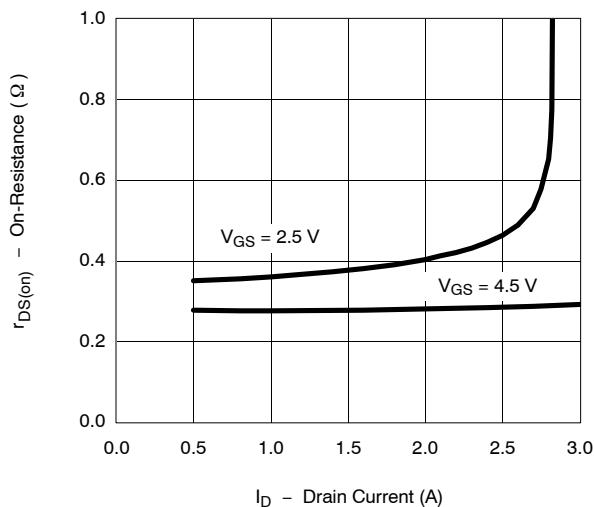
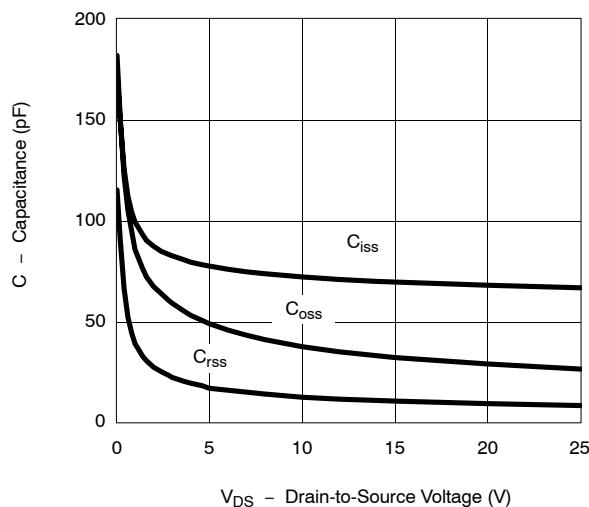
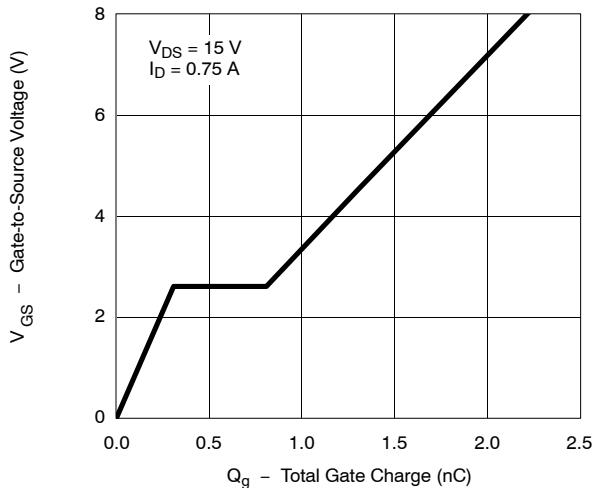
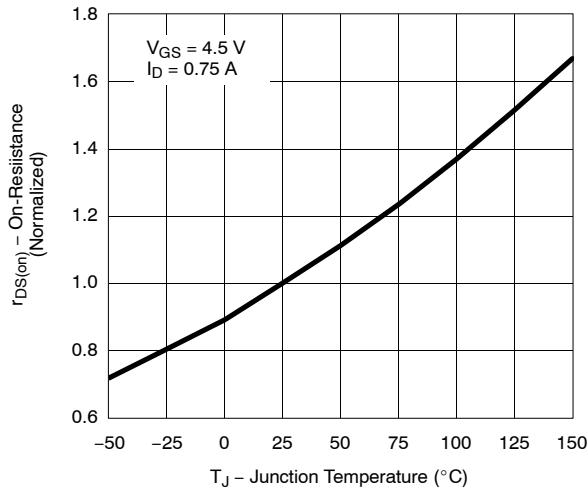
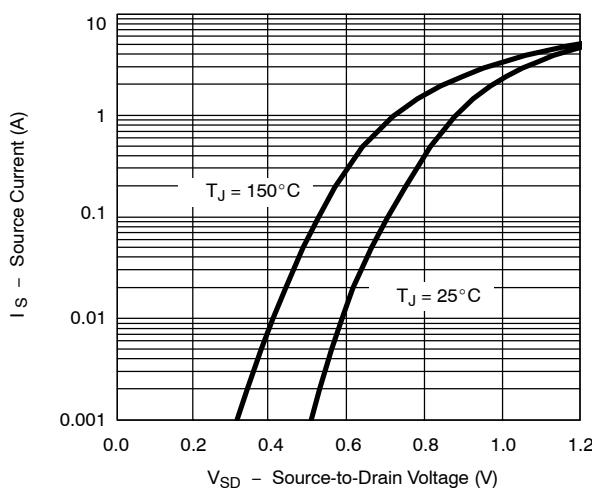
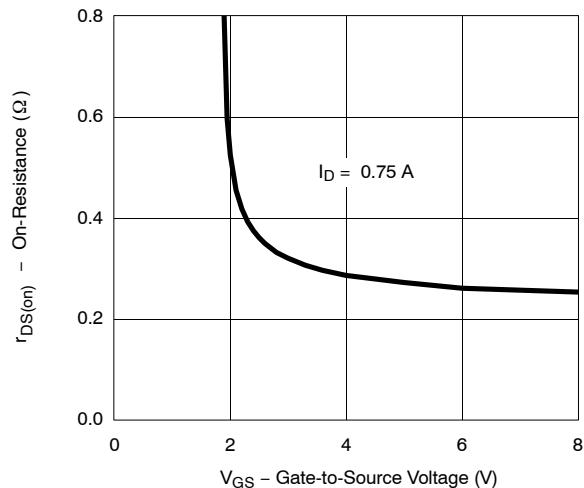
Notes

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

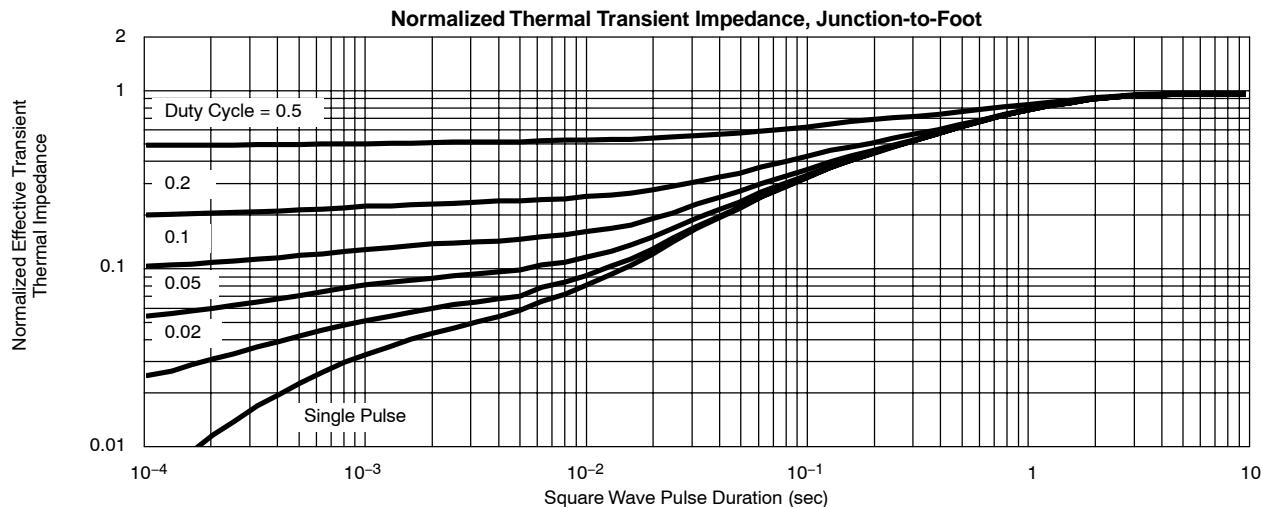
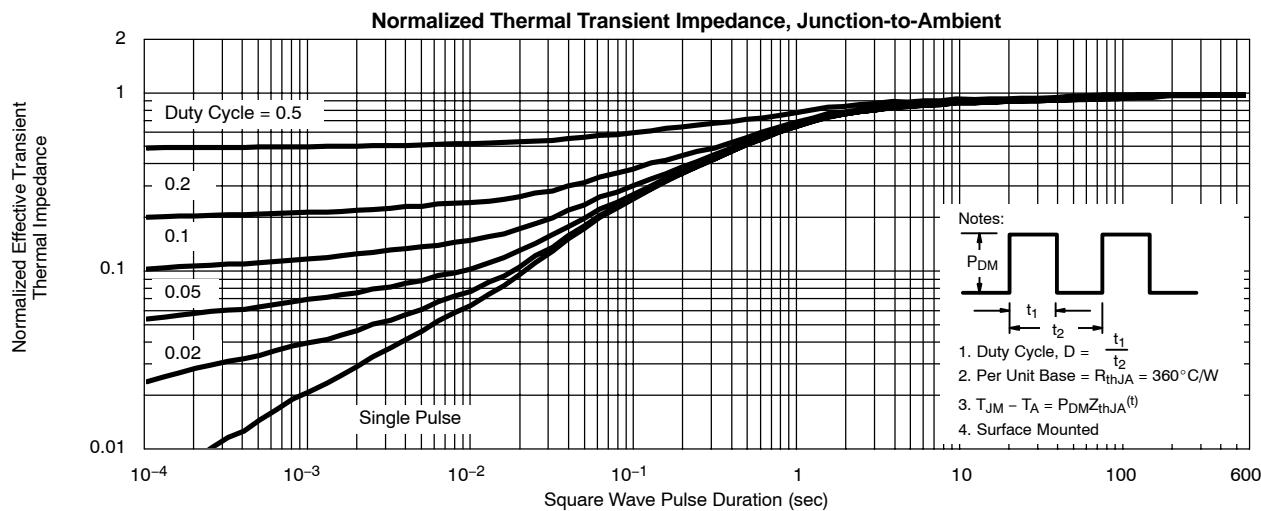
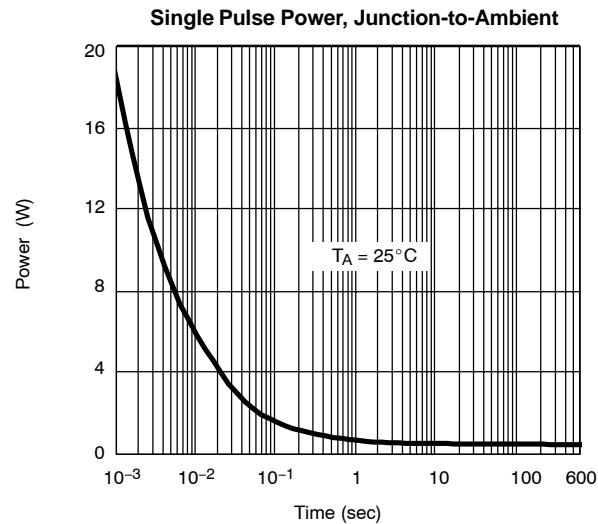
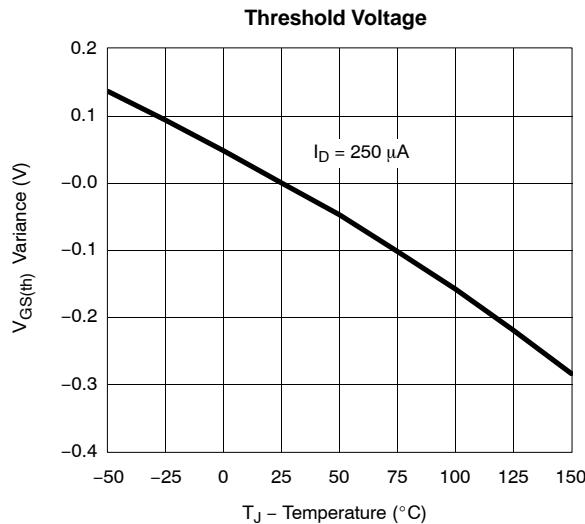
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



TYPICAL CHARACTERISTICS (25°C UNLESS 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 NOTED)



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