P-Channel 2.5-V (G-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
- 20	0.430 at V_{GS} = - 4.5 V	- 0.72
	0.480 at V_{GS} = - 3.6 V	- 0.68
	0.700 at V_{GS} = - 2.5 V	- 0.56

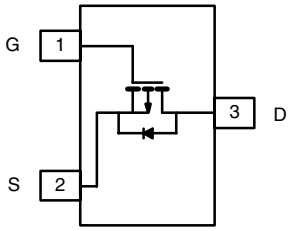
FEATURES

- TrenchFET® Power MOSFETs
- 2.5 V Rated

Pb-free Available

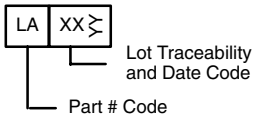
RoHS* COMPLIANT

SOT-323
SC-70 (3-LEADS)



Top View

Marking Code



Ordering Information: Si1303DL-T1
Si1303DL-T1-E3 (Lead (Pb)-free)

ABSOLUTE MAXIMUM RATINGS T_A = 25 °C, unless otherwise noted					
Parameter		**Symbol**	**5 sec**	**Steady State**	**Unit**
Drain-Source Voltage		V_{DS}	- 20		V
Gate-Source Voltage		V_{GS}	± 12		
Continuous Drain Current (T_J = 150 °C)[a]	T_A = 25 °C	I_D	- 0.72	- 0.67	A
	T_A = 70 °C		- 0.58	- 0.54	
Pulsed Drain Current		I_{DM}	- 2.5		
Continuous Diode Current (Diode Conduction)[a]		I_S	- 0.28	- 0.24	
Maximum Power Dissipation[a]	T_A = 25 °C	P_D	0.34	0.29	W
	T_A = 70 °C		0.22	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]	t ≤ 5 sec	R_{thJA}	315	375	°C/W
	Steady State		360	430	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	285	340	

Notes:
a. Surface Mounted on 1" x 1" FR4 board.

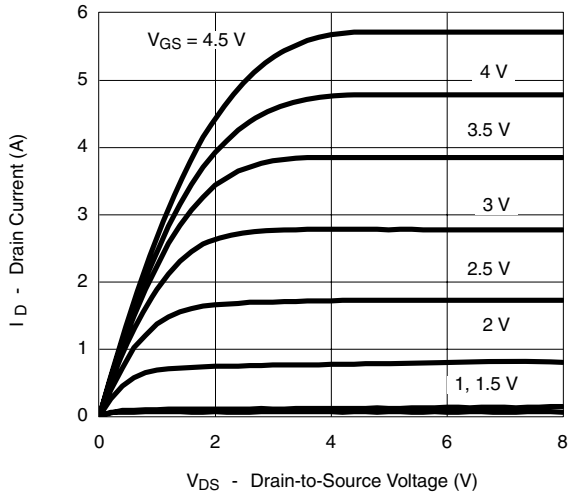
* Pb containing terminations are not RoHS compliant, exemptions may apply.

SPECIFICATIONS T_J = 25 °C, unless otherwise noted						
Parameter	**Symbol**	**Test Conditions**	**Min**	**Typ**	**Max**	**Unit**
Static						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = - 250 µA	- 0.6		- 1.4	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 12 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = - 20 V, V_{GS} = 0 V			- 1	µA
		V_{DS} = - 20 V, V_{GS} = 0 V, T_J = 70 °C			- 5	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} = - 5 V, V_{GS} = - 4.5 V	- 2.5			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = - 4.5 V, I_D = - 1 A		0.360	0.430	Ω
		V_{GS} = - 3.6 V, I_D = - 0.7 A		0.400	0.480	
		V_{GS} = - 2.5 V, I_D = - 0.3 A		0.560	0.700	
Forward Transconductance[a]	g_{fs}	V_{GS} = - 10 V, I_D = - 1 A		1.7		S
Diode Forward Voltage[a]	V_{SD}	I_S = - 0.3 A, V_{GS} = 0 V			- 1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = - 10 V, V_{GS} = - 4.5 V, I_D = - 1 A		1.7	2.2	nC
Gate-Source Charge	Q_{gs}			0.38		
Gate-Drain Charge	Q_{gd}			0.63		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = - 10 V, R_L = 10 Ω $I_D \cong$ - 1 A, V_{GEN} = - 4.5 V, R_G = 6 Ω		9	15	ns
Rise Time	t_r			31	45	
Turn-Off DelayTime	$t_{d(off)}$			12.5	20	
Fall Time	t_f			14	20	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = - 1 A, di/dt = 100 A/µs		35	55	

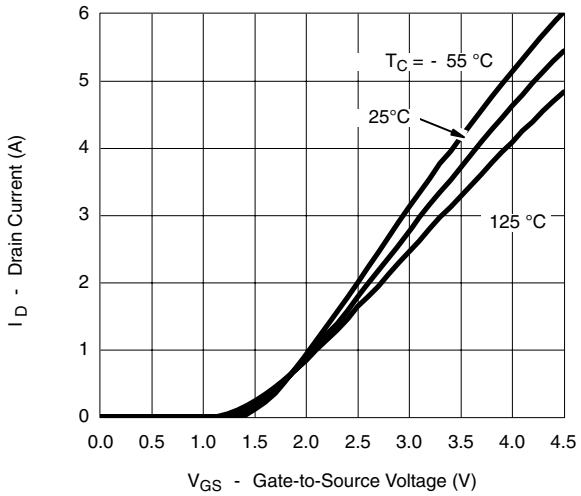
Notes:
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.

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

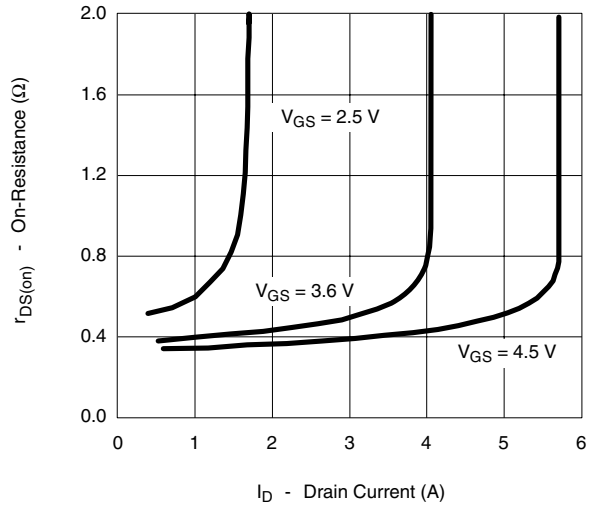


Output Characteristics

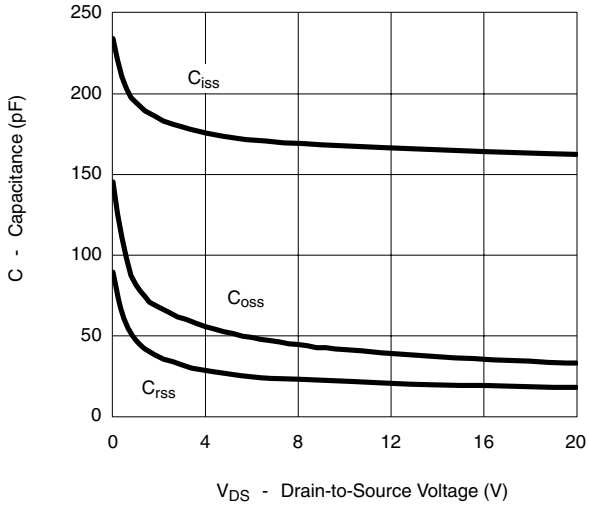


Transfer Characteristics

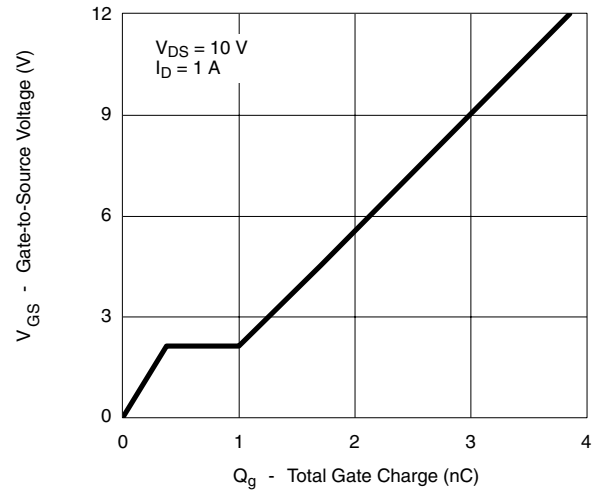
TYPICAL CHARACTERISTICS 25 °C, unless noted



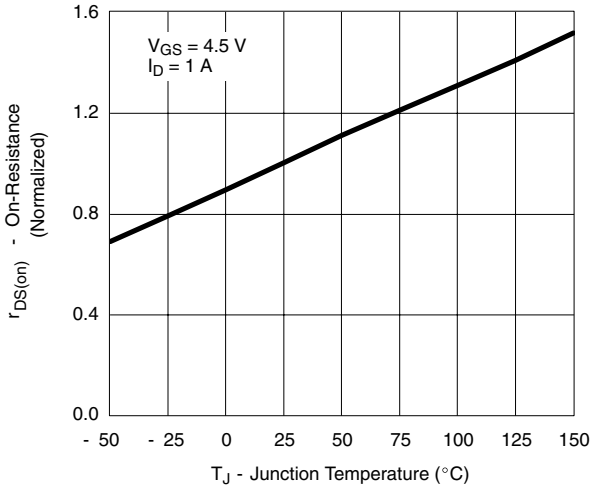
On-Resistance vs. Drain Current



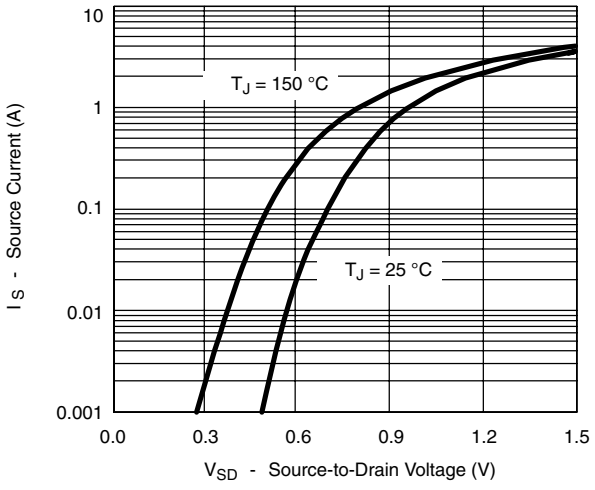
Capacitance



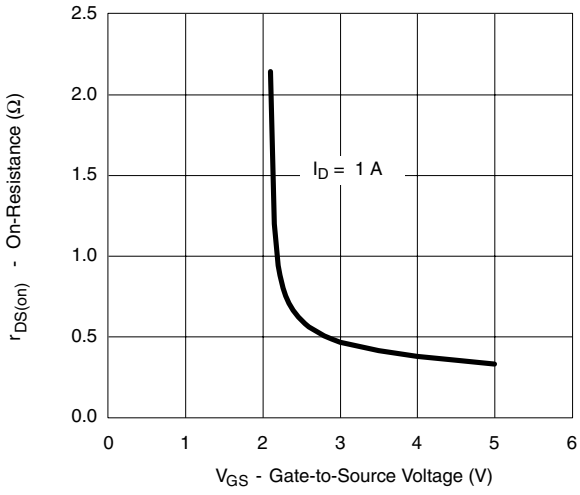
Gate Charge



On-Resistance vs. Junction Temperature

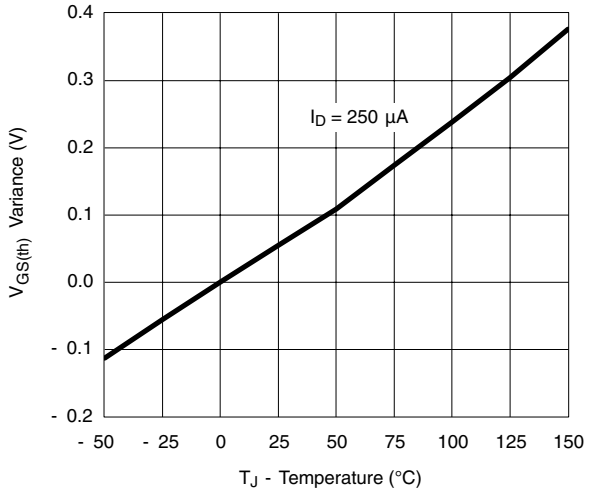


Source-Drain Diode Forward Voltage

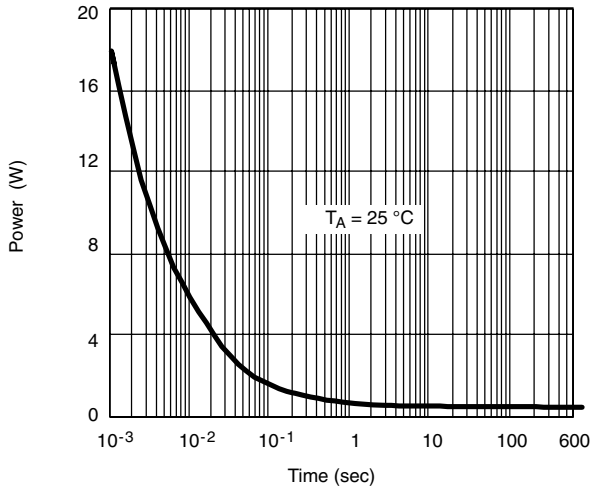


On-Resistance vs. Gate-to-Source Voltage

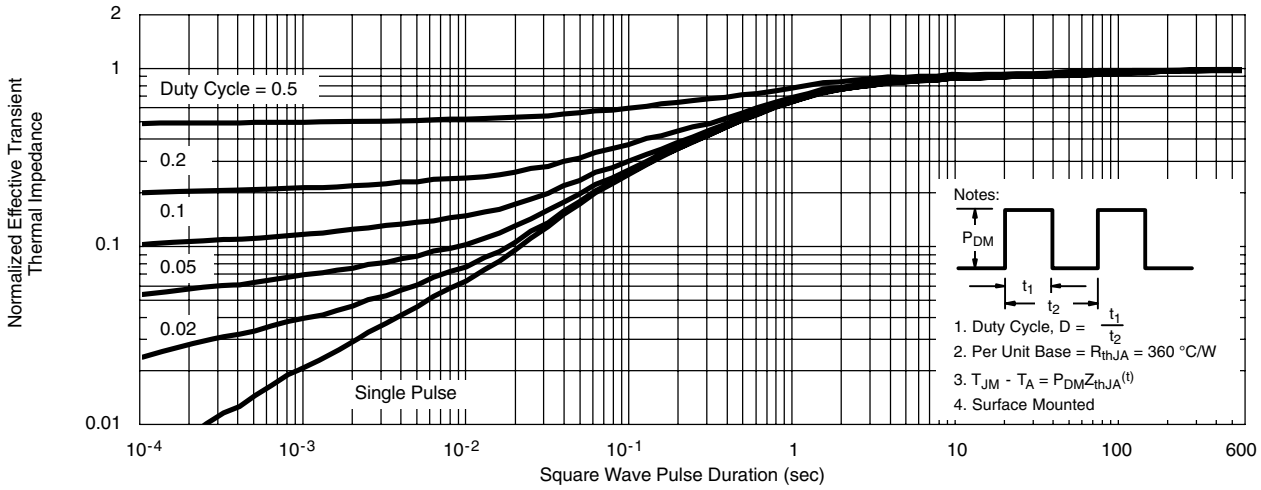
TYPICAL CHARACTERISTICS 25 °C, unless noted



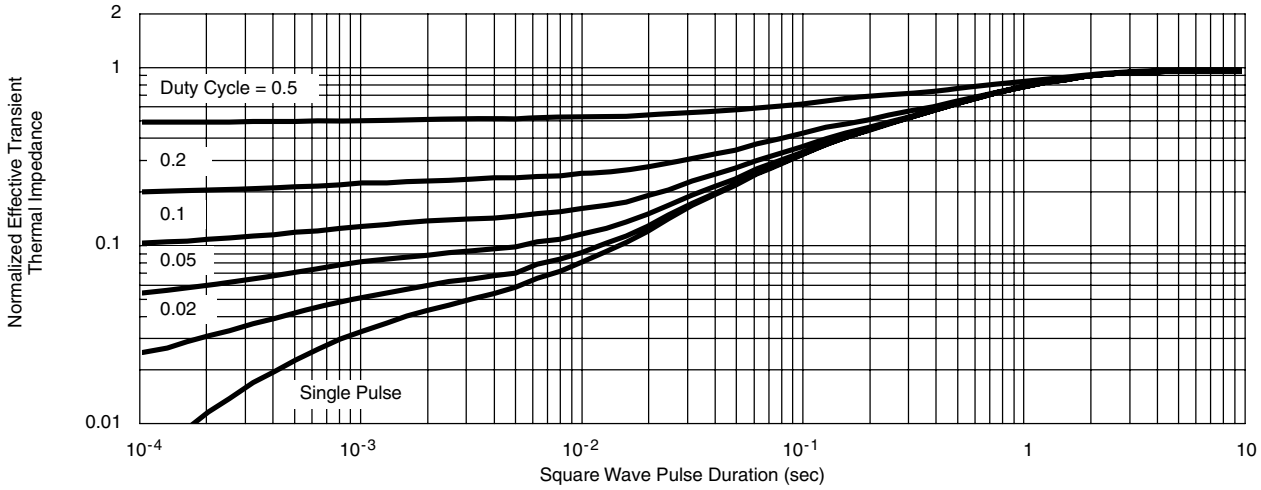
Threshold Voltage



Single Pulse Powert



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

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