P-Channel 1.8 V (G-S) MOSFET

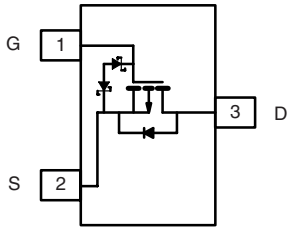
PRODUCT SUMMARY		
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
- 12	0.290 at V_{GS} = - 4.5 V	± 0.91
	0.435 at V_{GS} = - 2.5 V	± 0.74
	0.580 at V_{GS} = - 1.8 V	± 0.64

FEATURES

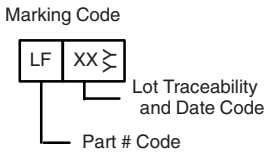
- **Halogen-free According to IEC 61249-2-21 Definition**
- ESD Protection: 3000 V
- Compliant to RoHS Directive 2002/95/EC

Pb-free
RoHS COMPLIANT
HALOGEN FREE Available

SOT-323
SC-70 (3-LEADS)



Top View



Ordering Information: Si1307EDL-T1-E3 (Lead (Pb)-free)
Si1307EDL-T1-GE3 (Lead (Pb)-free and Halogen-free)

ABSOLUTE MAXIMUM RATINGS T_A = 25 °C, unless otherwise noted					
Parameter		**Symbol**	**5 s**	**Steady State**	**Unit**
Drain-Source Voltage		V_{DS}	- 12		V
Gate-Source Voltage		V_{GS}	± 8		
Continuous Drain Current (T_J = 150 °C)[a]	T_A = 25 °C	I_D	± 0.91	± 0.85	A
	T_A = 70 °C		± 0.72	± 0.68	
Pulsed Drain Current		I_{DM}	± 3		
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 s	R_{thJA}	315	375	°C/W
	Steady State		360	430	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	285	340	

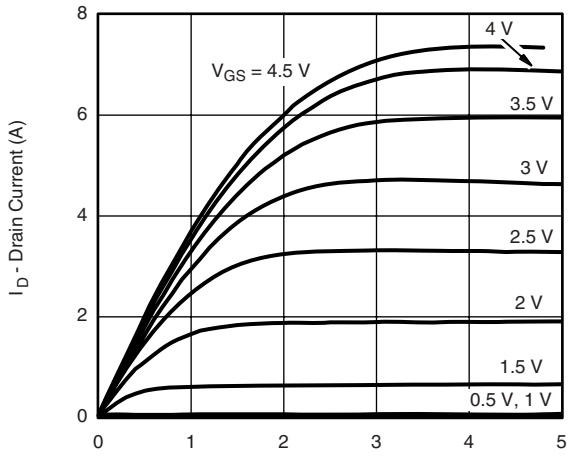
Notes:
a. Surface mounted on 1" x 1" FR4 board.

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	- 0.45			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 4.5 V			± 1	µA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = - 9.6 V, V_{GS} = 0 V			- 1	µA
		V_{DS} = - 9.6 V, V_{GS} = 0 V, T_J = 70 °C			- 5	µA
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} - 5 V, V_{GS} = - 4.5 V	- 3			A
Drain-Source On-State Resistance[a]	$R_{DS(on)}$	V_{GS} = - 4.5 V, I_D = - 1 A		0.240	0.290	Ω
		V_{GS} = - 2.5 V, I_D = - 0.5 A		0.350	0.435	Ω
		V_{GS} = - 1.8 V, I_D = - 0.3 A		0.480	0.580	Ω
Forward Transconductance[a]	g_{fs}	V_{DS} = - 5 V, I_D = - 1 A		3.5		S
Diode Forward Voltage[a]	V_{SD}	I_S = - 1 A, V_{GS} = 0 V			- 1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = - 6 V, V_{GS} = - 4.5 V, I_D = - 1 A		3.2	5	nC
Gate-Source Charge	Q_{gs}			0.69		nC
Gate-Drain Charge	Q_{gd}			0.61		nC
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = - 6 V, R_L = 6 Ω $I_D \cong$ - 1 A, V_{GEN} = - 4.5 V, R_g = 6 Ω		210	340	ns
Rise Time	t_r			450	720	ns
Turn-Off Delay Time	$t_{d(off)}$			910	1550	ns
Fall Time	t_f			1000	1600	ns
Source-Drain Reverse Recovery Time	t_{rr}	I_F = - 1 A, dI/dt = 100 A/µs		540	860	ns

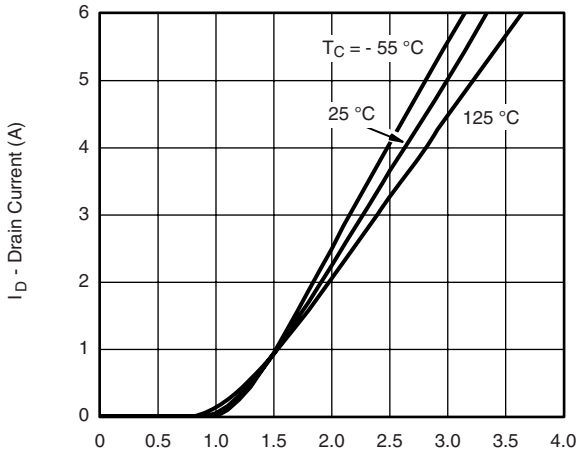
Notes:
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.

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 otherwise noted

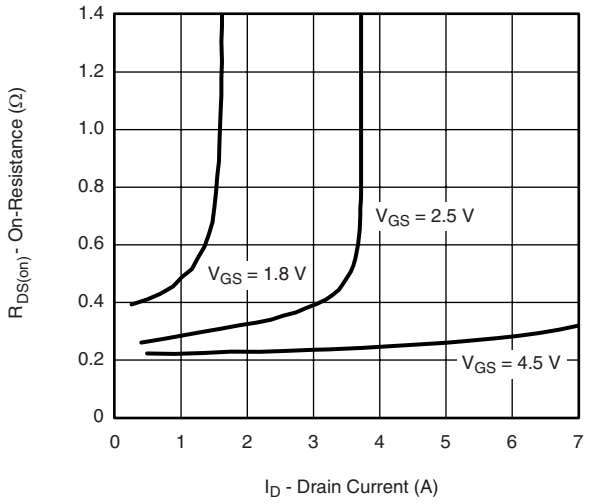


Output Characteristics

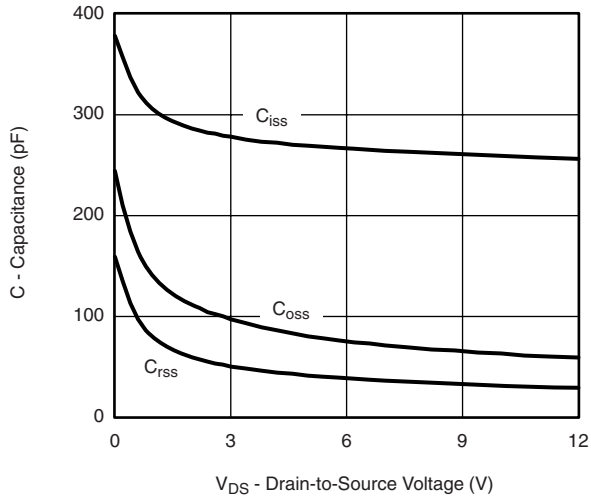


Transfer Characteristics

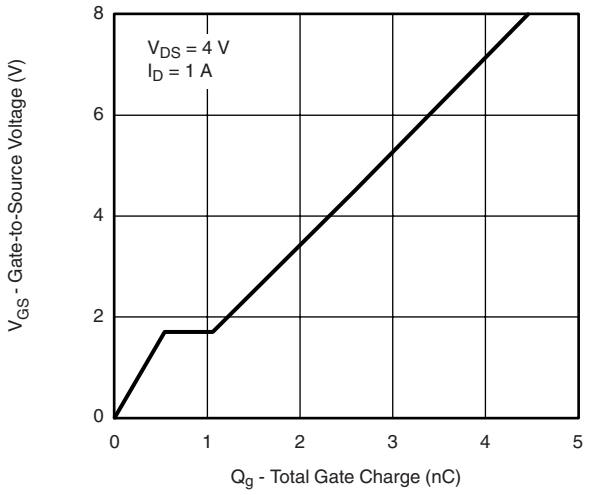
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



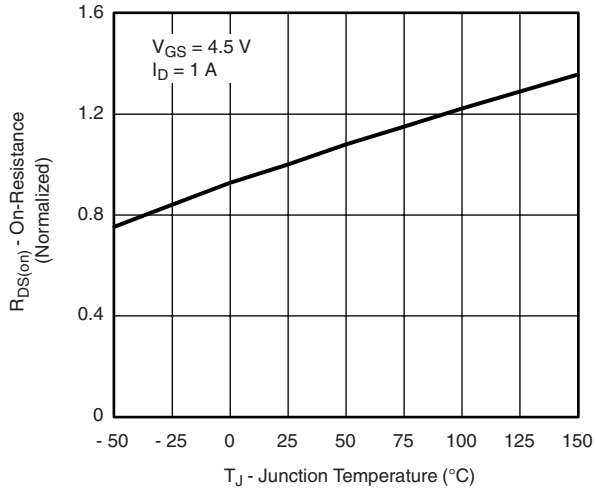
On-Resistance vs. Drain Current



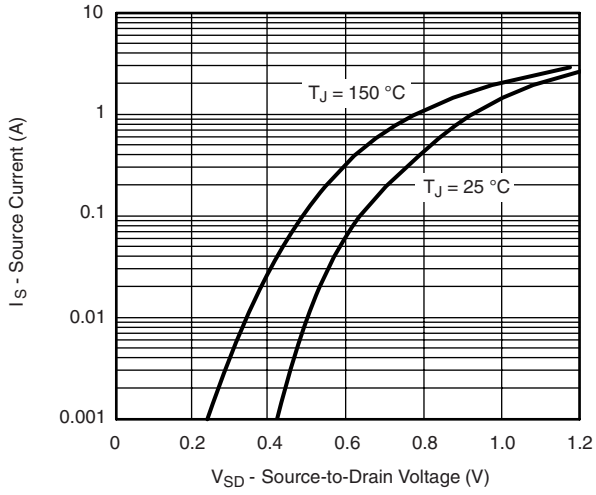
Capacitance



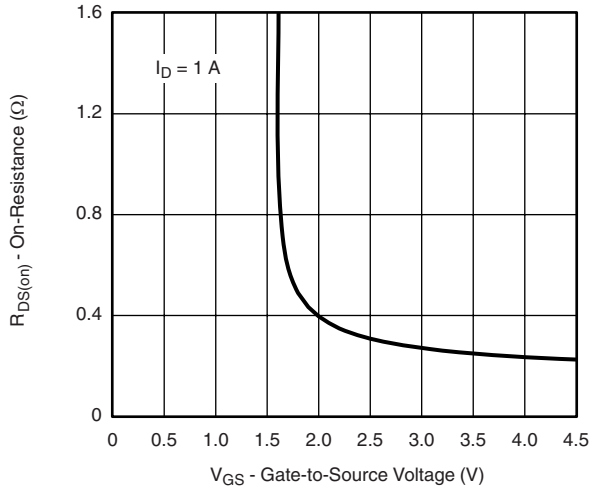
Gate Charge



On-Resistance vs. Junction Temperature

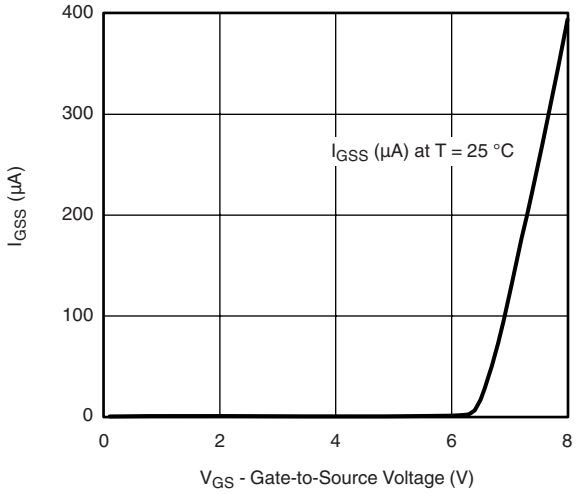


Source-Drain Diode Forward Voltage

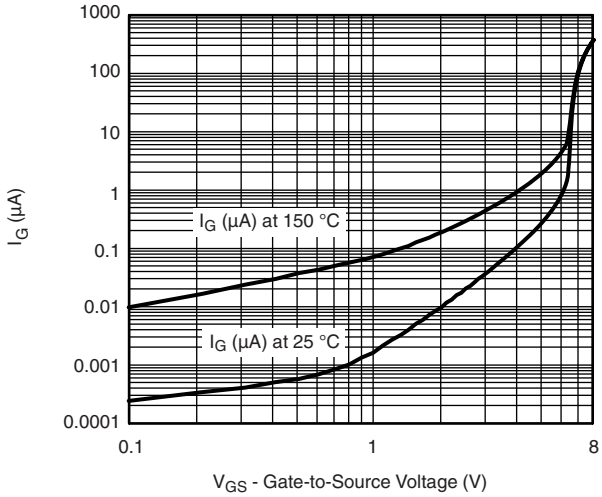


On-Resistance vs. Gate-Source Voltage

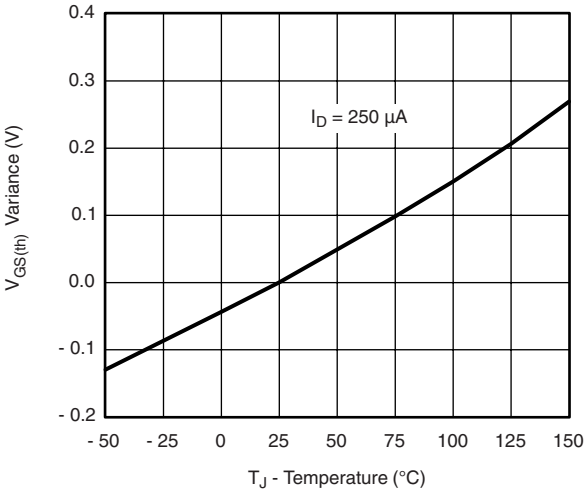
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



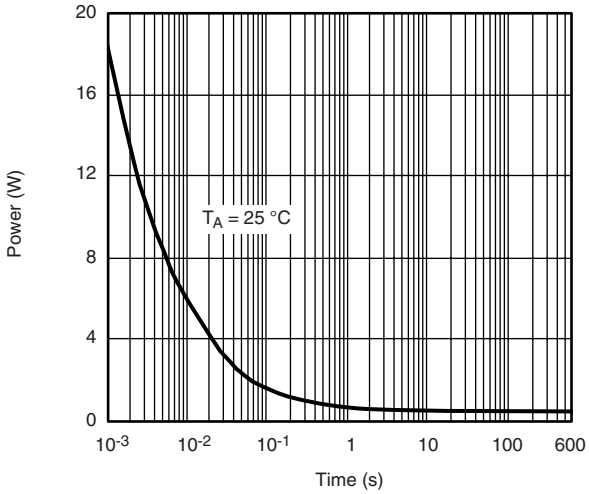
Gate-Current vs. Gate-to-Source Voltage



Gate-to-Source Voltage vs. Gate Current

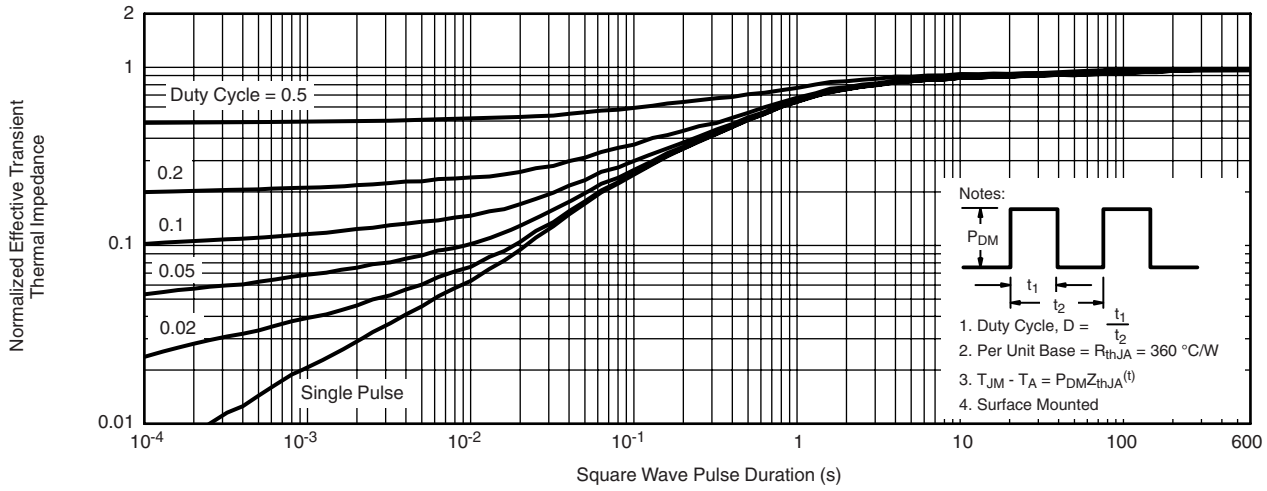


Threshold Voltage

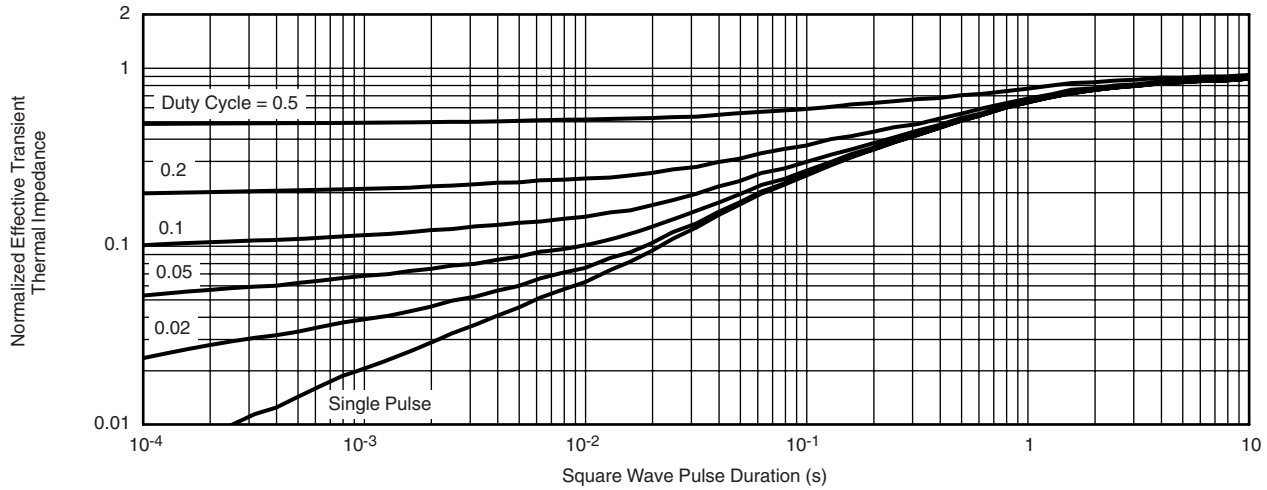


Single Pulse Power

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

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