Dual N-Channel 20 V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
20	0.280 at V_{GS} = 4.5 V	1.28
	0.360 at V_{GS} = 2.5 V	1.13
	0.450 at V_{GS} = 1.8 V	1.0

FEATURES

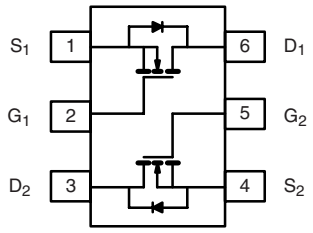
- **Halogen-free According to IEC 61249-2-21 Definition**
- TrenchFET® Power MOSFETs: 1.8 V Rated
- ESD Protected: 2000 V
- Thermally Enhanced SC-70 Package
- Compliant to RoHS Directive 2002/95/EC

Pb-free
RoHS COMPLIANT
HALOGEN FREE Available

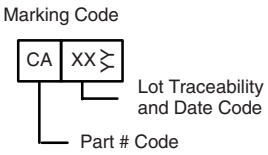
APPLICATIONS

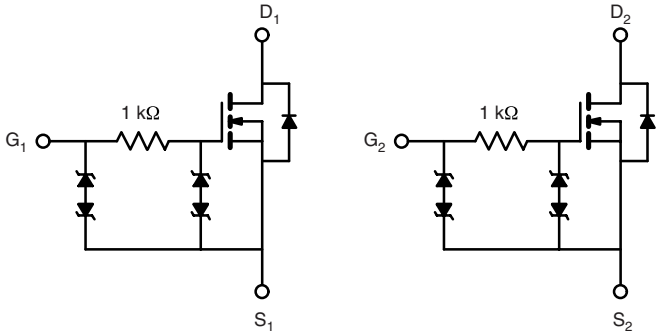
- Load Switching
- PA Switch
- Level Switch

SOT-363
SC-70 (6-LEADS)



Top View





Ordering Information: Si1912EDH-T1-E3 (Lead (Pb)-free)
Si1912EDH-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}	20		V
Gate-Source Voltage		V_{GS}	± 12		
Continuous Drain Current (T_J = 150 °C)[a]	T_A = 25 °C	I_D	1.28	1.13	A
	T_A = 85 °C		0.92	0.81	
Pulsed Drain Current		I_{DM}	4		
Continuous Diode-Current (Diode Conduction)[a]		I_S	0.61	0.48	
Maximum Power Dissipation[a]	T_A = 25 °C	P_D	0.74	0.57	W
	T_A = 85 °C		0.38	0.30	
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}	130	170	°C/W
	Steady State		170	220	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	80	100	

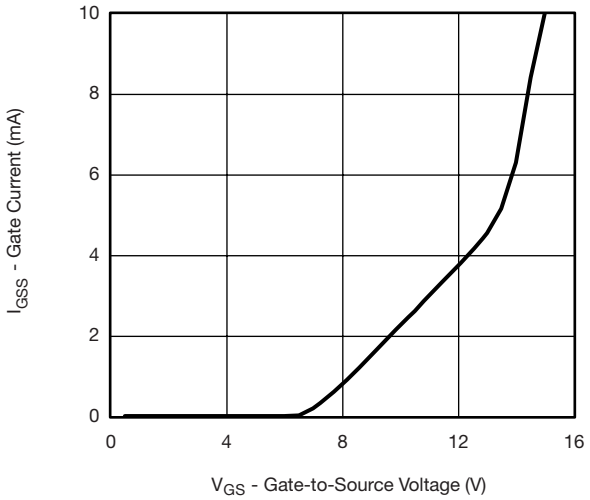
Notes:
a. Surface mounted on 1" x 1" FR4 board.

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 = 100 µA	0.45			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 4.5 V			± 1	µA
		V_{DS} = 0 V, V_{GS} = ± 12 V			± 10	mA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 16 V, V_{GS} = 0 V			1	µA
		V_{DS} = 16 V, V_{GS} = 0 V, T_J = 85 °C			5	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 4.5 V	2			A
Drain-Source On-State Resistance[a]	$R_{DS(on)}$	V_{GS} = 4.5 V, I_D = 1.13 A		0.220	0.280	Ω
		V_{GS} = 2.5 V, I_D = 0.99 A		0.281	0.360	
		V_{GS} = 1.8 V, I_D = 0.2 A		0.344	0.450	
Forward Transconductance[a]	g_{fs}	V_{DS} = 10 V, I_D = 1.13 A		2.6		S
Diode Forward Voltage[a]	V_{SD}	I_S = 0.48 A, V_{GS} = 0 V		0.8	1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = 10 V, V_{GS} = 4.5 V, I_D = 1.13 A		0.65	1	nC
Gate-Source Charge	Q_{gs}			0.2		
Gate-Drain Charge	Q_{gd}			0.23		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 10 V, R_L = 20 Ω I_D ≅ 0.5 A, V_{GEN} = 4.5 V, R_g = 6 Ω		45	70	ns
Rise Time	t_r			85	130	
Turn-Off Delay Time	$t_{d(off)}$			350	530	
Fall Time	t_f			210	320	

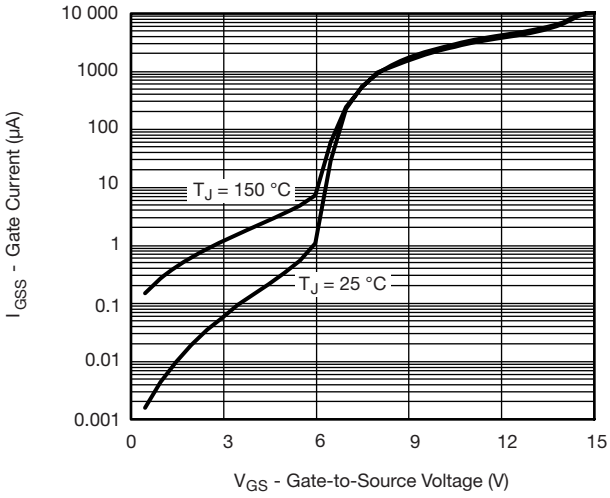
Notes
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %
b. Guaranteed by design, not subject to production testing.

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

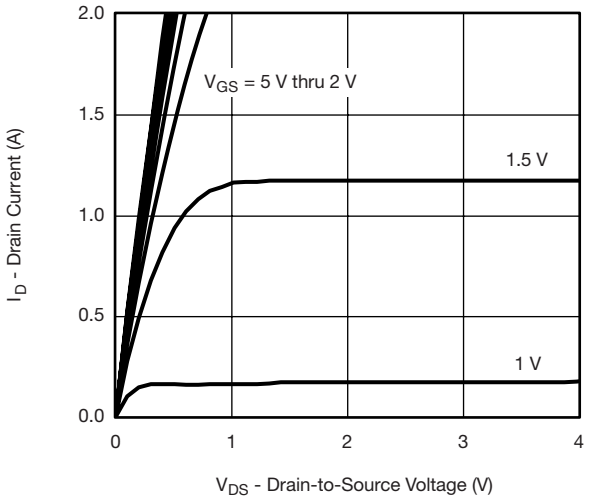


Gate Current vs. Gate-Source Voltage

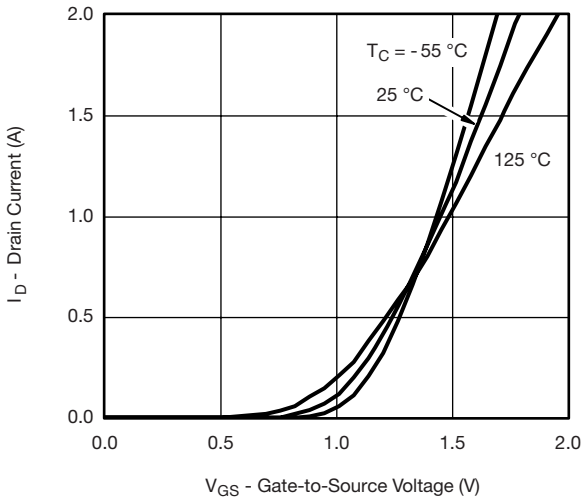


Gate Current vs. Gate-Source Voltage

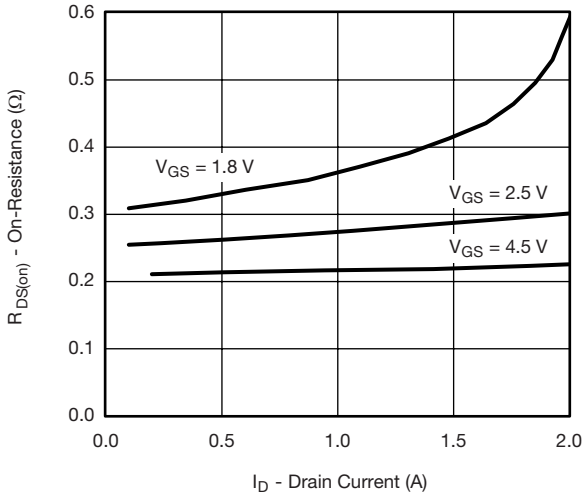
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



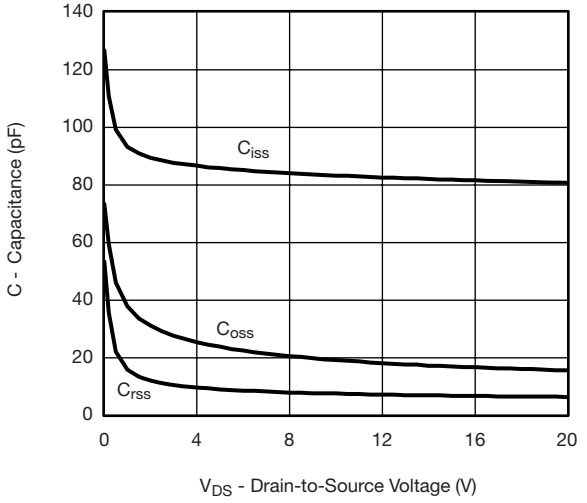
Output Characteristics



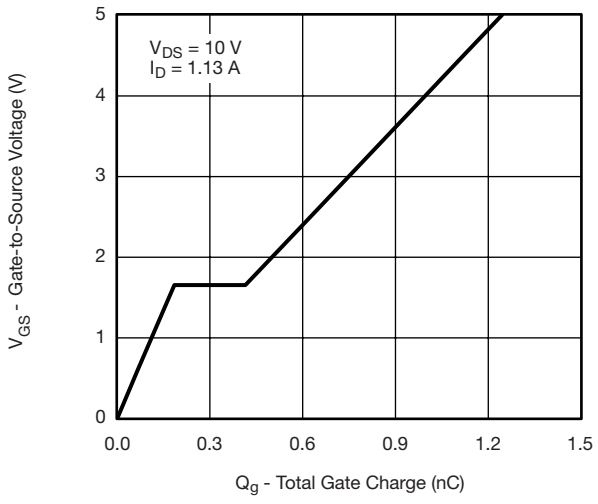
Transfer Characteristics



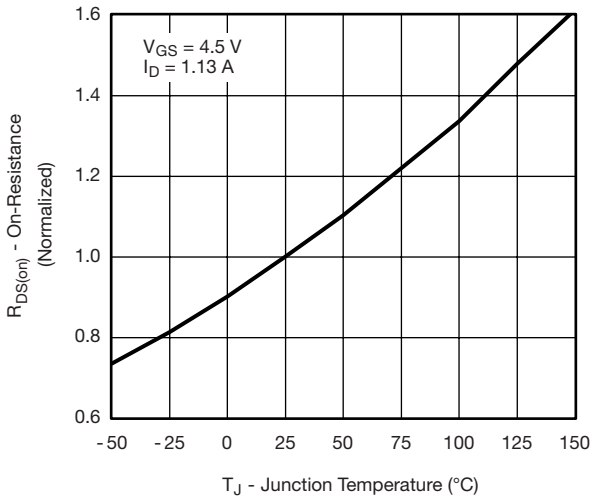
On-Resistance vs. Drain Current



Capacitance

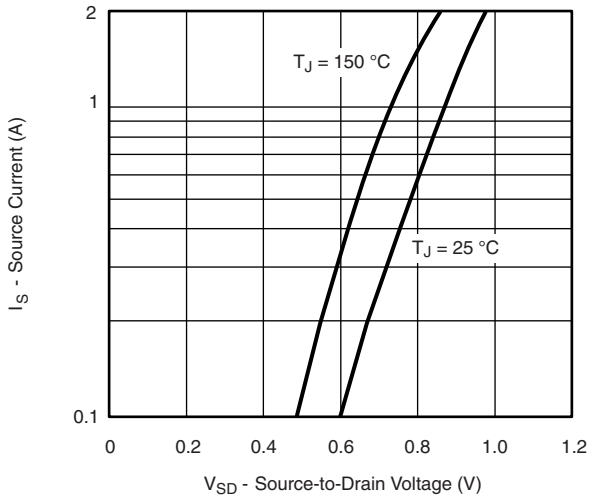


Gate Charge

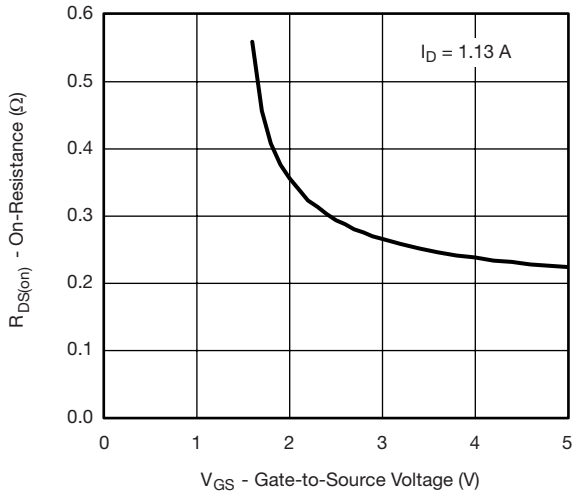


On-Resistance vs. Junction Temperature

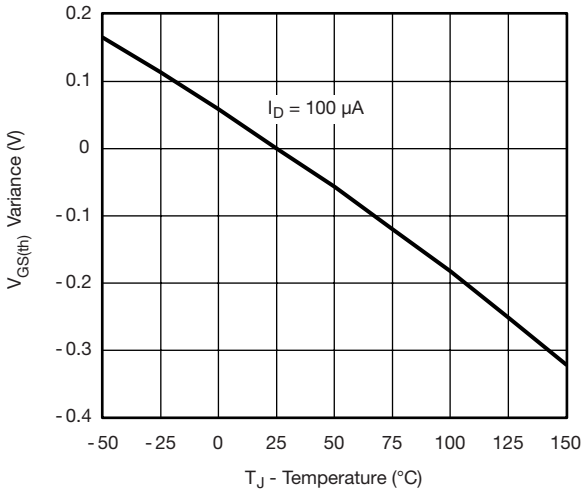
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



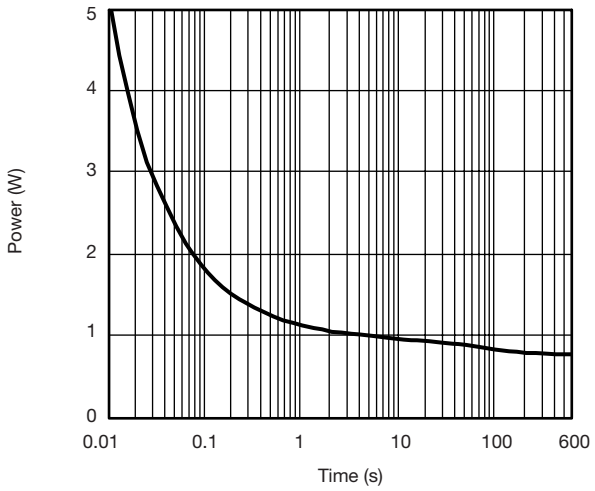
Source-Drain Diode Forward Voltage



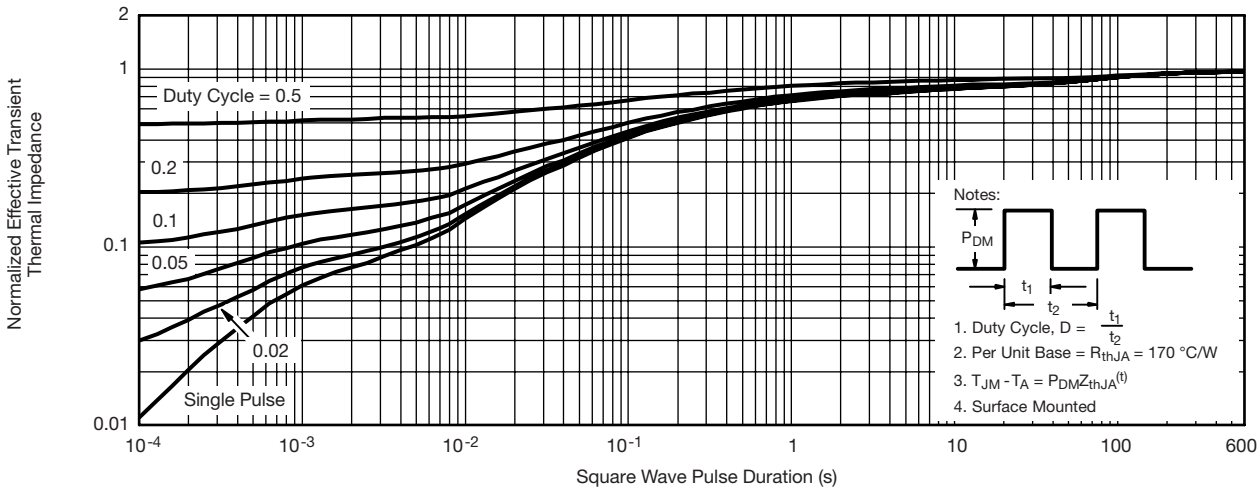
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

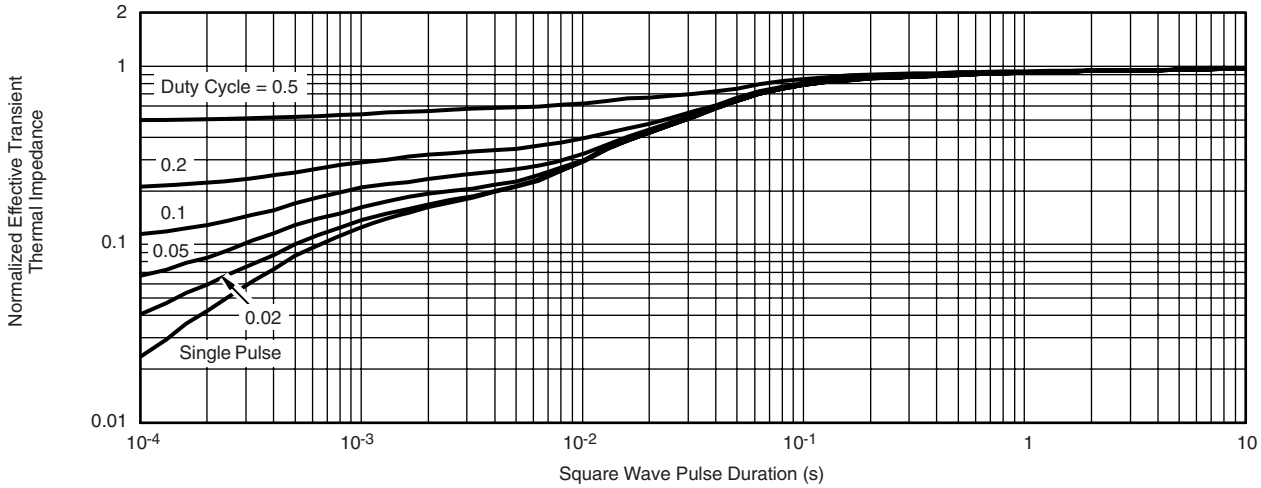


Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



Normalized Thermal Transient Impedance, Junction-to-Foot

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