P-Channel 12-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
–12	0.085 @ V_{GS} = –4.5 V	–3.3
	0.115 @ V_{GS} = –2.5 V	–2.9
	0.160 @ V_{GS} = –1.8 V	–2.4

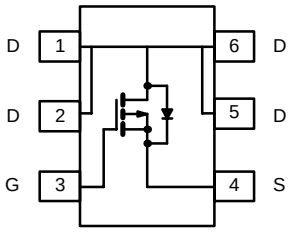
FEATURES

- TrenchFET® Power MOSFETS: 1.8-V Rated
- ESD Protected: 3000 V
- Thermally Enhanced SC-70 Package

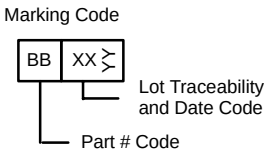
APPLICATIONS

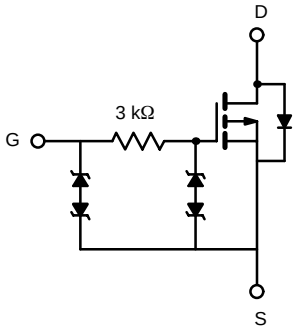
- Load Switching
- PA Switch
- Level Switch

SOT-363
SC-70 (6-LEADS)



Top View





ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	5 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	–12		V
Gate-Source Voltage		V_{GS}	±12		
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	–3.3	–2.7	A
	T_A = 85°C		–2.4	–1.9	
Pulsed Drain Current		I_{DM}	–8		
Continuous Diode Current (Diode Conduction)[a]		I_S	–1.4	–0.9	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	1.56	1.0	W
	T_A = 85°C		0.81	0.52	
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}	60	80	°C/W
	Steady State		100	125	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	34	45	

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

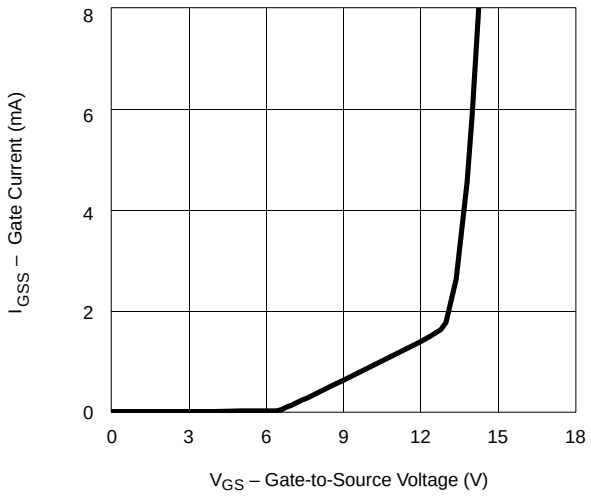
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = –250 µA	–0.45			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±4.5 V			±1.5	µA
		V_{DS} = 0 V, V_{GS} = ±12 V			±10	mA
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 = 85°C			–5	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} = –5 V, V_{GS} = –4.5 V	–4			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = –4.5 V, I_D = –3.3 A		0.070	0.085	Ω
		V_{GS} = –2.5 V, I_D = –2.9 A		0.095	0.115	
		V_{GS} = –1.8 V, I_D = –1.0 A		0.133	0.160	
Forward Transconductance[a]	g_{fs}	V_{DS} = –10 V, I_D = –3.3 A		8		S
Diode Forward Voltage[a]	V_{SD}	I_S = –1.4 A, V_{GS} = 0 V		–0.80	–1.1	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = –6 V, V_{GS} = –4.5 V, I_D = –3.3 A		5.8	8	nC
Gate-Source Charge	Q_{gs}			1.3		
Gate-Drain Charge	Q_{gd}			1.5		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = –6 V, R_L = 6 Ω I_D ≅ –1 A, V_{GEN} = –4.5 V, R_G = 6 Ω		0.60	1.0	µs
Rise Time	t_r			1.4	2.1	
Turn-Off Delay Time	$t_{d(off)}$			4.9	7.5	
Fall Time	t_f			4.9	7.5	

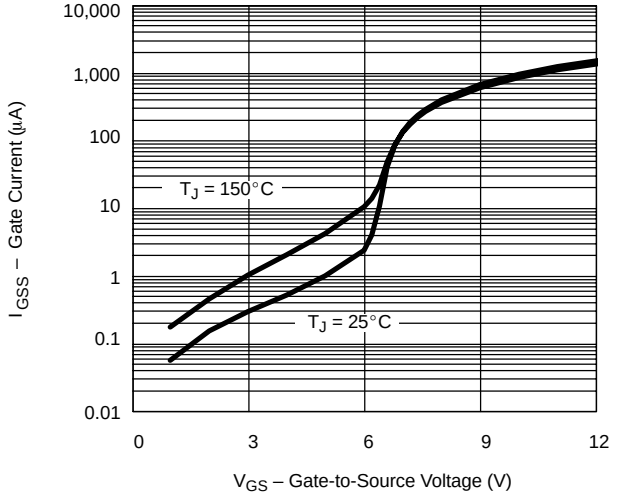
Notes
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Gate-Current vs. Gate-Source Voltage

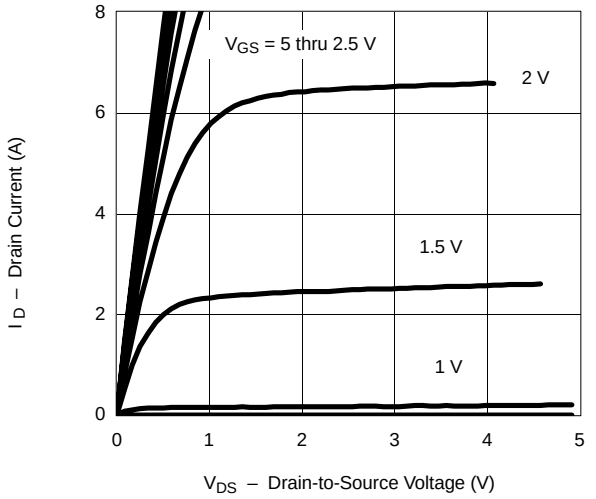


Gate Current vs. Gate-Source Voltage

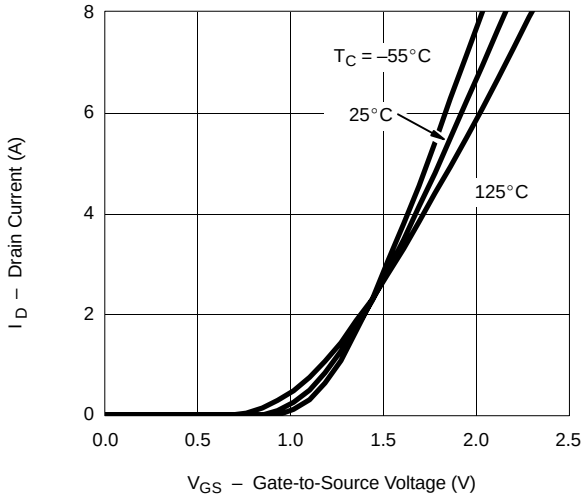


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

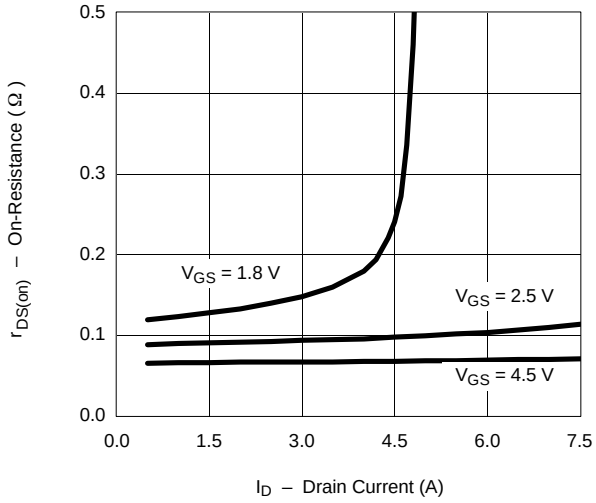
Output Characteristics



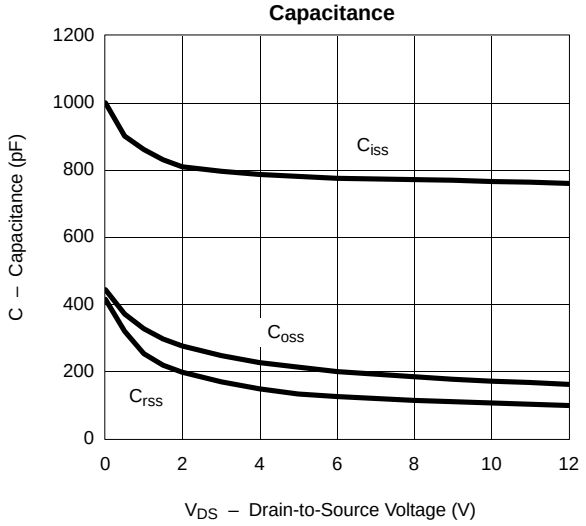
Transfer Characteristics



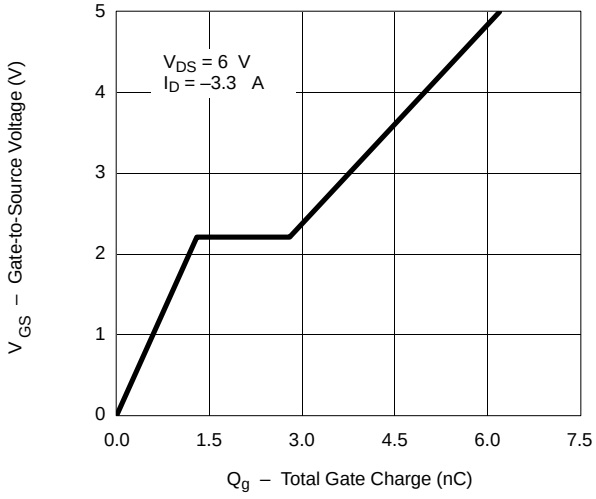
On-Resistance vs. Drain Current



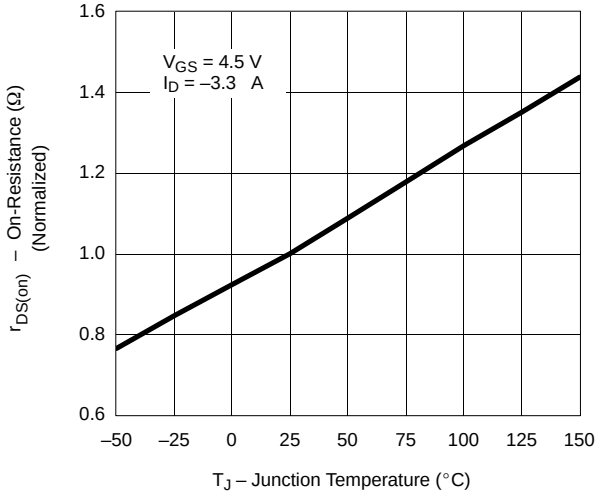
Capacitance



Gate Charge

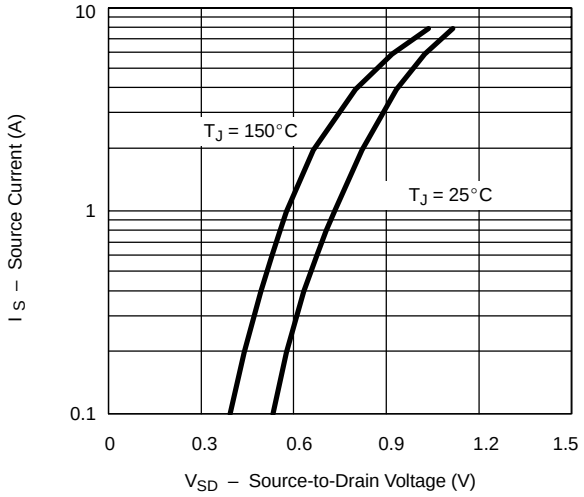


On-Resistance vs. Junction Temperature

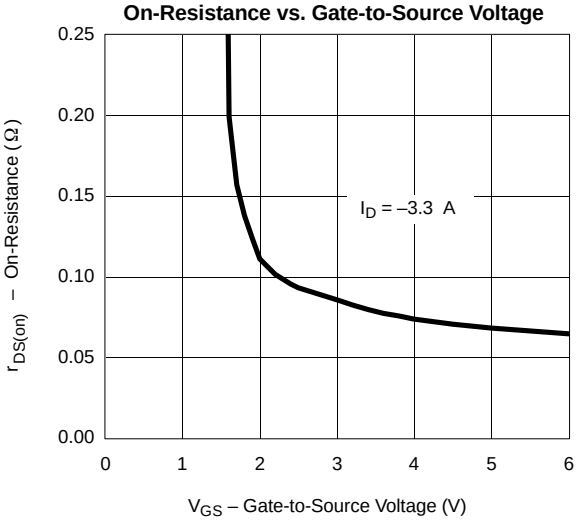


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

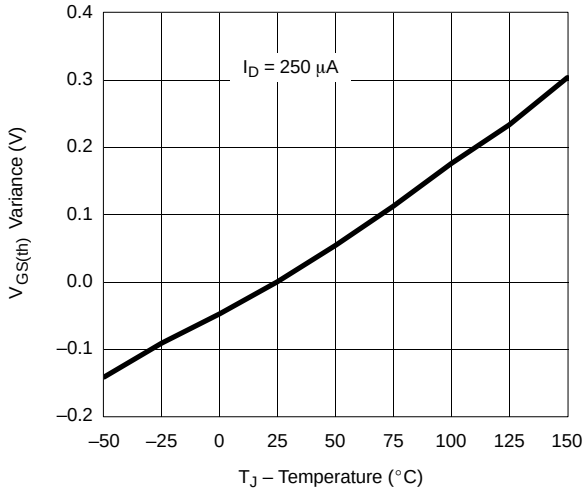
Source-Drain Diode Forward Voltage



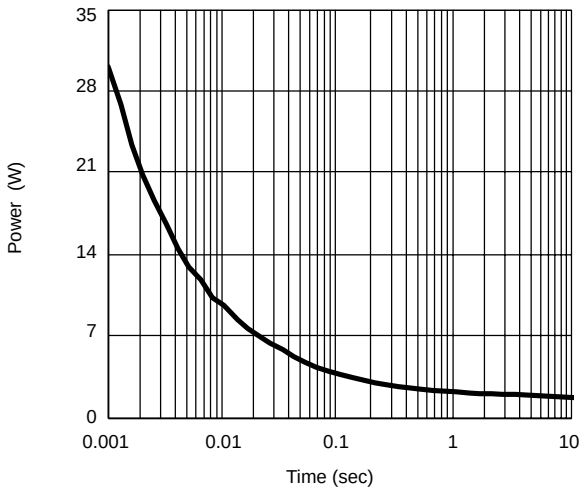
On-Resistance vs. Gate-to-Source Voltage



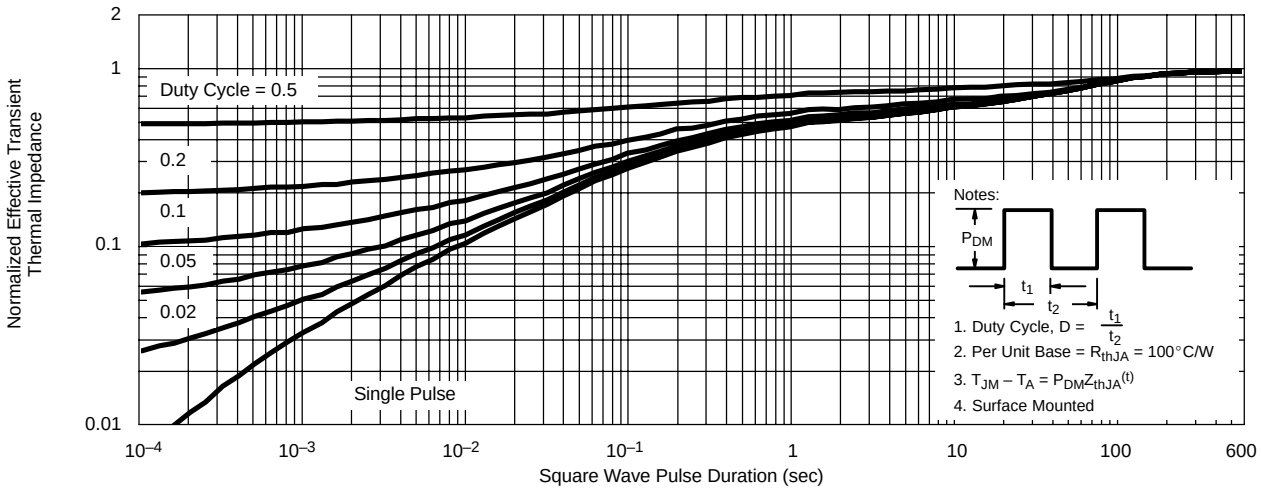
Threshold Voltage



Single Pulse Power, Junction-to-Ambient



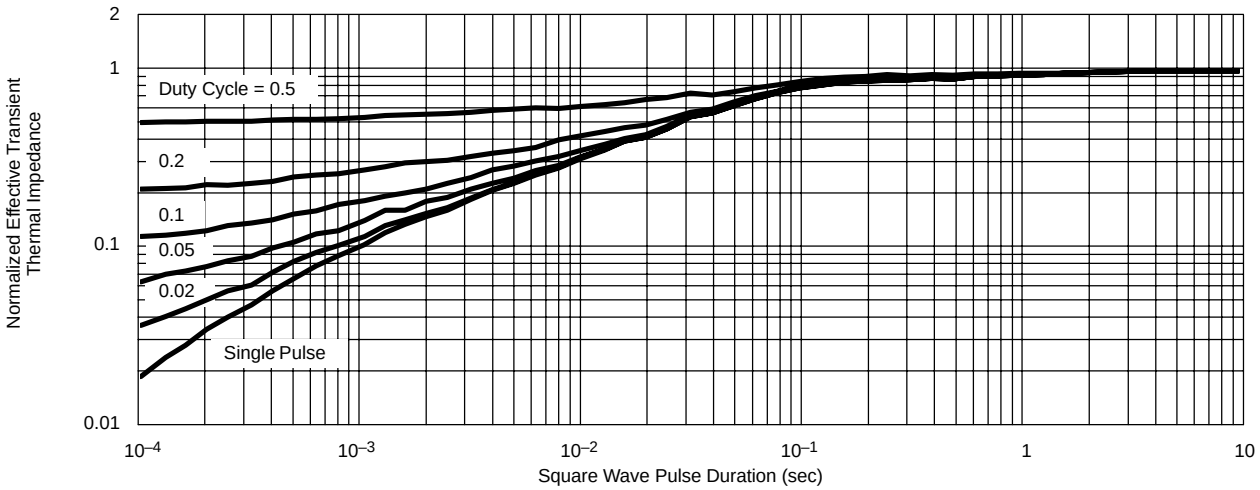
Normalized Thermal Transient Impedance, Junction-to-Ambient



Document Number: 71412
S-03187—Rev. A, 05-Mar-01

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Normalized Thermal Transient Impedance, Junction-to-Foot



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