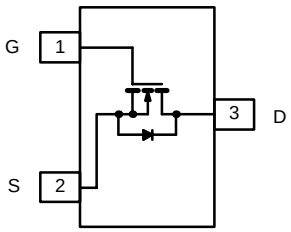
N-Channel 25-V (D-S) MOSFET

TrenchFET® Power MOSFETs

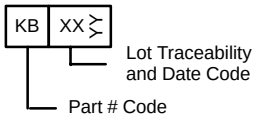
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
25	0.350 @ V_{GS} = 4.5 V	0.75
	0.450 @ V_{GS} = 2.5 V	0.66

SOT-323
SC-70 (3-LEADS)



Top View

Marking Code



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	5 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	25		V
Gate-Source Voltage		V_{GS}	±8		
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	0.75	0.70	A
	T_A = 70°C		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]	T_A = 25°C	P_D	0.33	0.29	W
	T_A = 70°C		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]	t ≤ 5 sec	R_{thJA}	315	375	°C/W
	Steady State		380	450	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	285	340	

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

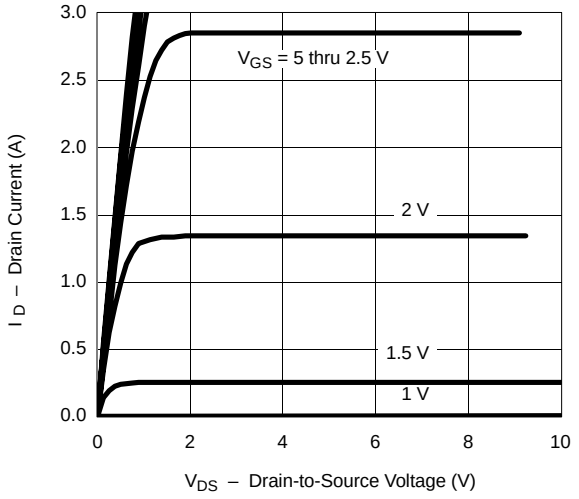
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 μA	0.6			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±8 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	3.0			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = 4.5 V, I_D = 0.75 A		0.280	0.350	Ω
		V_{GS} = 2.5 V, I_D = 0.50 A		0.355	0.450	
Forward Transconductance[a]	g_{fs}	V_{DS} = 15 V, I_D = 0.75 A		1.5		S
Diode Forward Voltage[a]	V_{SD}	I_S = 0.24 A, V_{GS} = 0 V		0.8	1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = 15 V, V_{GS} = 4.5 V, I_D = 0.75 A		1.85	2.8	nC
Gate-Source Charge	Q_{gs}			0.15		
Gate-Drain Charge	Q_{gd}			0.82		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 15 V, R_L = 20 Ω I_D ≅ 0.75 A, V_{GEN} = 4.5 V, R_G = 6 Ω		11	20	ns
Rise Time	t_r			18	30	
Turn-Off Delay Time	$t_{d(off)}$			17	30	
Fall Time	t_f			11	20	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = 0.24 A, di/dt = 100 A/μs		30	60	

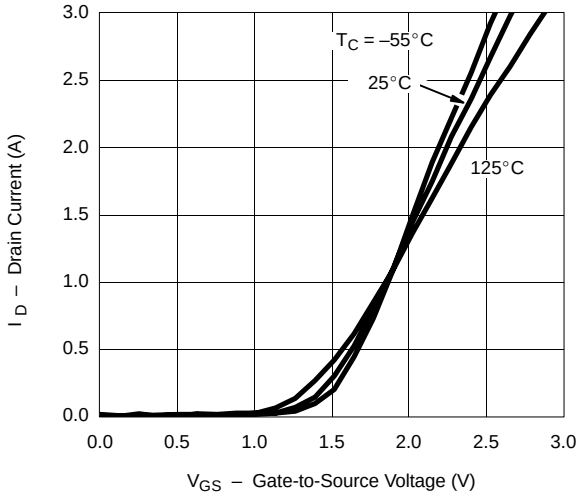
Notes
a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Output Characteristics

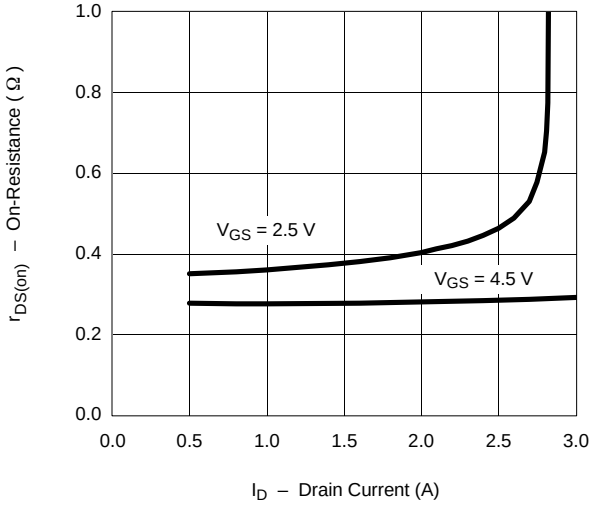


Transfer Characteristics

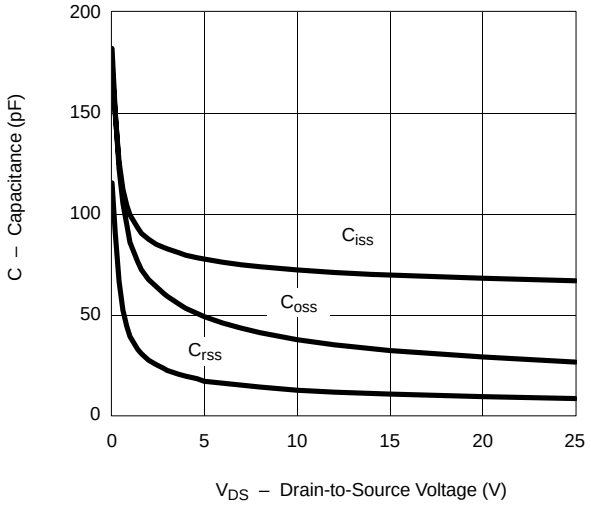


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

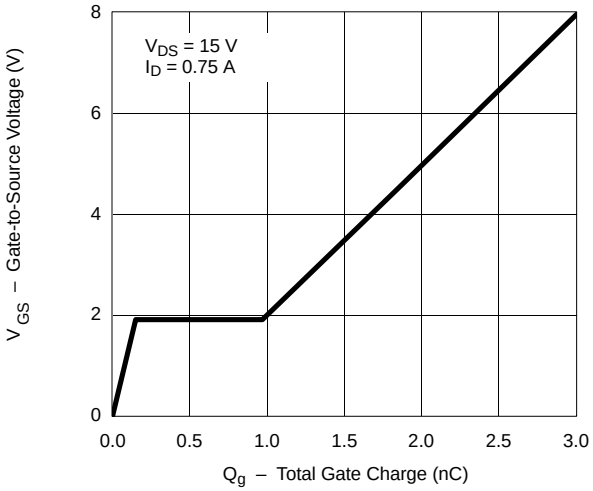
On-Resistance vs. Drain Current



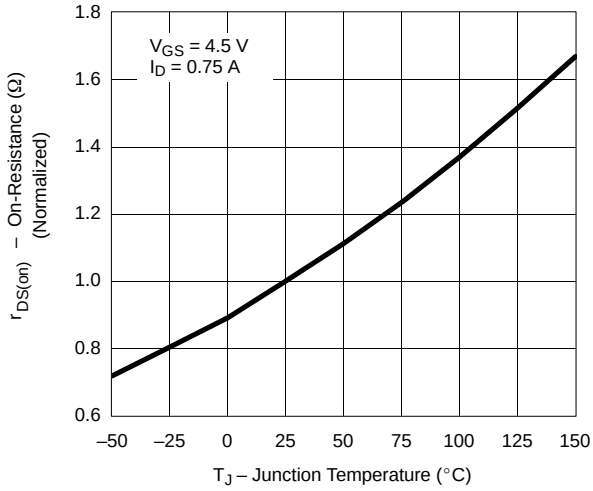
Capacitance



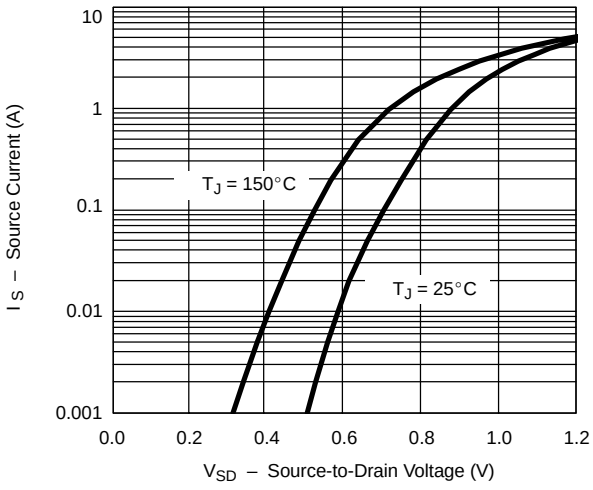
Gate Charge



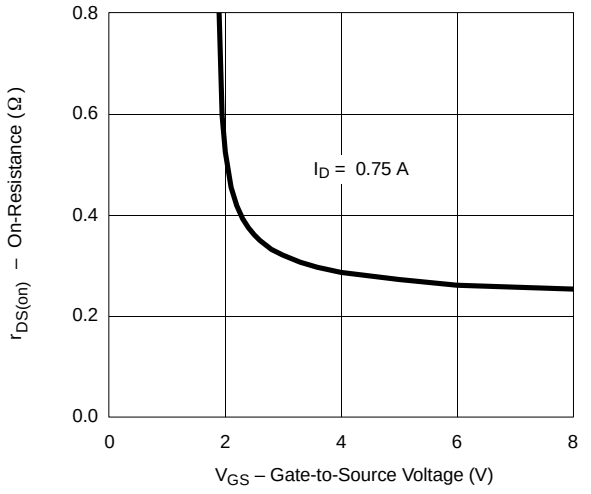
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

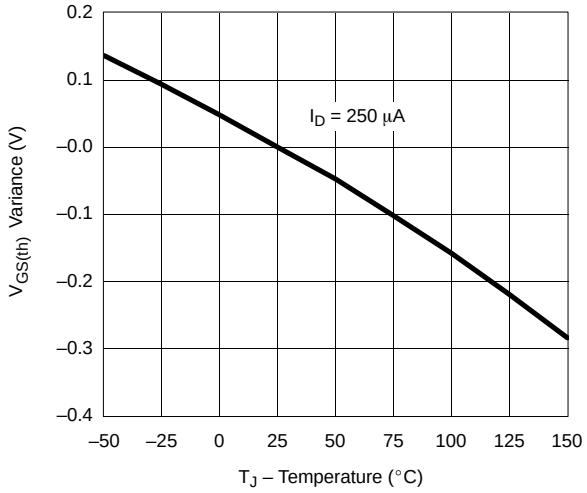


On-Resistance vs. Gate-to-Source Voltage

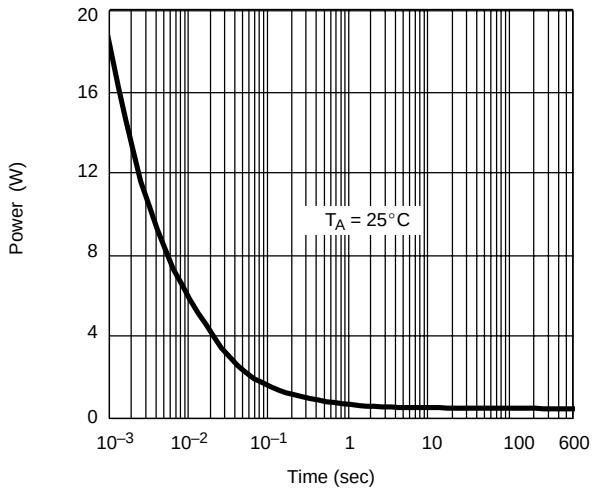


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

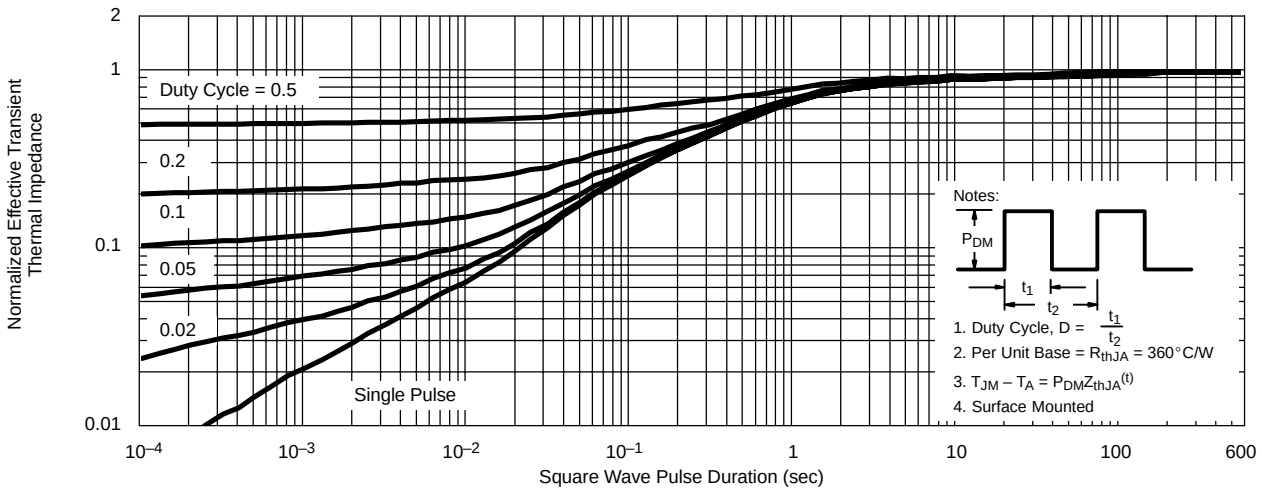
Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot