



P-Channel 1.8-V (G-S) MOSFET

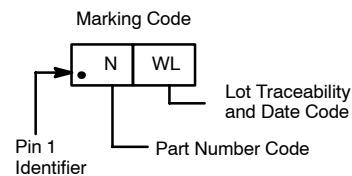
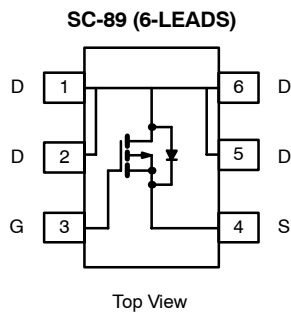
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-20	0.195 @ $V_{GS} = -4.5$ V	-0.84
	0.260 @ $V_{GS} = -2.5$ V	-0.73
	0.350 @ $V_{GS} = -1.8$ V	-0.64

FEATURES

- TrenchFET® Power MOSFET
- Low Threshold
- Smallest LITTLE FOOT® Package: 1.6 mm x 1.6 mm
- Low 0.6-mm Profile

APPLICATIONS

- Cell Phones and Pagers
 - Load Switch
- Battery Operated Systems



Ordering Information: Si1037X-T1

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter	Symbol	5 secs	Steady State	Unit	
Drain-Source Voltage	V_{DS}	-20		V	
Gate-Source Voltage	V_{GS}	± 8			
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	I_D	$T_A = 25^\circ\text{C}$	-0.84	-0.77	A
		$T_A = 70^\circ\text{C}$	-0.68	-0.62	
Pulsed Drain Current	I_{DM}	-4			
Continuous Diode Current (Diode Conduction) ^a	I_S	-0.18	-0.14		
Maximum Power Dissipation ^a	P_D	$T_A = 25^\circ\text{C}$	0.21	0.17	W
		$T_A = 70^\circ\text{C}$	0.13	0.10	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ\text{C}$	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^a	R_{thJA}	$t \leq 5$ sec	500	600	$^\circ\text{C/W}$
		Steady State	600	720	

Notes

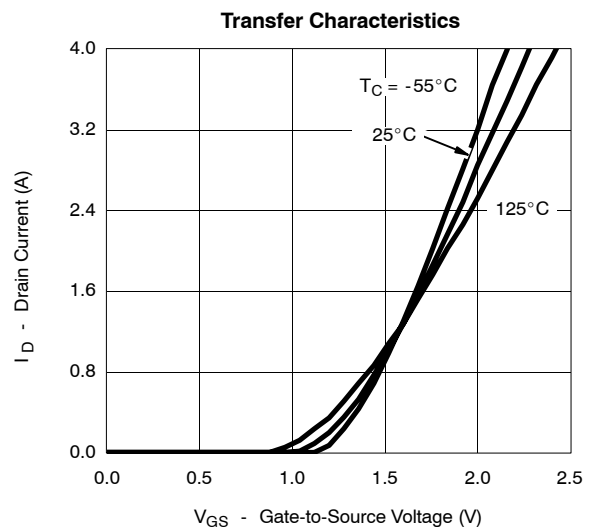
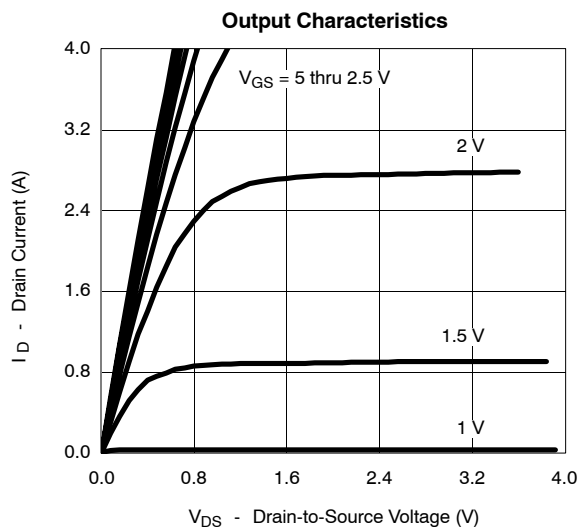
a. Surface Mounted on 1" x 1" FR4 Board with minimum copper.

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} = ±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	-4			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = -4.5 V, I _D = -0.77 A		0.160	0.195	Ω
		V _{GS} = -2.5 V, I _D = -0.67 A		0.212	0.260	
		V _{GS} = -1.8 V, I _D = -0.2 A		0.290	0.350	
Forward Transconductance ^a	g _{fs}	V _{DS} = -10 V, I _D = -0.77 A		3.1		S
Diode Forward Voltage ^a	V _{SD}	I _S = -0.14 A, V _{GS} = 0 V		-0.78	-1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = -10 V, V _{GS} = -4.5 V, I _D = -0.77 A		3.5	5.5	nC
Gate-Source Charge	Q _{gs}			0.65		
Gate-Drain Charge	Q _{gd}			0.60		
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		10	20	ns
Rise Time	t _r			15	30	
Turn-Off Delay Time	t _{d(off)}			30	60	
Fall Time	t _f			10	20	
Source-Drain Reverse Recovery Time	t _{rr}		I _F = -0.14 A, di/dt = 100 A/μs		20	

Notes

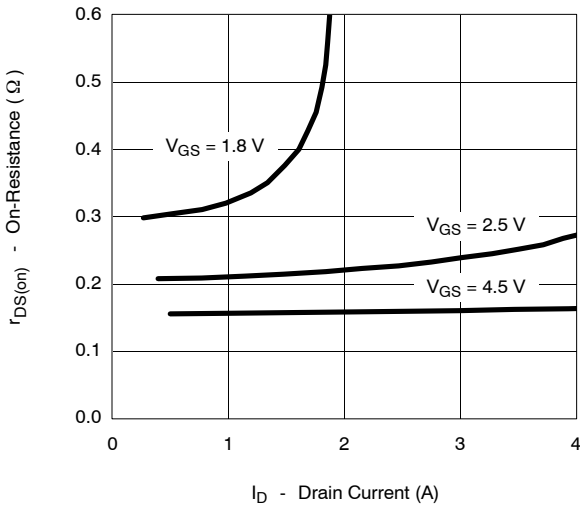
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

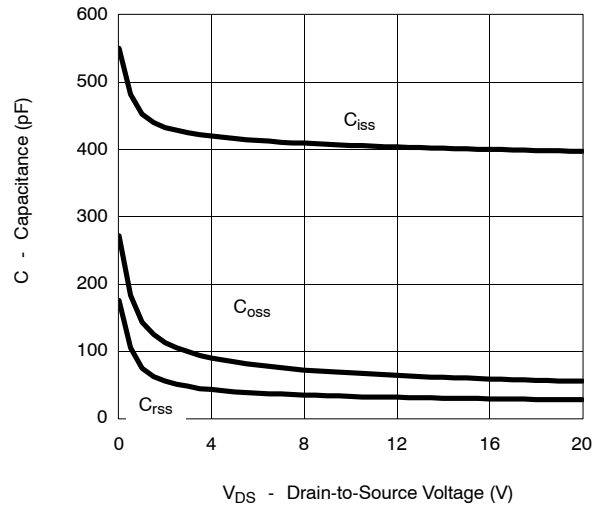


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

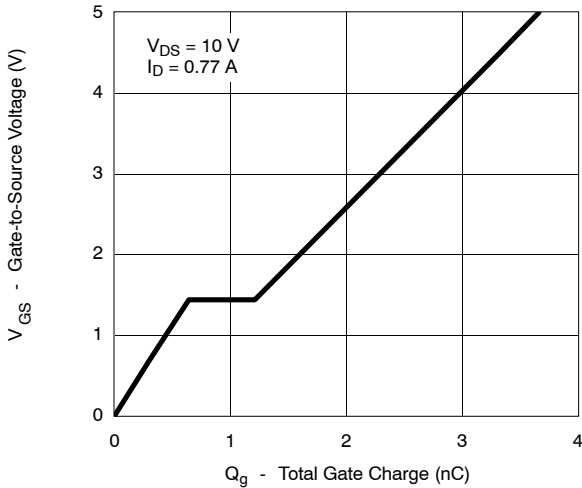
On-Resistance vs. Drain Current



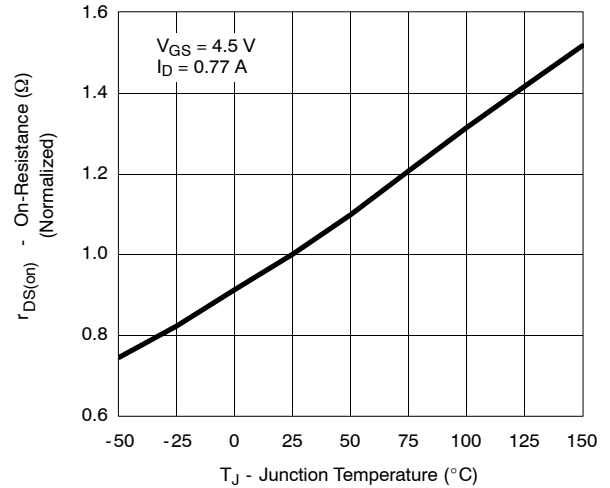
Capacitance



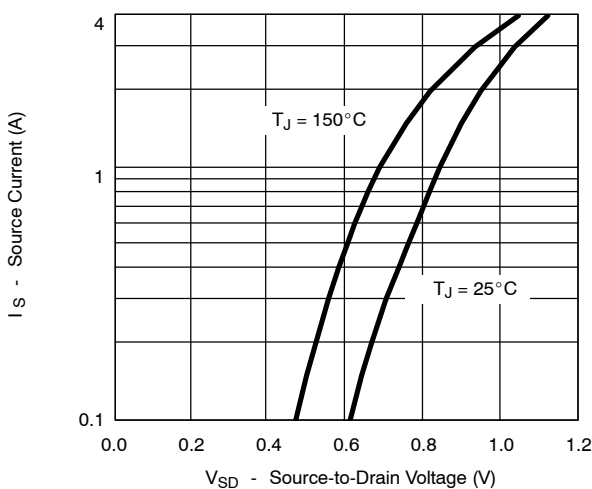
Gate Charge



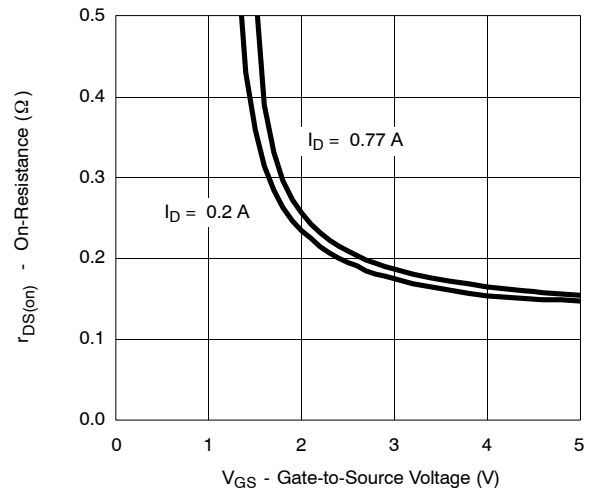
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

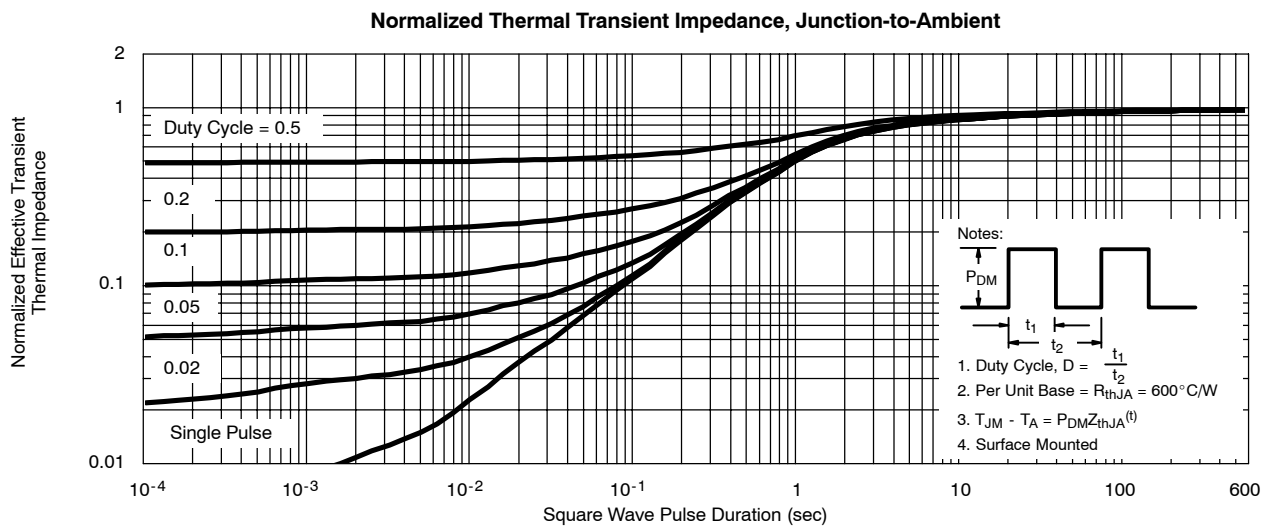
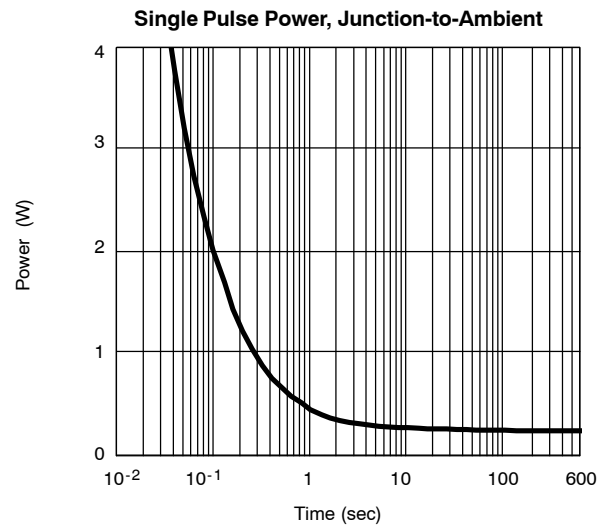
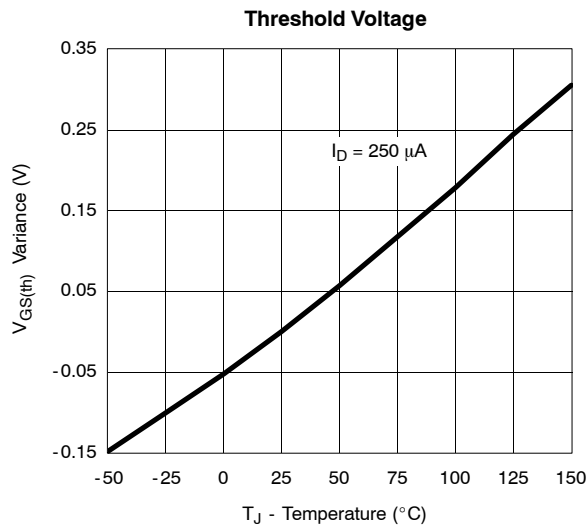


On-Resistance vs. Gate-to-Source Voltage





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





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