



N-Channel 60-V (D-S) MOSFET

TrenchFET MOSFET



**ESD Protected
2000 V**

PRODUCT SUMMARY			
$V_{(BR)DSS(min)}$ (V)	$r_{DS(on)}$ (Ω)	$V_{GS(th)}$ (V)	I_D (mA)
60	1.40 @ $V_{GS} = 10$ V	1 to 2.5	500

FEATURES

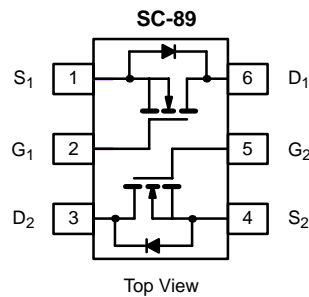
- Low On-Resistance: 1.40 Ω
- Low Threshold: 2 V (typ)
- Low Input Capacitance: 30 pF
- Fast Switching Speed: 15 ns (typ)
- Low Input and Output Leakage
- Miniature Package

BENEFITS

- Low Offset Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Error Voltage
- Small Board Area

APPLICATIONS

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.
- Battery Operated Systems
- Solid-State Relays



Marking Code: E

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter	Symbol	5 secs	Steady State	Unit	
Drain-Source Voltage	V_{DS}	60		V	
Gate-Source Voltage	V_{GS}	± 20			
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	I_D	$T_A = 25^\circ\text{C}$	320	305	mA
		$T_A = 85^\circ\text{C}$	230	220	
Pulsed Drain Current ^b	I_{DM}	-650			
Continuous Source Current (diode conduction) ^a	I_S	450	380		
Maximum Power Dissipation ^a	P_D	$T_A = 25^\circ\text{C}$	280	250	mW
		$T_A = 85^\circ\text{C}$	145	130	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ\text{C}$	
Gate-Source ESD Rating (HBM, Method 3015)	ESD	2000		V	

Notes

- a. Surface Mounted on FR4 Board.
- b. Pulse width limited by maximum junction temperature.

SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 10 μA	60			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 0.25 mA	1		2.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±10 V			±150	nA
		V _{DS} = 0 V, V _{GS} = ±5 V			±50	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 50 V, V _{GS} = 0 V T _J = 85 °C			10 100	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = 10 V, V _{GS} = 4.5 V	500			mA
		V _{DS} = 7.5 V, V _{GS} = 10 V	800			
Drain-Source On-Resistance ^a	r _{DS(on)}	V _{GS} = 4.5 V, I _D = 200 mA			3.0	Ω
		V _{GS} = 10 V, I _D = 500 mA			1.40	
		T _J = 125 °C			2.50	
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 200 mA		200		mS
Diode Forward Voltage ^a	V _{SD}	V _{GS} = 0 V, I _S = 200 mA			1.40	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 10 V, I _D = 250 mA V _{GS} = 4.5 V		600		pC
Gate-Source Charge	Q _{gs}			120		
Gate-Drain Charge	Q _{gd}			225		
Input Capacitance	C _{iss}	V _{DS} = 25 V, V _{GS} = 0 V f = 1 MHz		30		pF
Output Capacitance	C _{oss}			6		
Reverse Transfer Capacitance	C _{rss}			3		
Switching^{b, c}						
Turn-On Time	t _(on)	V _{DD} = 30 V, R _L = 150 Ω I _D = 200 mA, V _{GEN} = 10 V R _G = 10 Ω		15		ns
Turn-Off Time	t _(off)			20		

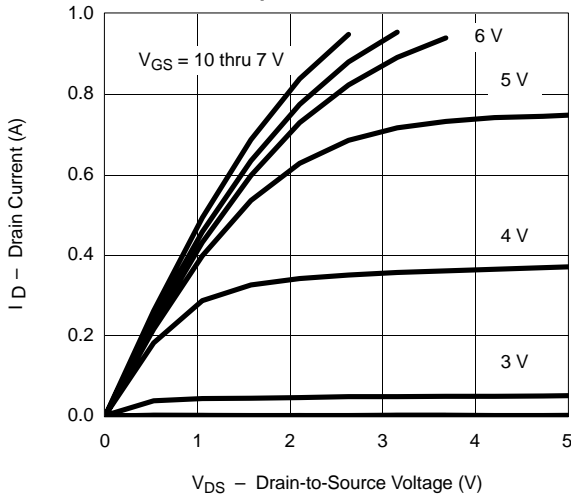
Notes

- a. Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.
b. For DESIGN AID ONLY, not subject to production testing.
c. Switching time is essentially independent of operating temperature.

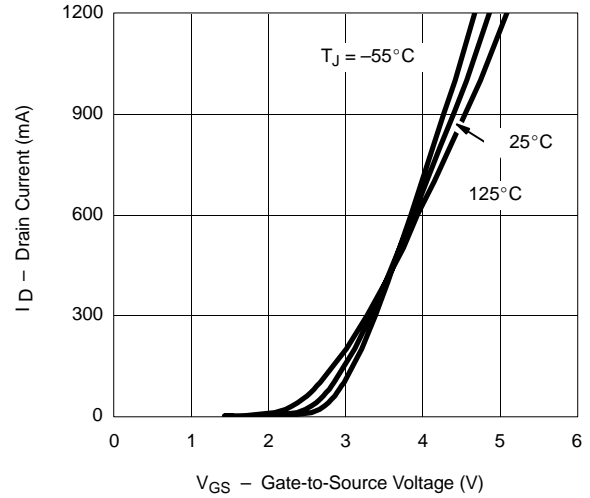


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

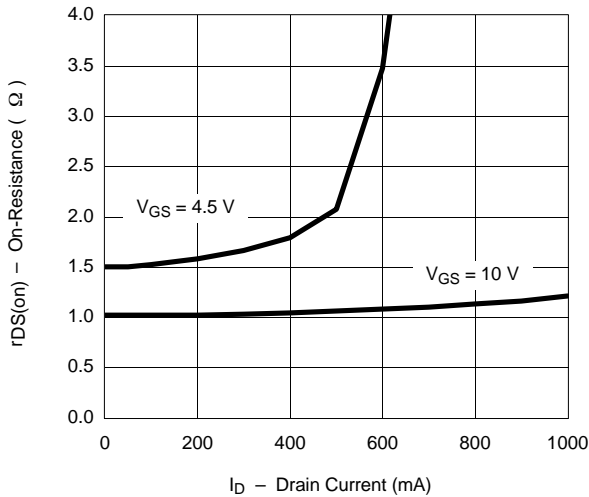
Output Characteristics



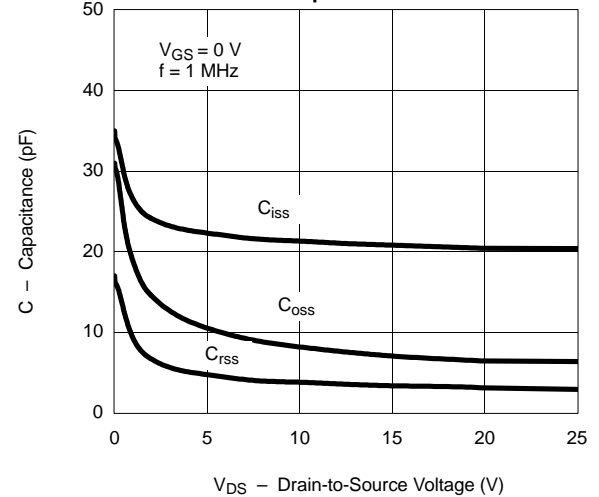
Transfer Characteristics



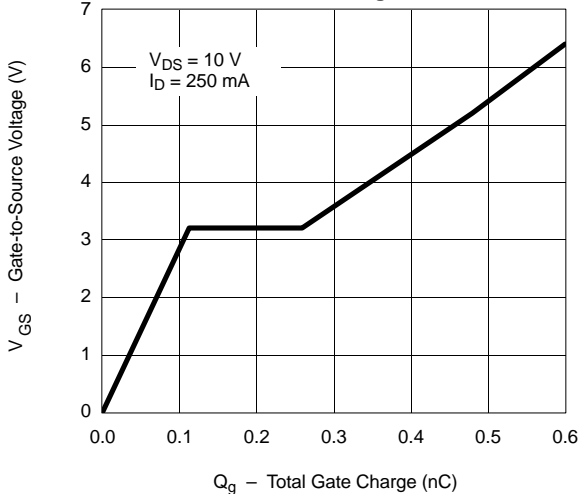
On-Resistance vs. Drain Current



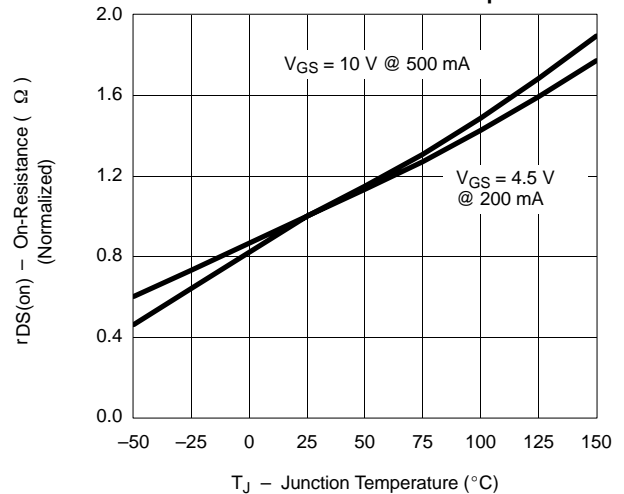
Capacitance



Gate Charge



On-Resistance vs. Junction Temperature



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

