

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

PRODUCT SUMMARY							
V _{(BR)DSS(min)} (V)	$R_{DS(on)}$ (Ω)	V _{GS(th)} (V)	I _D (mA)				
60	1.40 at V _{GS} = 10 V	1 to 2.5	500				

SC-89 61 1 6 D1 62 Marking Code: E Top View

Ordering Information: Si1026X-T1-E3 (Lead (Pb)-free)

Si1026X-T1-GE3 (Lead (Pb)-free and Halogen-free)

FEATURES

• Halogen-free Option Available

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

Low input and Output Leakay

ESD Protected: 2000 V

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

ABSOLUTE MAXIMUM RATINGS T	_A = 25 °C, unles	ss otherwise r	noted			
Parameter		Symbol	5 s	Steady State	Unit	
Drain-Source Voltage		V _{DS}	60		V	
Gate-Source Voltage		V _{GS}	± 20			
Outliness Durin Outline (T. 450.00)8	T _A = 25 °C	I _D	320	305		
Continuous Drain Current (T _J = 150 °C) ^a	T _A = 85 °C		230	220		
Pulsed Drain Current ^b		I _{DM}	- 650		mA	
Continuous Source Current (Diode Conduction) ^a		I _S	450	380		
	T _A = 25 °C	P _D	280	250	mW	
Maximum Power Dissipation ^a	T _A = 85 °C		145	130	IIIVV	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	- 55 to 150		°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.

Po-free

ROHS

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SPECIFICATIONS $T_J = 2$ Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit	
Static	1		l				
Drain-Source Breakdown Voltage	V _{(BR)DSS}	$V_{GS} = 0 \text{ V}, I_D = 10 \mu\text{A}$	60			V	
Gate Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_D = 0.25 \text{ mA}$	1		2.5		
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 10 \text{ V}$			± 150	nA	
		$V_{DS} = 0 \text{ V}, V_{GS} = \pm 5 \text{ V}$			± 50		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V			1	μΑ	
		$V_{DS} = 60 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 85 ^{\circ}\text{C}$			10		
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		$V_{GS} = 4.5 \text{ V}, I_D = 200 \text{ mA}$			3.0	Ω	
	R _{DS(on)}	$V_{GS} = 10 \text{ V}, I_D = 500 \text{ mA}$			1.40		
		$V_{GS} = 10 \text{ V}, I_D = 500 \text{ mA}, T_J = 125 \text{ °C}$			2.50		
Forward Transconductance ^a	9 _{fs}	V _{DS} = 10 V, I _D = 200 mA		200		mS	
Diode Forward Voltage ^a	V_{SD}	$V_{GS} = 0 \text{ V}, I_{S} = 200 \text{ mA}$			1.40	V	
Dynamic ^b							
Total Gate Charge	Q_g			600			
Gate-Source Charge	Q_{gs}	$V_{DS} = 10 \text{ V}, I_D = 250 \text{ mA}, V_{GS} = 4.5 \text{ V}$		120		рС	
Gate-Drain Charge	Q_{gd}			225			
Input Capacitance	C _{iss}			30			
Output Capacitance	C _{oss}	$V_{DS} = 25 \text{ V}, V_{GS} = 0 \text{ V},$ f = 1 MHz		6		pF	
Reverse Transfer Capacitance	C _{rss}	I = 1 IVII IZ		3			
Switching ^{b, c}			•	•			
Turn-On Time	t _(on)	V_{DD} = 30 V, R_L = 150 Ω		15			
Turn-Off Time	t _(off)	$I_D = 200 \text{ mA}, V_{GEN} = 10 \text{ V}, R_G = 10 \Omega$		20		ns	

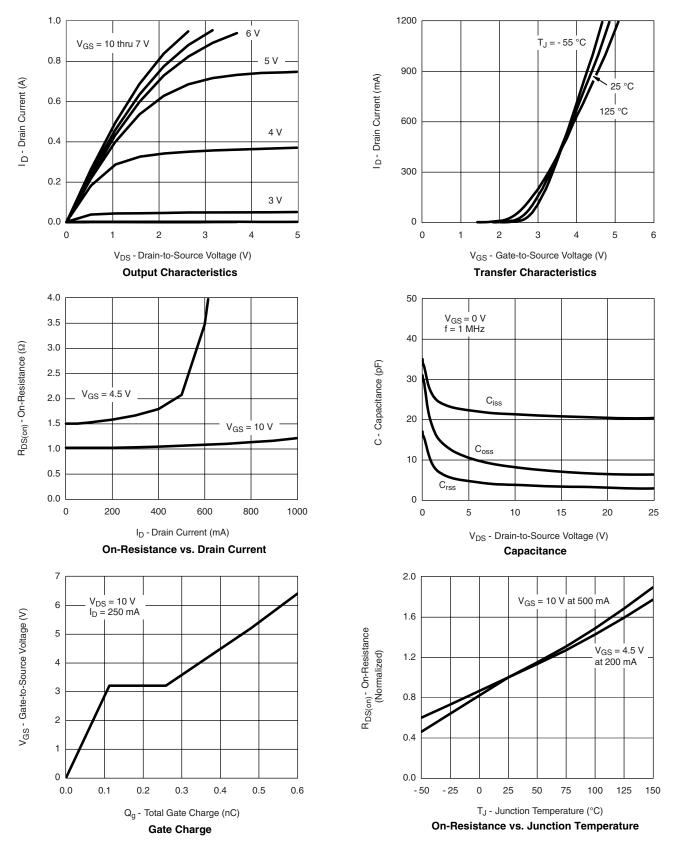
Notes:

- a. Pulse test; pulse width $\leq 300~\mu s,$ duty cycle $\leq 2~\%.$
- b. For DESIGN AID ONLY,, not subject to production testing.
- c. Switching time is essentially independent of operating temperature.

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.



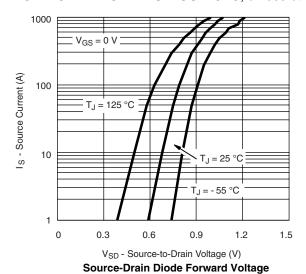
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

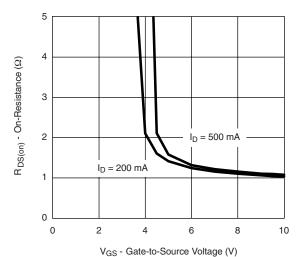


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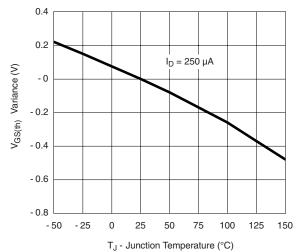
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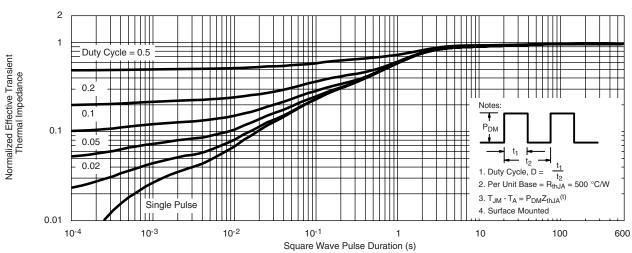




On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage Variance Over Temperature



Normalized Thermal Transient Impedance, Junction-to-Ambient

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