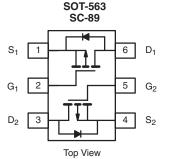


Dual P-Channel 20-V (D-S) MOSFET

PRODUCT SUMMARY						
V _{DS} (V)	$R_{DS(on)}\left(\Omega\right)$	I _D (mA)				
- 20	1.2 at V _{GS} = - 4.5 V	- 350				
	1.6 at V _{GS} = - 2.5 V	- 300				
	2.7 at V _{GS} = - 1.8 V	- 150				



Ordering Information: Si1023X-T1-E3 (Lead (Pb)-free)

Si1023X-T1-GE3 (Lead (Pb)-free and Halogen-free)

Marking Code: B

FEATURES

· Halogen-free Option Available

TrenchFET[®] Power MOSFET: 1.8 V Rated

RoHS

Very Small Footprint

· High-Side Switching

Low On-Resistance: 1.2 Ω
Low Threshold: 0.8 V (typ.)

Fast Switching Speed: 14 ns

• 1.8 V Operation

· Gate-Source ESD Protected: 2000 V

BENEFITS

- · Ease in Driving Switches
- · Low Offset (Error) Voltage
- · Low-Voltage Operation
- High-Speed Circuits
- · Low Battery Voltage Operation

APPLICATIONS

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- · Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Pagers

ABSOLUTE MAXIMUM RATINGS	T _A = 25 °C, unles	ss otherwise r	noted			
Parameter		Symbol	5 s	Steady State	Unit	
Drain-Source Voltage		V _{DS}	- 20		V	
Gate-Source Voltage		V _{GS}	± 6			
Out in the David Out of (T. 150,00)	T _A = 25 °C	I _D	- 390	- 370		
Continuous Drain Current (T _J = 150 °C) ^a	T _A = 85 °C		- 280	- 265		
Pulsed Drain Current ^b		I _{DM}	- 650		mA	
Continuous Source Current (Diode Conduction) ^a		Is	- 450	- 380		
	T _A = 25 °C	P _D	280	250	m\\/	
Maximum Power Dissipation ^a	T _A = 85 °C		145	130	mW	
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.

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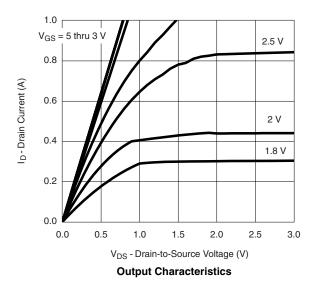
SPECIFICATIONS T _J = 25 °C, unless otherwise noted									
Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit			
Static									
Gate Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$	- 0.45			V			
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 4.5 \text{ V}$		± 1	± 2	μΑ			
Zero Gate Voltage Drain Current	I _{DSS}	$V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}$		- 0.3	- 100	nA			
		V _{DS} = - 16 V, V _{GS} = 0 V, T _J = 85 °C			- 5	μΑ			
On-State Drain Current ^a	I _{D(on)}	V _{DS} = - 5 V, V _{GS} = - 4.5 V	- 700			mA			
Drain-Source On-State Resistance ^a	R _{DS(on)}	$V_{GS} = -4.5 \text{ V}, I_D = -350 \text{ mA}$		0.8	1.2	Ω			
		V _{GS} = - 2.5 V, I _D = - 300 mA		1.2	1.6				
		V _{GS} = - 1.8 V, I _D = - 150 mA		1.8	2.7				
Forward Transconductance ^a	9 _{fs}	V _{DS} = - 10 V, I _D = - 250 mA		0.4		S			
Diode Forward Voltage ^a	V_{SD}	I _S = - 150 mA, V _{GS} = 0 V		- 0.8	- 1.2	V			
Dynamic ^b									
Total Gate Charge	Qg	V _{DS} = - 10 V, V _{GS} = - 4.5 V, I _D = - 250 mA		1500					
Gate-Source Charge	Q_{gs}			150		рС			
Gate-Drain Charge	Q_{gd}			450					
Turn-On Time	t _{d(on)}	V_{DD} = -10 V, R_L = 47 Ω		14		- ns			
Turn-Off Time	t _{d(off)}	$I_D \cong$ - 200 mA, V_{GEN} = - 4.5 V, R_G = 10 Ω		46					

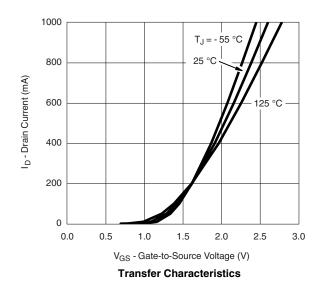
Notes:

- a. Pulse test; pulse width $\leq 300~\mu s,$ duty cycle $\leq 2~\%.$
- b. Guaranteed by design, not subject to production testing.

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.

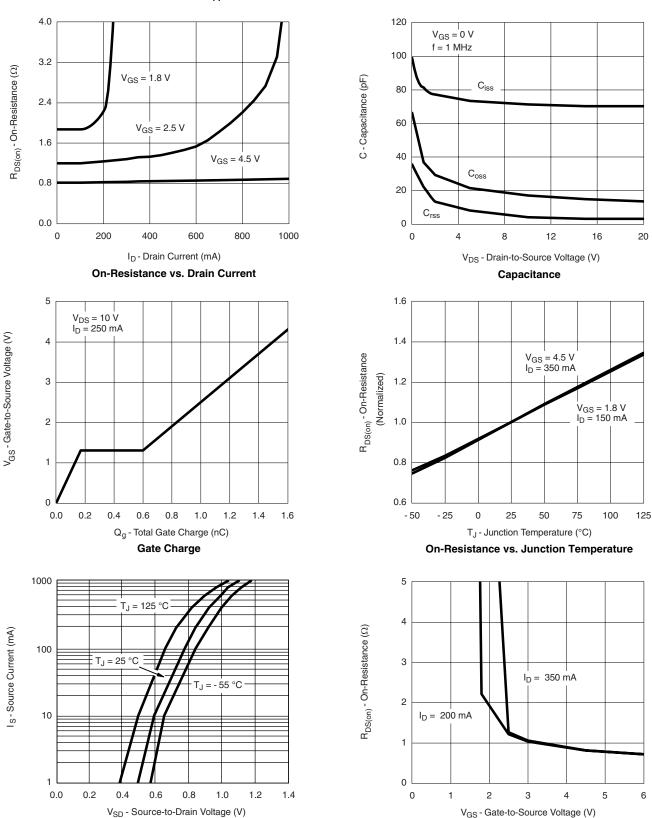
TYPICAL CHARACTERISTICS $T_A = 25$ °C, unless otherwise noted







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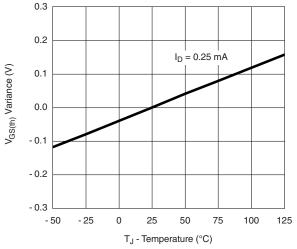
Source-Drain Diode Forward Voltage

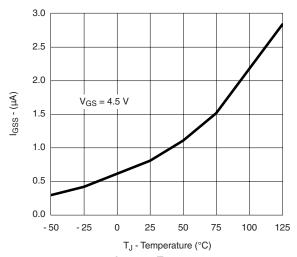
On-Resistance vs. Gate-to-Source Voltage

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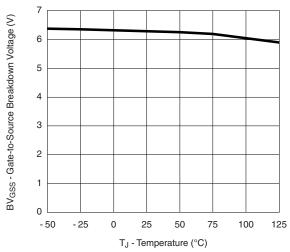
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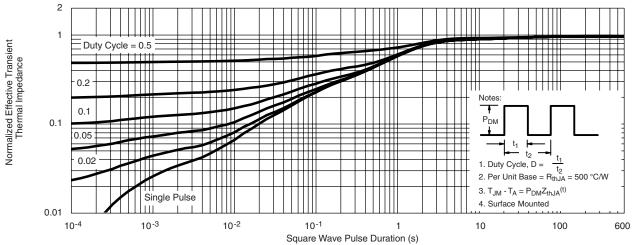


Threshold Voltage Variance vs. Temperature









Normalized Thermal Transient Impedance, Junction-to-Ambient

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