

Vishay Siliconix

N-Channel 20-V (D-S) MOSFET

PRODUCT SUMMARY					
V _{DS} (V)	$R_{DS(on)}\left(\Omega\right)$	I _D (A) ^a	Q _g (Typ.)		
20	0.420 at V _{GS} = 4.5 V	0.606			
	0.501 at V _{GS} = 2.5 V	0.505	0.92		
	0.660 at V _{GS} = 1.8 V	0.15			

FEATURES

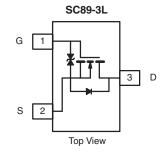
- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET[®] Power MOSFET: 1.8 V Rated
- ESD Protected: 2000 V
- Compliant to RoHS Directive 2002/95/EC

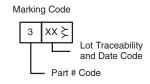


ROHS COMPLIANT HALOGEN FREE

APPLICATIONS

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





Ordering Information: Si1046X-T1-E3 (Lead (Pb)-free)

Si1046X-T1-GE3 (Lead (Pb)-free and Halogen-free)

Parameter		Symbol	Limit	Unit	
Drain-Source Voltage		V _{DS}	20	V	
Gate-Source Voltage		V_{GS}	± 8	V	
Continuous Drain Current (T _{.I} = 150 °C) ^a	T _A = 25 °C	I _D	0.606 ^{b, c}		
Continuous Brain Current (1) = 130 °C)	T _A = 70 °C		0.485 ^{b, c}	Α	
Pulsed Drain Current		I _{DM}	2.5	^	
Continuous Source-Drain Diode Current	T _A = 25 °C	I _S	0.21 ^{b, c}		
Mariana Davia Dissipation	T _A = 25 °C	P _D	0.25 ^{b, c}	W	
Maximum Power Dissipation ^a	T _A = 70 °C] 'D	0.16 ^{b, c}] vv	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	- 55 to 150	°C	

THERMAL RESISTANCE RATINGS							
Parameter	Symbol	Typical	Maximum	Unit			
Marrian una lumation de Ameleiandh d	t≤5s	R _{thJA}	440	530	°C/W		
Maximum Junction-to-Ambient ^{b, d}	Steady State	' 'thJA	540	650	C/VV		

Notes:

- a. Based on T_C = 25 °C.
- b. Surface Mounted on 1" x 1" FR4 board.
- c. t = 5 s.
- d. Maximum under steady state conditions is 650 $^{\circ}\text{C/W}.$

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Parameter	Symbol Test Conditions		Min.	Тур.	Max.	Unit	
Static				•			
Drain-Source Breakdown Voltage	V _{DS}	$V_{GS} = 0 \text{ V, } I_D = 250 \mu\text{A}$	20			V	
V _{DS} Temperature Coefficient	$\Delta V_{DS}/T_{J}$	I _D = 250 μA		20.5		m\//°C	
$_{\rm GS(th)}$ Temperature Coefficient $\Delta V_{\rm GS(th)}/$		ι _D = 250 μΑ		- 2.12		mV/°C	
Gate-Source Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$	0.35		0.95	V	
Gate-Source Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 8 \text{ V}$			± 30	mA	
Zero Gate Voltage Drain Current	I _{DSS}	$V_{DS} = 20 \text{ V}, V_{GS} = 0 \text{ V}$			1	μА	
		V _{DS} = 20 V, V _{GS} = 0 V, T _J = 85 °C			10		
On-State Drain Current ^a	I _{D(on)}	$V_{DS} = \ge 5 \text{ V}, V_{GS} = 4.5 \text{ V}$	2.5			Α	
		V _{GS} = 4.5 V, I _D = 0.606 A		0.336	0.420		
Drain-Source On-State Resistance ^a	R _{DS(on)}	$V_{GS} = 2.5 \text{ V}, I_D = 0.505 \text{ A}$		0.395	0.501	Ω	
	,	V _{GS} = 1.8 V, I _D = 0.150 A		0.438	0.660		
Forward Transconductance	g _{fs}	V _{DS} = 10 V, I _D = 0.606 A		2.1		S	
Dynamic ^b					I.		
Input Capacitance	C _{iss}			66		pF	
Output Capacitance	C _{oss}	$V_{DS} = 10 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$		17			
Reverse Transfer Capacitance	C _{rss}			7			
Tatal Oata Obarra		$V_{DS} = 10 \text{ V}, V_{GS} = 5 \text{ V}, I_{D} = 0.606 \text{ A}$		0.99	1.49		
Total Gate Charge	Q_g			0.92	1.38	nC	
Gate-Source Charge	Q _{qs}	V _{DS} = 10 V, V _{GS} = 4.5 V, I _D = 0.606 A		0.15			
Gate-Drain Charge	Q _{qd}			0.30			
Gate Resistance	R _q	f = 1 MHz		212		Ω	
Turn-On Delay Time	t _{d(on)}			17	26		
Rise Time	t _r	$V_{DD} = 10 \text{ V, R}_{L} = 20.8 \Omega$		19	28.5	1	
Turn-Off Delay Time	t _{d(off)}	$I_D \cong 0.48 \text{ A}, V_{GEN} = 4.5 \text{ V}, R_g = 1 \Omega$		76	114	ns	
Fall Time	t _f			27	41		
Drain-Source Body Diode Characterist	ics				L		
Pulse Diode Forward Current ^a	I _{SM}				2.5	Α	
Body Diode Voltage	V _{SD}	I _S = 0.48 A		0.8	1.2	V	
Body Diode Reverse Recovery Time	t _{rr}	-		16	24	ns	
Body Diode Reverse Recovery Charge	Q _{rr}	1 10 4 11/11 100 4/		4.8	7.2	nC	
Reverse Recovery Fall Time	t _a	I _F = 1.0 A, dl/dt = 100 A/μs		12.3			
Reverse Recovery Rise Time	t _b	9		3.7		ns	

Notes:

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.

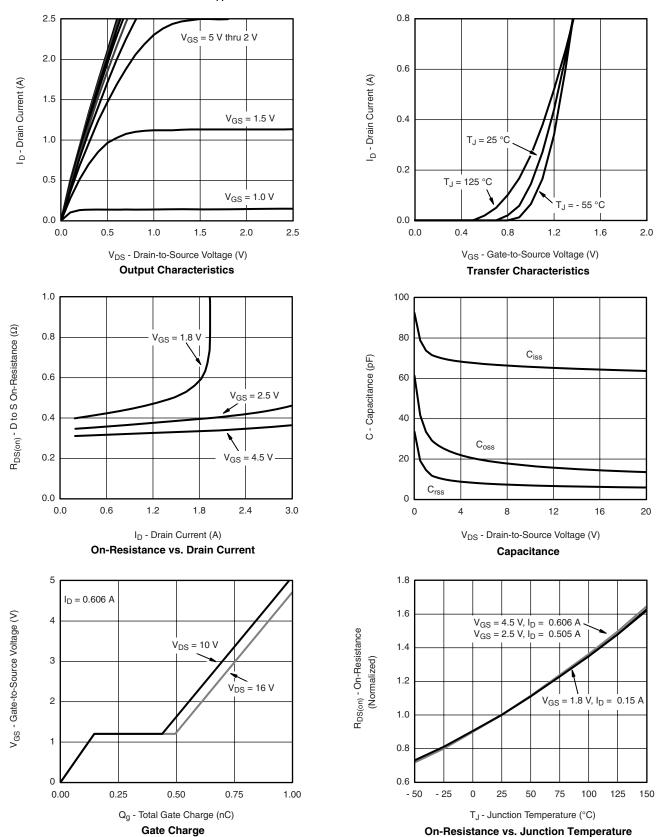
a. Pulse test; pulse width $\leq 300~\mu s,$ duty cycle $\leq 2~\%.$

b. Guaranteed by design, not subject to production testing.



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

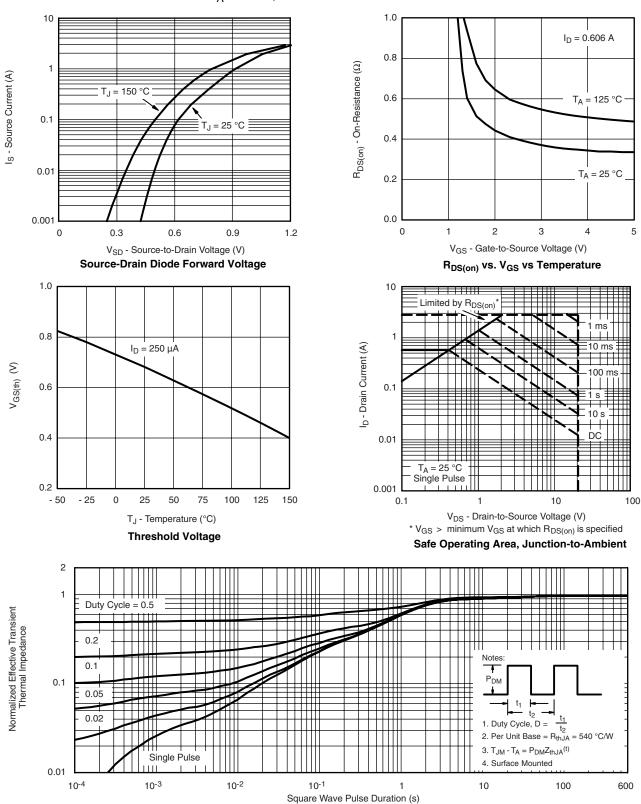


Si1046X

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VISHAY.

TYPICAL CHARACTERISTICS $T_A = 25 \, ^{\circ}C$, unless otherwise noted



Normalized Thermal Transient Impedance, Junction-to-Ambient

Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package/tape drawings, part marking, and reliability data, see www.vishay.com/ppg?74594.



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Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.

Revision: 02-Oct-12 Document Number: 91000

ПОСТАВКА ЭЛЕКТРОННЫХ КОМПОНЕНТОВ

многоканальный

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001 Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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Офис по работе с юридическими лицами:

105318, г. Москва, ул. Щербаковская д. 3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru moschip.ru_6 moschip.ru 4 moschip.ru 9