



N-Channel 100 V (D-S) MOSFET

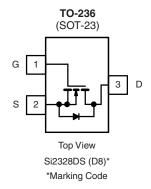
PRODUCT SUMMARY					
V _{DS} (V)	$R_{DS(on)}(\Omega)$	I _D (A)			
100	0.250 at V _{GS} = 10 V	1.5			

FEATURES

- Halogen-free According to IEC 61249-2-21
- 100 % R_g and UIS Tested TrenchFET[®] Power MOSFET
- Compliant to RoHS Directive 2002/95/EC







Ordering Information: Si2328DS-T1-E3 (Lead (Pb)-free)

Si2328DS-T1-GE3 (Lead (Pb)-free and Halogen-free)

ABSOLUTE MAXIMUM RATINGS	6 (T _A = 25 °C, unle	ess otherwise	noted)		
Parameter		Symbol	5 s	Steady State	Unit
Drain-Source Voltage		V _{DS}	100		V
Gate-Source Voltage		V _{GS}	± 20		
Continuous Drain Current /T = 150 °C\2	T _A = 25 °C	1	1.5	1.15	٨
Continuous Drain Current (T _J = 150 °C) ^a	T _A = 70 °C	I _D	1.2	0.92	
Pulsed Drain Current ^b		I _{DM}	6		Α
Avalanche Current ^b	L = 0.1 mH	I _{AS}	6		
ngle Avalanche Energy	L = 0.1 IIII	E _{AS}	1	1.8	mJ
Continuous Source Current (Diode Conduction) ^a		I _S	0.6		Α
Power Dissipation ^a	T _A = 25 °C	В	1.25	0.73	W
rower dissipation:	T _A = 70 °C	P _D	0.80	0.47	
Operating Junction and Storage Temperature Range		T _J , T _{stq}	- 55 to 150		°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	t ≤ 5 s	D	80	100	°C/W
Waximum Junction-to-Ambient	Steady State	- R _{thJA}	130	170	
Maximum Junction-to-Foot	Steady State	R _{thJF}	45	55	

Notes:

- a. Surface mounted on 1" x 1" FR4 board.
- b. Pulse width limited by maximum junction temperature.

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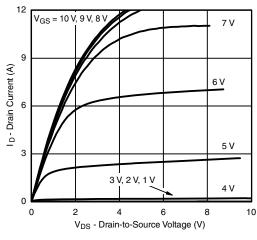
SPECIFICATIONS (T _A = 25	SPECIFICATIONS (T _A = 25 °C, unless otherwise noted)							
			Limits					
Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit		
Static								
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0 \text{ V}, I_D = 1 \text{ mA}$	100			V		
Gate-Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$	2		4	V		
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA		
Zero Gate Voltage Drain Current	1	$V_{DS} = 100 \text{ V}, V_{GS} = 0 \text{ V}$	1		1			
Zero Gate Voltage Drain Current	I _{DSS}	V_{DS} = 100 V, V_{GS} = 0 V, T_J = 70 °C			75	μΑ		
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \ge 15 \text{ V}, V_{GS} = 10 \text{ V}$	6			Α		
Drain-Source On-Resistance ^a	R _{DS(on)}	$V_{GS} = 10 \text{ V}, I_D = 1.5 \text{ A}$		0.195	0.250	Ω		
Forward Transconductance ^a	9 _{fs}	$V_{DS} = 15 \text{ V}, I_D = 1.5 \text{ A}$		4		S		
Diode Forward Voltage	V_{SD}	$I_{S} = 1 A, V_{GS} = 0 V$		0.8	1.2	V		
Dynamic ^b								
Total Gate Charge	Q_g			3.3	5			
Gate-Source Charge	Q_{gs}	$V_{DS} = 50 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 1.5 \text{ A}$		0.47		nC		
Gate-Drain Charge	Q_{gd}			1.45				
Gate Resistance	R_g		0.5	1.3	2.4	Ω		
Switching								
Turn-On Delay Time	t _{d(on)}			7	11			
Rise Time	t _r	V_{DD} = 50 V, R_L = 33 Ω		11	17			
Turn-Off Delay Time	t _{d(off)}	$I_D \cong 0.2 \text{ Å}, V_{GEN} = 10 \text{ V}, R_g = 6 \Omega$		9	15	ns		
Fall Time	t _f			10	15			
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 1.5 A, dI/dt = 100 A/μs		50	100			

Notes:

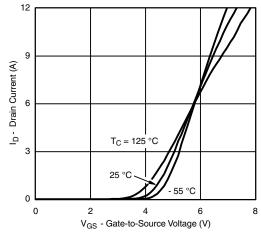
- a. Pulse test: PW \leq 300 $\mu s,$ duty cycle \leq 2 %.
- b. Guaranteed by design, not subject to production testing.

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 (25 °C, unless otherwise noted)



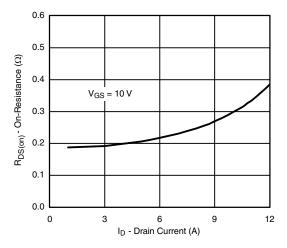




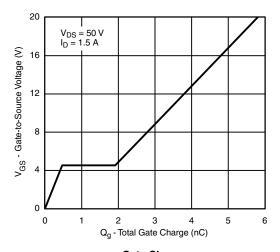
Transfer Characteristics



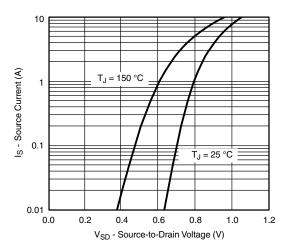
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



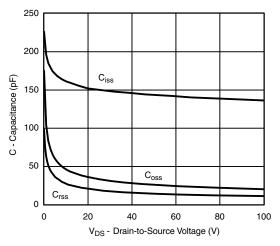
On-Resistance vs. Drain Current



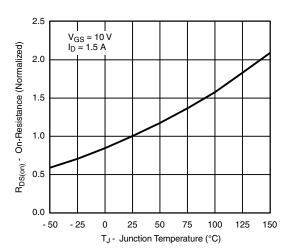
Gate Charge



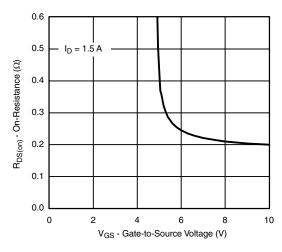
Source-Drain Diode Forward Voltage



Capacitance



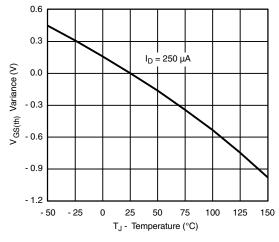
On-Resistance vs. Junction Temperature

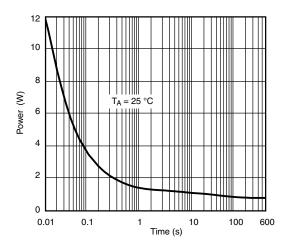


On-Resistance vs. Gate-to-Source Voltage

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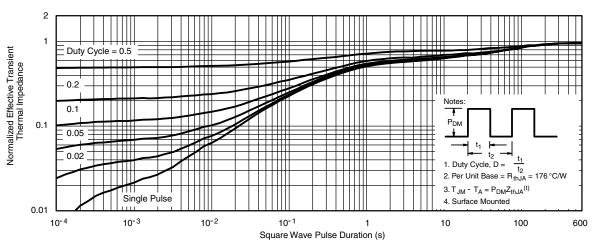
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)





Threshold Voltage

Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

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SOT-23 (TO-236): 3-LEAD







Dim	MILLI	METERS	INCHES		
	Min	Max	Min	Max	
Α	0.89	1.12	0.035	0.044	
A ₁	0.01	0.10	0.0004	0.004	
A ₂	0.88	1.02	0.0346	0.040	
b	0.35	0.50	0.014	0.020	
С	0.085	0.18	0.003	0.007	
D	2.80	3.04	0.110	0.120	
E	2.10	2.64	0.083	0.104	
E ₁	1.20	1.40	0.047	0.055	
е	0.95 BSC		0.0374 Ref		
e ₁	1.90 BSC		0.0748 Ref		
L	0.40	0.60	0.016	0.024	
L ₁	0.64 Ref		0.025 Ref		
S	0.50 Ref		0.020 Ref		
q	3°	8°	3°	8°	
FCN: S-03946-Rev K 09-	lul-01	•			

ECN: S-03946-Rev. K, 09-Jul-01

DWG: 5479

Document Number: 71196 www.vishay.com 09-Jul-01



RECOMMENDED MINIMUM PADS FOR SOT-23



Recommended Minimum Pads Dimensions in Inches/(mm)

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APPLICATION NOTE



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