

# N-Channel 100-V (D-S) MOSFET

PRODU	CT SUMMARY	
V <sub>DS</sub> (V)	$R_{DS(on)}\left(\Omega\right)$	I <sub>D</sub> (A)
100	0.100 at $V_{GS} = 10 \text{ V}$	5.0
100	0.120 at V <sub>GS</sub> = 4.5 V	4.5

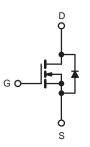
#### **FEATURES**

- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET® Power MOSFETs
- 175 °C Maximum Junction Temperature
- Compliant to RoHS Directive 2002/95/EC



RoHS COMPLIANT





N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS	T <sub>A</sub> = 25 °C, unle	ss otherwise r	noted		
Parameter		Symbol	10 s	Steady State	Unit
Drain-Source Voltage		V <sub>DS</sub>		100	V
Gate-Source Voltage		$V_{GS}$	±	20	V
Continuous Drain Current (T <sub>.I</sub> = 175 °C) <sup>a</sup>	T <sub>A</sub> = 25 °C	I <sub>D</sub>	5.0	4.5	
Continuous Diain Current (1) = 175 C)	T <sub>A</sub> = 70 °C		3.5	3.0	Α
Pulsed Drain Current		I <sub>DM</sub>		25	^
Avalanche Current		I <sub>AS</sub>		15	
Single Pulse Avalanche Energy		E <sub>AS</sub>	11		mJ
Maximum Dawar Dissinational	T <sub>A</sub> = 25 °C	P <sub>D</sub>	3.3	1.7	W
Maximum Power Dissipation <sup>a</sup>	T <sub>A</sub> = 70 °C	٠ ل	2.3	1.2	VV
Operating Junction and Storage Temperature Range	ge	T <sub>J</sub> , T <sub>stg</sub>	- 55	to 175	°C

THERMAL RESISTANCE RATINGS						
Parameter		Symbol	Typical	Maximum	Unit	
Mariana landina to Ambient 3	t ≤ 10 s	R <sub>thJA</sub>	36	45		
Maximum Junction-to-Ambient <sup>a</sup>	Steady State		75	90	°C/W	
Maximum Junction-to-Foot (Drain)	Steady State	$R_{thJF}$	17	20		

#### Notes:

a. Surface Mounted on 1" x 1" FR4 board.



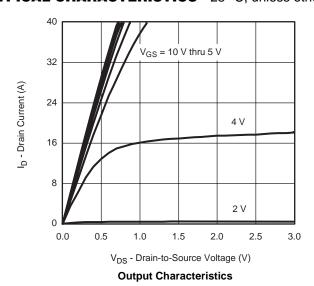
Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit	
Static			•				
Drain-Source Breakdown Voltage	$V_{DS}$	$V_{GS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	100			V	
Gate Threshold Voltage	V <sub>GS(th)</sub>	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$	1.5		3	V	
Gate-Body Leakage	I <sub>GSS</sub>	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
Zoro Gato Voltago Drain Current	1	V <sub>DS</sub> = 100 V, V <sub>GS</sub> = 0 V			1	μA	
Zero Gate Voltage Drain Current	IDSS	$V_{DS} = 100 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 55 ^{\circ}\text{C}$	0 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C		20		
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	$V_{DS} \ge 5 \text{ V}, V_{GS} = 10 \text{ V}$	40			Α	
		$V_{GS} = 10 \text{ V}, I_D = 6.0 \text{ A}$	0.110				
	D	$V_{GS} = 10 \text{ V}, I_D = 4.0 \text{ A}, T_J = 125 ^{\circ}\text{C}$		0.122		Ω	
Drain-Source On-State Resistance <sup>a</sup>	R <sub>DS(on)</sub>	$V_{GS} = 10 \text{ V}, I_D = 4.0 \text{ A}, T_J = 175 \text{ °C}$		0.140			
		$V_{GS} = 4.5 \text{ V}, I_D = 3.1 \text{ A}$		0.120		-	
Forward Transconductance <sup>a</sup>	9 <sub>fs</sub>	$V_{DS} = 15 \text{ V}, I_{D} = 4.0 \text{ A}$		25		S	
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	I <sub>S</sub> = 1.7 A, V <sub>GS</sub> = 0 V		0.8	1.2	V	
Dynamic <sup>b</sup>			•				
Total Gate Charge	$Q_g$			18	27		
Gate-Source Charge	$Q_{gs}$	$V_{DS} = 50 \text{ V}, V_{GS} = 10 \text{ V}, I_{D} = 4.0 \text{ A}$		3.4		nC	
Gate-Drain Charge	$Q_{gd}$	Q <sub>gd</sub>		5.3			
Gate Resistance	$R_g$	$V_{GS} = 0.1 \text{ V, f} = 5 \text{ MHz}$	0.5	1.4	2.4	Ω	
Turn-On Delay Time	t <sub>d(on)</sub>			10	20		
Rise Time	t <sub>r</sub>	$V_{DD}$ = 50 V, $R_L$ = 30 $\Omega$		10	20		
Turn-Off Delay Time	t <sub>d(off)</sub>	$I_D\cong 1$ A, $V_{GEN}=10$ V, $R_g=6$ $\Omega$		25	50	ns	
Fall Time	t <sub>f</sub>			12	24		
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 1.7 A, dI/dt = 100 A/μs		50	80		

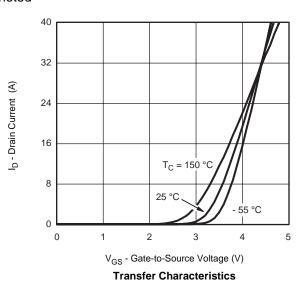
#### Notes:

- a. Pulse test; pulse width  $\leq$  300 µs, 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.

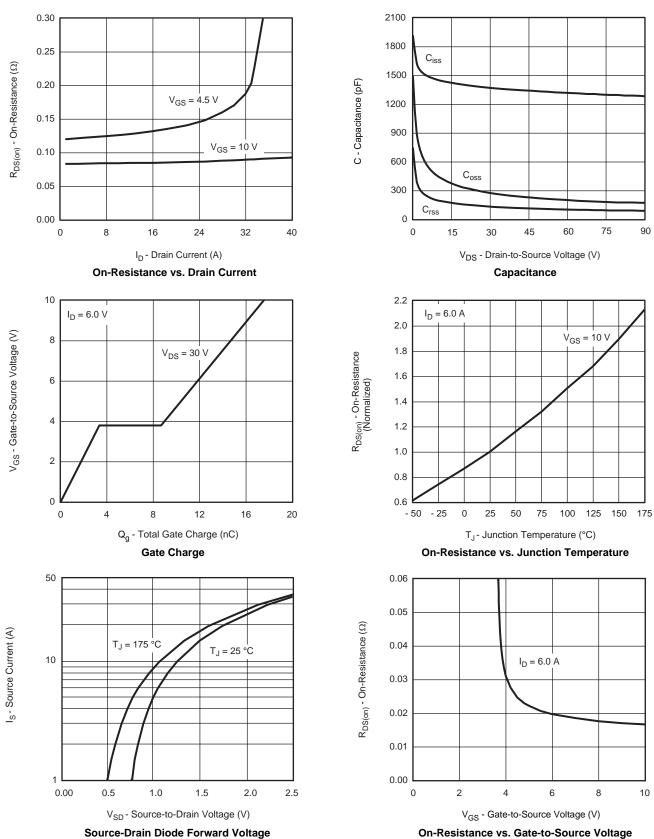
#### TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted





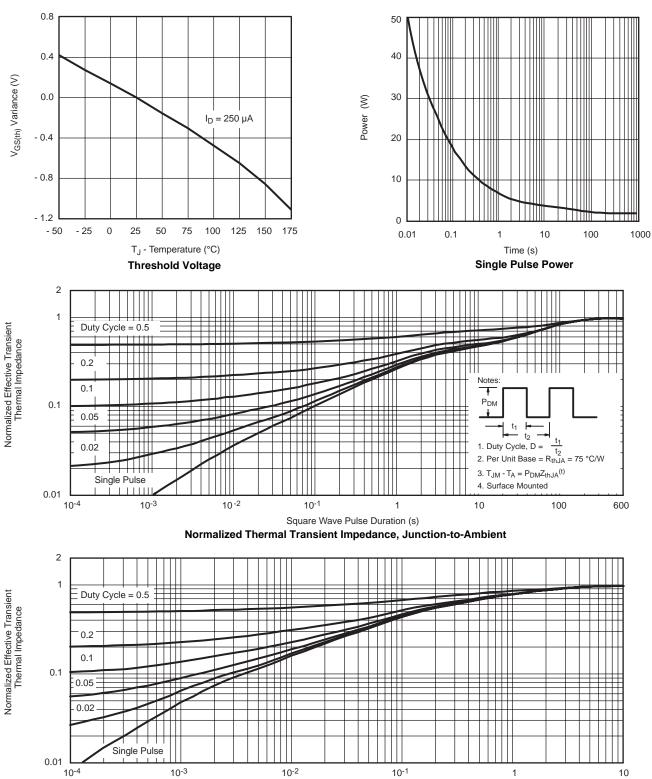


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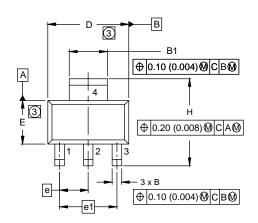
Square Wave Pulse Duration (s)

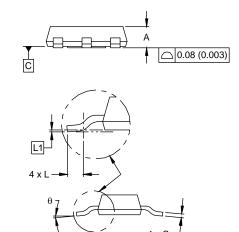
Normalized Thermal Transient Impedance, Junction-to-Foot



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## **SOT-223 (HIGH VOLTAGE)**





DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
Α	1.55	1.80	0.061	0.071
В	0.65	0.85	0.026	0.033
B1	2.95	3.15	0.116	0.124
С	0.25	0.35	0.010	0.014
D	6.30	6.70	0.248	0.264
E	3.30	3.70	0.130	0.146
е	2.30 BSC		0.0905 BSC	
e1	4.60 BSC		0.181	BSC
Н	6.71	7.29	0.264	0.287
L	0.91	-	0.036	-
L1	0.061 BSC		0.0024	1 BSC
θ	-	10'	-	10'

ECN: S-82109-Rev. A, 15-Sep-08

DWG: 5969

#### Notes

- 1. Dimensioning and tolerancing per ASME Y14.5M-1994.
- 2. Dimensions are shown in millimeters (inches).
- 3. Dimension do not include mold flash.
- 4. Outline conforms to JEDEC outline TO-261AA.



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