

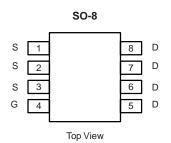
# P-Channel 30-V (D-S) MOSFET

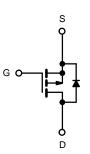
PRODUCT SUMMARY					
V <sub>DS</sub> (V)	$R_{DS(on)}\left(\Omega\right)$	I <sub>D</sub> (A)			
	0.042 at V <sub>GS</sub> = - 10 V	- 5.8			
- 30	0.055 at V <sub>GS</sub> = - 6 V	- 5.0			
	0.060 at V <sub>GS</sub> = - 4.5 V	- 4.4			

#### **FEATURES**

- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET<sup>®</sup> Power MOSFET
- Compliant to RoHS Directive 2002/95/EC







P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS T <sub>A</sub> = 25 °C, unless otherwise noted					
Parameter		Symbol	10 s	Steady State	Unit
Drain-Source Voltage		V <sub>DS</sub>	- 30		V
Gate-Source Voltage		V <sub>GS</sub>	± 20		
Continuous Prois Current /T 450 °C\8	T <sub>A</sub> = 25 °C	- I <sub>D</sub>	- 5.8	- 4.1	
Continuous Drain Current (T <sub>J</sub> = 150 °C) <sup>a</sup>	T <sub>A</sub> = 70 °C		- 4.6	- 3.2	
Pulsed Drain Current		I <sub>DM</sub>	- 30		А
Continuous Source Current (Diode Conduction) <sup>a</sup>		I <sub>S</sub>	- 2.3	- 1.1	
Mariana Barra Biraira di ad	T <sub>A</sub> = 25 °C	P <sub>D</sub>	2.5	1.3	W
Maximum Power Dissipation <sup>a</sup>	T <sub>A</sub> = 70 °C	1.6	0.8	v V	
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>stg</sub>	- 55 to 150		°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Manifestor boating to Ambienta	t ≤ 10 s	P	40	50	
Maximum Junction-to-Ambient <sup>a</sup>	Steady State	R <sub>thJA</sub>	70	95	°C/W
Maximum Junction-to-Foot (Drain)	Steady State	$R_{thJF}$	24	30	

#### Notes:

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



Parameter	Symbol	Test Conditions	Min.	Typ. <sup>a</sup>	Max.	Unit	
Static							
Gate Threshold Voltage	V <sub>GS(th)</sub>	$V_{DS} = V_{GS}, I_{D} = -250 \mu\text{A}$	- 0.7		- 2.0	V	
Gate-Body Leakage	I <sub>GSS</sub>	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = - 30 V, V <sub>GS</sub> = 0 V	V <sub>DS</sub> = - 30 V, V <sub>GS</sub> = 0 V		- 1	μΑ	
		V <sub>DS</sub> = - 30 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 70 °C			- 5		
0 0 1 0 1h	I <sub>D(on)</sub>	$V_{DS} \le -10 \text{ V}, V_{GS} = -10 \text{ V}$	- 20			А	
On-State Drain Current <sup>b</sup>		$V_{DS} \le -5 \text{ V}, V_{GS} = -4.5 \text{ V}$	- 5				
		V <sub>GS</sub> = - 10 V, I <sub>D</sub> = - 5.8 A		0.033	0.042	Ω	
Drain-Source On-State Resistance <sup>b</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -6 V, I <sub>D</sub> = -5 A		0.043	0.055		
		V <sub>GS</sub> = - 4.5 V, I <sub>D</sub> = - 4.4 A		0.056	0.060	1	
Forward Transconductance <sup>b</sup>	9 <sub>fs</sub>	V <sub>DS</sub> = - 15 V, I <sub>D</sub> = - 5.8 A		13		S	
Diode Forward Voltage <sup>b</sup>	$V_{SD}$	I <sub>S</sub> = - 2.3 A, V <sub>GS</sub> = 0 V		- 0.8	- 1.1	V	
Dynamic <sup>a</sup>							
Total Gate Charge	$Q_g$			16	24		
Gate-Source Charge	$Q_{gs}$	$Q_{gs}$ $V_{DS} = -15 \text{ V}, V_{GS} = -10 \text{ V}, I_D = -3.5 \text{ A}$		2.3		nC	
Gate-Drain Charge	$Q_{gd}$			4.5			
Gate Resistance	R <sub>g</sub>			8.8		Ω	
Turn-On Delay Time	t <sub>d(on)</sub>			14	25		
Rise Time	t <sub>r</sub>	$V_{DD}$ = - 15 V, $R_L$ = 15 $\Omega$		14	25	ns	
Turn-Off Delay Time	t <sub>d(off)</sub>	$I_D\cong$ - 1 A, $V_{GEN}=$ - 10 V, $R_g=$ 6 $\Omega$		42	70		
Fall Time	t <sub>f</sub>			30	50		
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = - 1.2 A, dI/dt = 100 A/μs		30	60		

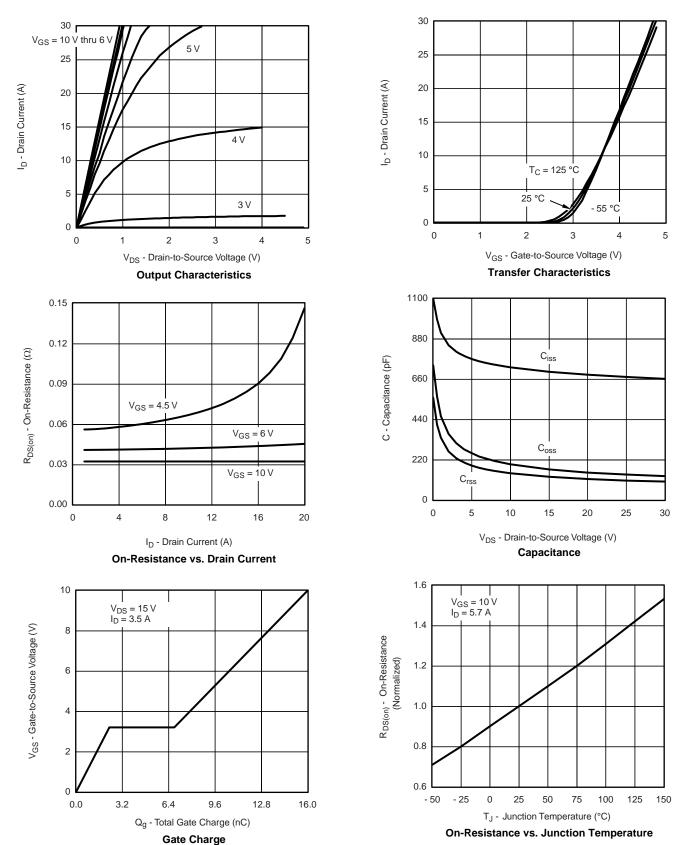
#### Notes:

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

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.

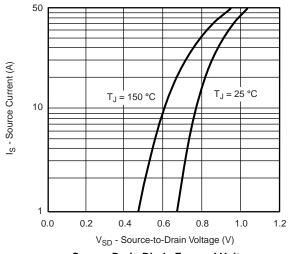


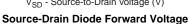
## TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

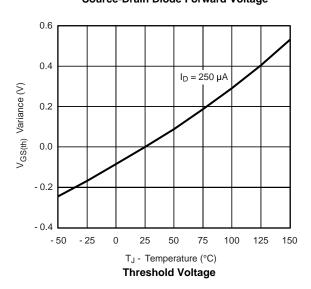


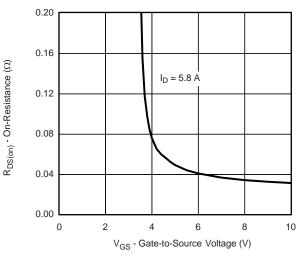


#### TYPICAL CHARACTERISTICS 25 C, unless otherwise noted

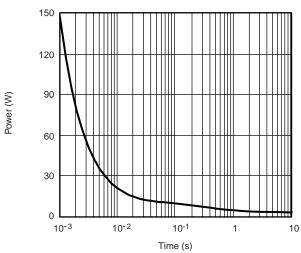




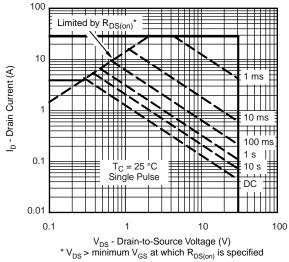




On-Resistance vs. Gate-to-Source Voltage



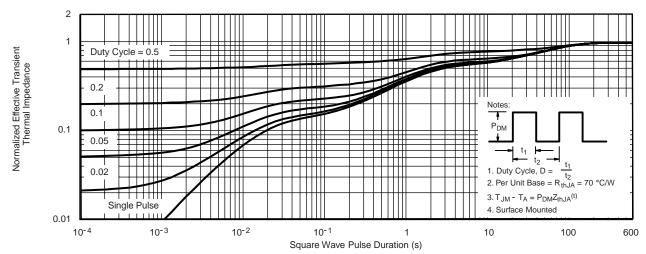
Single Pulse Power, Junction-to-Ambient



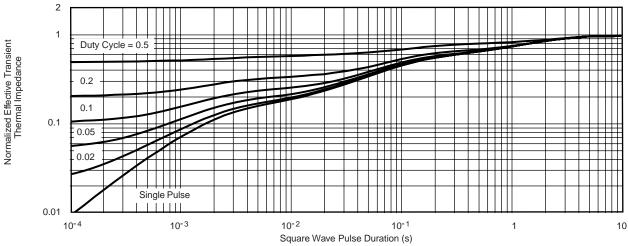
Safe Operating Area, Junction-to-Foot



## TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



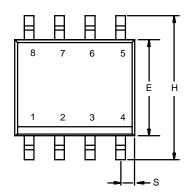
Normalized Thermal Transient Impedance, Junction-to-Ambient

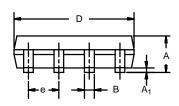


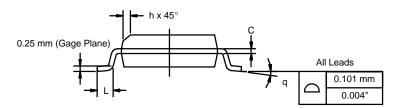
Normalized Thermal Transient Impedance, Junction-to-Foot



**SOIC (NARROW): 8-LEAD**JEDEC Part Number: MS-012







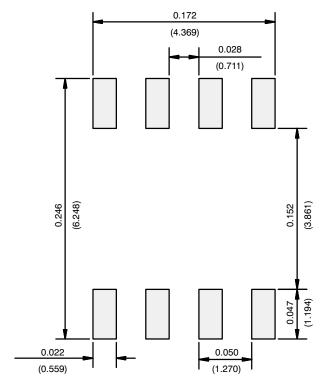
	MILLIMETERS		INC	HES		
DIM	Min	Max	Min	Max		
Α	1.35	1.75	0.053	0.069		
A <sub>1</sub>	0.10	0.20	0.004	0.008		
В	0.35	0.51	0.014	0.020		
С	0.19	0.25	0.0075	0.010		
D	4.80	5.00	0.189	0.196		
E	3.80	4.00	0.150	0.157		
е	1.27	BSC	0.050 BSC			
Н	5.80	6.20	0.228	0.244		
h	0.25	0.50	0.010	0.020		
L	0.50	0.93	0.020	0.037		
q	0°	8°	0°	8°		
S	0.44	0.64	0.018	0.026		
FCN: C-06527-Rev I 11-Sep-06						

ECN: C-06527-Rev. I, 11-Sep-06

DWG: 5498



## **RECOMMENDED MINIMUM PADS FOR SO-8**



Recommended Minimum Pads Dimensions in Inches/(mm)



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