



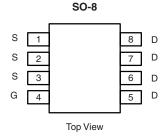
## P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY				
V <sub>DS</sub> (V)	$R_{DS(on)}(\Omega)$	I <sub>D</sub> (A)		
	0.0105 at V <sub>GS</sub> = - 10 V	- 12.6		
- 30	0.0125 at V <sub>GS</sub> = - 4.5 V	- 11.5		
	0.0195 at V <sub>GS</sub> = - 2.5 V	- 9.2		

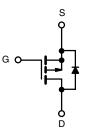
#### **FEATURES**

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





Ordering Information: Si4427BDY-T1-E3 (Lead (Pb)-free) Si4427BDY-T1-GE3 (Lead (Pb)-free and Halogen-free)



P-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>	- 30		V
Gate-Source Voltage		V <sub>GS</sub>	± 12		
Continuous Ducis Comment /T 450 9008	T <sub>A</sub> = 25 °C	- I <sub>D</sub>	- 12.6	- 9.7	
Continuous Drain Current (T <sub>J</sub> = 150 °C) <sup>a</sup>	T <sub>A</sub> = 70 °C		- 10.1	- 7.7	
Pulsed Drain Current		I <sub>DM</sub>	- 50		А
Continuous Source Current (Diode Conduction) <sup>a</sup>		I <sub>S</sub>	- 2.5	- 1.3	
Mariana Baran Biraira Kand	T <sub>A</sub> = 25 °C	P <sub>D</sub>	2.5	1.5	W
Maximum Power Dissipation <sup>a</sup>	T <sub>A</sub> = 70 °C	] ' <sup>-</sup> D	1.6	0.9	VV
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
Mariana Instituta Anticola	t ≤ 10 s	R <sub>thJA</sub>	40	50	
Maximum Junction-to-Ambient <sup>a</sup>	Steady State	' 'thJA	70	85	°C/W
Maximum Junction-to-Foot (Drain)	Steady State	R <sub>thJF</sub>	15	18	

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

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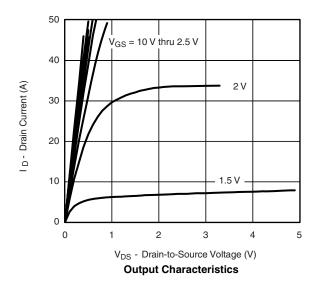
<b>SPECIFICATIONS</b> T <sub>J</sub> = 25 °C, unless otherwise noted							
Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit	
Static							
Gate Threshold Voltage	V <sub>GS(th)</sub>	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$	- 0.60		- 1.4	V	
Gate-Body Leakage	I <sub>GSS</sub>	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 12 \text{ V}$			± 100	nA	
Zava Cata Valtana Duain Commant		V <sub>DS</sub> = - 30 V, V <sub>GS</sub> = 0 V			-1		
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = - 30 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C			- 5	μΑ	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	$V_{DS} \le -5 \text{ V}, V_{GS} = -10 \text{ V}$	- 50			Α	
		V <sub>GS</sub> = - 10 V, I <sub>D</sub> = - 12.6 A		0.0088	0.0105		
Drain-Source On-State Resistance <sup>a</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = - 4.5 V, I <sub>D</sub> = - 11.5 A		0.0105	0.0125	Ω	
		V <sub>GS</sub> = - 2.5 V, I <sub>D</sub> = - 5.1 A		0.0150	0.0195		
Forward Transconductance <sup>a</sup>	9 <sub>fs</sub>	V <sub>DS</sub> = - 15 V, I <sub>D</sub> = - 12.6 A		44		S	
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = - 2.5 A, V <sub>GS</sub> = 0 V		- 0.8	- 1.2	V	
Dynamic <sup>b</sup>							
Total Gate Charge	$Q_g$			47.2	70		
Gate-Source Charge	$Q_{gs}$	$V_{DS} = -15 \text{ V}, V_{GS} = -4.5 \text{ V}, I_{D} = -12.6 \text{ A}$		9.5		nC	
Gate-Drain Charge	$Q_{gd}$			16.6			
Turn-On Delay Time	t <sub>d(on)</sub>			12	20		
Rise Time	t <sub>r</sub>	$V_{DD} = -15 \text{ V}, R_L = 15 \Omega$		15	25		
Turn-Off Delay Time	t <sub>d(off)</sub>	$I_D \cong -1 \text{ A}, V_{GEN} = -10 \text{ V}, R_g = 6 \Omega$		242	360	ns	
Fall Time	t <sub>f</sub>			110	165		
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	$I_F = -2.5 \text{ A}, \text{ dI/dt} = 100 \text{ A/}\mu\text{s}$		70	110		

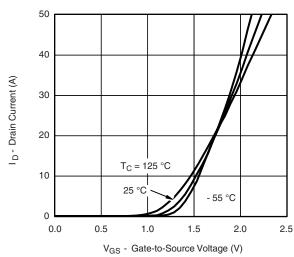
#### Notes:

- 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 25 °C, unless otherwise noted



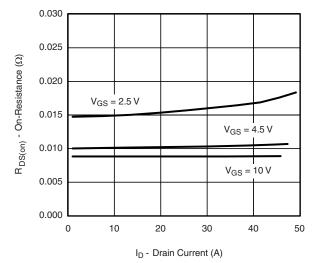




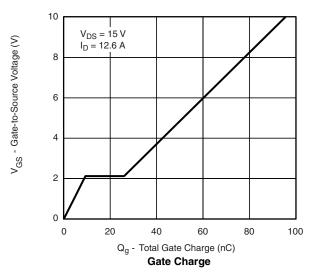


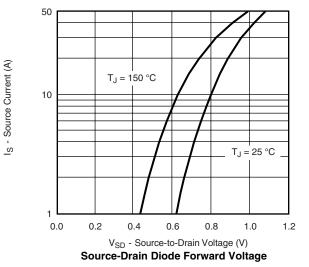


## TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

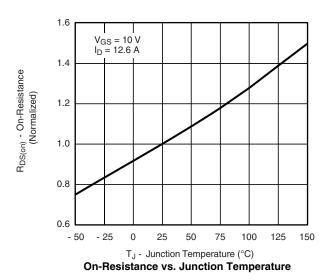


#### On-Resistance vs. Drain Current





V<sub>DS</sub> - Drain-to-Source Voltage (V) **Capacitance** 



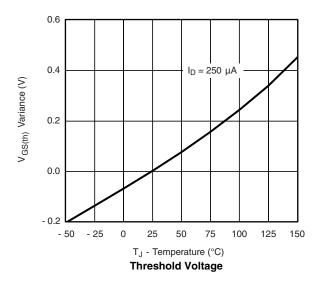
0.030 0.025 0.020 0.015 0.010 0.005 0.000 0 2 4 6 8 10 V<sub>GS</sub> - Gate-to-Source Voltage (V)

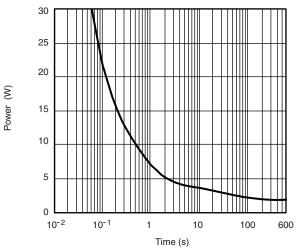
On-Resistance vs. Gate-to-Source Voltage

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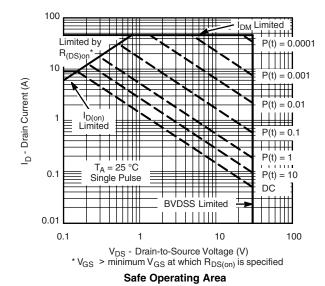
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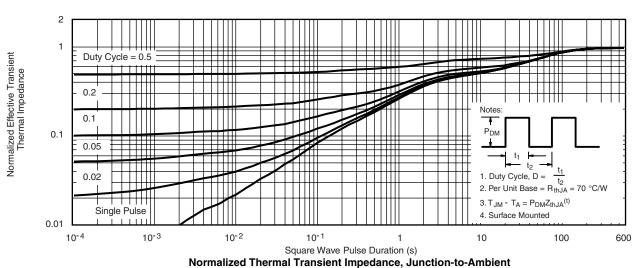
## TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted





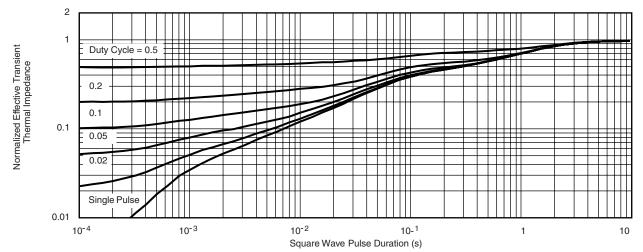
Single Pulse Power, Junction-to-Ambient







## TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



Normalized Thermal Transient Impedance, Junction-to-Foot

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 <a href="https://www.vishay.com/ppg?72295">www.vishay.com/ppg?72295</a>.



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







	MILLIM	IETERS	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	
Е	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-Bey   11-Sen-06					

DWG: 5498

Document Number: 71192 www.vishay.com 11-Sep-06



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



Recommended Minimum Pads Dimensions in Inches/(mm)

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