

Vishay Siliconix

# P-Channel 1.8-V (G-S) MOSFET

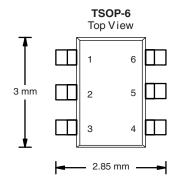
PRODUCT SUMMARY				
V <sub>DS</sub> (V)	R <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)		
	0.042 at V <sub>GS</sub> = - 4.5 V	- 5.6		
- 20	0.057 at V <sub>GS</sub> = - 2.5 V	- 4.8		
	0.080 at V <sub>GS</sub> = - 1.8 V	- 4.1		

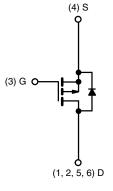
#### FEATURES

- Halogen-free According to IEC 61249-2-21
   Definition
- TrenchFET<sup>®</sup> Power MOSFETs: 1.8 V Rated
- Compliant to RoHS Directive 2002/95/EC



Available





 Ordering Information:
 Si3433BDV-T1-E3 (Lead (Pb)-free) Si3433BDV-T1-GE3 (Lead (Pb)-free and Halogen-free)

 Marking Code:
 B3xxx

P-Channel MOSFET

<b>ABSOLUTE MAXIMUM RATINGS</b> $T_A = 25 \degree C$ , unless otherwise noted						
Parameter		Symbol	5 s	Steady State	Unit	
Drain-Source Voltage		V <sub>DS</sub>	- 20		V	
Gate-Source Voltage		V <sub>GS</sub>	± 8			
	T <sub>A</sub> = 25 °C	- I <sub>D</sub>	- 5.6	- 4.3		
Continuous Drain Current (T <sub>J</sub> = 150 °C) <sup>a</sup>	T <sub>A</sub> = 85 °C		- 4.1	- 3.1		
Pulsed Drain Current		I <sub>DM</sub>	- 20		A	
Continuous Source Current (Diode Conduction) <sup>a</sup>		۱ <sub>S</sub>	- 1.7	- 0.9		
Maximum Power Dissipation <sup>a</sup>	T <sub>A</sub> = 25 °C	- P <sub>D</sub>	2.0	1.1	w	
	T <sub>A</sub> = 85 °C		1.0	0.6		
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
Manimum Institute to Anthia 18	t ≤ 5 s	- R <sub>thJA</sub>	50	60	°C/W
Maximum Junction-to-Ambient <sup>a</sup>	Steady State		90	110	
Maximum Junction-to-Foot (Drain)	Steady State	R <sub>thJF</sub>	35	42	

Notes:

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

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<b>SPECIFICATIONS</b> $T_J = 25 \text{ °C}$ , unless otherwise noted								
Parameter	Symbol	Test Conditions	Min. Typ.		Max.	Unit		
Static								
Gate Threshold Voltage	V <sub>GS(th)</sub>	$V_{DS} = V_{GS}, I_{D} = -250 \ \mu A$	- 0.45		- 0.85	V		
Gate-Body Leakage	I <sub>GSS</sub>	$V_{DS}$ = 0 V, $V_{GS}$ = ± 8 V			± 100	nA		
Zero Gate Voltage Drain Current	1	$V_{DS} = -20 V, V_{GS} = 0 V$			- 1			
	IDSS	$V_{DS}$ = - 20 V, $V_{GS}$ = 0 V, $T_{J}$ = 85 °C			- 5	μΑ		
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	$V_{DS} = -5 V, V_{GS} = -4.5 V$	- 20			А		
	R <sub>DS(on)</sub>	V <sub>GS</sub> = - 4.5 V, I <sub>D</sub> = - 5.6 A		0.034	0.042	Ω		
Drain-Source On-State Resistance <sup>a</sup>		V <sub>GS</sub> = - 2.5 V, I <sub>D</sub> = - 4.8 A		0.045	0.057			
		V <sub>GS</sub> = - 1.8 V, I <sub>D</sub> = - 1 A		0.060	0.080			
Forward Transconductance <sup>a</sup>	9 <sub>fs</sub>	V <sub>DS</sub> = - 5 V, I <sub>D</sub> = - 5.6 A		10		S		
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = - 1.7 A, V <sub>GS</sub> = 0 V		- 0.7	- 1.2	V		
Dynamic <sup>b</sup>								
Total Gate Charge	Qg			12	18			
Gate-Source Charge	Q <sub>gs</sub>	$V_{DS}$ = - 10 V, $V_{GS}$ = - 4.5 V, $I_D$ = - 5.6 A		1.7		nC		
Gate-Drain Charge	Q <sub>gd</sub>			3.5		1		
Turn-On Delay Time	t <sub>d(on)</sub>			15	25			
Rise Time	t <sub>r</sub>	$V_{DD}$ = - 10 V, $R_L$ = 10 $\Omega$		45	75	ns		
Turn-Off Delay Time	t <sub>d(off)</sub>	$\text{I}_\text{D}\cong$ - 1 A, $\text{V}_\text{GEN}$ = - 4.5 V, $\text{R}_\text{g}$ = 6 $\Omega$		80	130			
Fall Time	t <sub>f</sub>			60	100			
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = - 1.7 A, dl/dt = 100 A/μs		40	70			

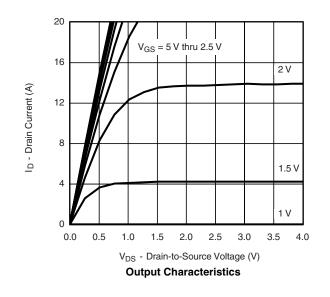
Notes:

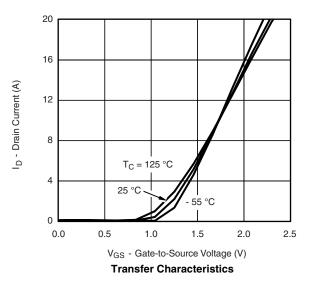
a. Pulse test; pulse width  $\leq$  300 µs, duty cycle  $\leq$  2 %.

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



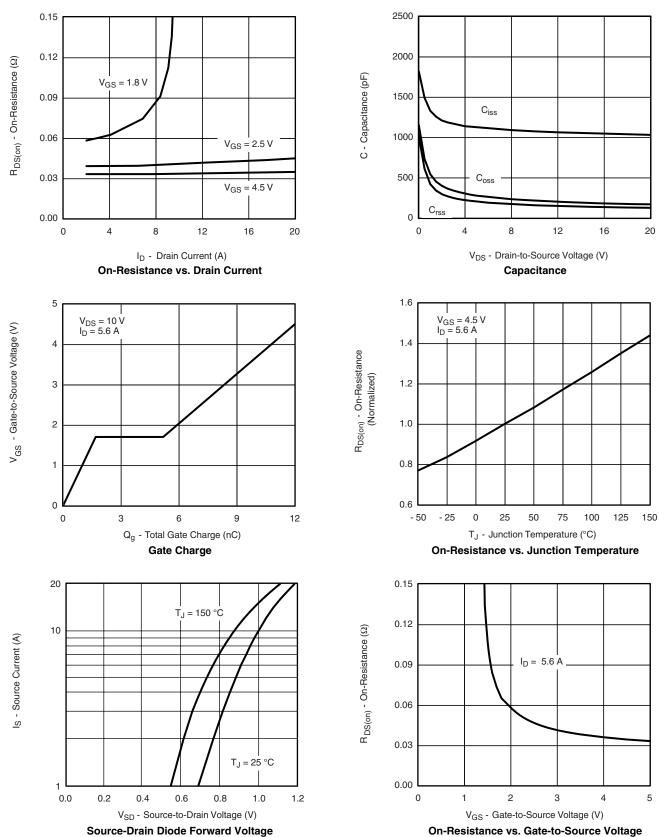




# Si3433BDV

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



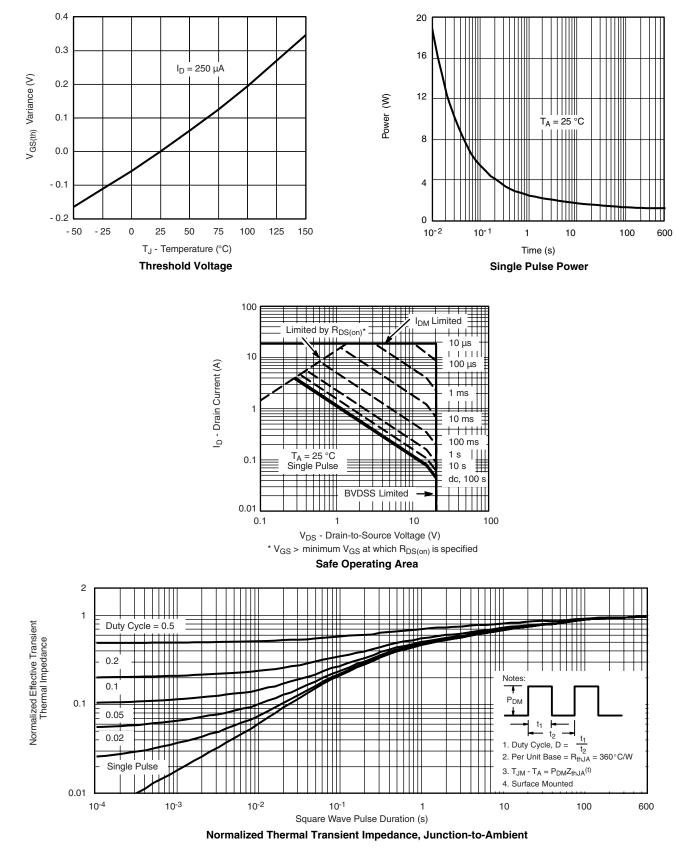
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## Si3433BDV

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

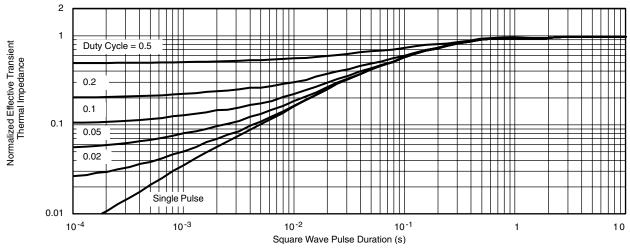




Si3433BDV

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#### 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="http://www.vishay.com/ppg?72027">www.vishay.com/ppg?72027</a>.



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