Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

Vishay/Siliconix
SI8901EDB-T2-E1

For any questions, you can email us directly:
sales@integrated-circuit.com

Bi-Directional P-Channel 20-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{S1S2} (V)	$R_{S1S2(on)}$ (Ω)	I_{S1S2} (A)
- 20	0.060 at V_{GS} = - 4.5 V	- 4.4
	0.080 at V_{GS} = - 2.5 V	- 3.9
	0.105 at V_{GS} = - 1.8 V	- 3.4

FEATURES

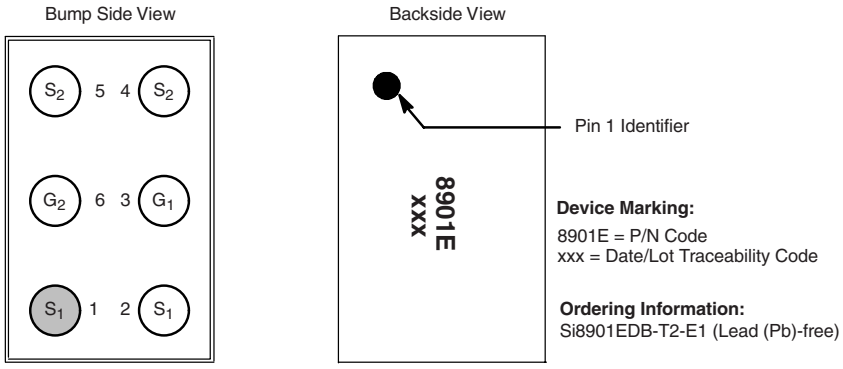
- TrenchFET® Power MOSFET
- Ultra-Low $R_{SS(on)}$
- ESD Protected: 6000 V
- MICRO FOOT® Chipscale Packaging Reduces Footprint Area, Profile (0.65 mm) and On-Resistance Per Footprint Area

Pb-free
RoHS COMPLIANT

APPLICATIONS

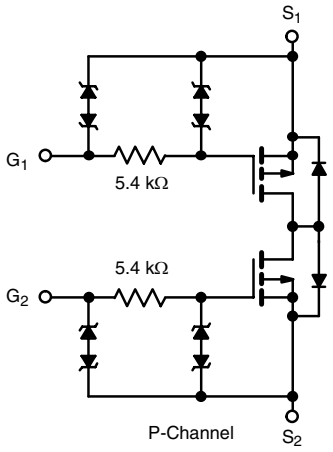
- Smart Batteries for Portable Devices

MICRO FOOT



Device Marking:
8901E = P/N Code
xxx = Date/Lot Traceability Code

Ordering Information:
Si8901EDB-T2-E1 (Lead (Pb)-free)



ABSOLUTE MAXIMUM RATINGS T_A = 25 °C, unless otherwise noted					
Parameter		**Symbol**	**5 s**	**Steady State**	**Unit**
Source1- Source2 Voltage		V_{S1S2}	- 20		V
Gate-Source Voltage		V_{GS}	± 12		
Continuous Source1- Source2 Current (T_J = 150 °C)[a]	T_A = 25 °C	I_{S1S2}	- 4.4	- 3.5	A
	T_A = 85 °C		- 3.2	- 2.5	
Pulsed Source1- Source2 Current		I_{SM}	- 10		
Maximum Power Dissipation[a]	T_A = 25 °C	P_D	1.7	1	W
	T_A = 85 °C		0.8	0.5	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 150		°C
Package Reflow Conditions[c]	IR/Convection		260		

THERMAL RESISTANCE RATINGS					
Parameter		**Symbol**	**Typical**	**Maximum**	**Unit**
Maximum Junction-to-Ambient[a]	t ≤ 5 s	R_{thJA}	60	75	°C/W
	Steady State		95	120	
Maximum Junction-to-Foot[b]	Steady State	R_{thJF}	18	22	

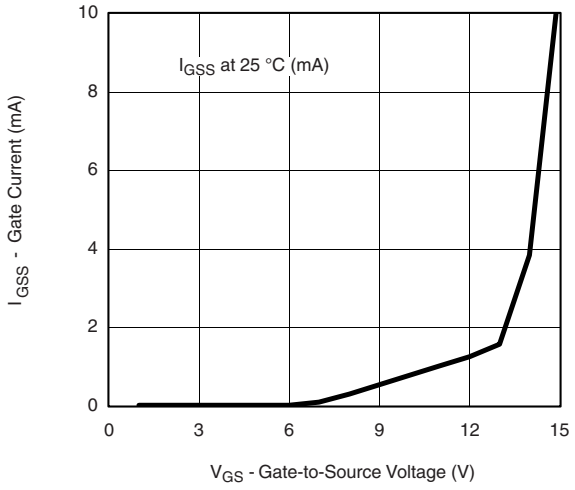
Notes:
a. Surface Mounted on 1" x 1" FR4 board.
b. The foot is defined as the top surface of the package.
c. Refer to IPC/JEDEC (J-STD-020C), no manual or hand soldering.

SPECIFICATIONS T_J = 25 °C, unless otherwise noted						
Parameter	**Symbol**	**Test Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Static						
Gate Threshold Voltage	$V_{GS(th)}$	V_{SS} = V_{GS}, I_D = - 350 µA	- 0.45		- 1.0	V
Gate-Body Leakage	I_{GSS}	V_{SS} = 0 V, V_{GS} = ± 4.5 V			± 4	µA
		V_{SS} = 0 V, V_{GS} = ± 12 V			± 10	mA
Zero Gate Voltage Source Current	I_{S1S2}	V_{SS} = - 20 V, V_{GS} = 0 V			- 1	µA
		V_{SS} = - 20 V, V_{GS} = 0 V, T_J = 85 °C			- 5	
On-State Source Current[a]	$I_{S(on)}$	V_{SS} = - 5 V, V_{GS} = - 4.5 V	- 5			A
Source1- Source2 On-State Resistance[a]	$R_{S1S2(on)}$	V_{GS} = - 4.5 V, I_{SS} = - 1 A		0.048	0.060	Ω
		V_{GS} = - 2.5 V, I_{SS} = - 1 A		0.062	0.080	
		V_{GS} = - 1.8 V, I_{SS} = - 1 A		0.081	0.105	
Forward Transconductance[a]	g_{fs}	V_{SS} = - 10 V, I_{SS} = - 1 A		7		S
Dynamic[b]						
Turn-On Delay Time	$t_{d(on)}$	V_{SS} = - 10 V, R_L = 10 Ω I_{SS} ≅ - 1 A, V_{GEN} = - 4.5 V, R_g = 6 Ω		2.3	3.5	µs
Rise Time	t_r			2.2	3.5	
Turn-Off Delay Time	$t_{d(off)}$			1.3	2	
Fall Time	t_f			9	14	

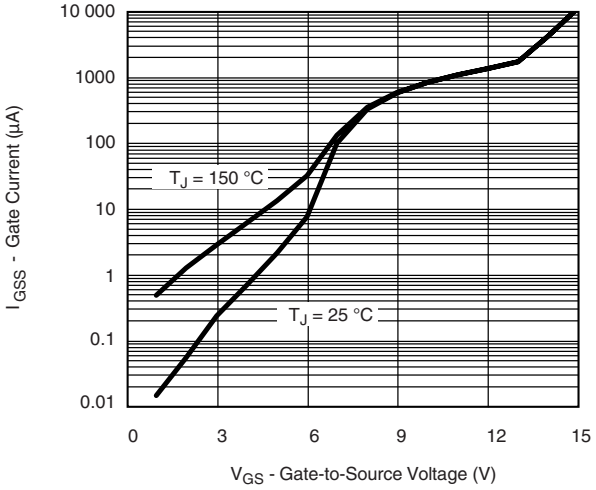
Notes:
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.

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

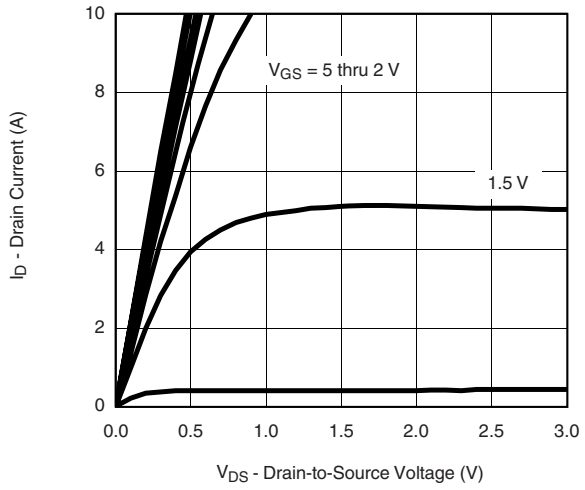


Gate-Current vs. Gate-Source Voltage

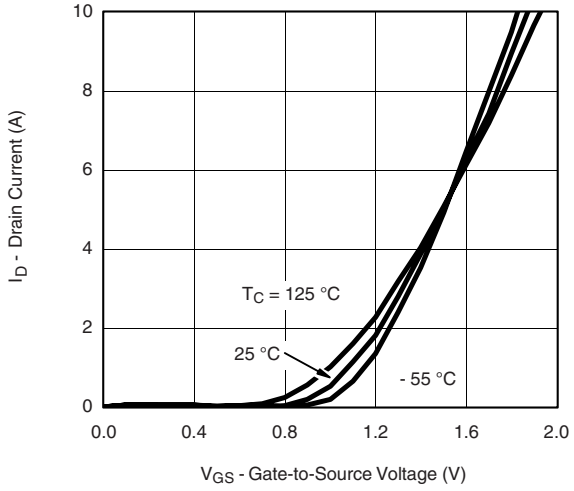


Gate Current vs. Gate-Source Voltage

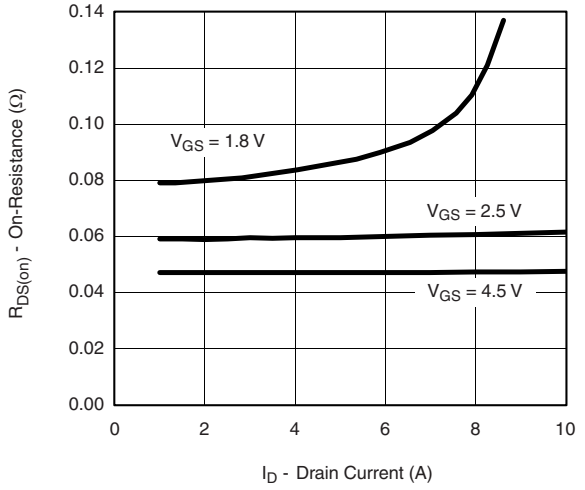
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



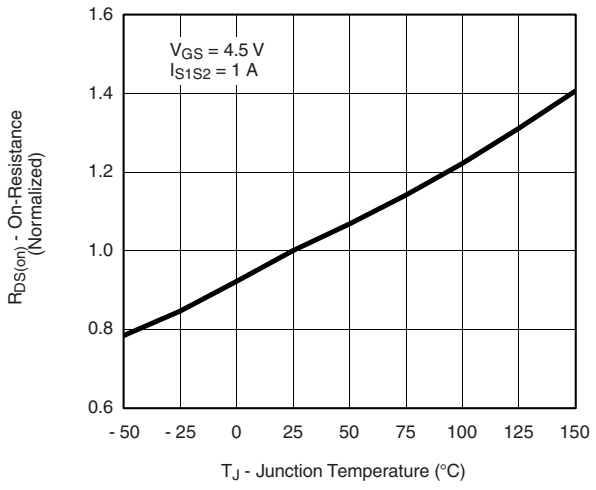
Output Characteristics



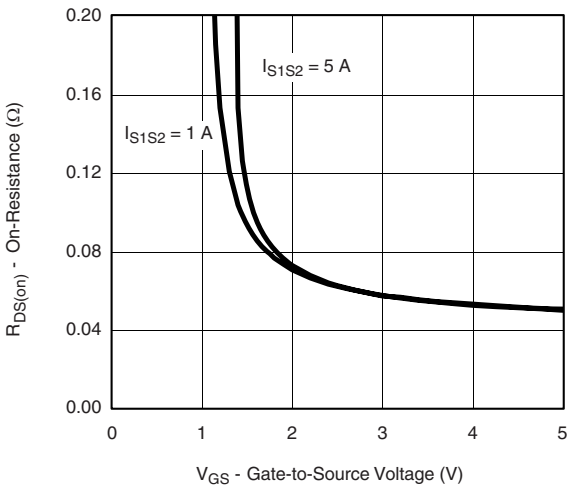
Transfer Characteristics



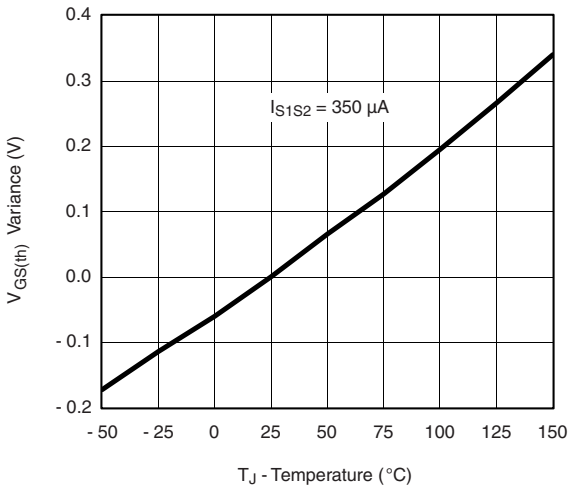
On-Resistance vs. Drain Current



On-Resistance vs. Junction Temperature

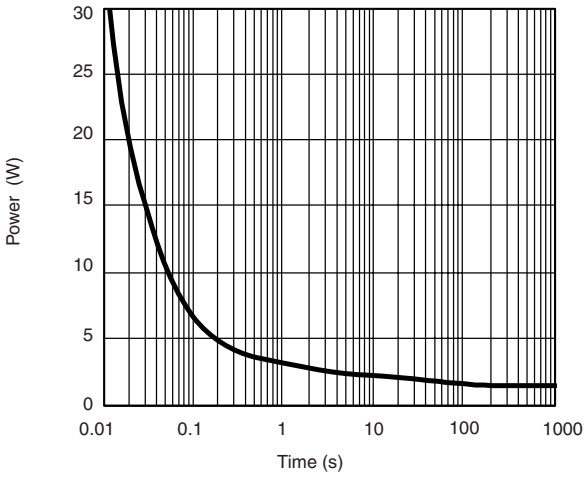


On-Resistance vs. Gate-to-Source Voltage

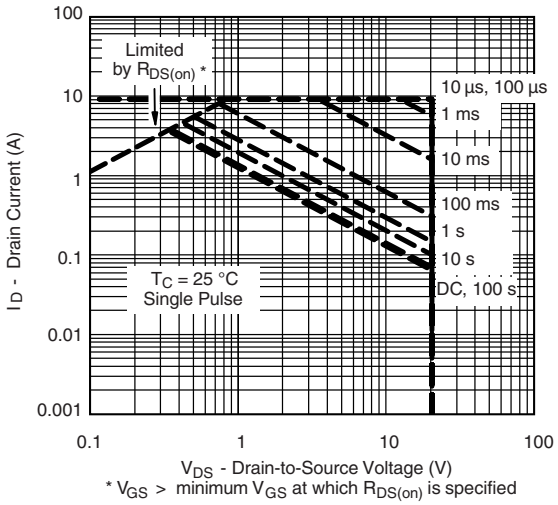


Threshold Voltage

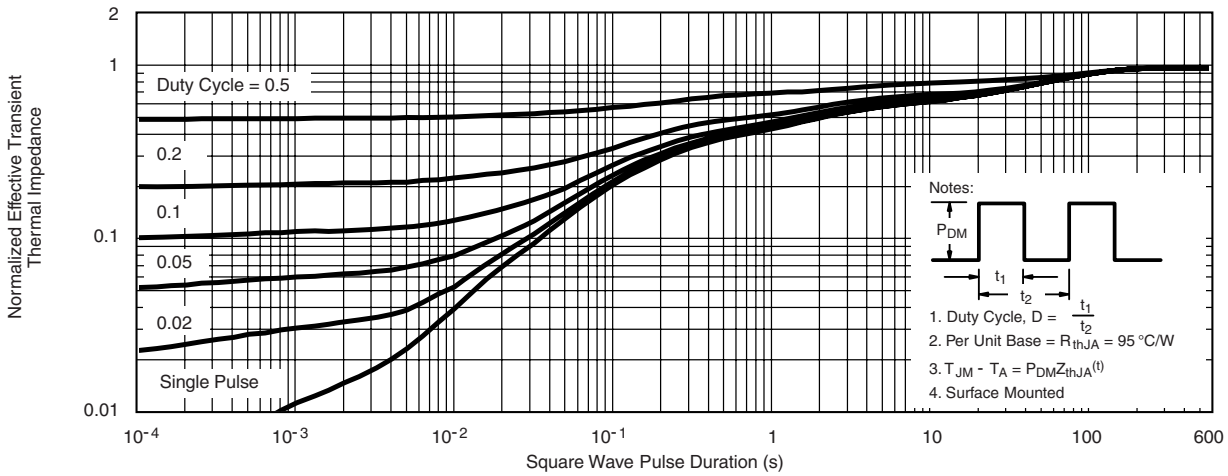
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



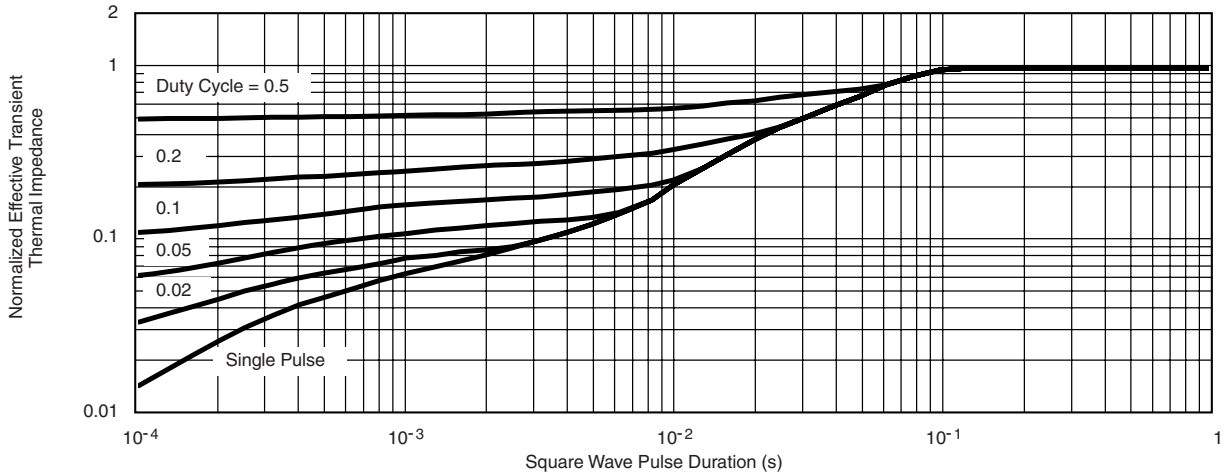
Single Pulse Power, Junction-to-Ambient



Safe Operating Area



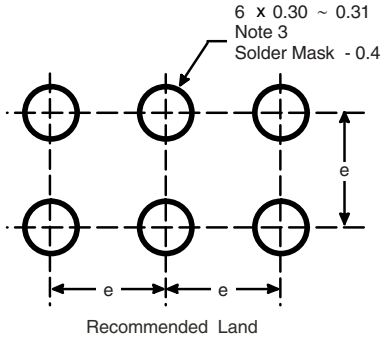
Normalized Thermal Transient Impedance, Junction-to-Ambient

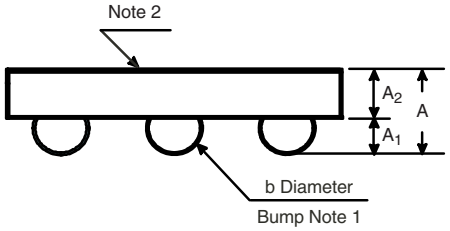


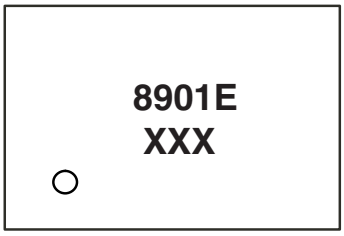
Normalized Thermal Transient Impedance, Junction-to-Foot

PACKAGE OUTLINE

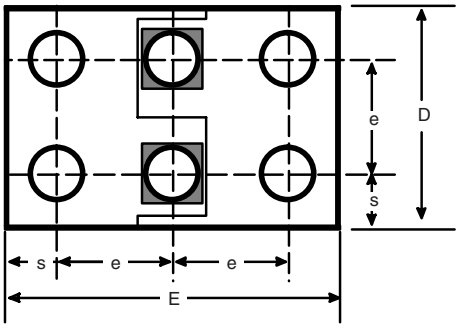
MICRO FOOT: 6-BUMP (2 x 3, 0.8 mm PITCH)







Mark on Backside of Die



Notes (Unless Otherwise Specified):
1. 6 solder bumps are 95.5/3.8/0.7 Sn/Ag/Cu.
2. Backside surface is coated with a Ag/Ni/Ti layer.
3. Non-solder mask defined copper landing pad.
4. Laser marks on the silicon die back.

Dim.	Millimeters[a]		Inches	
	Min.	Max.	Min.	Max.
A	0.600	0.650	0.0236	0.0256
A_1	0.260	0.290	0.102	0.114
A_2	0.340	0.360	0.0134	0.0142
b	0.370	0.410	0.0146	0.0161
D	1.52	1.6	0.0598	0.0630
E	2.32	2.4	0.0913	0.0945
e	0.750	0.850	0.0295	0.0335
s	0.380	0.400	0.0150	0.0157

Notes:
a. Use millimeters as the primary measurement.

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 http://www.vishay.com/ppg?72941.

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay’s knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer’s technical experts. Product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.