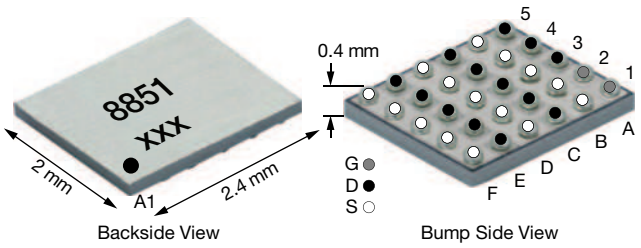
P-Channel 20 V (D-S) MOSFET

PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (Ω) Max.	I_D (A) [a, d]	Q_g (Typ.)
-20	0.0080 at V_{GS} = -4.5 V	-16.7	70 nC
	0.0086 at V_{GS} = -3.7 V	-16.1	
	0.0110 at V_{GS} = -2.5 V	-14.2	
	0.0185 at V_{GS} = -1.8 V	-11	

Power MICRO FOOT® 2.4 x 2



Backside View Bump Side View

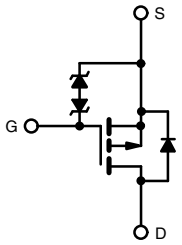
FEATURES

- TrenchFET® power MOSFET
- Small 2.4 mm x 2 mm outline area
- Low 0.4 mm max. profile
- Typical ESD protection 6000 V HBM
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free
RoHS COMPLIANT
HALOGEN FREE

APPLICATIONS

- Battery switch / load switch
- Power management
- For smart phones, tablet PCs, and mobile computing



P-Channel MOSFET

Ordering Information:
Si8851EDB-T2-E1 (Lead (Pb)-free and halogen-free)

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)				
PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 8	
Continuous Drain Current (T_J = 150 °C)	T_A = 25 °C	I_D	-16.7 [a]	A
	T_A = 70 °C		-13.4 [a]	
	T_A = 25 °C		-7.7 [b]	
	T_A = 70 °C		-6.2 [b]	
Pulsed Drain Current (t = 100 µs)		I_{DM}	-80	
Continuous Source-Drain Diode Current	T_C = 25 °C	I_S	-2.6 [a]	
	T_A = 25 °C		-0.55 [b]	
Maximum Power Dissipation	T_A = 25 °C	P_D	3.1 [a]	W
	T_A = 70 °C		2 [a]	
	T_A = 25 °C		0.66 [b]	
	T_A = 70 °C		0.43 [b]	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to +150	°C
Package Reflow Conditions [c]	VPR		260	
	IR/Convection		260	

Notes
a. Surface mounted on 1" x 1" FR4 board with full copper, t = 5 s.
b. Surface mounted on 1" x 1" FR4 board with minimum copper, t = 5 s.
c. Refer to IPC/JEDEC® (J-STD-020), no manual or hand soldering.
d. Based on T_A = 25 °C.

THERMAL RESISTANCE RATINGS					
PARAMETER		SYMBOL	Typical	Maximum	Unit
Maximum Junction-to-Ambient [a, b]	t = 5 s	R_{thJA}	30	40	°C/W
Maximum Junction-to-Ambient [c, d]	t = 5 s		145	188	

Notes
a. Surface mounted on 1" x 1" FR4 board with full copper.
b. Maximum under steady state conditions is 85 °C/W.
c. Surface mounted on 1" x 1" FR4 board with minimum copper.
d. Maximum under steady state conditions is 330 °C/W.

For technical questions, contact: pmostechsupport@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = -250 µA	-20	-	-	V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	I_D = -250 µA	-	-11	-	mV/°C
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$		-	3	-	
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250 µA	-0.45	-	-1	V
Gate-Source Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 4.5 V	-	-	± 0.5	µA
		V_{DS} = 0 V, V_{GS} = ± 8 V	-	-	± 10	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -20 V, V_{GS} = 0 V	-	-	-1	
		V_{DS} = -20 V, V_{GS} = 0 V, T_J = 70 °C	-	-	-10	
On-State Drain Current [a]	$I_{D(on)}$	$V_{DS} \leq$ -5 V, V_{GS} = -4.5 V	-5	-	-	A
Drain-Source On-State Resistance [a]	$R_{DS(on)}$	V_{GS} = -4.5 V, I_D = -7 A	-	0.0060	0.0080	Ω
		V_{GS} = -3.7 V, I_D = -7 A	-	0.0065	0.0086	
		V_{GS} = -2.5 V, I_D = -5 A	-	0.0081	0.0110	
		V_{GS} = -1.8 V, I_D = -3 A	-	0.0130	0.0185	
Forward Transconductance [a]	g_{fs}	V_{DS} = -10 V, I_D = -7 A	-	50	-	S
Dynamic [b]						
Input Capacitance	C_{iss}	V_{DS} = -10 V, V_{GS} = 0 V, f = 1 MHz	-	6900	-	pF
Output Capacitance	C_{oss}		-	640	-	
Reverse Transfer Capacitance	C_{rss}		-	715	-	
Total Gate Charge	Q_g	V_{DS} = -10 V, V_{GS} = -8 V, I_D = -5 A	-	120	180	nC
		V_{DS} = -10 V, V_{GS} = -4.5 V, I_D = -5 A	-	70	105	
Gate-Source Charge	Q_{gs}		-	8	-	
Gate-Drain Charge	Q_{gd}		-	14	-	
Gate Resistance	R_g	V_{GS} = -0.1 V, f = 1 MHz	-	2.3	-	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -10 V, R_L = 2 Ω $I_D \cong$ -5 A, V_{GEN} = -4.5 V, R_g = 1 Ω	-	35	70	ns
Rise Time	t_r		-	40	80	
Turn-Off Delay Time	$t_{d(off)}$		-	115	230	
Fall Time	t_f		-	35	70	
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -10 V, R_L = 2 Ω $I_D \cong$ -5 A, V_{GEN} = -8 V, R_g = 1 Ω	-	15	30	
Rise Time	t_r		-	10	20	
Turn-Off Delay Time	$t_{d(off)}$		-	110	220	
Fall Time	t_f		-	25	50	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	T_A = 25 °C	-	-	-2.6	A
Pulse Diode Forward Current (t = 100 µs)	I_{SM}		-	-	-80	
Body Diode Voltage	V_{SD}	I_S = -5 A, V_{GS} = 0 V	-	-0.8	-1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F = -5 A, dI/dt = 100 A/µs, T_J = 25 °C	-	40	80	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	30	60	nC
Reverse Recovery Fall Time	t_a		-	16	-	ns
Reverse Recovery Rise Time	t_b		-	24	-	

Notes

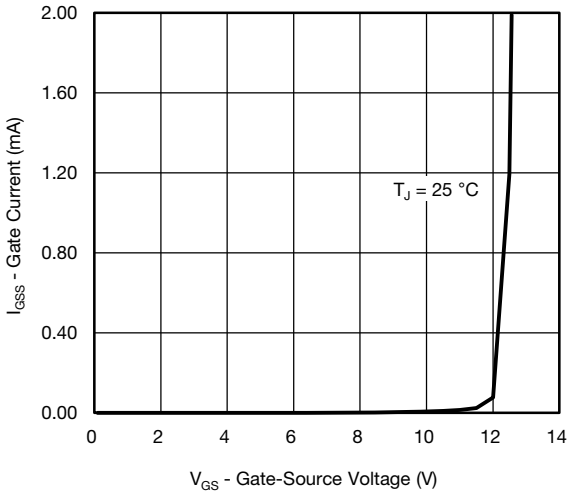
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.

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.

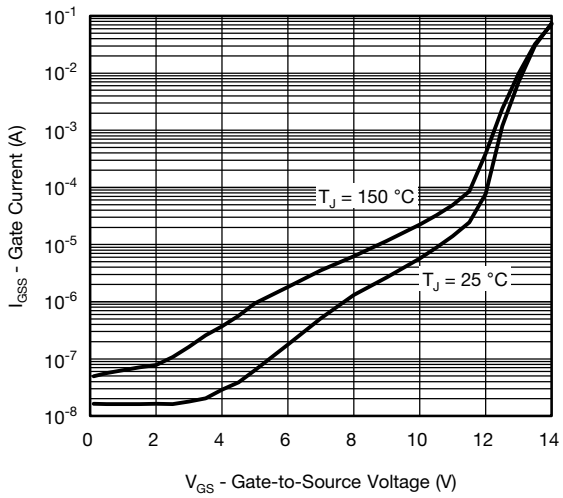
For technical questions, contact: pmostechsupport@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

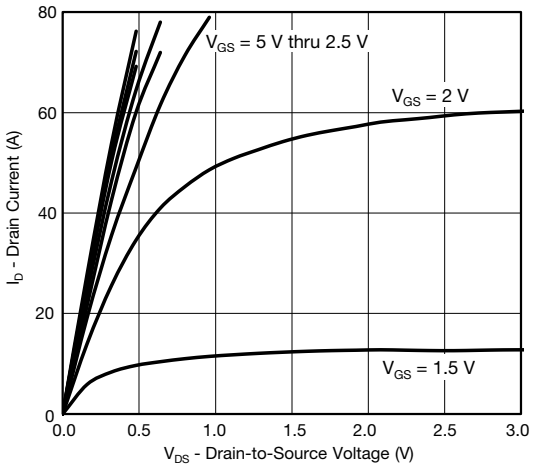
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



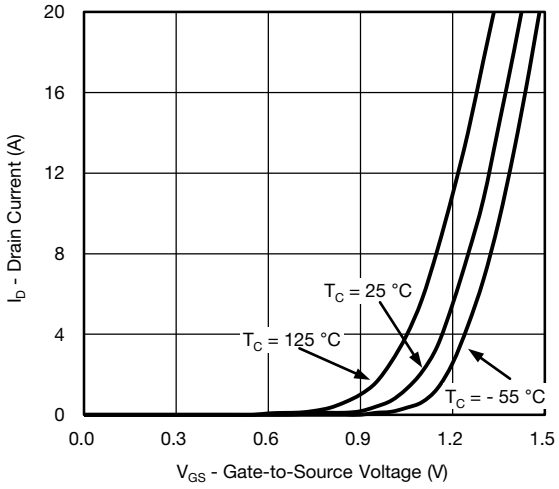
Gate Current vs. Gate-Source Voltage



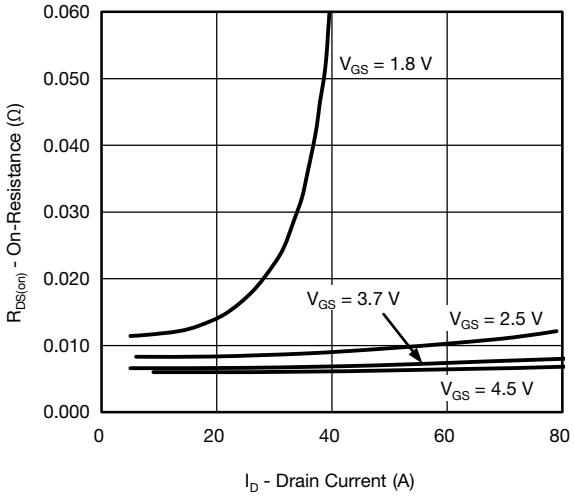
Gate Current vs. Gate-Source Voltage



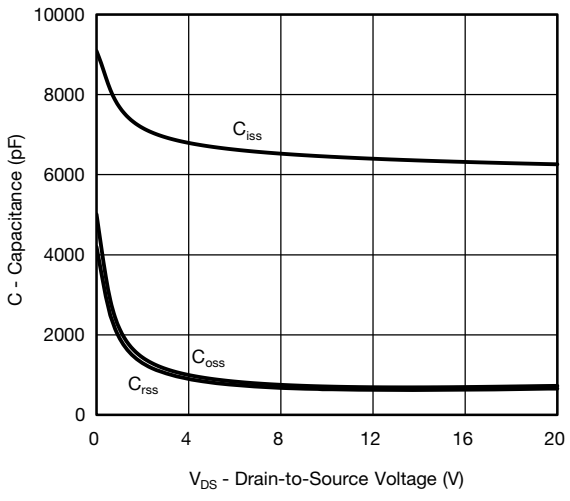
Output Characteristics



Transfer Characteristics



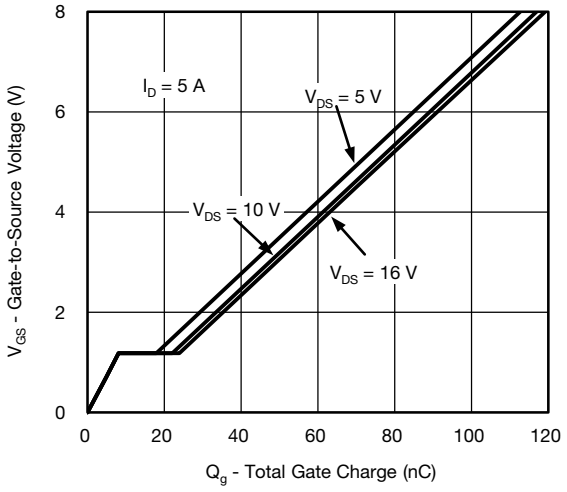
On-Resistance vs. Drain Current and Gate Voltage



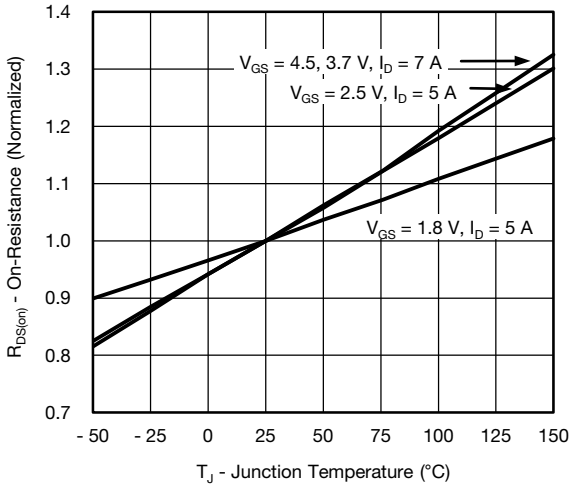
Capacitance

For technical questions, contact: pmostechsupport@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

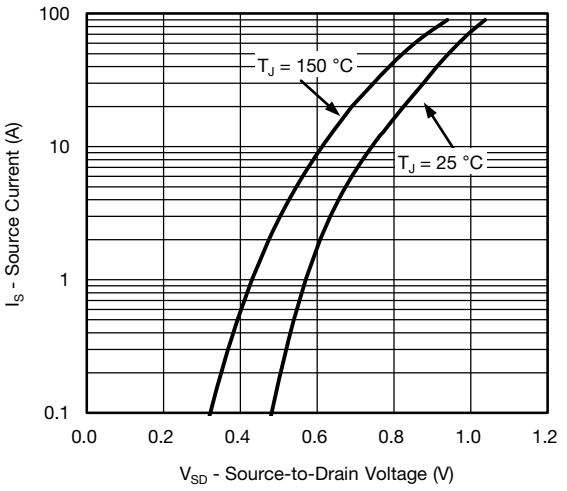
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



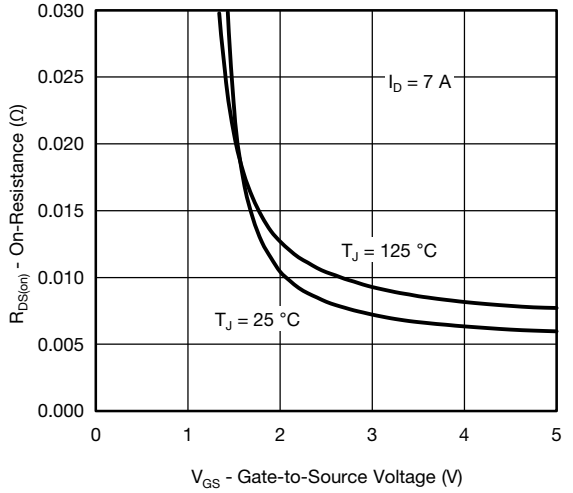
Gate Charge



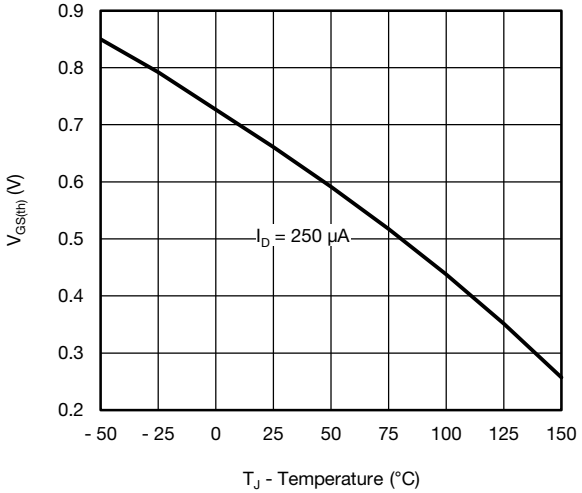
On-Resistance vs. Junction Temperature



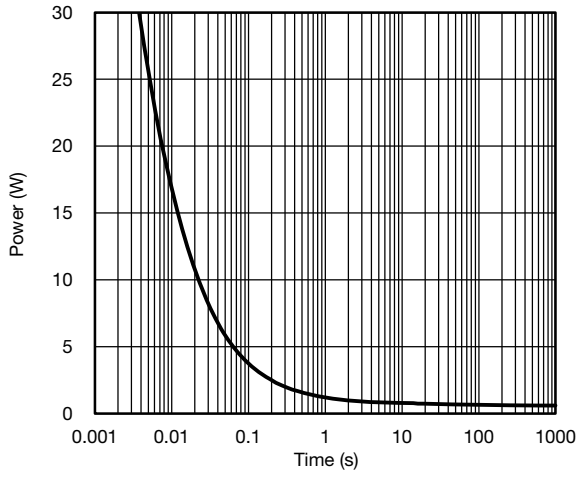
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



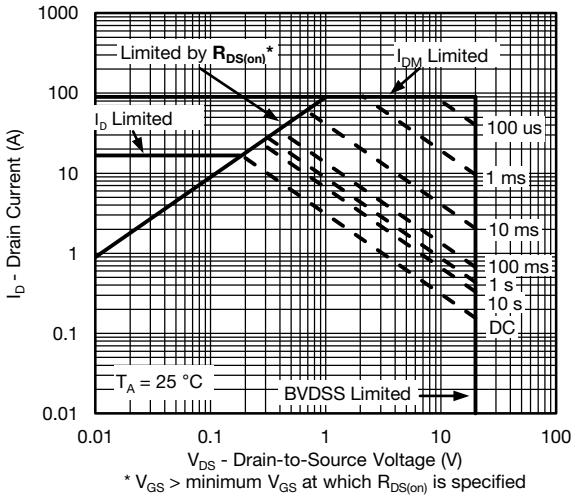
Threshold Voltage



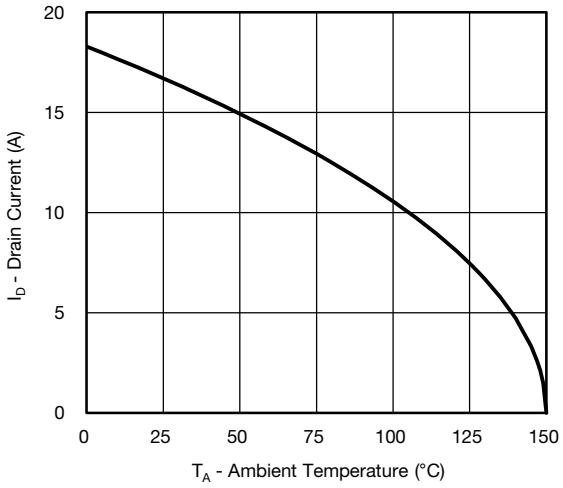
Single Pulse Power, Junction-to-Ambient

For technical questions, contact: pmostechsupport@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

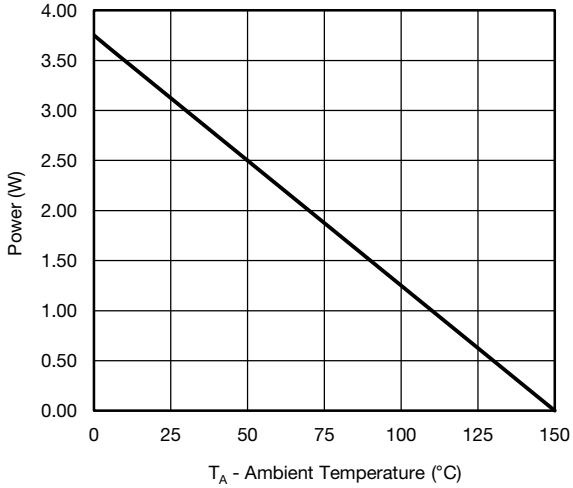
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Safe Operating Area, Junction-to-Ambient[a]



Current Derating [a]



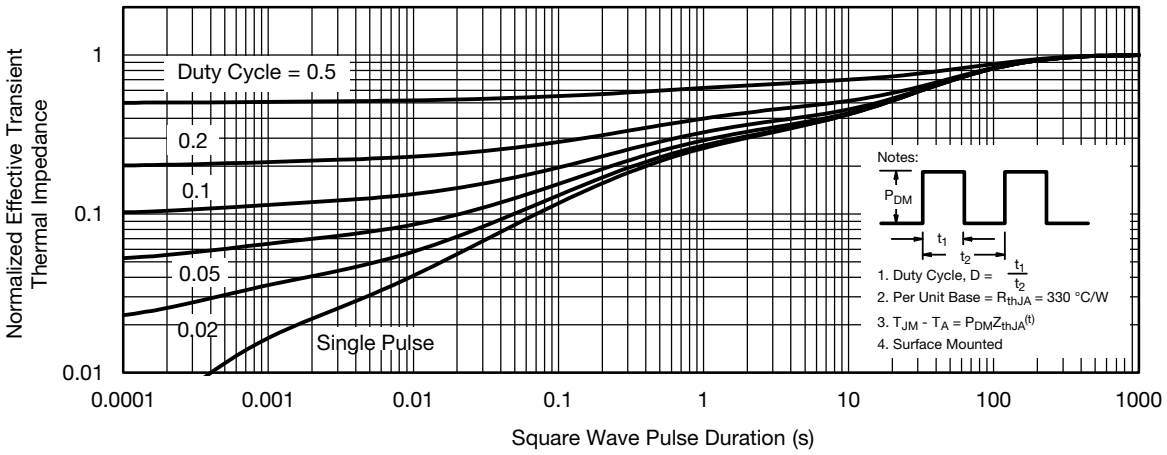
Power Derating[a]

Note

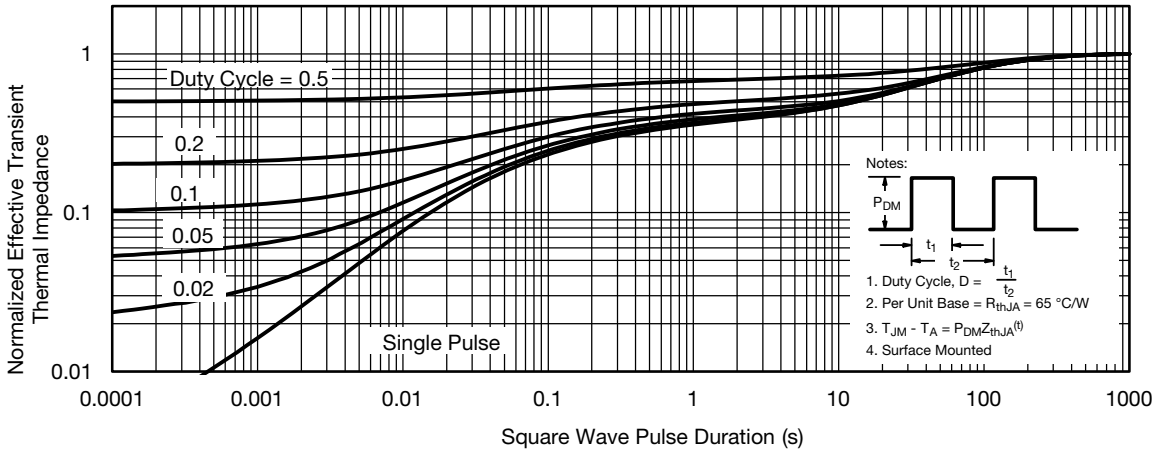
a. When mounted on 1" x 1" FR4 with full copper and t = 5 s

For technical questions, contact: pmostechsupport@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient (on 1" x 1" FR4 Board with minimum Copper)

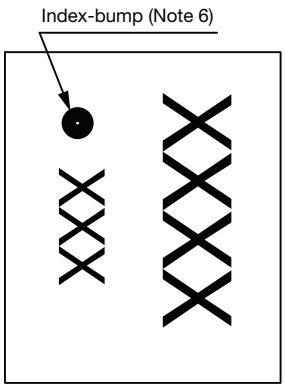


Normalized Thermal Transient Impedance, Junction-to-Ambient (on 1" x 1" FR4 Board with maximum Copper)

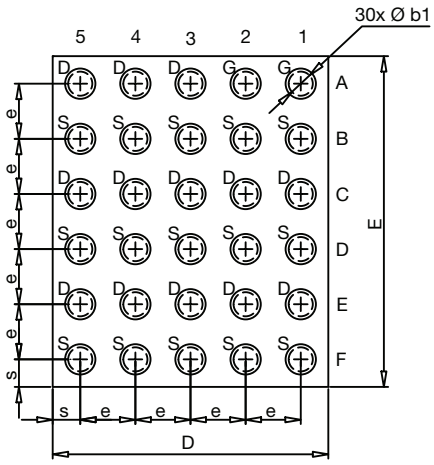
Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package/tape drawings, part marking, and reliability data, see www.vishay.com/ppg?64197.

For technical questions, contact: pmostechsupport@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

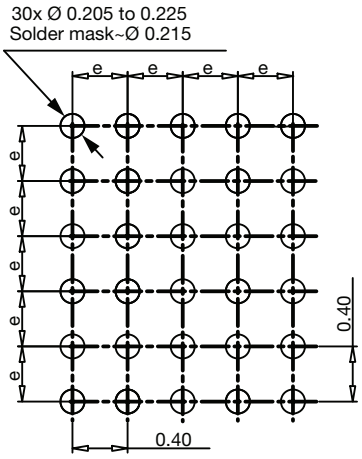
MICRO FOOT®: 30-Bumps
(2.4 mm x 2 mm, 0.4 mm Pitch, 0.184 mm Bump Height)



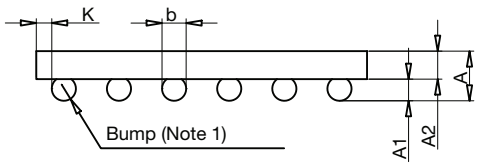
Top side (die back)

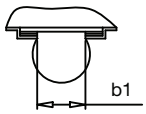


Bump side view



Recommended land pattern





Notes

1. Bumps are 95.5/3.8/0.7 Sn/Ag/Cu.
2. Backside surface is coated with a Ti/Ni/Ag layer.
3. Non-solder mask defined copper landing pad.
4. Laser marks on the silicon die back.
5. “b1” is the diameter of the solderable substrate surface, defined by an opening in the solder resist layer solder mask defined.
6. • is the location of pin 1

DIM.	MILLIMETERS			INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.328	0.365	0.402	0.0129	0.0144	0.0158
A1	0.136	0.160	0.184	0.0054	0.0063	0.0072
A2	0.192	0.205	0.218	0.0076	0.0081	0.0086
b	0.200	0.220	0.240	0.0079	0.0087	0.0094
b1		0.175			0.0069	
e		0.400			0.0157	
s	0.160	0.180	0.200	0.0063	0.0071	0.0079
D	1.920	1.960	2.000	0.0756	0.0772	0.0787
E	2.320	2.360	2.400	0.0913	0.0929	0.0945
K	0.040	0.070	0.100	0.0016	0.0028	0.0039

Note

- Use millimeters as the primary measurement.

ECN: T15-0177-Rev. A, 27-Apr-15
DWG: 6040

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. 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.

© 2026 VISHAY INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000