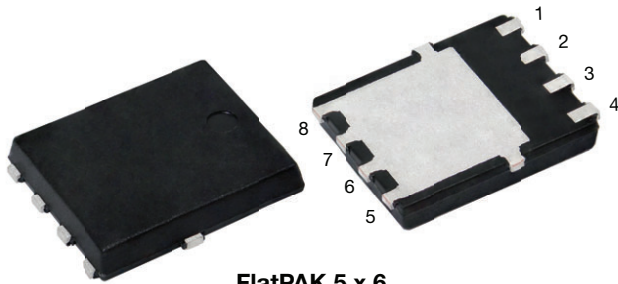
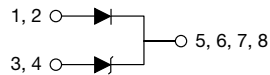


## Hybrid Solution Surface-Mount


**FlatPAK 5 x 6**


### LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS		
Standard Rectifier	$I_{F(AV)}$	3 A
	$V_{RRM}$	600 V
	$I_{FSM}$	40 A
	$V_F$ at $I_F = 3$ A ( $T_J = 125$ °C)	0.86V
Transient Voltage Suppressors	$V_{BR}$	27 V
	$V_{WM}$	23.1 V
	$P_{PPM}$	200 W
$T_J$ max.	175 °C	
Package	FlatPAK 5 x 6	
Circuit configuration	Common cathode	

### FEATURES

- Automotive hybrid solution for Rectifier and TRANSZORB® TVS
- Oxide planar chip junction
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### TYPICAL APPLICATIONS

Secondary protection for sensor units, distributed airbag modules and low power DC / DC converters under power distributor

### MECHANICAL DATA

**Case:** FlatPAK 5 x 6

Molding compound meets UL 94 V-0 flammability rating  
Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

HM3 suffix meets JESD 201 class 2 whisker test

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)				
TECHNOLOGY	PARAMETER	SYMBOL	R3T2FPHM3	UNIT
Standard Rectifier	Device marking code		R3T2FP	
	Maximum repetitive peak reverse voltage	$V_{RRM}$	600	V
	Maximum DC forward current	$I_{F(AV)}$ <sup>(1)</sup>	3	A
		$I_{F(AV)}$ <sup>(2)</sup>	2	
Transient Voltage Suppressors	Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	40	A
	Peak pulse power dissipation with a 10/1000 $\mu$ s waveform <sup>(3)</sup>	$P_{PPM}$	200	W
	Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(3)</sup>	$I_{PPM}$	5.3	A
Operating junction temperature range		$T_J$ <sup>(4)</sup>	-55 to +175	°C
Storage temperature range		$T_{STG}$	-55 to +175	°C

#### Notes

- Mounted on 3 x 3 cm aluminum pad area
- Free air mounted on recommended pad area
- Non-repetitive current pulse per Fig.10 and derated above  $T_A = 25$  °C per Fig.8
- The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$



ELECTRICAL CHARACTERISTICS ( $T_J = 25\text{ }^\circ\text{C}$ unless otherwise noted)									
TECHNOLOGY	PARAMETER	TEST CONDITIONS		SYMBOL	MIN.	TYP.	MAX.	UNIT	
Standard Rectifier	Instantaneous forward voltage	$I_F = 1.5\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	-	0.91	-	V	
		$I_F = 3\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$		-	0.97	1.1		
		$I_F = 1.5\text{ A}$	$T_J = 125\text{ }^\circ\text{C}$		-	0.79	-		
		$I_F = 3\text{ A}$	$T_J = 125\text{ }^\circ\text{C}$		-	0.86	0.98		
	Reverse current	Rated $V_R$	$T_J = 25\text{ }^\circ\text{C}$		$I_R^{(2)}$	-	-	10	$\mu\text{A}$
			$T_J = 125\text{ }^\circ\text{C}$			-	13	100	
	Typical reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$		$t_{rr}$	-	1.5	-	$\mu\text{s}$	
	Typical junction capacitance	4.0 V, 1 MHz		$C_J$	-	19	-	pF	
Transient Voltage Suppressors	Breakdown Voltage <sup>(3)</sup>	$I_T = 1.0\text{ mA}$		$V_{BR}$	25.7	27.0	28.4	V	
	Stand-off Voltage			$V_{WM}$	-	23.1	-	V	
	Maximum Reverse Leakage	Rated $V_{WM}$		$I_D$	-	-	0.5	$\mu\text{A}$	
	Maximum Clamping Voltage	$I_{PPM} = 5.3\text{ A}$ , 10/1000 $\mu\text{s}$ waveform		$V_C$	-	-	37.5	V	
	Typical junction capacitance	0 V		$C_J$		330		pF	
	Typical junction capacitance	23.1 V		$C_J$		95		pF	

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
(2) Pulse test: pulse width  $\leq 5\text{ ms}$   
(3) Pulse test:  $t_p \leq 50\text{ ms}$

IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	CLASS	VALUE
AEC-Q101-001	Human body model (contact mode)	$C = 100\text{ pF}$ , $R = 1.5\text{ k}\Omega$	$V_C$	H3B	$> 8\text{ kV}$
AEC-Q101-005	Charged device model (CDM)	$V = 500\text{ V}$		C3	$> 1\text{ kV}$
IEC 61000-4-2 <sup>(2)</sup>	Contact mode	$C = 150\text{ pF}$ , $R = 330\text{ }\Omega$		4	$> 8\text{ kV}$
	Air-discharge mode <sup>(1)</sup>	$C = 150\text{ pF}$ , $R = 330\text{ }\Omega$		4	$> 15\text{ kV}$

**Notes**

- (1) Immunity to IEC 61000-4-2 air discharge mode has a typical performance  $> 30\text{ kV}$   
(2) System ESD standard

THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	TYP.	MAX.	UNIT
Thermal resistance per diode	$R_{\theta JA}^{(1)(2)}$	80	-	$^\circ\text{C/W}$
	$R_{\theta JM}^{(3)}$	3.0	4.0	

**Notes**

- (1) The heat generated must be less than thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$   
(2) Thermal resistance junction-to-ambient to follow JEDEC<sup>®</sup> 51-2A, device mounted on FR4 PCB, 2 oz., standard footprint  
(3) Thermal resistance junction-to-mount to follow JEDEC<sup>®</sup> 51-14 transient dual interface test method (TDIM)

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
R3T2FPHM3/I <sup>(1)</sup>	0.10	I	6000	13" diameter plastic tape and reel

**Note**

- (1) AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES FOR RECTIFIERS** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

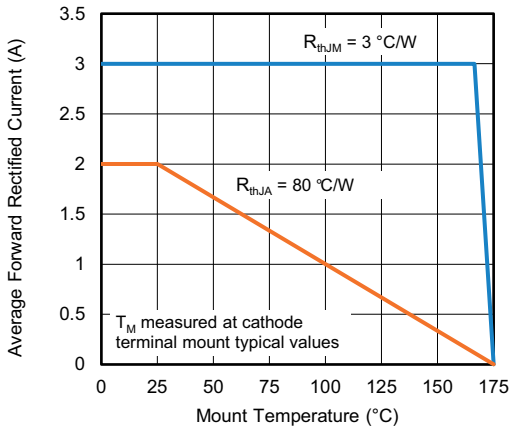


Fig. 1 - Maximum Forward Derating Curve

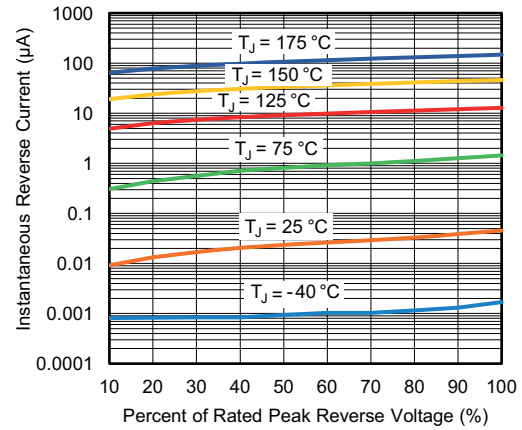


Fig. 4 - Typical Reverse Leakage Characteristics

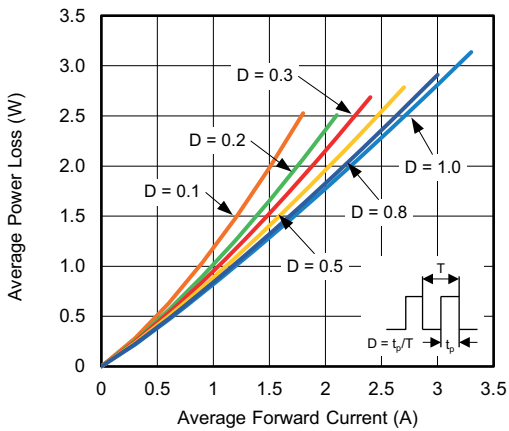


Fig. 2 - Forward Power Loss Characteristics

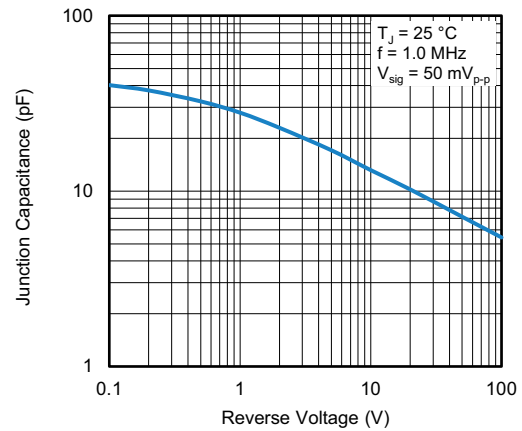


Fig. 5 - Typical Junction Capacitance

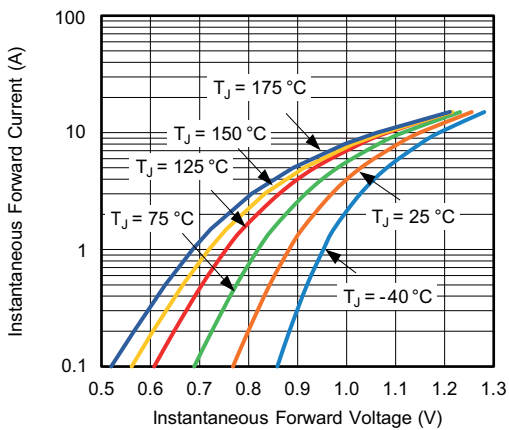


Fig. 3 - Typical Instantaneous Forward Characteristics

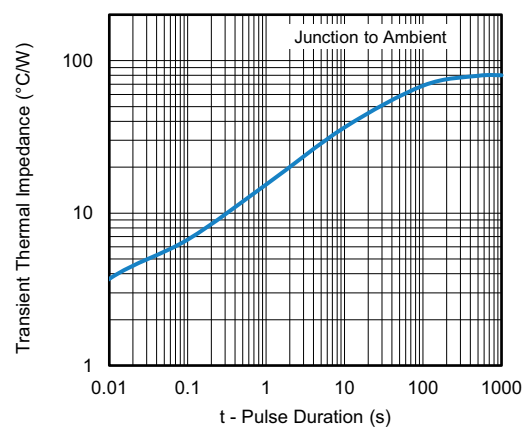


Fig. 6 - Typical Transient Thermal Impedance

**RATINGS AND CHARACTERISTICS CURVES FOR TVS** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

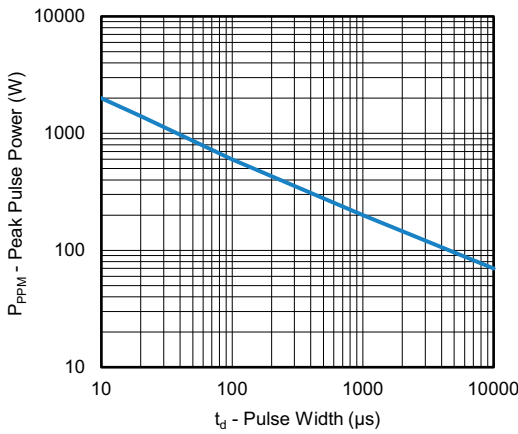


Fig. 7 - Peak Pulse Power Derating Curve

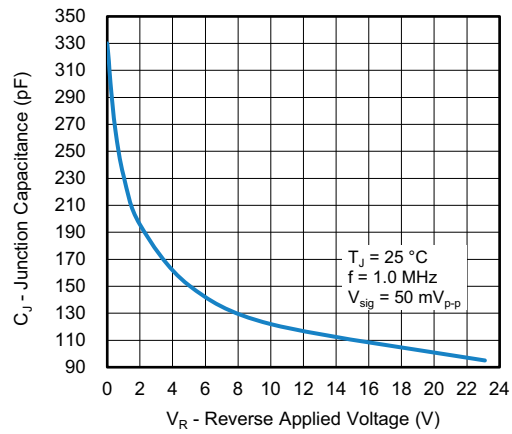


Fig. 9 - Typical Junction Capacitance

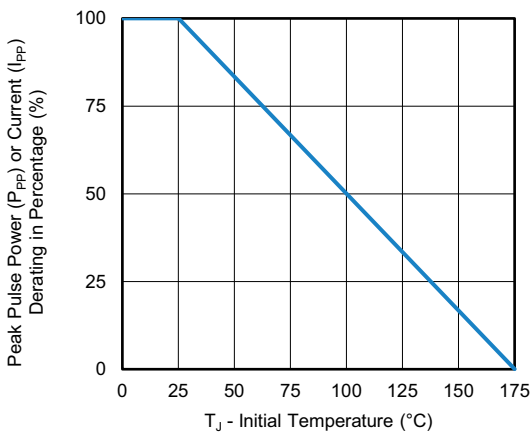


Fig. 8 - Pulse Power or Current vs. Initial Junction Temperature

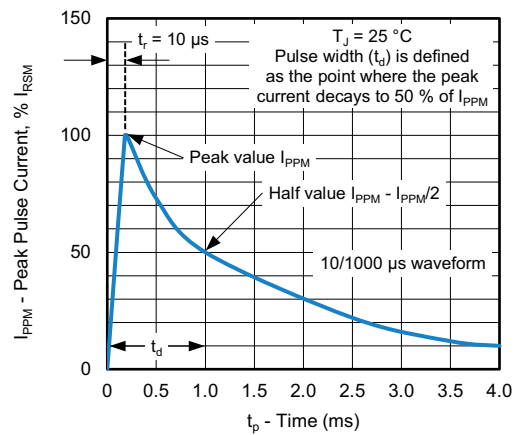
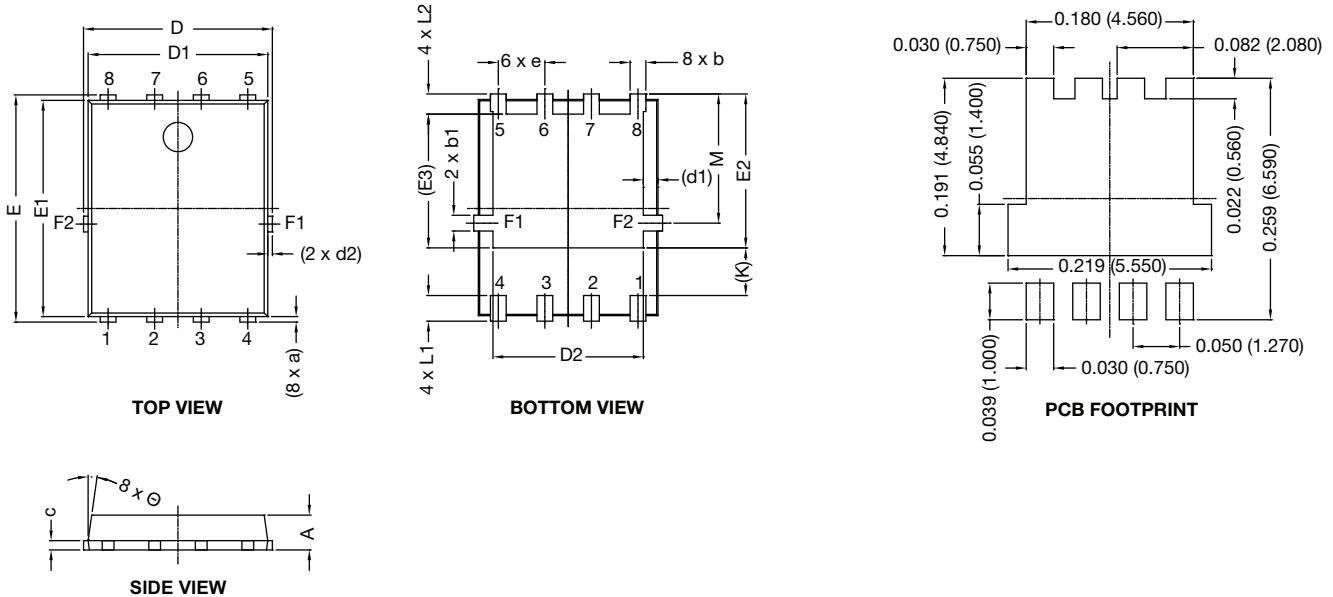


Fig. 10 - Pulse Waveform



**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**FlatPAK 5 x 6**



DIM.	INCHES			MILLIMETERS		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.035	0.039	0.043	0.89	0.99	1.09
(a)	-	0.006	-	-	0.15	-
b	0.013	0.017	0.020	0.32	0.43	0.52
b1	0.013	0.017	0.020	0.32	0.43	0.52
c	0.008	-	0.014	0.20	-	0.35
D	0.197	0.203	0.209	5.00	5.15	5.30
D1	0.189	0.193	0.197	4.80	4.90	5.00
D2	0.154	0.161	0.169	3.90	4.10	4.30
(d1)	-	0.016	-	-	0.40	-
(d2)	-	0.005	-	-	0.125	-
E	0.238	0.244	0.250	6.05	6.20	6.35
E1	0.228	0.232	0.236	5.80	5.90	6.00
E2	0.157	0.165	0.173	4.00	4.20	4.40
(E3)	-	0.144	-	-	3.65	-
e	0.050 BSC			1.27 BSC		
(K)	0.039	-	-	1.00	-	-
L1	0.019	-	0.043	0.48	-	1.10
L2	0.012	-	0.031	0.30	-	0.80
M	0.128	0.138	0.148	3.25	3.50	3.75
θ	0°	-	10°	0°	-	10°

**Notes**

- Dimensioning and tolerancing per ASME Y14.5-2009
- Dimensions D1 and E1 do not include mold flash or gate burrs
- Dimension (XX) means reference only



## 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.

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.