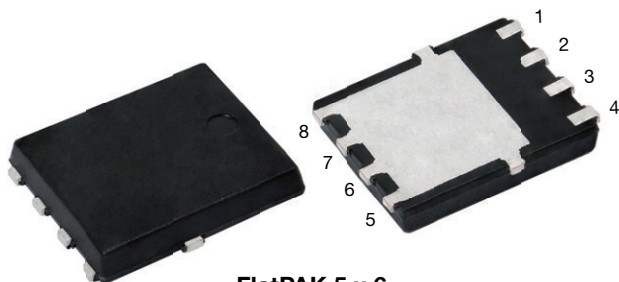
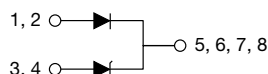


## Two-in-One Solution Surface-Mount


**FlatPAK 5 x 6**


### LINKS TO ADDITIONAL RESOURCES



### FEATURES

- Automotive two-in-one 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)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### 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

### PRIMARY CHARACTERISTICS

Standard Rectifier	$I_{F(AV)}$	3 A
	$V_{RRM}$	600 V
	$I_{FSM}$	40 A
	$V_F$ at $I_F = 3A$ ( $T_J = 125\text{ °C}$ )	0.86 V
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	

### MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)

TECHNOLOGY	PARAMETER	SYMBOL	R3T2FPHM3	UNIT
	Device marking code		R3T2FP	
Standard Rectifier	Maximum repetitive peak reverse voltage	$V_{RRM}$	600	V
	Maximum DC forward current	$I_{F(AV)}^{(1)}$	3	A
		$I_{F(AV)}^{(2)}$	2	
	Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	40	A
Transient Voltage Suppressors	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

(1) Mounted on 3 x 3 cm aluminum pad area

(2) Free air mounted on recommended pad area

(3) Non-repetitive current pulse per Fig.10 and derated above  $T_A = 25\text{ °C}$  per Fig.8

(4) 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	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $t_{rr} = 0.25\text{ A}$		$t_{rr}$	-	1.5	- $\mu\text{s}$
Transient Voltage Suppressors	Typical junction capacitance	4.0 V, 1 MHz		$C_J$	-	19	- pF
	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 kV
AEC-Q101-005	Charged device model (CDM)	$V = 500\text{ V}$		C3	> 1 kV
IEC 61000-4-2 <sup>(2)</sup>	Contact mode	$C = 150\text{ pF}$ , $R = 330\text{ }\Omega$		4	> 8 kV
	Air-discharge mode <sup>(1)</sup>	$C = 150\text{ pF}$ , $R = 330\text{ }\Omega$		4	> 15 kV

**Notes**

- (1) Immunity to IEC 61000-4-2 air discharge mode has a typical performance > 30 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

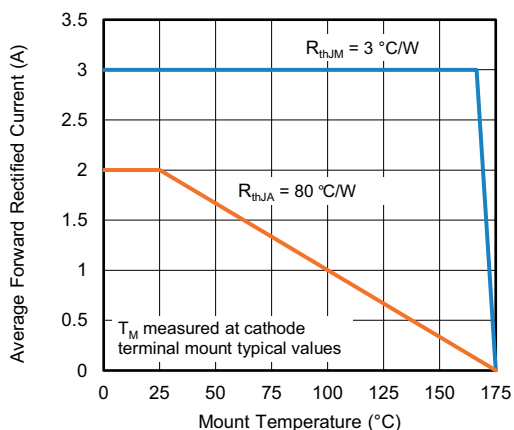
**RATINGS AND CHARACTERISTICS CURVES FOR RECTIFIERS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Derating Curve

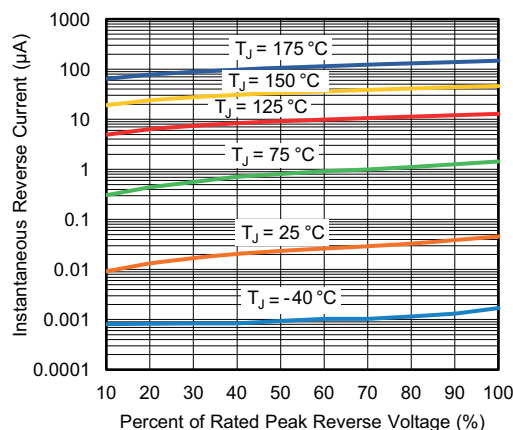


Fig. 4 - Typical Reverse Leakage Characteristics

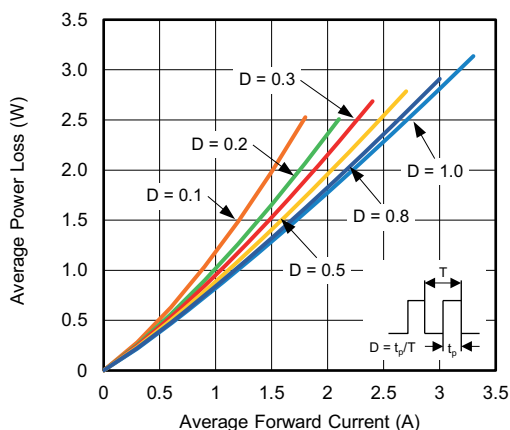


Fig. 2 - Forward Power Loss Characteristics

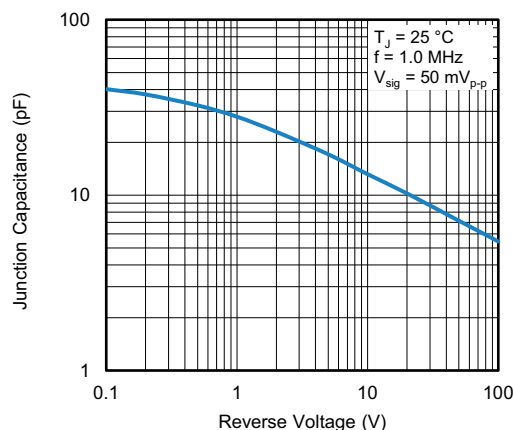


Fig. 5 - Typical Junction Capacitance

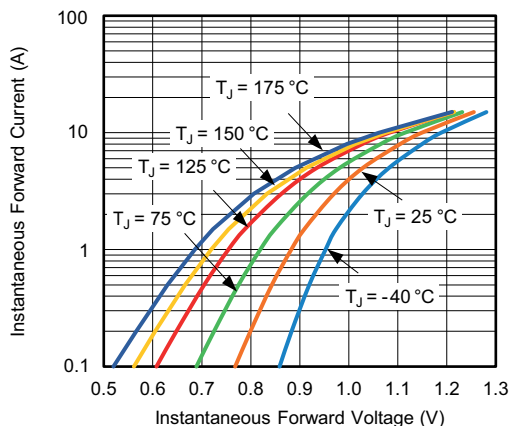


Fig. 3 - Typical Instantaneous Forward Characteristics

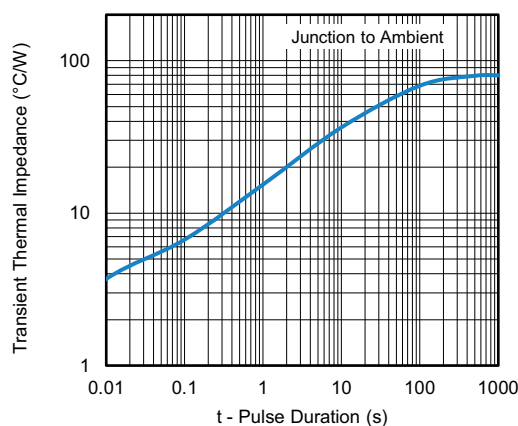


Fig. 6 - Typical Transient Thermal Impedance

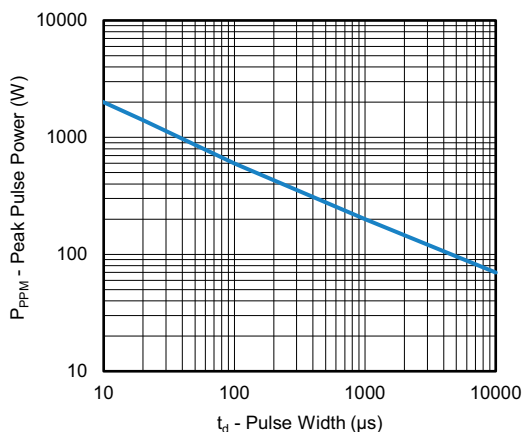
**RATINGS AND CHARACTERISTICS CURVES FOR TVS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 7 - Peak Pulse Power Derating Curve

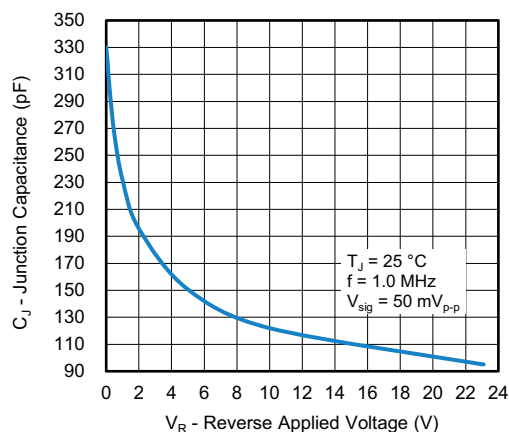


Fig. 9 - Typical Junction Capacitance

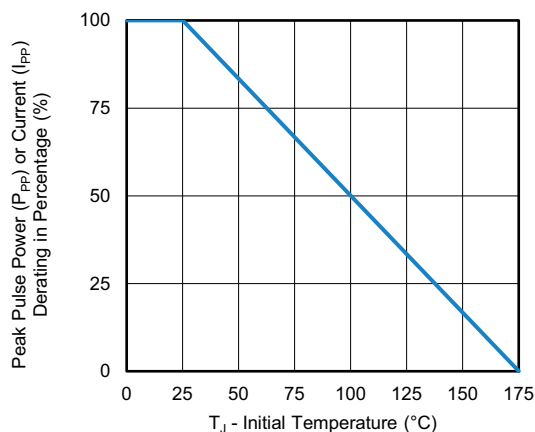


Fig. 8 - Pulse Power or Current vs. Initial Junction Temperature

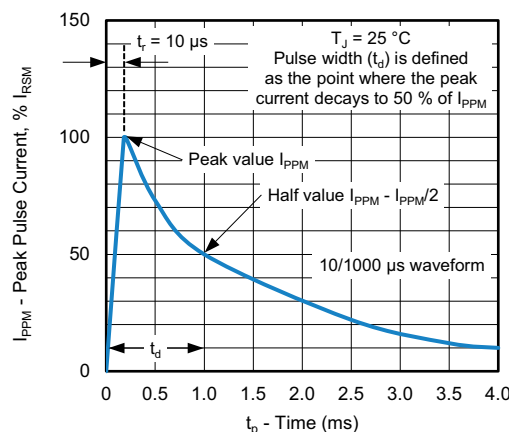
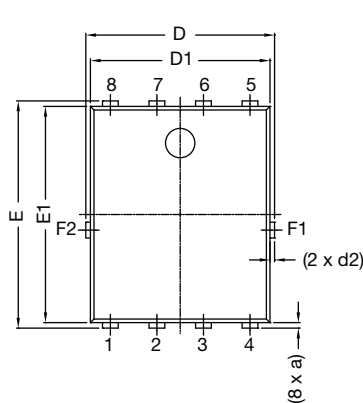
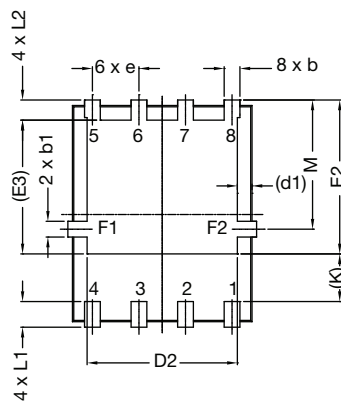
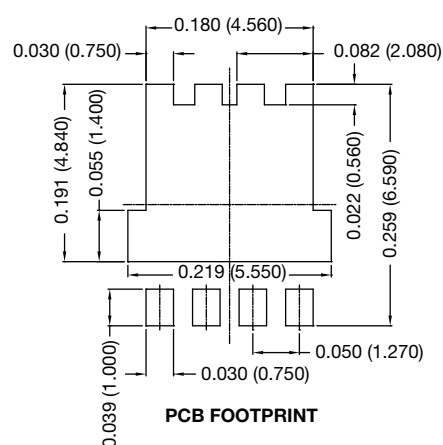
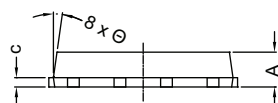


Fig. 10 - Pulse Waveform

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)**FlatPAK 5 x 6****TOP VIEW****BOTTOM VIEW****PCB FOOTPRINT****SIDE VIEW**

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



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