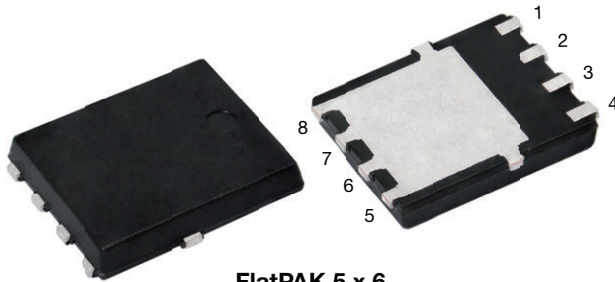
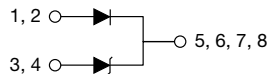


## Two-in-One Solution Surface-Mount


**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)

 AUTOMOTIVE  
GRADE  
Available

**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 $I_F = 3A$ ( $T_J = 125\text{ }^\circ\text{C}$ )	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 ( $T_A = 25\text{ }^\circ\text{C}$ 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 $\mu\text{s}$ waveform <sup>(3)</sup>	$P_{PPM}$	200	W
	Peak pulse current with a 10/1000 $\mu\text{s}$ 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  $T_A = 25\text{ }^\circ\text{C}$  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 <sub>J</sub> = 25 °C unless otherwise noted)									
TECHNOLOGY	PARAMETER	TEST CONDITIONS		SYMBOL	MIN.	TYP.	MAX.	UNIT	
Standard Rectifier	Instantaneous forward voltage	I <sub>F</sub> = 1.5 A	T <sub>J</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	-	0.91	-	V	
		I <sub>F</sub> = 3 A	T <sub>J</sub> = 25 °C		-	0.97	1.1		
		I <sub>F</sub> = 1.5 A	T <sub>J</sub> = 125 °C		-	0.79	-		
		I <sub>F</sub> = 3 A	T <sub>J</sub> = 125 °C		-	0.86	0.98		
	Reverse current	Rated V <sub>R</sub>	T <sub>J</sub> = 25 °C		I <sub>R</sub> <sup>(2)</sup>	-	-	10	μA
			T <sub>J</sub> = 125 °C			-	13	100	
	Typical reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>tr</sub> = 0.25 A		t <sub>rr</sub>	-	1.5	-	μs	
	Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	-	19	-	pF	
Transient Voltage Suppressors	Breakdown Voltage <sup>(3)</sup>	I <sub>T</sub> = 1.0 mA		V <sub>BR</sub>	25.7	27.0	28.4	V	
	Stand-off Voltage			V <sub>WM</sub>	-	23.1	-	V	
	Maximum Reverse Leakage	Rated V <sub>WM</sub>		I <sub>D</sub>	-	-	0.5	μA	
	Maximum Clamping Voltage	I <sub>PPM</sub> = 5.3 A, 10/1000 μs waveform		V <sub>C</sub>	-	-	37.5	V	
	Typical junction capacitance	0 V		C <sub>J</sub>		330		pF	
	Typical junction capacitance	23.1 V		C <sub>J</sub>		95		pF	

**Notes**

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle  
(2) Pulse test: pulse width ≤ 5 ms  
(3) Pulse test: t<sub>p</sub> ≤ 50 ms

IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS (T <sub>A</sub> = 25 °C unless otherwise noted)					
STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	CLASS	VALUE
AEC-Q101-001	Human body model (contact mode)	C = 100 pF, R = 1.5 kΩ	V <sub>C</sub>	H3B	> 8 kV
AEC-Q101-005	Charged device model (CDM)	V = 500 V		C3	> 1 kV
IEC 61000-4-2 <sup>(2)</sup>	Contact mode	C = 150 pF, R = 330 Ω		4	> 8 kV
	Air-discharge mode <sup>(1)</sup>	C = 150 pF, R = 330 Ω		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 <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	TYP.	MAX.	UNIT
Thermal resistance per diode	R <sub>θJA</sub> <sup>(1)(2)</sup>	80	-	°C/W
	R <sub>θJM</sub> <sup>(3)</sup>	3.0	4.0	

**Notes**

- (1) The heat generated must be less than thermal conductivity from junction-to-ambient: dP<sub>D</sub>/dT<sub>J</sub> < 1/R<sub>θJA</sub>  
(2) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz., standard footprint  
(3) Thermal resistance junction-to-mount to follow JEDEC® 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)

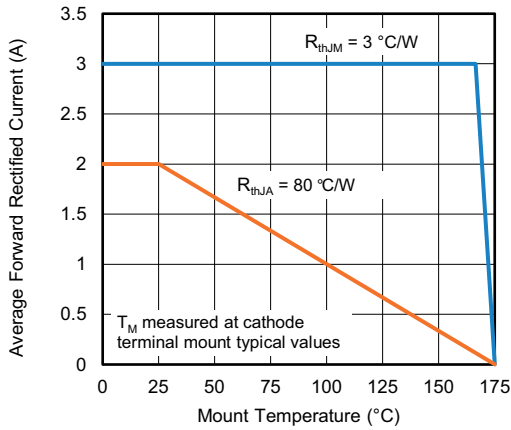


Fig. 1 - Maximum Forward Derating Curve

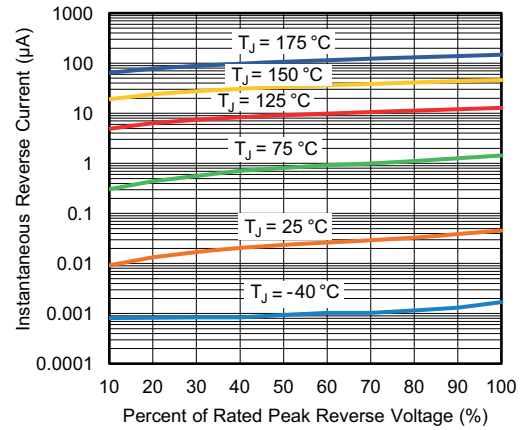


Fig. 4 - Typical Reverse Leakage Characteristics

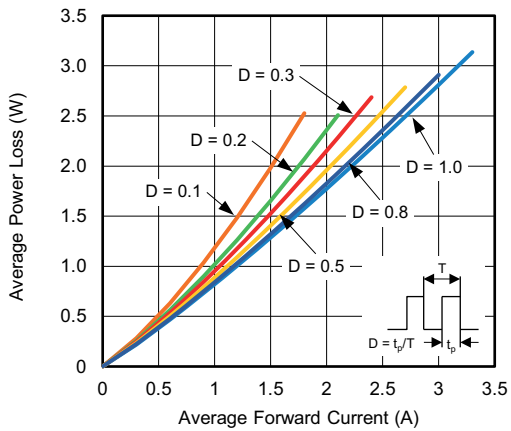


Fig. 2 - Forward Power Loss Characteristics

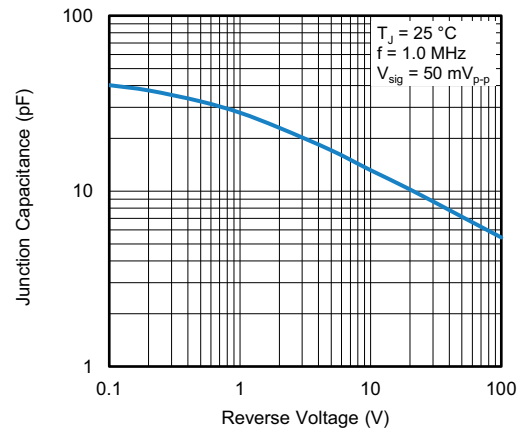


Fig. 5 - Typical Junction Capacitance

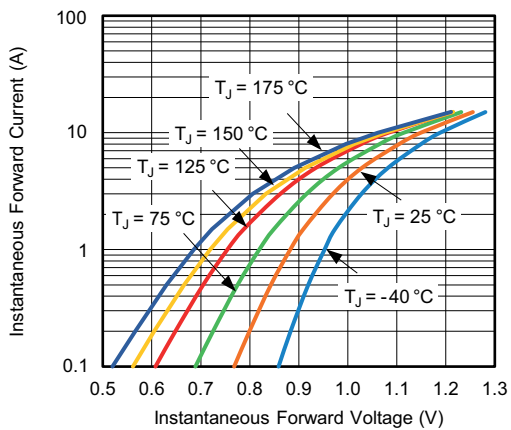


Fig. 3 - Typical Instantaneous Forward Characteristics

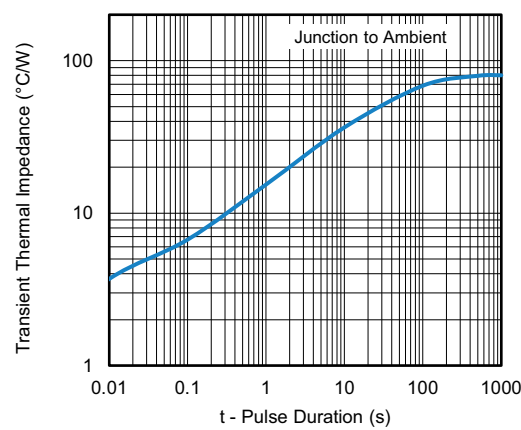


Fig. 6 - Typical Transient Thermal Impedance



RATINGS AND CHARACTERISTICS CURVES FOR TVS (T<sub>A</sub> = 25 °C unless otherwise noted)

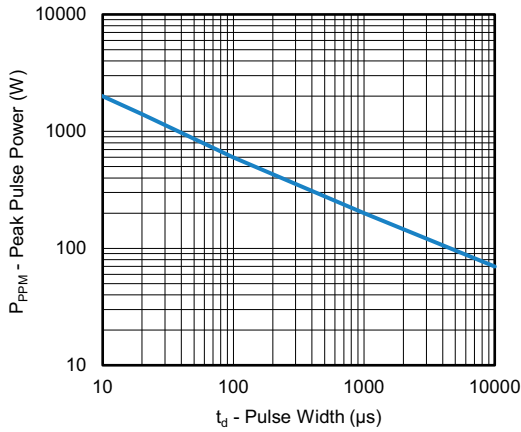


Fig. 7 - Peak Pulse Power Derating Curve

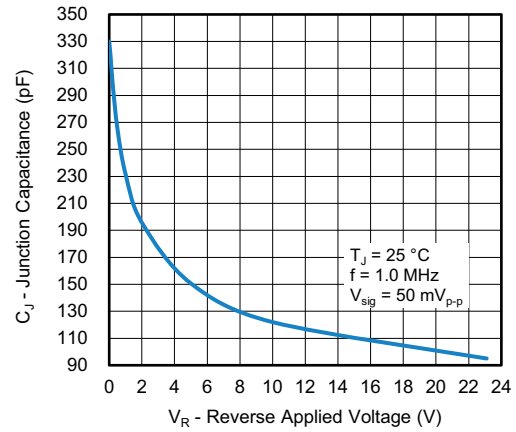


Fig. 9 - Typical Junction Capacitance

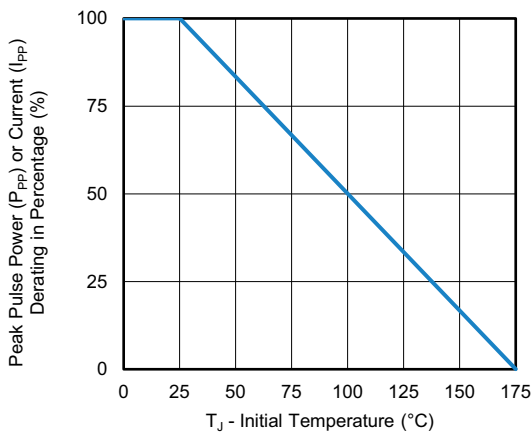


Fig. 8 - Pulse Power or Current vs. Initial Junction Temperature

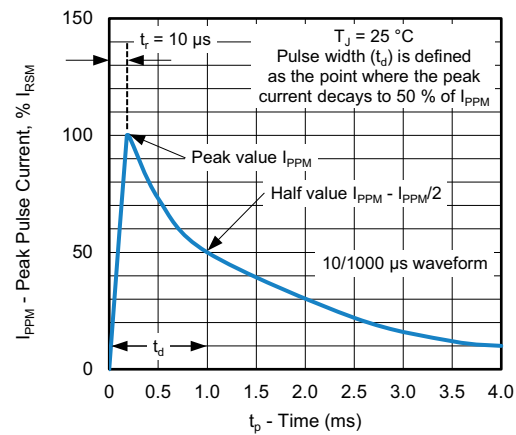
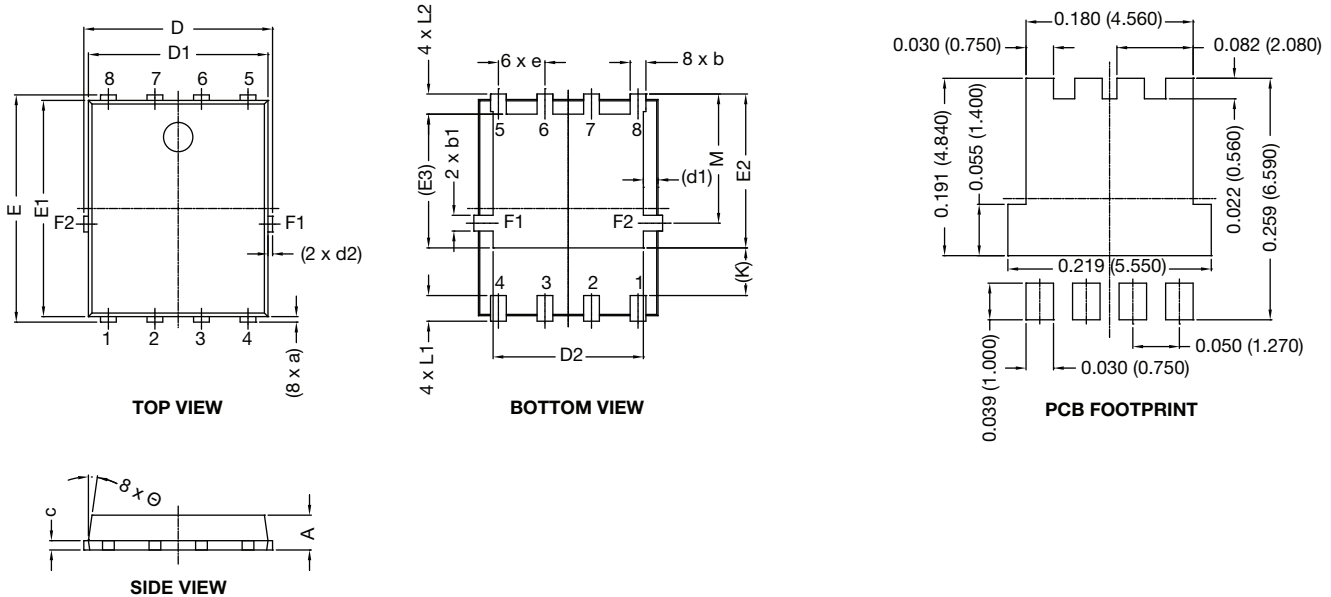


Fig. 10 - Pulse Waveform



**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
$\theta$	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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