

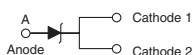


# Surface Mount TRANSZORB® Transient Voltage Suppressors

## eSMP® Series



TO-277A (SMPC)



## FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Uni-direction only
- Excellent clamping capability
- Low incremental surge resistance
- Very fast response time
- Meets MSL level 1, per J-STD-020
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



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

## PRIMARY CHARACTERISTICS

$V_{WM}$	5.0 V to 36 V
$P_{PPM}$	1500 W
$P_D$	6.5 W
$I_{FSM}$	200 A
$T_J$ max.	150 °C

## MECHANICAL DATA

**Case:** TO-277A (SMPC)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS compliant, and commercial grade

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

M3 suffix meets JESD 201 class 1A whisker test

## TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial and telecommunication. Sensitive equipment against transient overvoltages.

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

PARAMETER	SYMBOL	VALUE	UNIT
Peak power dissipation with a 10/1000 $\mu$ s waveform (fig. 3)	$P_{PPM}^{(1)(2)}$	1500	W
Peak pulse current with a 10/1000 $\mu$ s waveform (fig. 1)	$I_{PPM}^{(1)}$	See next table	A
Peak forward surge current 8.3 ms single half sine-wave	$I_{FSM}^{(2)}$	200	A
Power dissipation on infinite heatsink, $T_A = 50\text{ °C}$	$P_D$	6.5	W
Maximum instantaneous forward voltage at 100 A	$V_F^{(3)}$	3.5	V
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150	°C

### Notes

(1) Non-repetitive current pulse, per fig. 3 and derated above  $T_A = 25\text{ °C}$  per fig. 2

(2) Measured on 8.3 ms single half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minute maximum

(3) Pulse test: 300  $\mu$ s pulse width, 1 % duty cycle

## SMPC5.0A thru SMPC36A

Vishay General Semiconductor

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

DEVICE TYPE	DEVICE MARKING CODE	BREAKDOWN VOLTAGE $V_{BR}$ AT $I_T$ <sup>(1)</sup> (V)		TEST CURRENT $I_T$ (mA)	STAND-OFF VOLTAGE $V_{WM}$ (V)	MAXIMUM REVERSE LEAKAGE CURRENT $I_R$ AT $V_{WM}$ ( $\mu\text{A}$ )	MAXIMUM PEAK PULSE SURGE CURRENT $I_{PPM}$ <sup>(2)</sup> (A)	MAXIMUM CLAMPING VOLTAGE AT $I_{PPM}$ $V_C$ (V)
		MIN.	MAX.					
SMPC5.0A	GDE	6.40	7.07	10	5.0	1500	150	10.0
SMPC6.0A	GDG	6.67	7.37	10	6.0	1000	145.6	10.3
SMPC6.5A	GDK	7.22	7.98	10	6.5	500	133.9	11.2
SMPC7.0A	GDM	7.78	8.60	10	7.0	200	125.0	12.0
SMPC7.5A	GDP	8.33	9.21	1.0	7.5	100	116.3	12.9
SMPC8.0A	GDR	8.89	9.83	1.0	8.0	50	110.3	13.6
SMPC8.5A	GDT	9.44	10.4	1.0	8.5	20	104.2	14.4
SMPC9.0A	GDV	10.0	11.1	1.0	9.0	5.0	97.4	15.4
SMPC10A	GDX	11.1	12.3	1.0	10.0	2.0	88.2	17.0
SMPC11A	GDZ	12.2	13.5	1.0	11.0	2.0	82.4	18.2
SMPC12A	GEE	13.3	14.7	1.0	12.0	2.0	75.4	19.9
SMPC13A	GEG	14.4	15.9	1.0	13.0	1.0	69.8	21.5
SMPC14A	GEK	15.6	17.2	1.0	14.0	1.0	64.7	23.2
SMPC15A	GEM	16.7	18.5	1.0	15.0	1.0	61.5	24.4
SMPC16A	GEP	17.8	19.7	1.0	16.0	1.0	57.7	26.0
SMPC17A	GER	18.9	20.9	1.0	17.0	1.0	54.3	27.6
SMPC18A	GET	20.0	22.1	1.0	18.0	1.0	51.4	29.2
SMPC20A	GEV	22.2	24.5	1.0	20.0	1.0	46.3	32.4
SMPC22A	GEX	24.4	26.9	1.0	22.0	1.0	42.3	35.5
SMPC24A	GEZ	26.7	29.5	1.0	24.0	1.0	38.6	38.9
SMPC26A	GFE	28.9	31.0	1.0	26.0	1.0	35.6	42.1
SMPC28A	GFG	31.1	34.4	1.0	28.0	1.0	33.0	45.4
SMPC30A	GFK	33.3	36.8	1.0	30.0	1.0	31.0	48.4
SMPC33A	GFM	36.7	40.6	1.0	33.0	1.0	28.1	53.3
SMPC36A	GFP	40.0	44.2	1.0	36.0	1.0	25.8	58.1

**Notes**<sup>(1)</sup> Pulse test:  $t \leq 50\text{ ms}$ <sup>(2)</sup> Surge current waveform per fig. 3 and derated per fig. 2<sup>(3)</sup> All terms and symbols are consistent with ANSI/IEEE C62.35**THERMAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to ambient air	$R_{\theta JA}$ <sup>(1)</sup>	125	$^{\circ}\text{C/W}$
Typical thermal resistance, junction to leads	$R_{\theta JL}$ <sup>(2)</sup>	15	

**Notes**<sup>(1)</sup> Mounted on minimum recommended pad layout<sup>(2)</sup> Units mounted on infinite heatsink at  $T_A = 50\text{ }^{\circ}\text{C}$ **ORDERING INFORMATION** (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SMPC5.0A-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SMPC5.0A-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel



## RATINGS AND CHARACTERISTICS CURVES

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

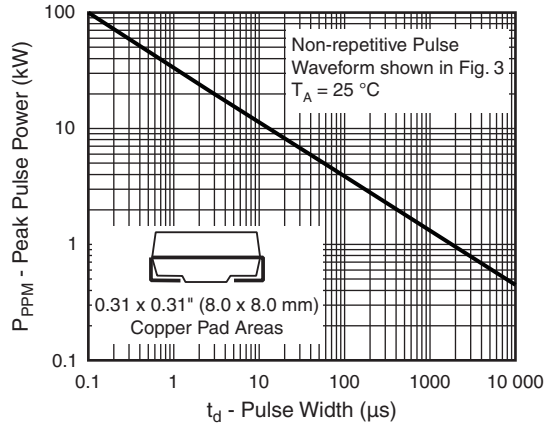


Fig. 1 - Peak Pulse Power Rating Curve

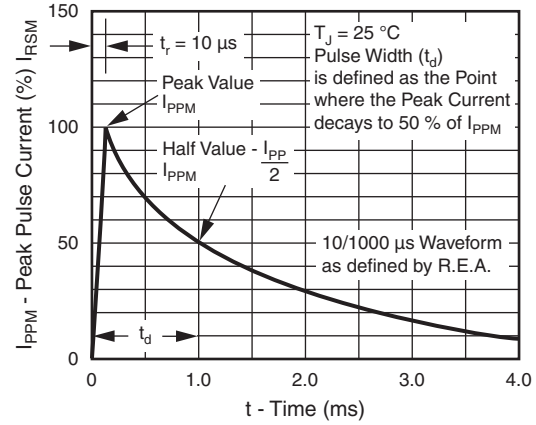


Fig. 3 - Pulse Waveform

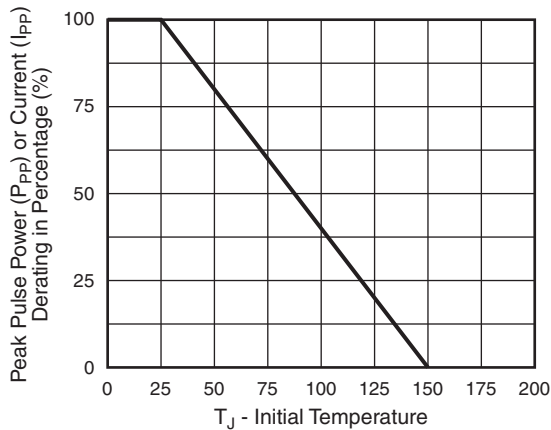


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

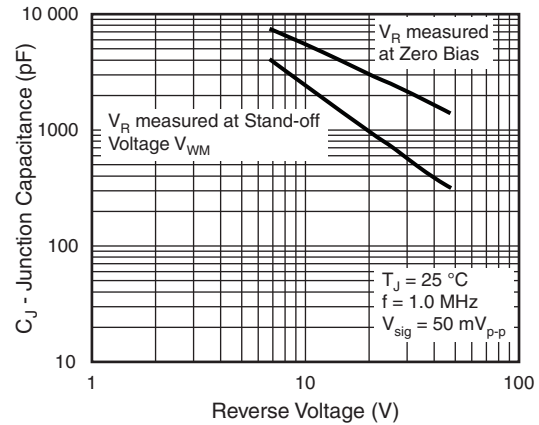
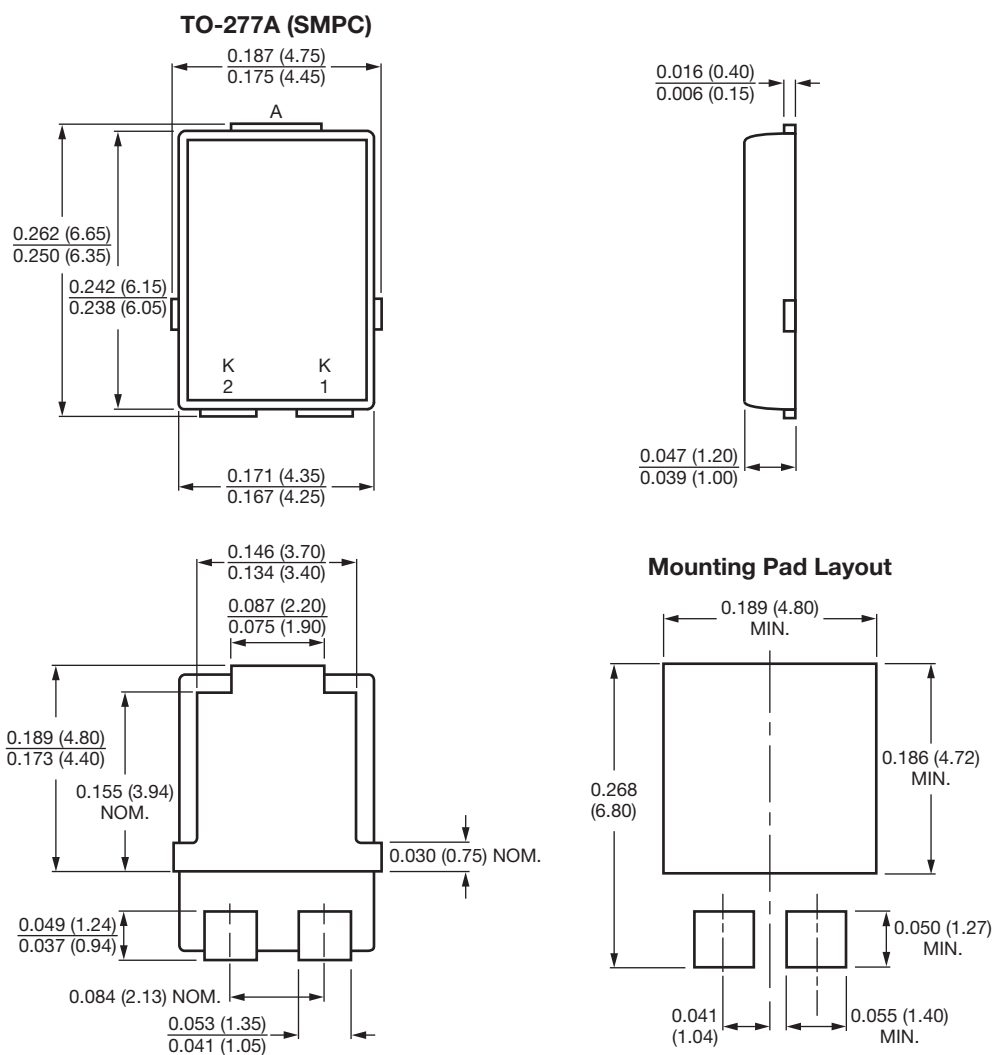


Fig. 4 - Typical Junction Capacitance

**SMPC5.0A thru SMPC36A**

Vishay General Semiconductor

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



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