Surface Mount Power Voltage-Regulating Diodes

eSMP® Series

SMP (DO-220AA)

FEATURES

- Very low profile - typical height of 1.0 mm
- Ideal for automated placement
- Low Zener impedance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

TYPICAL APPLICATIONS

For general purpose regulation, industrial, and protection applications.

MECHANICAL DATA

Case: SMP (DO-220AA)

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

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 1A whisker test

Polarity: color band denotes cathode end

LINKS TO ADDITIONAL RESOURCES

3D Models

PRIMARY CHARACTERISTICS	
V_Z nom.	4.2 V to 38 V
P_{tot} at T_L = 75 °C	1500 mW
P_{tot} at T_L = 25 °C	600 mW
T_J max.	150 °C
V_Z specification	Pulse current
Package	SMP (DO-220AA)
Circuit configuration	Single

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
SMP (DO-220AA)	24 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Power dissipation at T_L = 75 °C (fig. 1) (1)	P_{tot}	1500	mW
Power dissipation at T_A = 25 °C (fig. 1) (2)	P_{tot}	600	mW
Maximum instantaneous forward voltage at 200 mA for all types (3)	V_F	1.5	V
Operating junction temperature	T_J	150	°C
Storage temperature range	T_{STG}	-65 to +150	°C

Notes

(1) Mounted on PCB with 5.0 mm x 5.0 mm copper pads attached to each terminal
(2) Mounted on minimum recommended pad layout
(3) Pulse test: 300 µs pulse width, 1 % duty cycle

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

PART NUMBER	DEVICE MARKING CODE	ZENER VOLTAGE RANGE			TEST CURRENT	MAXIMUM ZENER DYNAMIC IMPEDANCE	MAXIMUM REVERSE LEAKAGE CURRENT	
		V_Z AT I_{ZT}			I_{ZT}	Z_{ZT} AT I_{ZT}	I_R at V_R	
		V			mA	Ω	µA	V
		MIN.	NOM.	MAX.		MAX.	MAX.	
PTV 3.9B	VB	3.9	4.2	4.4	40	15	20	1.0
PTV 4.3B	VC	4.3	4.6	4.8	40	15	20	1.0
PTV 4.7B	VD	4.7	5.0	5.2	40	10	20	1.0
PTV 5.1B	VE	5.1	5.4	5.7	40	8	20	1.0
PTV 5.6B	VF	5.6	6.0	6.3	40	8	20	1.5
PTV 6.2B	VG	6.2	6.6	7.0	40	6	20	3.0
PTV 6.8B	VH	6.8	7.3	7.7	40	6	50	3.5
PTV 7.5B	VI	7.5	8.0	8.4	40	4	20	4.0
PTV 8.2B	VJ	8.2	8.8	9.3	40	4	20	5.0
PTV 9.1B	VK	9.1	9.7	10.2	40	6	20	6.0
PTV 10B	VL	10.0	10.6	11.2	40	6	10	7.0
PTV 11B	VM	11.0	11.7	12.3	20	8	10	8.0
PTV 12B	VN	12.0	12.8	13.5	20	8	10	9.0
PTV 13B	VO	13.3	14.2	15.0	20	10	10	10.0
PTV 15B	VP	14.7	15.6	16.5	20	10	10	11.0
PTV 16B	VQ	16.2	17.3	18.3	20	12	10	12.0
PTV 18B	VR	18.0	19.2	20.3	20	12	10	13.0
PTV 20B	VS	20.0	21.2	22.4	20	14	10	15.0
PTV 22B	VT	22.0	23.3	24.5	10	14	10	17.0
PTV 24B	VU	24.0	25.8	27.6	10	16	10	19.0
PTV 27B	VV	27.0	28.9	30.8	10	16	10	21.0
PTV 30B	VX	30.0	32.0	34.0	10	18	10	23.0
PTV 33B	VY	33.0	35.0	37.0	10	18	10	25.0
PTV 36B	VZ	36.0	38.0	40.0	10	20	10	27.0

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Typical thermal resistance, junction to lead (1)	$R_{\theta JL}$	50	°C/W
Typical thermal resistance, junction to ambient (2)	$R_{\theta JA}$	208	°C/W

Notes

(1) Mounted on PCB with 5.0 mm x 5.0 mm copper pad areas attached to each terminal

(2) Mounted on minimum recommended pad layout

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
PTV7.5B-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
PTV7.5B-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

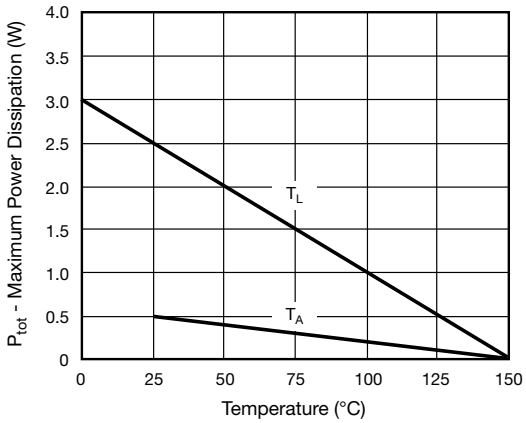


Fig. 1 - Steady State Power Derating

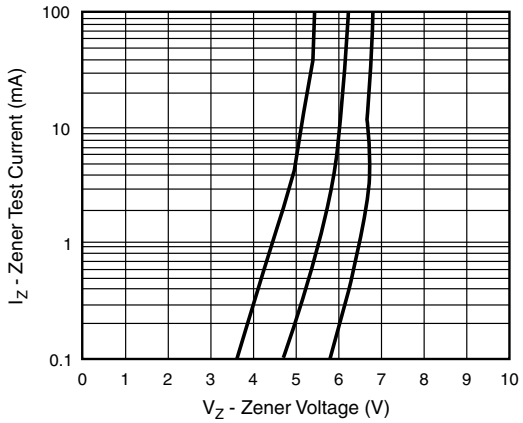


Fig. 2 - Typical Zener Voltage

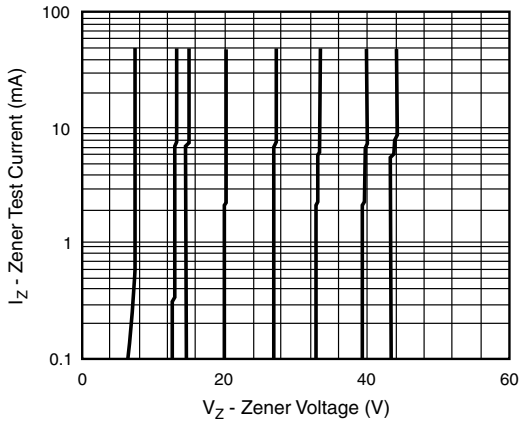
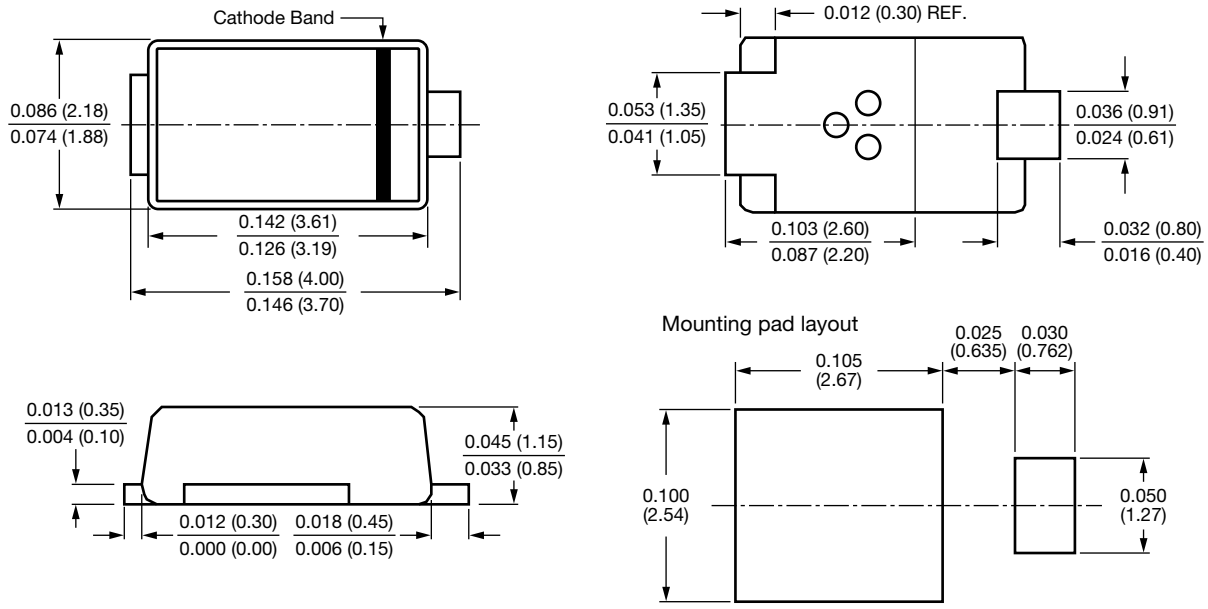


Fig. 3 - Typical Zener Voltage

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMP (DO-220AA)



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