

Surface Mount Power Voltage-Regulating Diodes

eSMP™ Series



DO-220AA (SMP)

PRIMARY CHARACTERISTICS

V_Z	3.9 V to 36 V
P_D at $T_L = 75\text{ °C}$	1.5 W
P_D at $T_A = 25\text{ °C}$	0.6 W
T_J max.	150 °C

TYPICAL APPLICATIONS

For general voltage regulation, voltage limiting and voltage surge absorption.

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
- 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

MECHANICAL DATA

Case: DO-220AA (SMP)

Molding compound meets UL 94 V-0 flammability rating.

Base P/N-M3 - halogen-free and RoHS compliant, 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

Polarity: Color band denotes cathode end

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

PARAMETER	SYMBOL	VALUE	UNIT
Power dissipation at $T_L = 75\text{ °C}$ (fig. 1) ⁽¹⁾	P_D	1.5	W
Power dissipation at $T_A = 25\text{ °C}$ (fig. 1) ⁽²⁾	P_D	0.6	W
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}	- 55 to + 150	°C

Notes:

⁽¹⁾ Mounted on P.C.B. 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 μ s pulse width, 1 % duty circle



ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)								
PART NUMBER	DEVICE MARKING CODE	ZENER VOLTAGE			MAXIMUM ZENER DYNAMIC IMPEDANCE		MAXIMUM REVERSE LEAKAGE CURRENT	
		V_Z (V)		I_{ZT} (mA)	Z_{ZT} (Ω)	I_{ZT} (mA)	I_R (μA)	V_R (V)
		MIN.	MAX.					
PTV 3.9B	VB	3.90	4.40	40	15	40	20	1.0
PTV 4.3B	VC	4.30	4.80	40	15	40	20	1.0
PTV 4.7B	VD	4.70	5.20	40	10	40	20	1.0
PTV 5.1B	VE	5.10	5.70	40	8	40	20	1.0
PTV 5.6B	VF	5.60	6.30	40	8	40	20	1.5
PTV 6.2B	VG	6.20	7.00	40	6	40	20	3.0
PTV 6.8B	VH	6.80	7.70	40	6	40	50	3.5
PTV 7.5B	VI	7.50	8.40	40	4	40	20	4.0
PTV 8.2B	VJ	8.20	9.30	40	4	40	20	5.0
PTV 9.1B	VK	9.10	10.2	40	6	40	20	6.0
PTV 10B	VL	10.0	11.2	40	6	40	10	7.0
PTV 11B	VM	11.0	12.3	20	8	20	10	8.0
PTV 12B	VN	12.0	13.5	20	8	20	10	9.0
PTV 13B	VO	13.3	15.0	20	10	20	10	10.0
PTV 15B	VP	14.7	16.5	20	10	20	10	11.0
PTV 16B	VQ	16.2	18.3	20	12	20	10	12.0
PTV 18B	VR	18.0	20.3	20	12	20	10	13.0
PTV 20B	VS	20.0	22.4	20	14	20	10	15.0
PTV 22B	VT	22.0	24.5	10	14	10	10	17.0
PTV 24B	VU	24.0	27.6	10	16	10	10	19.0
PTV 27B	VV	27.0	30.8	10	16	10	10	21.0
PTV 30B	VX	30.0	34.0	10	18	10	10	23.0
PTV 33B	VY	33.0	37.0	10	18	10	10	25.0
PTV 36B	VZ	36.0	40.0	10	20	10	10	27.0

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	LIMIT	UNIT
Typical thermal resistance, junction to lead ⁽¹⁾	$R_{\theta JL}$	50	$^\circ\text{C/W}$
Typical thermal resistance, junction to ambient ⁽²⁾	$R_{\theta JA}$	208	$^\circ\text{C/W}$

Notes:

⁽¹⁾ Mounted on P.C.B. with 5.0 mm x 5.0 mm copper pads 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

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

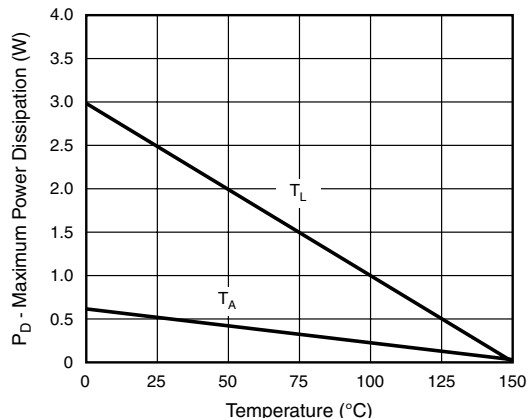


Figure 1. Steady State Power During

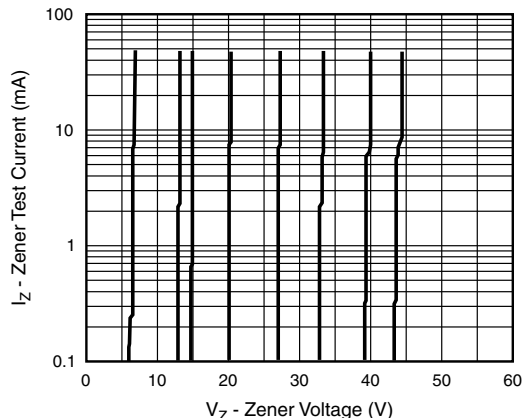


Figure 3. Typical Zener Voltage

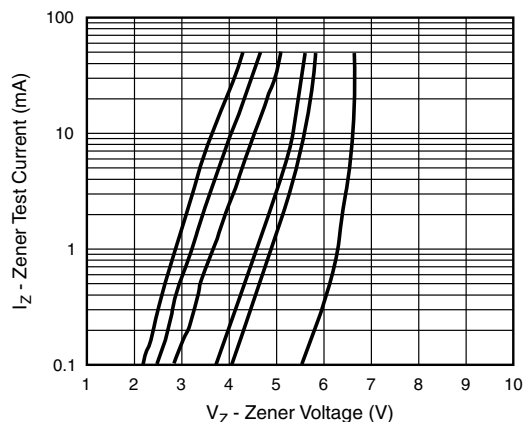
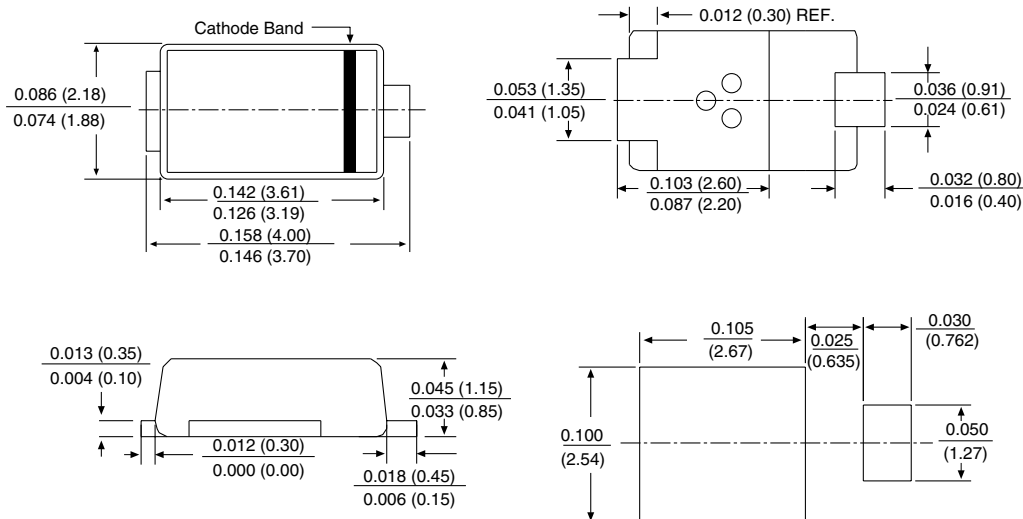


Figure 2. Typical Zener Voltage

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)





Disclaimer

All product specifications and data are subject to change without notice.

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 herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

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.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.