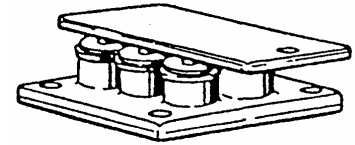


**DESCRIPTION**

This high power Transient Voltage Suppressor and Zener is designed for applications requiring protection of voltage-sensitive electronic devices that may be damaged by high power or high energy voltage transients including lightning per IEC61000-4-5 and classes 1-4 with various source impedances described herein. Individual cells are matched to ensure current-sharing under high current pulse conditions and for continuous operation as a Zener when required.

**APPEARANCE**



**IMPORTANT:** For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

**FEATURES**

- Peak surge power capacity given from 0.1 ms to 10 seconds.
- Low clamping factor
- Negligible power loss
- Small size and weight for 350 W dc rating
- Low thermal resistance junction to base plate
- Working Standoff Voltages 14 to 165 Volts
- Following variations are also available:
  - Non-Standard Voltages
  - Higher Power Capacity
  - Other Package Configurations

**APPLICATIONS / BENEFITS**

- High Power Voltage Regulation
- High Power Transient Voltage Protection from Lightning per IEC61000-4-5 for class 1,2,3,4, and 5 with source impedance of 42 Ohms
- High Power Transient Voltage Protection from Lightning per IEC61000-4-5 for class 1,2,3, and 4 with source impedance of 12 Ohms for MPZ5-16 and MPZ5-32 device types
- High Power Transient Voltage Protection from Lightning per IEC61000-4-5 for class 2 and 3 with source impedance of 2 Ohms for MPZ5-16 and MPZ5-32 as well as class 4 for MPZ5-16

**MAXIMUM RATINGS**

- Transient Peak Pulse Power: 40 kW at 0.1 ms and 8 kW at 1.0 ms (sq. wave) or 12 kW @ 10/1000 us
- DC Power Dissipation: 350 Watts @  $T_c = 25^\circ\text{C}$  (Derate 2.33 W/ $^\circ\text{C}$  above 25 $^\circ\text{C}$ )
- Operating junction & storage temperature range: -65 $^\circ\text{C}$  to +175 $^\circ\text{C}$ .

**MECHANICAL AND PACKAGING**

- Robust copper heat-sink mounting plates and cells
- Finish: Nickel-Solder Plated
- Polarity: Anode-to-Case is standard. Cathode-to-Case available upon request.
- Weight: 61 grams (approximate)

**ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ ,  $V_F = 1.5\text{ V max @ } 10\text{ A}$  for all types)**

Type	Rated Standoff Voltage (Note 1)		Maximum Device Clamping Factor $CF = \frac{V_z @ I_z(\text{pulse})}{V_z @ I_{zT}}$ (Note 2)	Minimum Zener Voltage		Maximum Zener Voltage Pulse Width = 1.0 ms		Maximum Standby Current $I_D @ V_{WM} \mu\text{A}$	Typical Capacitance C (typ) @ $V_{WM} \mu\text{F}$
	$V_{WM} \text{ Vdc}$	$V_{WM} \text{ Vrms}$		$V_z \text{ (min) @ } I_{zT} \text{ Vdc}$	$\text{ @ } I_{zT} \text{ Adc}$	$V_z \text{ (max) @ } I_z \text{ (pulse) Vdc}$	$\text{ @ } I_z \text{ (pulse) Adc}$		
MPZ5-16A	14	10	1.25	16	0.4	24	200	50	0.025
MPZ5-16B	14	10	1.25	16	0.4	20	200	50	0.025
MPZ5-32A	28	20	1.25	32	0.2	50	100	50	0.011
MPZ5-32B	28	20	1.25	32	0.2	45	100	50	0.011
MPZ5-32C	28	20	1.25	32	0.2	40	100	50	0.011
MPZ5-180A	165	117	1.14	180	0.03	250	20	50	0.0012
MPZ5-180B	165	117	1.14	180	0.03	225	20	50	0.0012
MPZ5-180C	165	117	1.14	180	0.03	205	20	50	0.0012

**NOTE 1:** Rated Standoff Voltage ( $V_{WM}$ ) is defined as normal input voltage to device for non-operating condition. If non-sinusoidal wave or dc input is present, the peak operating voltage input values for  $V_{WM}$  should be used to select device type.

**NOTE 2:** The maximum device clamping factor  $C_F$  is a ratio of  $V_z$  measured at  $I_z$  (pulse) given in the Electrical Characteristics Table divided by  $V_z$  measured at  $I_{zT}$  under steady state conditions. This value guarantees the sharpness of the voltage breakdown of individual devices. Figure 2 demonstrates the typical sharpness of the breakdown, and indicates the voltage regulation over a wide range of currents where the change in voltage  $\Delta V_z$  is as follows:  $\Delta V_z = V_z @ I_z \text{ (pulse)} - V_z @ I_{zT}$

OUTLINE AND CIRCUIT

FIGURE 1 – MAXIMUM NON-REPETITIVE SURGE POWER  
(RECTANGULAR WAVEFORM)

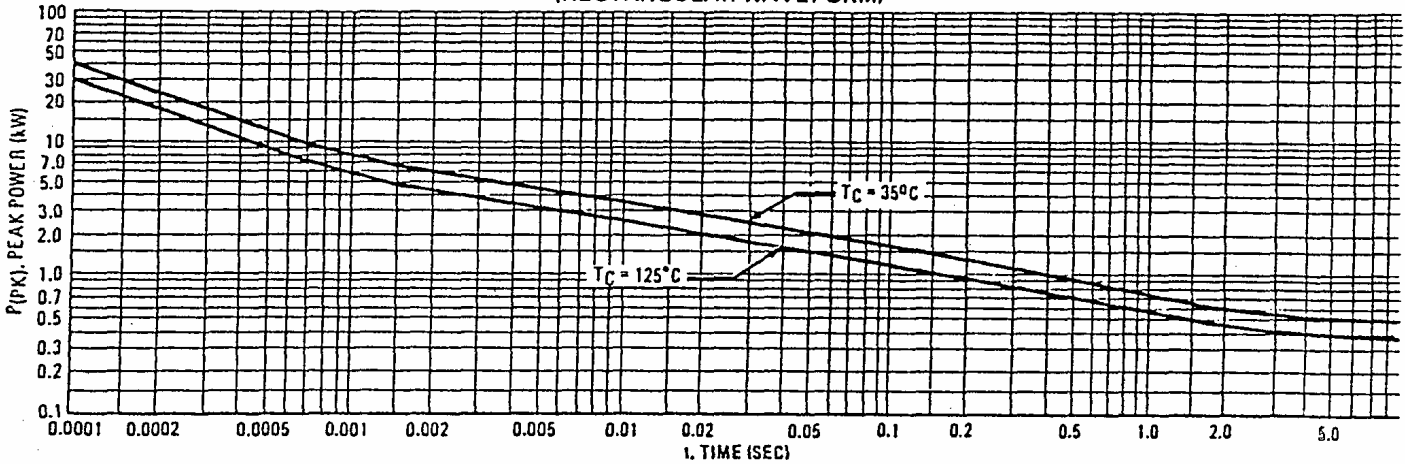
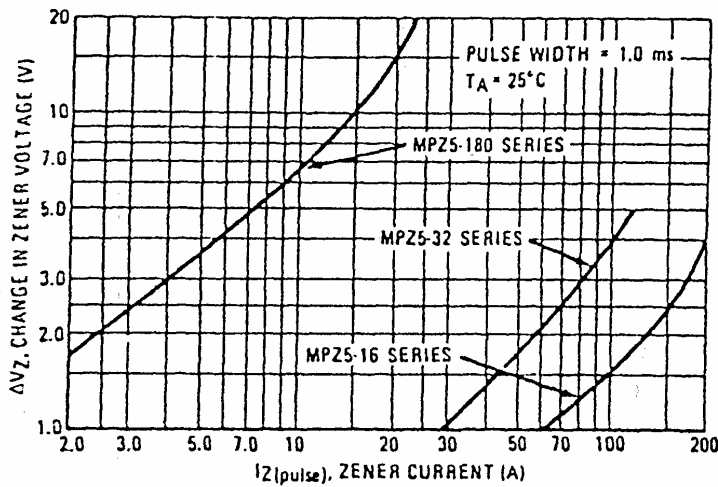
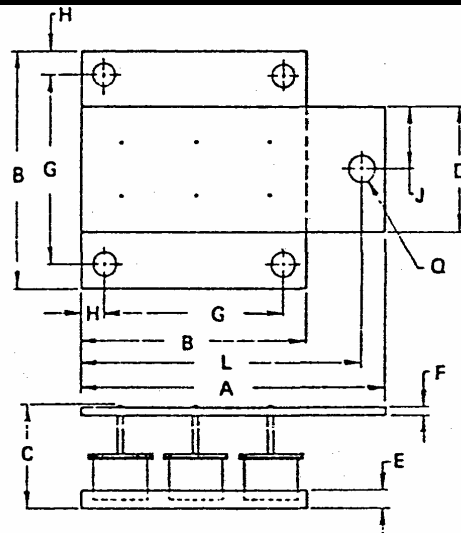


FIGURE 2 – TYPICAL DYNAMIC ZENER VOLTAGE CHARACTERISTICS (Note 2)



PACKAGE DIMENSIONS



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	50.29	51.31	1.980	2.020
B	37.59	38.61	1.480	1.520
C	-	16.51	-	0.650
D	20.24	21.01	0.797	0.827
E	2.92	3.43	0.115	0.135
F	1.32	1.83	0.052	0.072
G	29.97	30.99	1.180	1.220
H	3.56	4.06	0.140	0.160
J	10.06	10.57	0.396	0.416
L	46.74	47.74	1.840	1.860
Q	3.30	3.81	0.130	0.150