

MPTE-5, C thru MPTE-45, C
See Page 4-59

T-11-23

MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

SILICON POWER TRANSIENT SUPPRESSOR

... designed for applications requiring protection of voltage sensitive electronic devices in danger of destruction by high energy voltage transients. Individual cells are matched to insure current-sharing under high current pulse conditions.

- Peak Surge Power Capacity Given From 0.1 ms To 10 Seconds
- Low Clamping Factor Assures Low Voltage Overshoot
- Negligible Power Loss
- Small Size and Weight
- Following Variations are Available:
 - Non-Standard Voltages
 - Higher Power Capacity
 - Other Package Configurations

MAXIMUM RATINGS

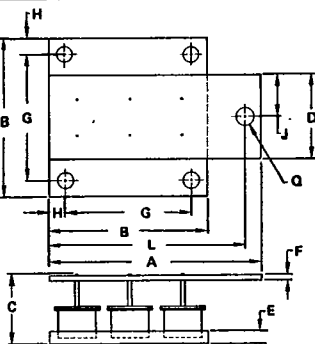
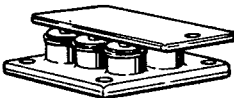
Transient Power Dissipation: 40 kW
Pulse Width: 0.1ms, (See Figure 1)
DC Power Dissipation: 350 Watts @ $T_C = 25^{\circ}\text{C}$
(Derate 2.33 W/ $^{\circ}\text{C}$ above 25°C)
Operating Junction & Storage Temperature Range:
-65 $^{\circ}\text{C}$ to +175 $^{\circ}\text{C}$

MECHANICAL CHARACTERISTICS

POLARITY: Anode-to-Case Is Standard. Cathode-to-Case Available Upon Request.

MPZ5-16 Series
MPZ5-32 Series
MPZ5-180 Series

SILICON POWER
TRANSIENT SUPPRESSOR



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

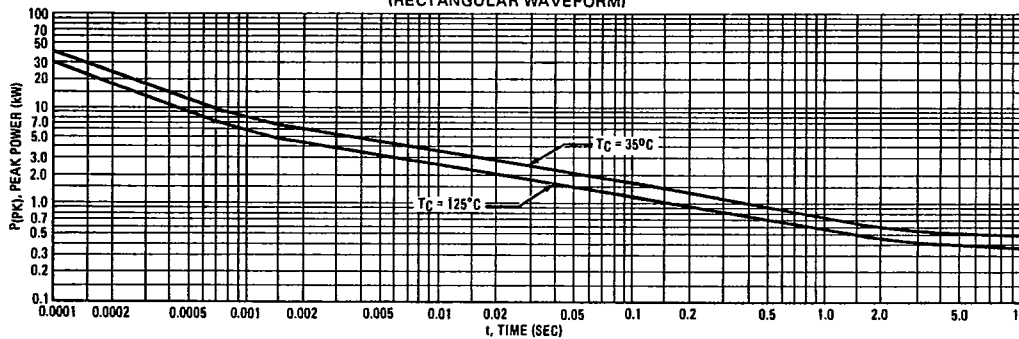
CASE 119-01
NOTE: DIA "Q" 5 PLACES

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

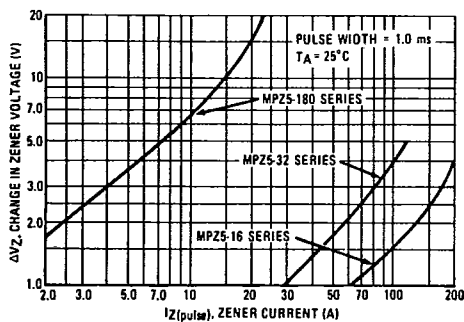
Type	Nominal Operating Voltage (Note 1)		Maximum Device Clamping Factor $CF = \frac{V_Z @ I_Z \text{ (pulse)}}{V_Z @ I_Z \text{ (Note 2)}}$	Minimum Zener Voltage		Maximum Zener Voltage Pulse Width = 1.0 ms		Maximum Reverse Current $I_R \text{ (max)}$ @ $V_R = V_{OP(PK)}$ μA_{dc}	Typical Capacitance C (typ) @ $V_R = V_{OP(PK)}$ μF
	$V_{OP(PK)}$ Vdc	$V_{OP(RMS)}$ Vrms		$V_Z \text{ (min)}$ Vdc	@ I_{ZT} Adc	$V_Z \text{ (max)}$ Vdc	@ $I_Z \text{ (pulse)}$ Adc		
MPZ5-16A	14	10	1.25	16	0.4	24	200	50 ↑ 50	0.025
-16B	14	10	1.25	16	0.4	20	200		0.025
-32A	28	20	1.25	32	0.2	50	100		0.011
-32B	28	20	1.25	32	0.2	45	100		0.011
-32C	28	20	1.25	32	0.2	40	100		0.011
-180A	165	117	1.14	180	0.03	250	20		0.0012
-180B	165	117	1.14	180	0.03	225	20		0.0012
-180C	165	117	1.14	180	0.03	205	20		0.0012

MPZ5-16 Series, MPZ5-32 Series, MPZ5-180 Series

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



**FIGURE 2 -- TYPICAL DYNAMIC ZENER
VOLTAGE CHARACTERISTICS (Note 2)**



NOTE 1: Nominal operating voltage is defined as normal input voltage to device for non-operating condition. If non-sinusoidal wave or dc input is present, peak voltage input values V_{OP(PK)} 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.

$$\Delta V_Z = V_Z @ I_Z(\text{pulse}) - V_Z @ I_{ZT}$$