

**Microsemi Corp.**

The diode experts

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(602) 941-6300

**1N6356 thru  
1N6372  
and  
MPT-5 thru  
MPT-45C**

## FEATURES

- DESIGNED TO PROTECT BIPOLAR AND MOS MICROPROCESSOR BASED SYSTEMS.
- VOLTAGE RANGE OF 5.0 TO 45 VOLTS
- LOW CLAMPING RATIO

## MAXIMUM RATINGS

1500 Watts of Peak Pulse Power dissipation at 25°C at 10/1000  $\mu$ s

$t_{clamping}$  (0 volts to  $V_{(BR)}$  min): Unidirectional — Less than  $1 \times 10^{-12}$  seconds  
Bidirectional — Less than  $5 \times 10^{-9}$  seconds

Operating and Storage temperatures:  $-65^{\circ}$  to  $+175^{\circ}$ C

Forward surge rating: 200 amps, 1/120 second at 25°C

(Applies to Unipolar or single direction only for 1N6356-1N6364)

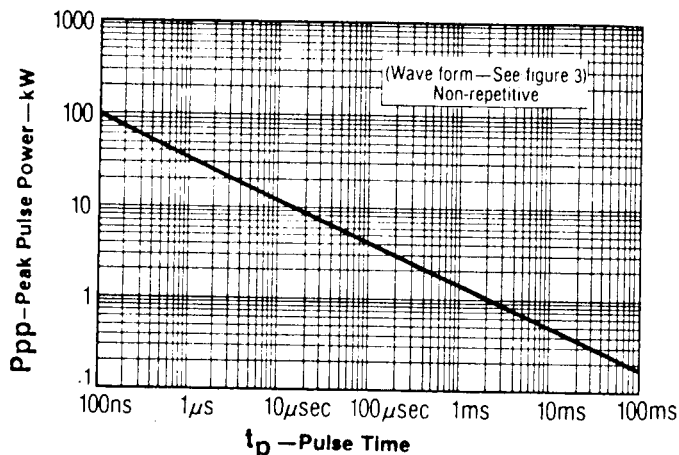
Steady State power dissipation: 1.0 watt

Repetition rate (duty cycle): .01%

## ELECTRICAL CHARACTERISTICS

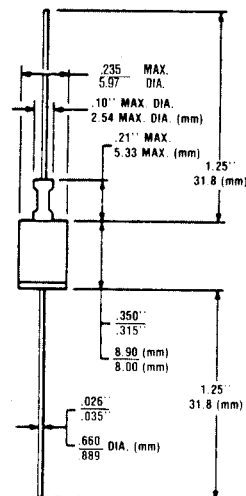
Clamping Factor: 1.33 @ Full rated power  
1.20 @ 50% rated power

Clamping Factor: The ratio of the actual  $V_C$  (Clamping Voltage) to the actual  $V_{(BR)}$  (Breakdown Voltage) as measured on a specific device.



**FIGURE 1**  
PEAK PULSE POWER VS. PULSE TIME

## TRANSIENT ABSORPTION ZENER



## MECHANICAL CHARACTERISTICS

CASE: DO-13 welded, hermetically sealed, metal and glass.

FINISH: All external surfaces are corrosion resistant and leads solderable.

POLARITY: Cathode connected to case and marked. Bidirectional not marked.

WEIGHT: 1.4 grams (Appx.)

MOUNTING POSITION: Any.

# 1N6356 thru 1N6372 and MPT-5 thru MPT-45C

## ELECTRICAL CHARACTERISTICS @ 25°C

| MICROSEMI<br>PART<br>NUMBER | STAND-OFF<br>VOLTAGE<br>(NOTE 1)<br>$V_{WM}$<br>VOLTS | MAXIMUM<br>REVERSE<br>LEAKAGE<br>@ $V_{WM}$<br>$I_D$<br>$\mu A$ | MINIMUM*<br>BREAKDOWN<br>VOLTAGE<br>@ 1.0 mA<br>$V_{(BR)}$ (min)<br>VOLTS | MAXIMUM<br>CLAMPING VOLTAGE<br>(Fig. 2)<br>$I_{PP1} = 1A$<br>$V_C$<br>VOLTS | MAXIMUM<br>CLAMPING VOLTAGE<br>(Fig. 2)<br>@ $I_{PP2} = 10A$<br>$V_C$<br>VOLTS | MAXIMUM<br>PEAK PULSE<br>CURRENT<br>$I_{PP3}$<br>A |
|-----------------------------|-------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------------------------|
| 1N6356                      | MPT-5                                                 | 5.0                                                             | 300                                                                       | 7.1                                                                         | 7.5                                                                            | 160                                                |
| 1N6357                      | MPT-8                                                 | 8.0                                                             | 25                                                                        | 11.3                                                                        | 11.5                                                                           | 100                                                |
| 1N6358                      | MPT-10                                                | 10.0                                                            | 2                                                                         | 13.7                                                                        | 14.1                                                                           | 90                                                 |
| 1N6359                      | MPT-12                                                | 12.0                                                            | 2                                                                         | 16.1                                                                        | 16.5                                                                           | 70                                                 |
| 1N6360                      | MPT-15                                                | 15.0                                                            | 2                                                                         | 20.1                                                                        | 20.6                                                                           | 60                                                 |
| 1N6361                      | MPT-18                                                | 18.0                                                            | 2                                                                         | 24.2                                                                        | 25.2                                                                           | 50                                                 |
| 1N6362                      | MPT-22                                                | 22.0                                                            | 2                                                                         | 29.8                                                                        | 32.0                                                                           | 40                                                 |
| 1N6363                      | MPT-36                                                | 36.0                                                            | 2                                                                         | 50.6                                                                        | 54.3                                                                           | 23                                                 |
| 1N6364                      | MPT-45                                                | 45.0                                                            | 2                                                                         | 63.3                                                                        | 70.0                                                                           | 19                                                 |

$V_f$  at 100 amps peak, 8.3 msec sine wave equals 3.5 volts maximum

## ELECTRICAL CHARACTERISTICS @ 25°C (Test Both Polarities)

|        |         |      |     |      |      |      |     |
|--------|---------|------|-----|------|------|------|-----|
| 1N6365 | MPT-5C  | 5.0  | 300 | 6.0  | 7.1  | 7.5  | 160 |
| 1N6366 | MPT-8C  | 8.0  | 25  | 9.4  | 11.4 | 11.6 | 100 |
| 1N6367 | MPT-10C | 10.0 | 2   | 11.7 | 14.1 | 14.5 | 90  |
| 1N6368 | MPT-12C | 12.0 | 2   | 14.1 | 16.7 | 17.1 | 70  |
| 1N6369 | MPT-15C | 15.0 | 2   | 17.6 | 20.8 | 21.4 | 60  |
| 1N6370 | MPT-18C | 18.0 | 2   | 21.2 | 24.8 | 25.5 | 50  |
| 1N6371 | MPT-22C | 22.0 | 2   | 25.9 | 30.8 | 32.0 | 40  |
| 1N6372 | MPT-36C | 36.0 | 2   | 42.4 | 50.6 | 54.3 | 23  |
| 1N6372 | MPT-45C | 45.0 | 2   | 52.9 | 63.3 | 70.0 | 19  |

C Suffix indicates Bidirectional

**NOTE 1** TAZ are normally selected according to the reverse "Stand Off Voltage" ( $V_{WM}$ ) which should be equal to or greater than the DC or continuous peak operating voltage level.

\*The minimum breakdown voltage as shown takes into consideration the  $\pm 1$  volt tolerance normally specified for power supply regulation on most integrated circuit manufacturers data sheets. Similar devices are available with reduced clamping voltages where tighter regulated power supply voltages are employed.

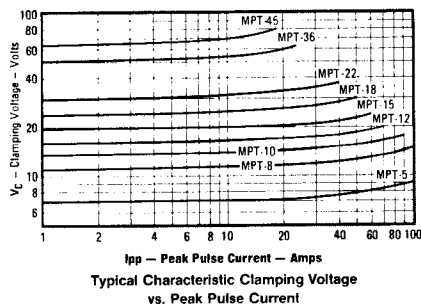
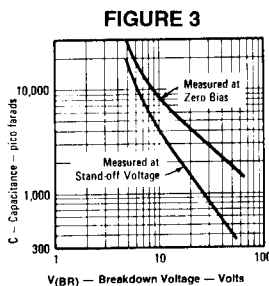
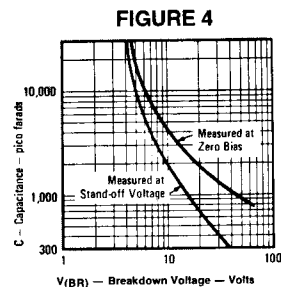


FIGURE 2



Typical Capacitance vs. Breakdown Voltage  
(Unidirectional Types)



Typical Capacitance vs. Breakdown Voltage  
(Bidirectional Types)