

## Features

- Voltage ratings to 1000V (UM7000)
- Wide variety of package styles
- Rated average power dissipation to 10W
- Cost effective in volume applications

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## Description

The UM7000 and UM7100 series offer moderately high power handling in combination with reasonably low levels of both series resistance and capacitance. The UM7200 series offers the lowest series resistance, but the highest capacitance of the group. The differences in specified performance, for

each of the series, results from different I-region thicknesses. The three series have broad applicability in many RF and microwave switch and attenuator circuits. Additionally, the UM7100 in leaded versions, is usually the most cost-effective diode choice in high volume usage.

## MAXIMUM RATINGS

### Average Power Dissipation and Thermal Resistance Ratings

| Package            | Condition  | P <sub>d</sub> | θ        |
|--------------------|--|----------------|----------|
| A                  | 25°C Pin Temperature                             | 10W            | 15°C/W   |
| B&E (Axial Leads)  | ½ in. (12.7mm) Total Lead Length to 25°C Contact | 5.5W           | 27.5°C/W |
| B&E (Axial Leads)  | Free Air   | 1.5W           | —        |
| C (Studded)        | 25°C Stud Temperature                            | 10W            | 15°C/W   |
| D (Insulated Stud) | 25°C Stud Temperature                            | 7.5W           | 20°C/W   |

### Peak Power Dissipation Rating

|              |  |  |
|--------------|--|--|
| All Packages | 1 μs Pulse (Single)<br>at 25°C Ambient | UM7000 - 60 KW<br>UM7100 - 35 KW<br>UM7200 - 20 KW |
|--------------|--|--|

**Operating and Storage Temperature Range: -65°C to +175°C**

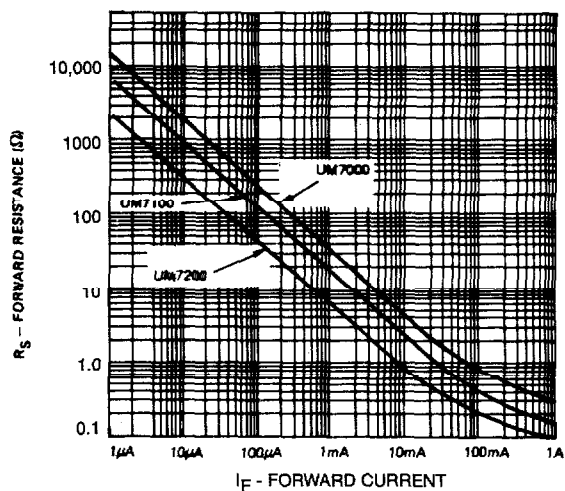
**Voltage Ratings (25 °C)**

| Reverse Voltage (V <sub>R</sub> ) — Volts (I <sub>R</sub> = 10 μA) | Types  |        |        |
|--|--------|--------|--------|
| 100V   | UM7001 | UM7101 | UM7201 |
| 200V   | UM7002 | UM7102 | UM7202 |
| 400V   | —      | UM7104 | UM7204 |
| 600V   | UM7006 | —      | —      |
| 800V   | —      | UM7108 | —      |
| 1000V  | UM7010 | —      | —      |

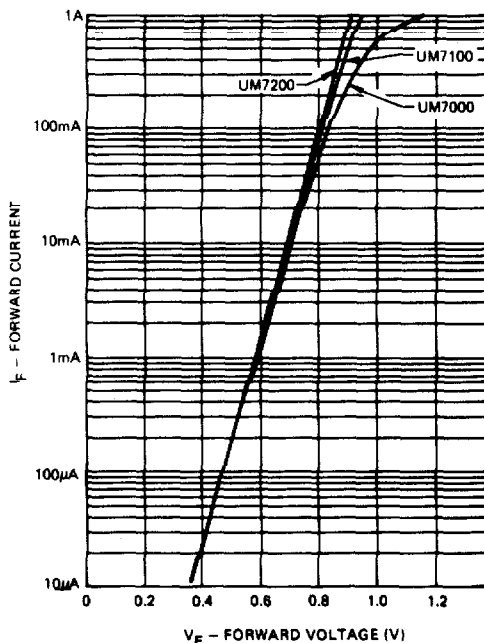
**Electrical Specifications (25 °C)**

| Test                      | Symbol         | UM7000 | UM7100 | UM7200 | Conditions              |
|---------------------------|----------------|--------|--------|--------|-------------------------|
| Total Capacitance (Max)   | C <sub>T</sub> | 0.9 pF | 1.2 pF | 2.2 pF | 100V, 1MHz              |
| Series Resistance (Max)   | R <sub>S</sub> | 1.0Ω   | 0.6Ω   | 0.25Ω  | 100mA, 100MHz           |
| Parallel Resistance (Min) | R <sub>P</sub> | 200 KΩ | 150 KΩ | 70 KΩ  | 100V, 100MHz            |
| Carrier Lifetime (Min)    | τ              | 2.5 μs | 2.0 μs | 1.5 μs | I <sub>F</sub> = 10 mA  |
| Reverse Current (Max)     | I <sub>R</sub> | 10 μA  | 10 μA  | 10 μA  | V <sub>R</sub> = Rating |
| I-Region Width (Min)      | W              | 150 μm | 80 μm  | 40 μm  | —                       |

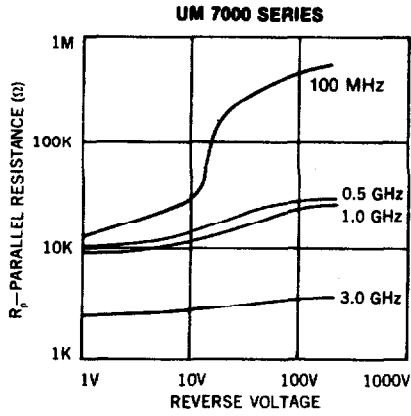
**TYPICAL FORWARD RESISTANCE VS FORWARD CURRENT (F = 100 MHz)**



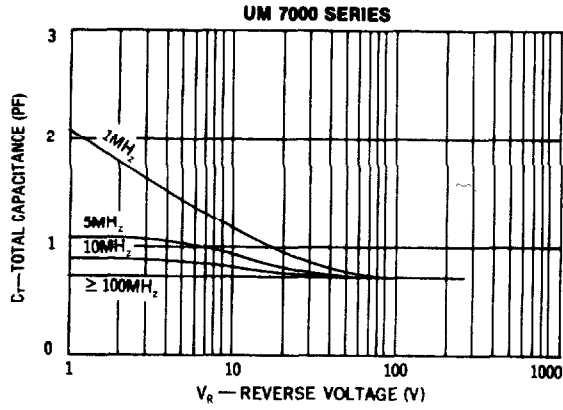
**TYPICAL DC CHARACTERISTIC FORWARD VOLTAGE VS FORWARD CURRENT UM7000/UM7100/UM7200**



TYPICAL  $R_p$  CHARACTERISTIC

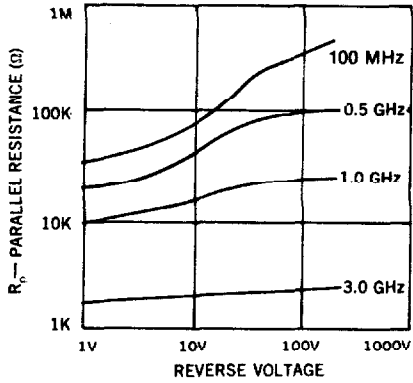


TYPICAL  $C_T$  CHARACTERISTIC

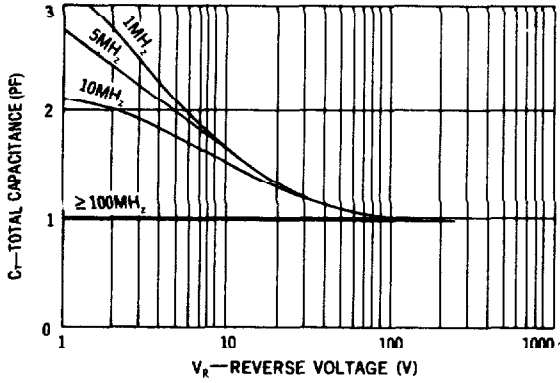


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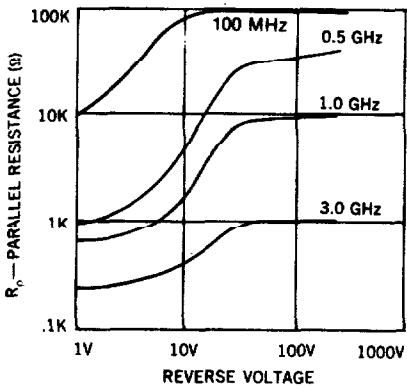
**UM7100 SERIES**



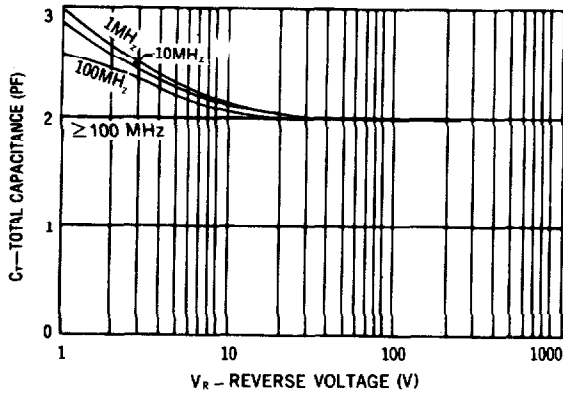
**UM 7100 SERIES**



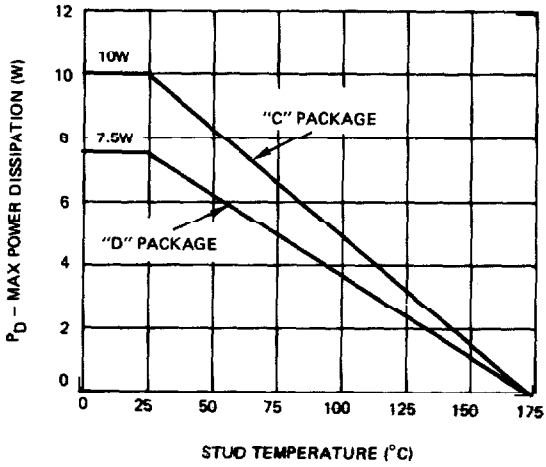
**UM 7200 SERIES**



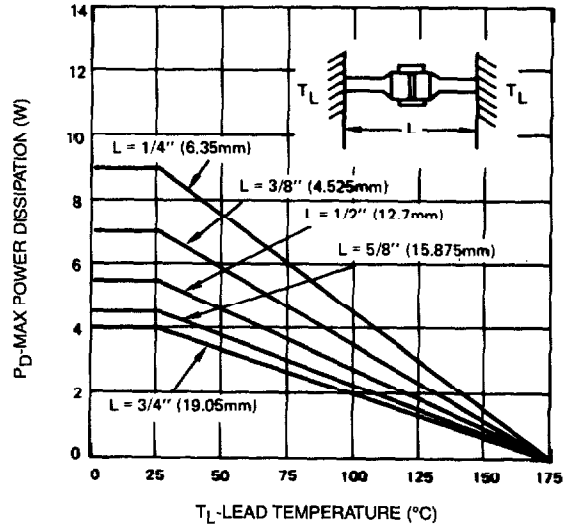
**UM 7200 SERIES**



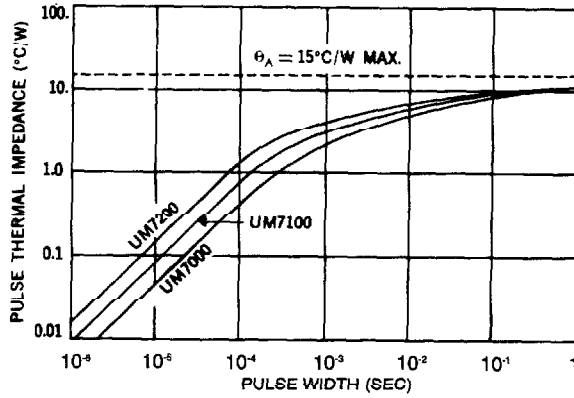
**POWER RATING STUD MOUNTED DIODES**



**POWER RATING — AXIAL LEADED DIODES**



**PULSE THERMAL IMPEDANCE VS PULSE WIDTH**



**ORDERING INSTRUCTIONS**

Part numbers of Microsemi PIN Diodes consist of the letters UM followed by four digits and one or two letters. The first two digits indicate the diode series, the next two digits specify the minimum breakdown voltage in hundreds of volts. The remaining letters denote the package style. Reverse polarity (anode on stud end) is available in C or D Styles and denoted by adding second letter R.

For Example: **UM7000C**

|             |           |         |
|-------------|-----------|---------|
| Series 7000 | 100 volts | Style C |
|-------------|-----------|---------|