PIN DIODE

UM4000 SERIES
UM4900 SERIES

Features

- Power dissipation to 37.5W
- Voltage ratings to 1000V
- Series resistance rated at 0.5Ω
- Carrier lifetime greater than 5μs

Description

The UM4000 and UM4900 series feature high power PIN diodes with long carrier lifetimes and thick I-regions. They are especially suitable for use in low distortion switches and attenuators, in the HF through S band frequencies. While both series are electrically equivalent, the UM4900 series have higher power ratings due to a shorter thermal path between chip and package. High charge storage and long carrier lifetime enable high RF levels to be controlled with relatively low bias current. Similarly, peak RF voltages can be handled well in excess of applied reverse bias voltage.

Both series have been fully qualified in high power UHF phase shifters and megawatt peak-power duplexers, accumulating thousands of hours of proven performance. Both types have been used in the design of antenna selectors and couplers, where inductive and capacitive elements are switched in and out of filter or cavity networks.

MAXIMUM RATINGS

Average Power Dissipation and Thermal Resistance Ratings

Package	Condition	UM4000		UM4900	
		P_D	θ	P_D	θ
A	25 °C Pin Temperature	25W	6 °C/W	37.5W	4 °C/W
B&E (Axial Leads)	½ in. (12.7mm) Total Length to 25 °C Contact	12W	12.5 °C/W	12W	12.5 °C/W
B&E (Axial Leads)	Free Air	2.5W	—	2.5W	—
C (Studded)	25 °C Stud Temperature	25W	6 °C/W	37.5W	4 °C/W
D (Insulated Stud)	25 °C Stud Temperature	18.75W	8 °C/W	25W	6 °C/W

Peak Power Dissipation Rating

All Packages	1 μs Pulse (Single) at 25 °C Ambient	100 KW

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

Microsemi Corp.
Watertown
The diode experts

Voltage Ratings (25°C)

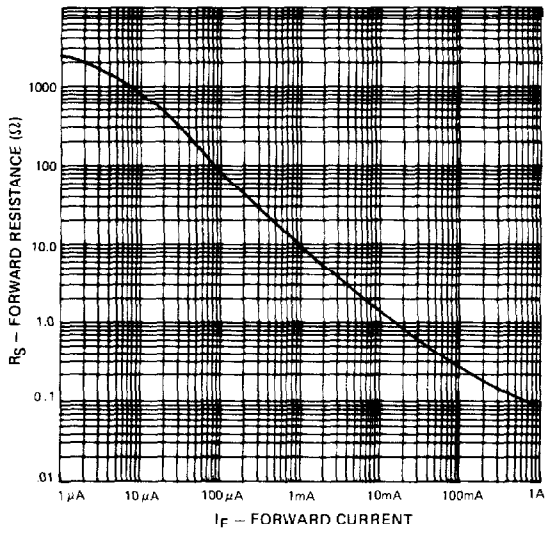
Reverse Voltage (V_R) — Volts (I_R = 10 μ Amps)	Types	
100	UM4001	UM4901
200	UM4002	UM4902
400	—	—
600	UM4006	UM4906
1000	UM4010	—

6

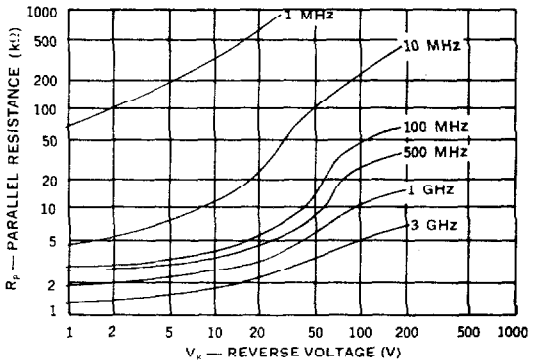
Electrical Specifications (25°C)

Test	Symbol	UM4000 UM4900	Conditions
Total Capacitance (Max)	C_T	3 pF	100V, 1MHz
Series Resistance (Max)	R_S	0.5Ω	100mA, 100MHz
Parallel Resistance (Min)	R_P	10 KΩ	100V, 100MHz
Carrier Lifetime (Min)	τ	5μs	I_F = 10mA
Reverse Current (Max)	I_R	10μA	V_R = Rating
I-Region Width (Min)	W	150μm	—

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



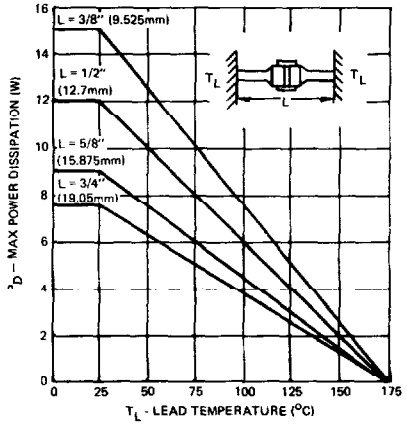
TYPICAL PARALLEL RESISTANCE CHARACTERISTIC



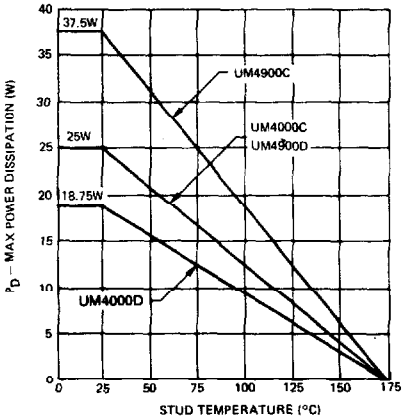
580 PLEASANT STREET • WATERTOWN, MA 02172
TEL. (617) 926-0404 • FAX (617) 924-1235

PRINTED IN U.S.A.

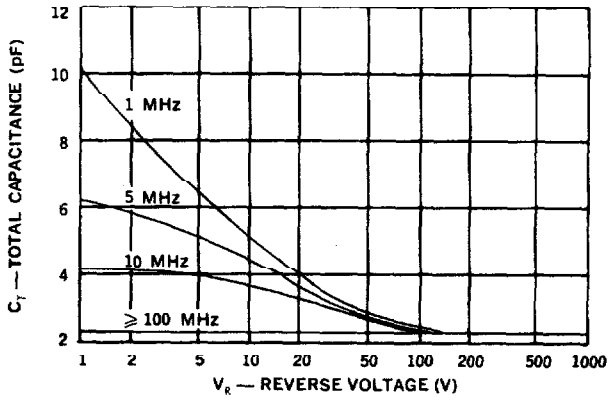
POWER RATING
AXIAL LEADED DIODE



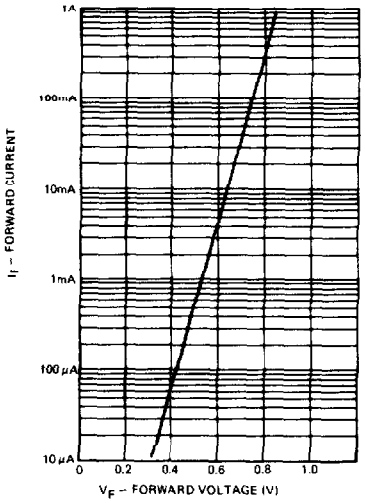
POWER RATING
STUD MOUNTED DIODES



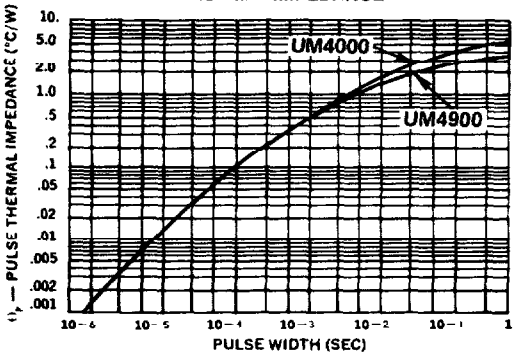
TYPICAL CAPACITANCE CHARACTERISTIC



DC CHARACTERISTICS
FORWARD VOLTAGE
VS
FORWARD CURRENT (TYPICAL)



THERMAL IMPEDANCE



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 large end cap) is available for the C style and denoted by adding second letter R.

For Example: UM|40|06|CR|

[Series 4000] [100 Volts] [Style C|Reverse Polarity]

580 PLEASANT STREET • WATERTOWN, MA 02172
TEL. (617) 926-0404 • FAX (617) 924-1235

PRINTED IN U.S.A.