PIN DIODE

UM4300 SERIES
UM7300 SERIES

For Attenuator Applications

Features

- Extremely low distortion performance
- Useful frequency range extends below 500 KHz
- Power dissipation to 20W (UM4300)
- Capacitance as low as 0.7 pF (UM7300)
- Voltage ratings to 1000V

6

Description

The UM4300 and UM7300 series combine a diode chip of extremely thick intrinsic region with a low thermal resistance construction. This results in diodes uniquely applicable to very low distortion linear attenuators and specialized switching functions. The UM4300 series, with large cross-sectional chip area offers the highest power capability, of the two series. The UM7300 series offers lower capacitance.

Both diode series are intended for use in linear attenuators operating from HF to beyond 1 GHz. Low distortion at low frequencies is a result of transit time frequencies below 5 MHz.

Operated as RF switches, either diode series can be operated at low dc reverse bias voltages, to hold off much higher RF voltage levels.

MAXIMUM RATINGS

Average Power Dissipation and Thermal Resistance Ratings

Package	Condition	UM4300 P_D	UM4300 θ	UM7300 P_D	UM7300 θ
A	25°C Pin Temperature	20W	7.5°C/W	7.5W	20°C/W
B&E (Axial Leads)	½ in. (12.7mm) Total Lead Length to 25°C Contact	10W	15°C/W	4W	37.5°C/W
B&E (Axial Leads)	Free Air	2.5W	—	1.5W	—
C (Studded)	25°C Stud	20W	7.5°C/W	7.5W	20°C/W
D (Insulated Stud)	25°C Stud	15W	10°C/W	6W	25°C/W

Peak Power Dissipation Rating

All packages	1μs Pulse (Single) at 25°C Ambient	500 KW	100 KW

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

Microsemi Corp.
Watertown
The diode experts

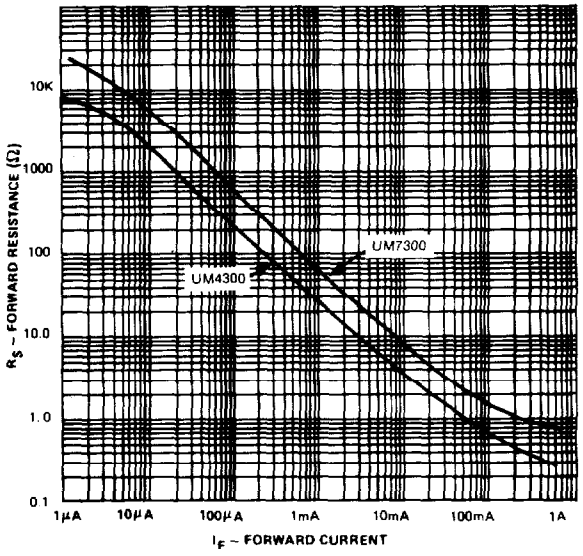
Voltage Ratings (25 °C)

Reverse Voltage (V_R) — Volts (I_R = 10 μA)	Types	
100V	UM4301	UM7301
200V	UM4302	UM7302
600V	UM4306	UM7306
1000V	UM4310	UM7310

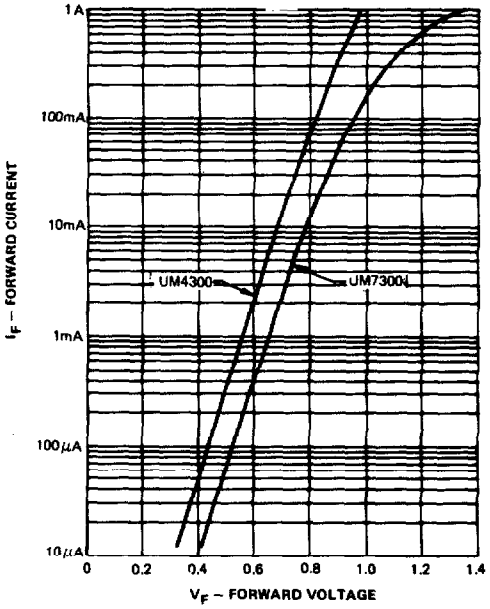
Electrical Specifications (25 °C)

Test	Symbol	UM4300	UM7300	Conditions
Total Capacitance (Max)	C_T	2.2 pF	0.7 pF	100V, 100MHz
Series Resistance (Max)	R_S	1.5Ω	3.0Ω	100mA, 100MHz
Series Resistance (Min)	R_S	1000Ω	3000Ω	10 μA, 100MHz
Carrier Lifetime (Min)	τ	6μs	4.0μS	I_F = 10mA
Leakage Current (Max)	I_R	10μA	10μA	V_R = Rating
I-Region Width (Min)	W	250μm	250μm	—

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



TYPICAL DC CHARACTERISTIC
FORWARD VOLTAGE
VS FORWARD CURRENT

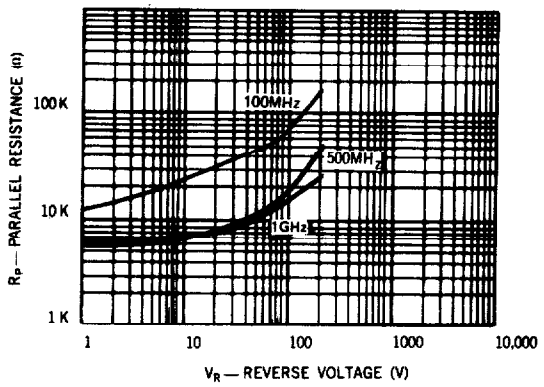


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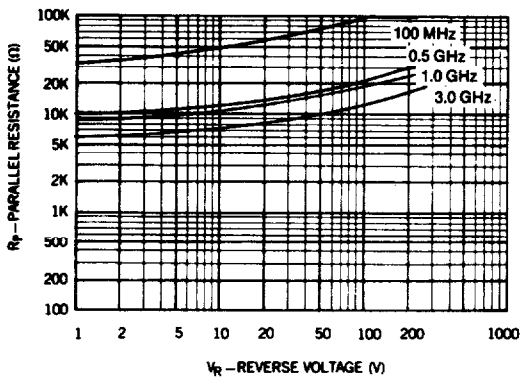
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PARALLEL RESISTANCE VS REVERSE VOLTAGE

UM4300



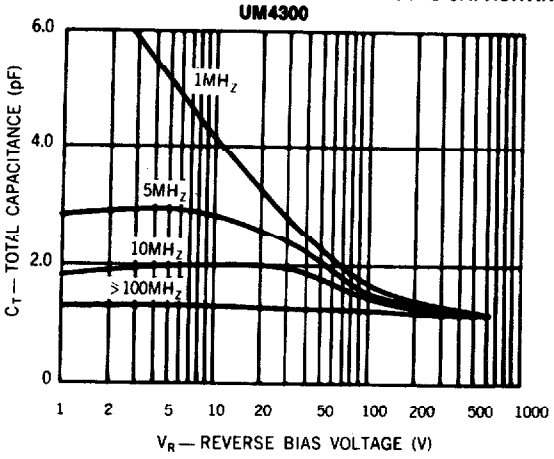
UM7300



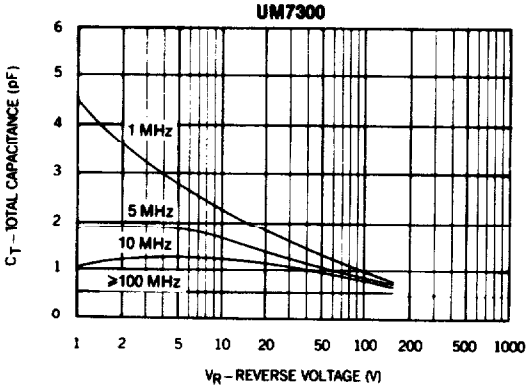
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TOTAL CAPACITANCE VS REVERSE VOLTAGE

UM4300

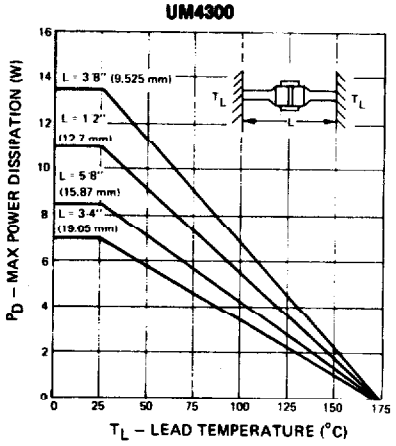


UM7300

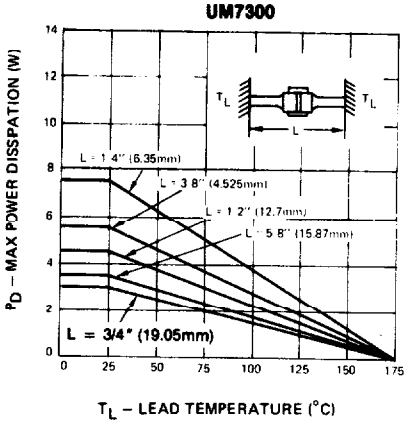


POWER RATING AXIAL LEADED DIODE

UM4300



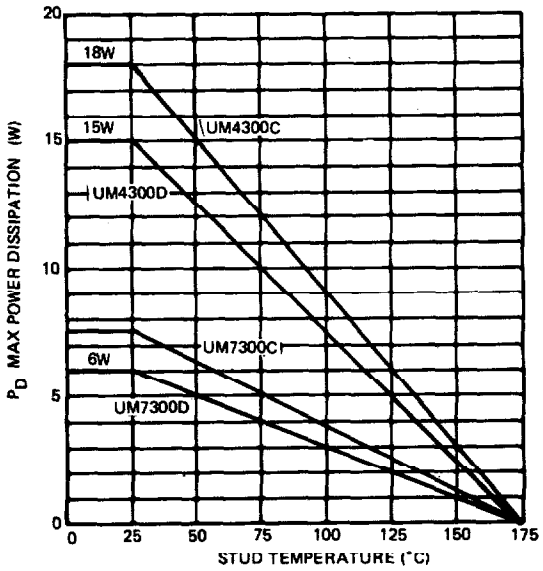
UM7300



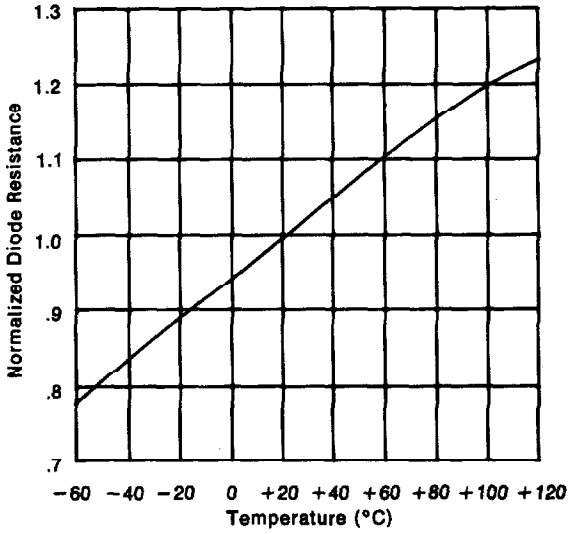
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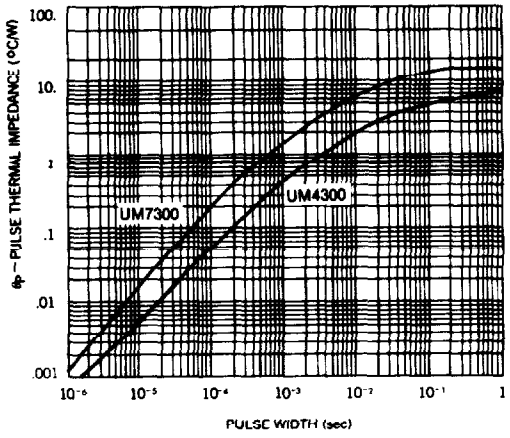
UM4300/UM7300
POWER RATING
STUD MOUNTED DIODES



NORMALIZED R_S VS TEMPERATURE



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: UM|73|01|C|

|Series 7300| |100 volts| |Style C|

Reverse polarity available in C style. Part number designated by adding R.

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