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Microsemi

UM9301/UM9301SM

Commercial Attenuator Diode

PRODUCT PREVIEW

DESCRIPTION

The UM9301 PIN Diode utilizes special overall chip geometry with an extremely thick intrinsic "I" region, to offer unique capabilities in both RF switch and attenuator applications.
Volume production also makes the diode an economical choice suitable for many commercial low power equipments.
The UM9301 has been designed for use in bridged TEE attenuator circuits commonly utilized for gain and slope control in CATV amplifiers.
Low distortion and high dynamic range are characteristic of the diodes' outstanding performance.
The UM9301 is also appropriate for switch applications, when little or no bias voltage is available. Frequent applications occur in portable 12 volt-powered communications equipments, operating at frequencies as low as 2 MHz.

KEY FEATURES

- Specified low distortion
- Low distortion properties at low reverse bias
- Resistance specified at 3 current points
- High reliability fused-in-glass construction

APPLICATIONS/BENEFITS

- Little or no Bias required.
- Operates as low as $2MH_Z$.
- Available in leaded or surface mount packages.

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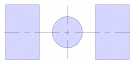

IMPORTANT: For the most current data, consult *MICROSEMI*'s website: **http://www.microsemi.com**

ABSOLUTE MAXIMUM RATINGS AT 25° C (UNLESS OTHERWISE SPECIFIED)

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	75	Volts
Reverse Current	I_R	10	µA
Average Power Dissipation (1, 2)	P_A	1.0	Watts
Storage Temperature	T stg	-65 to 175	°C
Operating Temperature	T op	-65 to 175	°C

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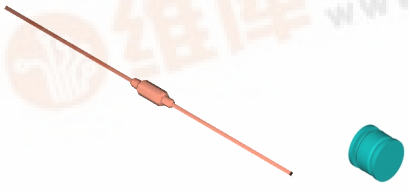

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(1) Mounted on 2" square by 0.06' thick FR4 board with a 1" x 1" square 2-ounce copper pattern..
(2) Lead ½ inch. (12.7mm) Total to 25°C Contact.

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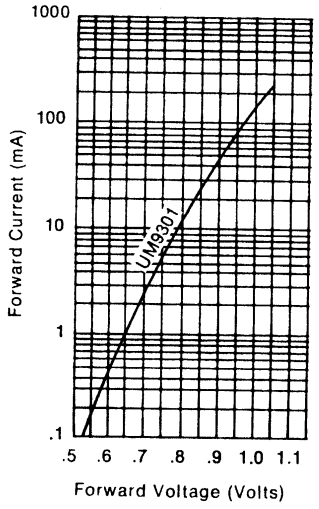
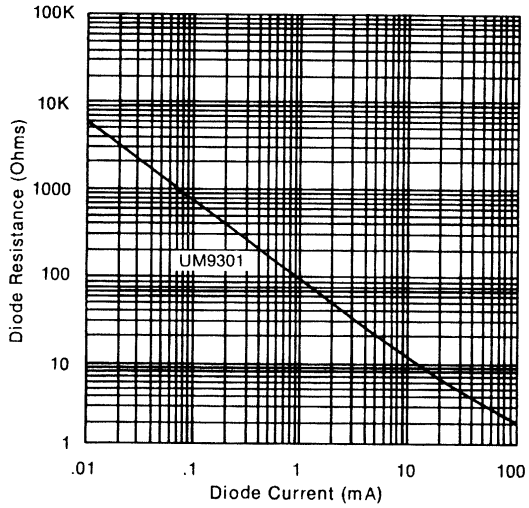
ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)						
Parameter	**Symbol**	**Conditions**	**Min**	**Typ.**	**Max**	**Units**
Off Characteristics						
Diode Resistance	R_S	I = 100 mA; f = 100 MHz I = 1 mA; f = 100 MHz I = 0.01 mA; f = 100 MHz	 3000	1.7 80 5000	3.0 150	Ω
Current for R_S = 75 Ω I_R	R_S	f = 100 MHz	0.5	1.1	2.0	mA
Return Loss	I	Frequency Range: 10-300MHz R_S = 75 Ω @ 100MHz Diode Terminates 75 Ω line	25			dB
Second Order Distortion	V	f_1 = 10 MHz; f_2 = 13 MHz P = 50 dBmV; See Test Circuit		55	50	-dB
		F_1 = 67 MHz; f_2 = 77 MHz P = 50 dBmV; See Test Circuit		70		-dB
Third Order Distortion	V	F_1 = 10 MHz; F_2 = 13 MHz P = 50 dBmV; See Test Circuit		75	65	-dB
		Triple Beat; 205 +67 –77MHz P = 50 dBmV; See Test Circuit		95		-dB
Cross Modulation Distortion	V	12 Channel Test P = 50 dBmV; See Test Circuit Dix Hills Test Set		75		-dB
Reverse Current	I_R	V = 75 V			10	µA
Carrier Lifetime	τ	I = 10 mA	4.0			µs
Dynamic characteristics						
Capacitance	C_T	V = 0V; f = 100 MHz			0.8	pF

FORWARD CURRENT VS FORWARD VOLTAGE (TYPICAL)



DIODE RESISTANCE VS DIODE CURRENT (TYPICAL)



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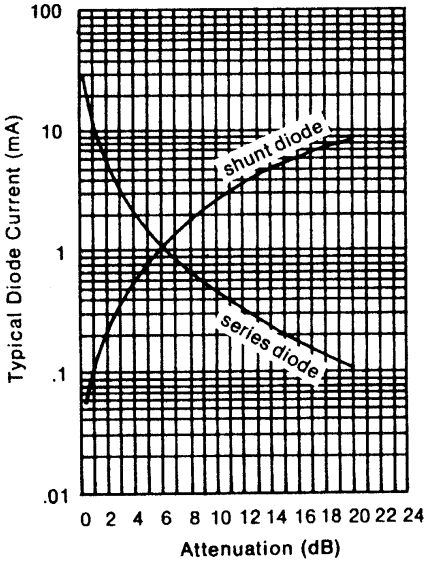
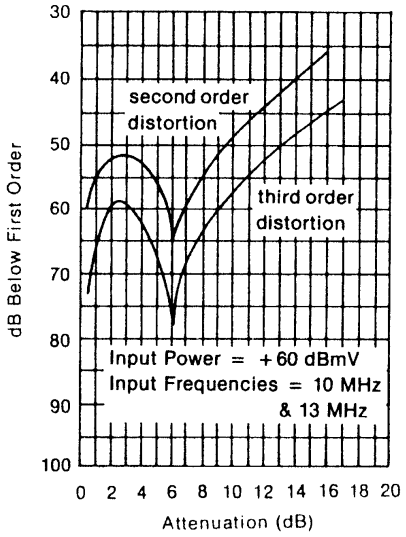
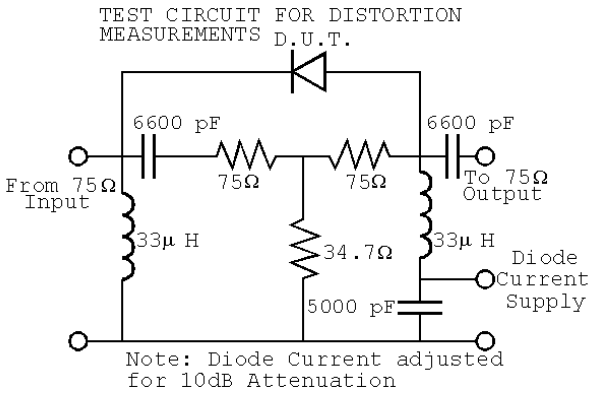
TYPICAL BRIDGED TEE ATTENUATOR PERFORMANCE

DIODE CURRENT VS ATTENUATION UM9301

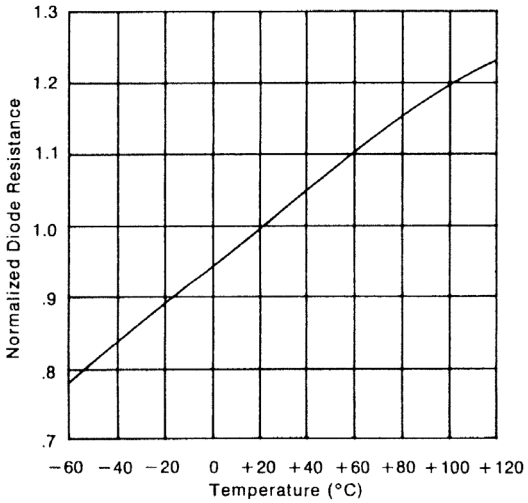


DISTORTION ATTENUATION





NORMALIZED R_S VS TEMPERATURE



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ELECTRICAL

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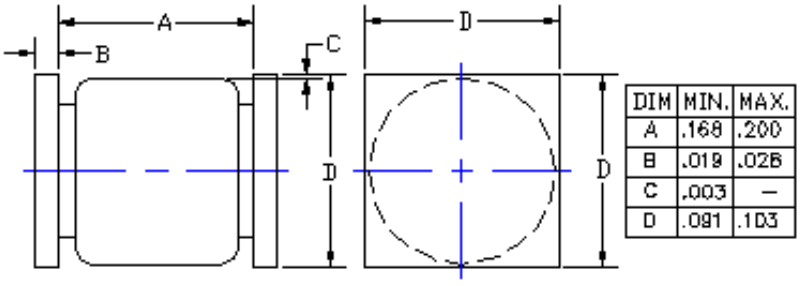
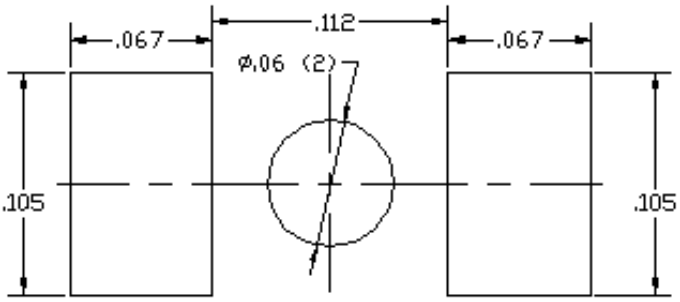


DIM	MIN.	MAX.
A	.168	.200
B	.019	.028
C	.003	—
D	.091	.103

NOTES:

1. These dimensions will match the terminals and provide for additional solder fillets at the outboard ends at least as wide as the terminals themselves, assuming accuracy of device placement within .005 inches.
2. If the mounting method chosen requires use of an adhesive separate from the solder compound, a round (or square) spot of cement as shown should be sartorially located.
3. Dimensions shown are in inches.

STANDARD SMALL SQUARE END CAP OUTLINE



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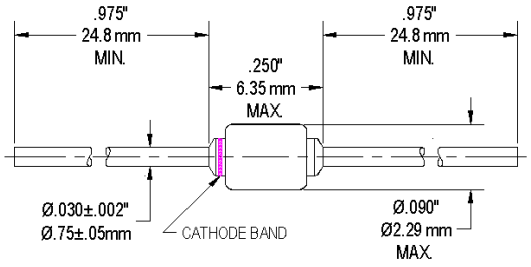

NOTES:
1. BAND INDICATE CATHODE END.

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