UM9301 – UM9301SM

COMMERCIAL ATTENUATOR PIN DIODES

RoHS Compliant Versions Available

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.

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

- Low Distortion, even a low bias
- High Reliability Design
- Series resistance (R_S) specified at 3 current points.
- Available with RoHS compliant finish.

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

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	75	Volts
Reverse Current	I_R	10	uA
Average Power Dissipation (1, 2)	P_A	1.0	Watts
Storage Temperature	T_{STG}	-65 to 175	ºC
Operating Temperature	T_{OP}	-65 to 175	ºC

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.

APPLICATIONS/BENEFITS

- Little or no bias required
- Operates as low as 2 MHz
- Available in Leaded or Surface Mount package
- Soldering temperature: 260 °C for 20 seconds maximum

UM9301

UM9301SM

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

[1] The UM9301 can be supplied with a RoHS compliant matte Tin finish (UMX9301) or with a 90/10 Sn/Pb finish. Consult factory for details.

e3 e4 RoHS

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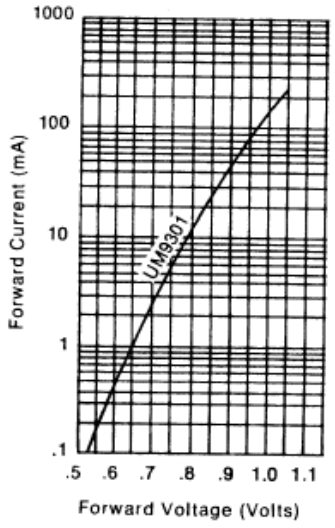
Microwave Products
75 Technology Drive, Lowell, MA. 01851, 978-442-5600, Fax: 978-937-3748

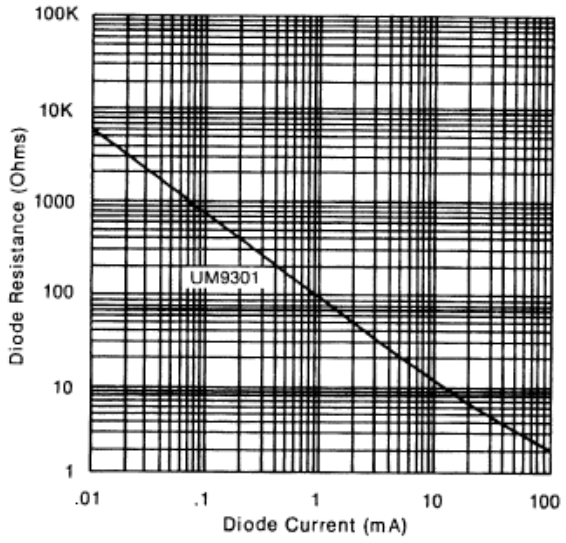
ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)

Parameter	Symbol	Conditions	MIN	TYP.	MAX	Units
Capacitance	C_T	V = 0 V; f=100MHz			0.8	pF
Diode Resistance	R_S	I = 100 mA; f = 100 MHz		1.7		Ω
		I = 1 mA; f = 100 MHz		80	150	
		I = 0.01 mA; f = 100 MHz	3000	5000		
Current for R_S = 75 Ω	I_F	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	Pd	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		
Third Order Distortion		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		
Cross Modulation Distortion		12 Channel Test P = 50 dBmV; See Test Circuit Dix Hills Test Set		75		-dB
Reverse Current	I_R	V = 75 V			10	mA
Carrier Lifetime	τ	I = 10 mA	4.0			uS

TYPICAL VF VS IF



TYPICAL RS VS IF



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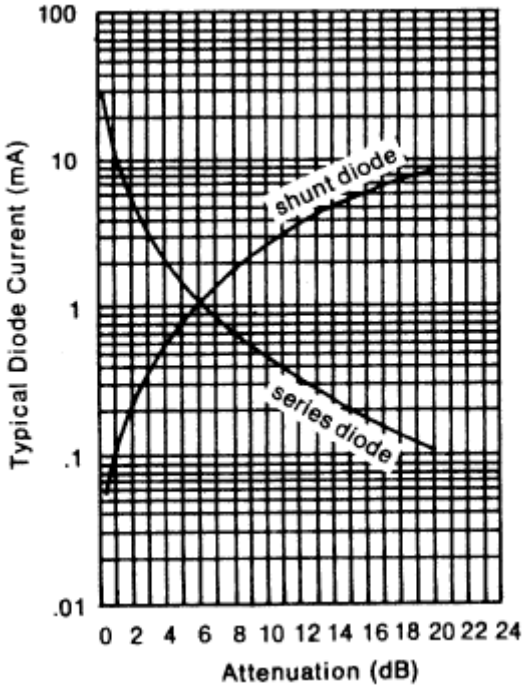
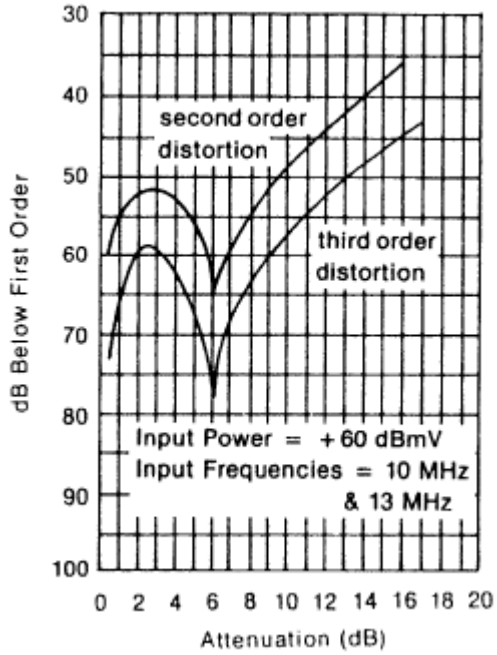
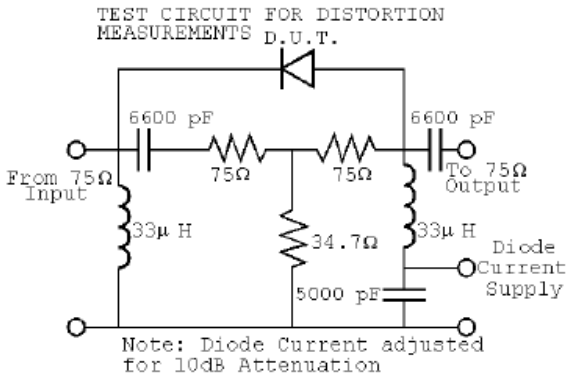
IF VS ATTENUATION



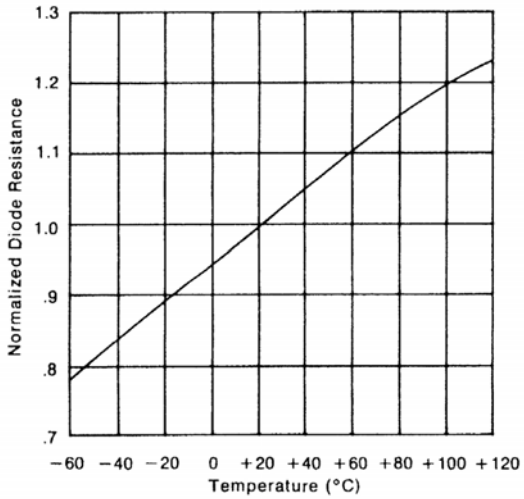
DISTORTION VS ATTENUATION



TYPICAL TEST CIRCUIT



NORMALIZED RS VS TEMP



TYPICAL BRIDGED 'T' ATTENUATOR PERFORMANCE

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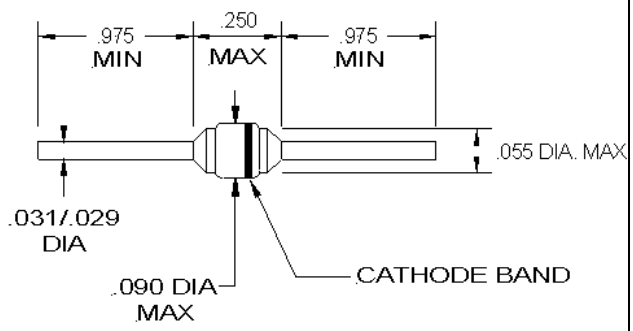
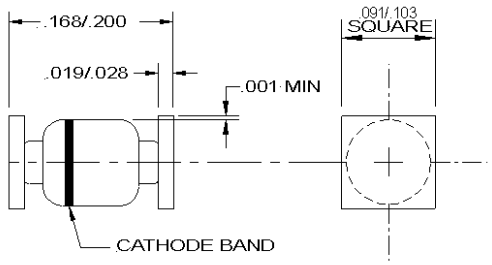
UM9301 (STYLE 'A')



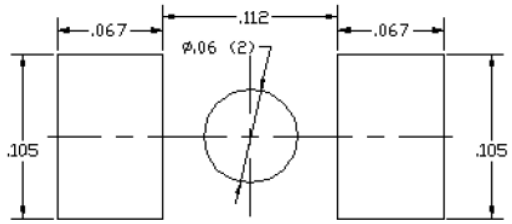
UM9301SM (STYLE 'SM')



'SM' SOLDER NOTES

1- The solder footprint will match the terminals and provide for an optimal solder fillet assuming the accuracy of the device placement is within 0.005 inches.
2- This footprint provides for an optional adhesive, separate from the solder compound if desired.
3- Dimensions are in inches.

STYLE 'SM' FOOTPRINT



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