UM9989

FAST MRI PROTECTION DIODES

RoHS Compliant Versions Available

DESCRIPTION

The UM9989 diode series was designed to protect MRI receivers from high RF energy fields including long RF pulses and RF spike pulses present in most MRI machines. The UM9989 acts as a passive protector (limiter) for the MRI receiver. No forward bias voltage is required to turn on the diode. It is self-biased by the RF transmitter pulse power. A switch driver is not needed for this receiver protection application.

Receiver protector diodes appear directly across the input port of the receiver. They are connected in anti-parallel pairs to limit the RF carrier excursion in both polarities. They must, therefore, exhibit extremely low insertion loss, both in the "on" state (high power present) and the "off" state (receiver power present) so as not to decrease the receiver's sensitivity. The UM9989 diodes are available in two package configurations for flexibility in design.

IMPORTANT: For the most current data, visit our website: ***www.MICROSEMI.com***

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

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	75	V
RMS Reverse Voltage	$V_{R\ (RMS)}$	50	V
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine wave	I_{FSM}	2.5	A
Storage Temperature	T_{STG}	-65 to +150	ºC
Operating Temperature	T_{OP}	-65 to +150	ºC

THERMAL CHARACTERISTICS (UNLESS OTHERWISE SPECIFIED)

Thermal Resistance			
@ Lead length = 3/8 inches	R_{OLA}	100	ºC/Watt

Style "B"

Style "SM"

KEY FEATURES

- Available in surface mount package.
- Metallurgical bond
- Planar passivated chip
- Ultra Low magnetic construction
- Non cavity design
- Thermally matched configuration
- Low capacitance at 0 V bias
- Low conductance at 0 V bias
- Compatible with automatic insertion equipment
- RoHS Compliant Versions Available[1]

APPLICATIONS/BENEFITS

- MRI receiver protection
- Body coil isolation

Note 1: RoHS compliant versions are supplied with a matte Tin finish. RoHS part numbers are:
UMX9989B
UMX9989SM

Microsemi
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
Forward Voltage (Note 1)	V_F	I_F = 10 mA , T_J = 25 ºC			1.0	V
		I_F = 100 mA , T_J = 25 ºC			1.2	V
Reverse Break Down Voltage (Note 1)	V_{BR}	I_R = 100 uA	75			V
Reverse Current (Note1)	I_R	V_R = 20 V, T_J = 25 ºC			50	nA
		V_R = 50 V, T_J = 25 ºC			500	nA
Capacitance	C_T	V_R = 0V, F = 1 MH_Z		1.2	5	pF
Conductance	G	V_R = 0 V, F = 64 MHz			40	uS

Note: 1 Short duration test pulse used to minimize self heating effect.

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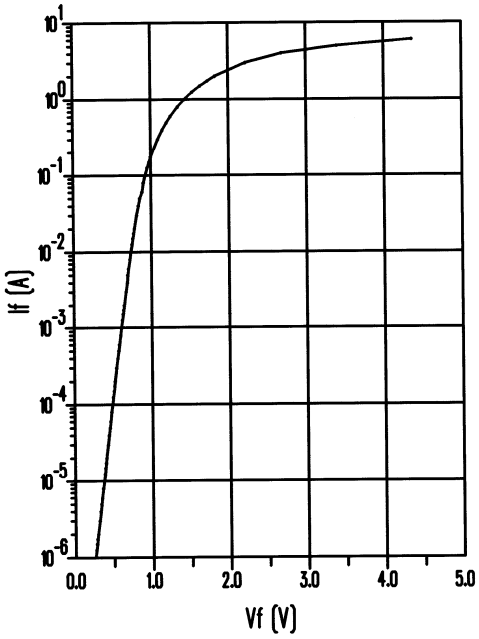
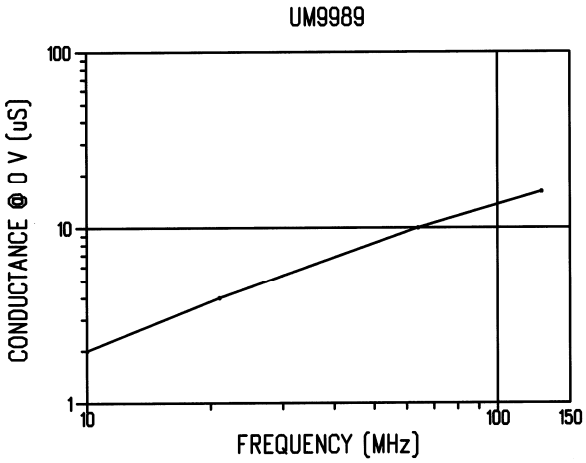
RoHS Compliant Versions Available

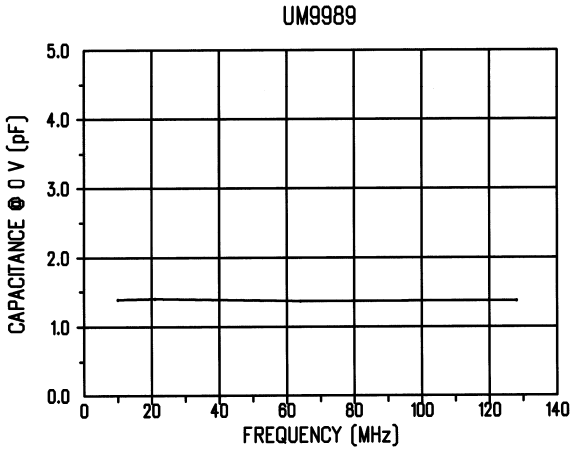
VF VS IF



CONDUCTANCE VS FREQUENCY



CAPACITANCE VS FREQUENCY



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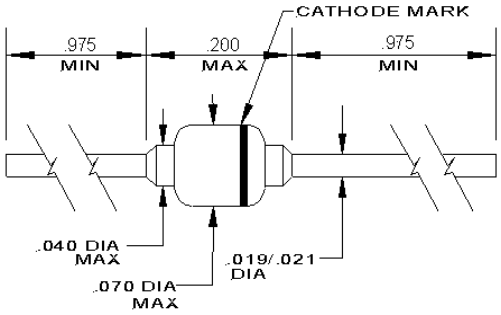
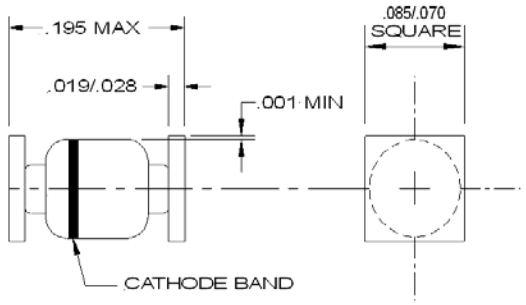
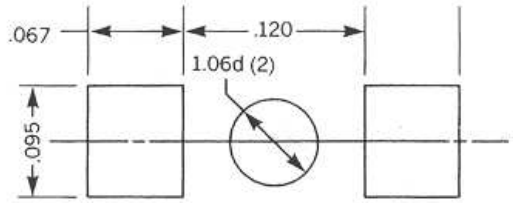
UM9989B



UM9989SM



SM STYLE SOLDER FOOTPRINT



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