

**DESCRIPTION**

The UM1089 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 UM1089 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. The UM1089 process has been optimized for lower loss performance. 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 UM1089 diodes are available in two package configurations for flexibility in design.

**IMPORTANT:** For the most current data, visit our website: [www.MICROSEMI.com](http://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	°C
Operating Temperature	$T_{OP}$	-65 to +150	°C

**THERMAL CHARACTERISTICS  
(UNLESS OTHERWISE SPECIFIED)**
**Thermal Resistance**

@ Lead length = 3/8 inches	$R_{\theta LA}$	100	°C/Watt
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**KEY FEATURES**

- Available in surface mount package.
- Metallurgical bond
- Passivated chip
- Low magnetic construction
- Non cavity design
- Optimized for low loss performance
- Low capacitance at 0 V bias
- Low conductance at 0 V bias
- Compatible with automatic insertion equipment
- RoHS Compliant Versions Available<sup>1</sup>

**APPLICATIONS/BENEFITS**

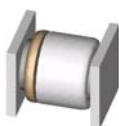
- MRI receiver protection
- Body coil isolation

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

UMX1089B – matte Tin finish  
UMX1089SM – Silver finish



Style "B"



Style "SM"

**ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)**

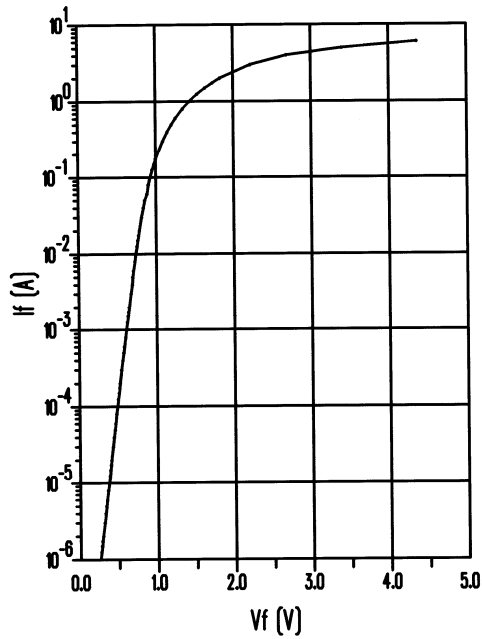
Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Forward Voltage (Note 1)	$V_F$	$I_F = 10 \text{ mA}$ , $T_J = 25^\circ\text{C}$			1.0	V
		$I_F = 100 \text{ mA}$ , $T_J = 25^\circ\text{C}$			1.2	V
Reverse Break Down Voltage	$V_{BR}$	$I_R = 100 \text{ uA}$	75			V
Reverse Current (Note1)	$I_R$	$V_R = 20 \text{ V}$ , $T_J = 25^\circ\text{C}$			50	nA
		$V_R = 50 \text{ V}$ , $T_J = 25^\circ\text{C}$			500	nA
Capacitance	$C_T$	$V_R = 0\text{V}$ , $F = 1 \text{ MHz}$		1.5	3	pF
Conductance	G	$V_R = 0 \text{ V}$ , $F = 64 \text{ MHz}$			40	uS

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

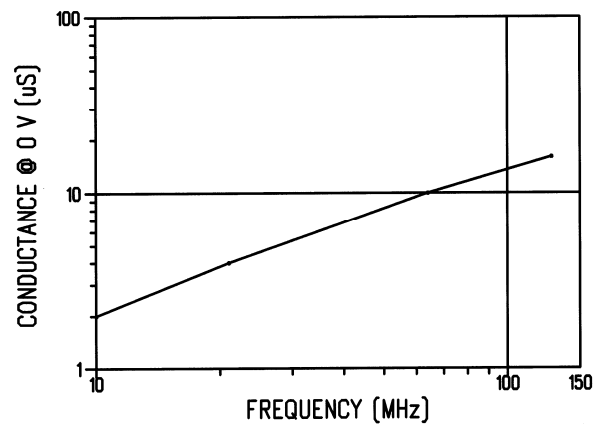


RoHS Compliant Versions Available

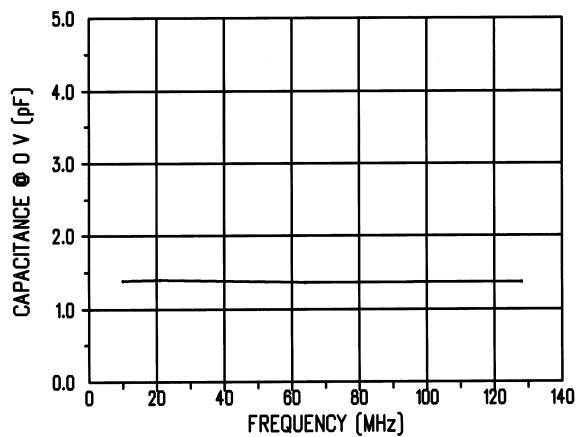
#### VF VS IF



#### CONDUCTANCE VS FREQUENCY



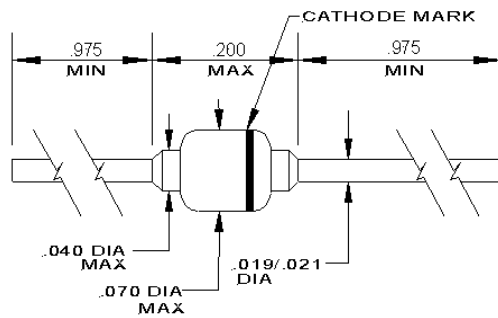
#### CAPACITANCE VS FREQUENCY



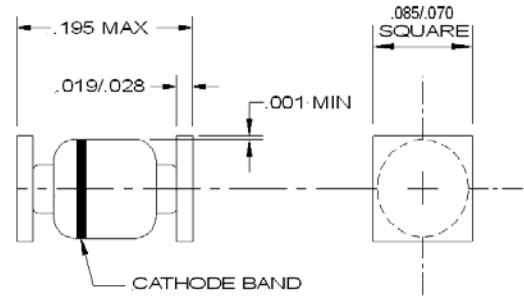


RoHS Compliant Versions Available

#### UM1089B



#### UM1089SM



#### SM STYLE SOLDER FOOTPRINT

