UM9995

ULTRA LOW MAGNETIC MRI SWITCHING DIODES

DESCRIPTION

The UM9995 was developed for switching applications in MRI systems that require an ultra low magnetic image. The UM9995 is also excellent for shunt mount applications with good switch performance from VHF and higher. The selection of the proper materials for the package insures the minimum magnetic image required for MRI applications. The performance is achieved using discrete low inductance PIN diodes assembled with special hardware to permit good electrical and mechanical properties The Microsemi UM9995 PIN diode is constructed using a fused-in-glass process, which results in a highly reliable, hermetic package. The process utilizes symmetrical, full faced metallurgical bonds to both surfaces of the silicon chip. This construction greatly minimizes the normal parasite inductance and capacitance found in conventional glass or ceramic packaged diodes, which employ straps, springs, or washers.

Fig. 1 Image of the UM9995 compared to standard Switch diode

KEY FEATURES

- ✓ **Ultra low magnetic construction**
- ✓ **Low inductance package**
- ✓ **High power handling capability**
- ✓ **Low bias current requirement**
- ✓ **Excellent distortion properties**
- ✓ **Passivated chip**
- ✓ **Metallurgical bond**
- ✓ **Non-cavity design**
- ✓ **Thermally matching configuration**
- ✓ **Available in surface or shunt mount packages**

This is an actual **Magnetic Image** of the standard UM9601 and the specially constructed **UM9995** PIN diode (in a 3T MRI system).

ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Series Resistance	Rs	I = 100 mA F = 100 MHz	-	0.4	0.6	Ω
Total Capacitance	Ct	V = 100V F = 1MHz	-	-	1.2	pF
Parallel Resistance	Rp	V = 100 V F = 100 MHz	100	-	-	kΩ
Forward Voltage (Note 1)	V_f	I_F = 100 mA ,	-	0.85	-	V
Carrier Lifetime	τ	If = 10 mA	2.0			µs
I-Region Width	W		80			µm

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

ELECTRICAL PARAMETERS @25ºC (unless otherwise specified)

	Po	***θt***
Flange at 25ºC	7.5 W	20ºC/W
Free Air	1.5 W	-
Peak Power (1 µs @ 25ºC)	10 kW	
Storage Temperature Operating Temperature	-65 to +150ºC -65 to +150ºC	

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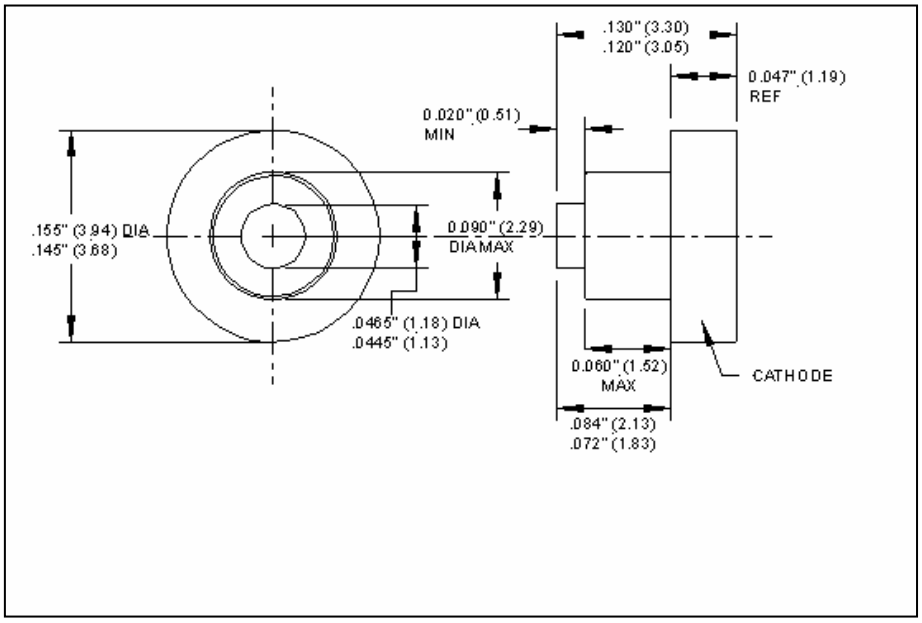

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