

Product Overview

This line of metal electrode leadless face (MELF) high-power PIN diodes consists of hermetically sealed surface mount packaged devices with full-face bonded chips for low-inductance construction. The MELF ceramic package has square-end terminations, which are ideal for surface mount and pick-and-place operations. The PIN diodes chips are coated with a special hard glass passivation, which is required both for high-power applications and to enhance the reliability, resulting in mean time between failures (MTBFs) of greater than one million hours. These RoHS-compliant products meet the requirements of EU Directive 2002/95/EC. The standard terminal finish is matte tin unless otherwise specified. Alternative terminal finishes are available.

Key Features

- Low-magnetic (ideal for MRI applications)
- Very low inductance, full-face bonding
- High-reliability hermetic design
- Surface mount devices available in tape and reel
- RoHS compliant¹
- ESD HMB Class 2

Applications

- Designed for low-loss and low-distortion applications
- Switch-filter bank
- T/R control
- Attenuators
- MRI switching

Performance Overview

Parameter	Conditions	Value	Units
V_B	$I_R = 10\ \mu A$	500	V
C_T	at 50V	0.5–1.2	pF
R_S	at 100 mA	0.40–0.85	Ω
R_S	at 200 mA	0.2–0.55	Ω
T_L		1.5–5.5	μs
θ_P		15–35	$^{\circ}C/W$

Note:

1. RoHS versions are supplied with a matte tin finish.

Package Styles



Performance Curves

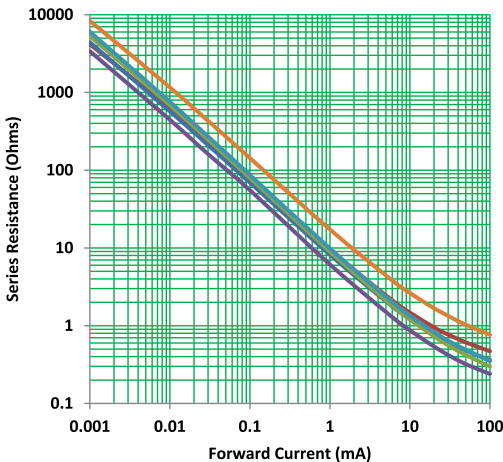


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1. Electrical Specifications

1.1 Typical Electrical Performance

Table 1-1. Typical Electrical Performance at 25 °C

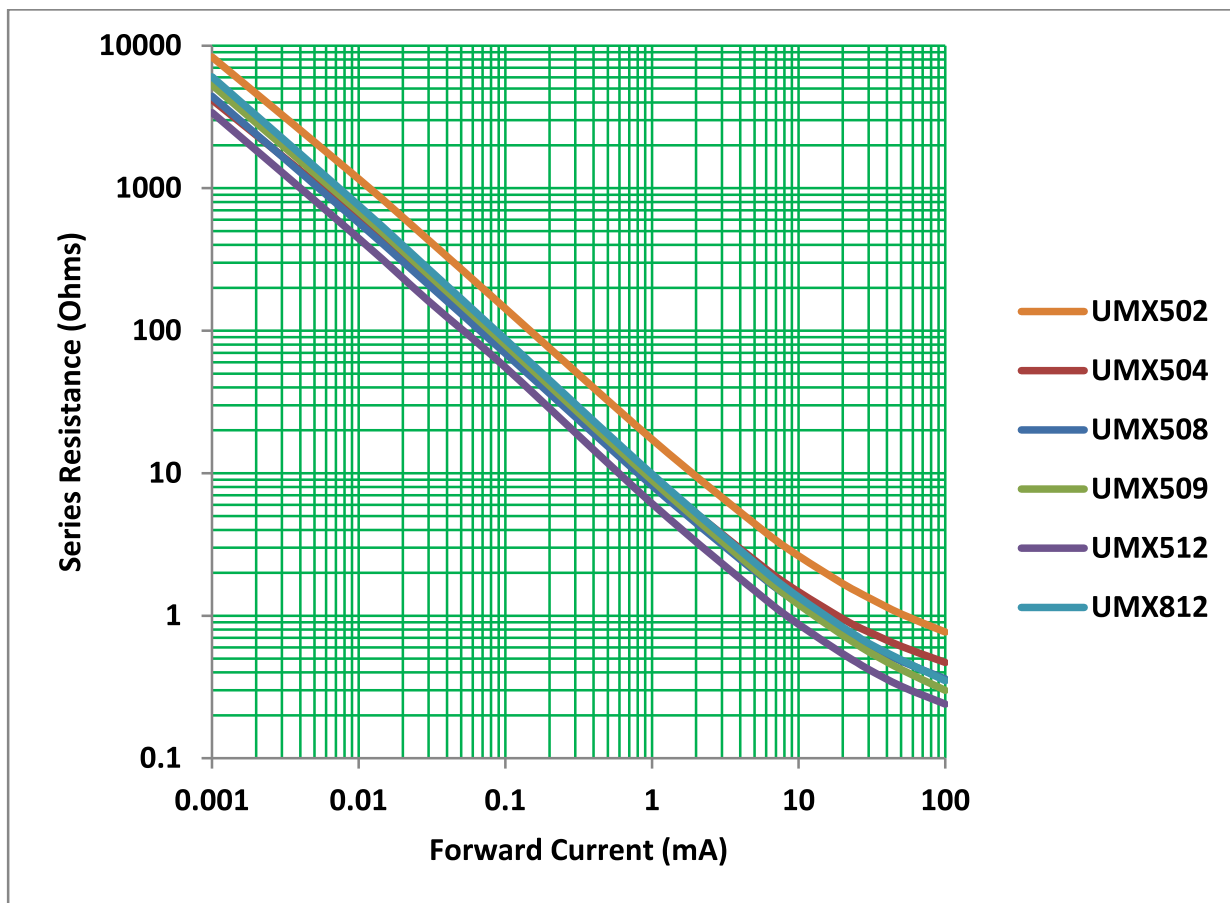
Model Number	V_b (V)	C_T (pF) ¹	R_s (Ω) ²	R_s (Ω) ²	T_L (μ s)	Thermal Resistance θ_P ($^{\circ}$ C/W)
	$I_R = 10 \mu$ A	at 50V	at 100 mA	at 200 mA		
	(Min)	(Max)	(Max)	(Typ)	(Typ)	(Max)
UMX502	500	0.5	0.85	0.55	1.5	35
UMX504	500	0.6	0.65	0.45	3.0	20
UMX508	500	0.9	0.45	0.25	5.0	15
UMX509	500	1.2	0.40	0.2	5.5	15
UMX512	500	1.5	0.30	0.12	4.0	15
UMX812	500	1.3	0.45	0.25	5.5	15

Notes:

1. Capacitance (C_T) is measured at $f = 1$ MHz.
2. Series resistance (R_s) is measured at $f = 100$ MHz.

1.2 Typical Performance Curves

Figure 1-1. Typical RS Curves



1.3 Absolute Maximum Ratings

The following table shows the absolute maximum ratings at 25 °C unless otherwise specified.

Table 1-2. Absolute Maximum Ratings

Ratings	Symbol	Value	Unit
Maximum leakage current at 80% of minimum rated V_B	I_R	500	nA
Forward current (1 μ s pulse)	I_F	1	A
Operating temperature	T_{OP}	-55 to 150	°C
Storage temperature	T_{STG}	-55 to 150	°C
Maximum solder temperature		260	°C



ESD Sensitive Device

2. Outline Drawing

The UMX502–UMX812 devices have the following package outline specifications.

Figure 2-1. Package Outline

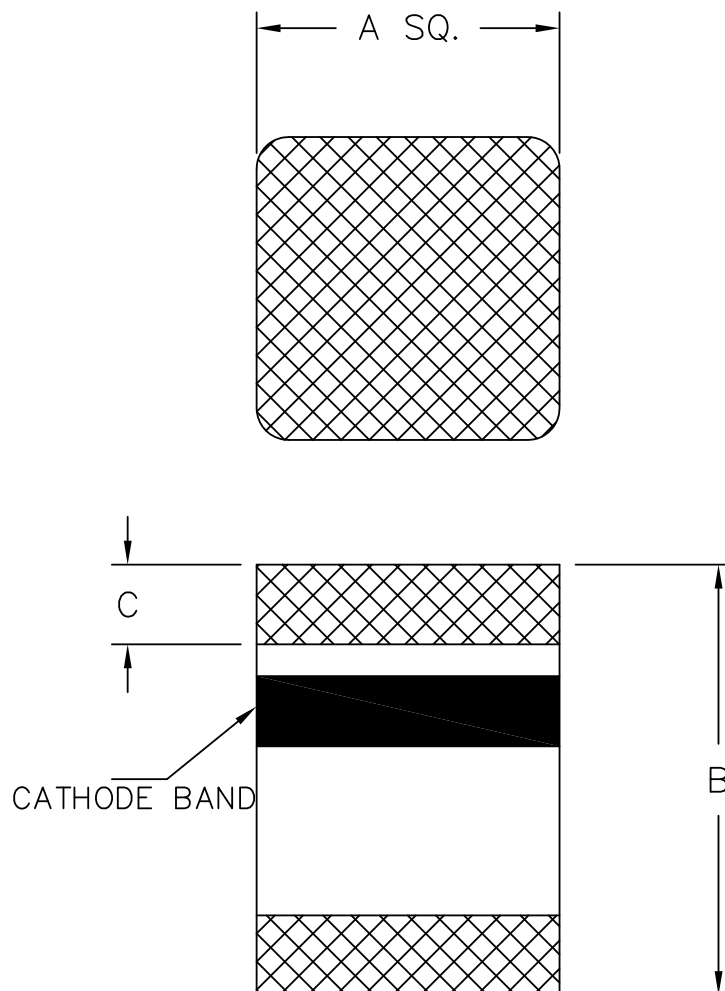


Table 2-1. UMX502–UMX812 Package Dimensions

DIM	INCHES			MM		
	Min	Typ	Max	Min	Typ	Max
A	0.080		0.095	2.032		2.413
B	0.115		0.135	2.921		3.429
C	0.008		0.030	0.203		0.762

3. Ordering Information

For additional ordering information, contact your Microchip sales representative.

Part Number	Package
UMX502	F
UMX504	F
UMX508	F
UMX509	F
UMX512	F
UMX812	F

Note:

1. Add /TR at the end for tape and reel, for example, UMX502-F/TR.

4. Revision History

The revision history describes the changes that were implemented in the document. The changes are listed by revision, starting with the most current publication.

Revision	Date	Description
A	07/2023	Document reformatted and revised part number.

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