

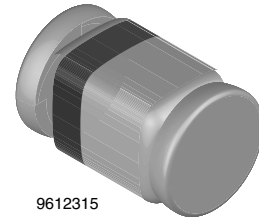
Small Signal Fast Switching Diodes

Features

- Silicon Epitaxial Planar Diodes
- Saving space
- Hermetic sealed parts
- Fits onto SOD-323 / SOT-23 footprints
- Electrical data identical with the devices 1N4148 and 1N4448 respectively
- MicroMELF package
- AEC-Q101 qualified
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS
COMPLIANT
HALOGEN
FREE



9612315

Applications

- Extreme fast switches

Mechanical Data

Case: MicroMELF

Weight: approx. 12 mg

Cathode band color: black

Packaging codes/options:

TR3 / 10 k per 13" reel (8 mm tape), 10 k/box

TR / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
MCL4148	$V_{RRM} = 100\text{ V}$, V_F at $I_F 50\text{ mA} = 1\text{ V}$	MCL4148-TR3 or MCL4148-TR	Tape and Reel
MCL4448	$V_{RRM} = 100\text{ V}$, V_F at $I_F 100\text{ mA} = 1\text{ V}$	MCL4448-TR3 or MCL4448-TR	Tape and Reel

Absolute Maximum Ratings

$T_{amb} = 25\text{ }^\circ\text{C}$, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	100	V
Reverse voltage		V_R	75	V
Peak forward surge current	$t_p = 1\text{ }\mu\text{s}$	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	450	mA
Forward continuous current		I_F	200	mA
Average forward current	$V_R = 0$	I_{FAV}	150	mA
Power dissipation		P_{tot}	500	mW

Thermal Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction to ambient air	Mounted on epoxy-glass hard tissue, Fig. 5, 35 μm copper clad, 0.9 mm^2 copper area per electrode	R_{thJA}	500	K/W
Junction temperature		T_j	175	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	- 65 to + 175	$^{\circ}\text{C}$

Electrical Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min.	Typ.	Max.	Unit
Forward voltage	$I_F = 5\text{ mA}$	MCL4448	V_F	620		720	mV
	$I_F = 50\text{ mA}$	MCL4148	V_F		860	1000	mV
	$I_F = 100\text{ mA}$	MCL4448	V_F		930	1000	mV
Reverse current	$V_R = 20\text{ V}$		I_R			25	nA
	$V_R = 20\text{ V}$, $T_j = 150\text{ }^{\circ}\text{C}$		I_R			50	μA
	$V_R = 75\text{ V}$		I_R			5	μA
Breakdown voltage	$I_R = 100\text{ }\mu\text{A}$, $t_p/T = 0.01$, $t_p = 0.3\text{ ms}$		$V_{(BR)}$	100			V
Diode capacitance	$V_R = 0$, $f = 1\text{ MHz}$, $V_{HF} = 50\text{ mV}$		C_D			4	pF
Rectification efficiency	$V_{HF} = 2\text{ V}$, $f = 100\text{ MHz}$		η_r	45			%
Reverse recovery time	$I_F = I_R = 10\text{ mA}$, $i_R = 1\text{ mA}$		t_{rr}			8	ns
	$I_F = 10\text{ mA}$, $V_R = 6\text{ V}$, $i_R = 0.1 \times I_R$, $R_L = 100\text{ }\Omega$		t_{rr}			4	ns

Typical Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

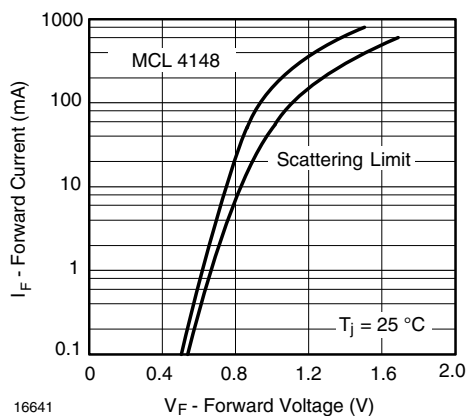


Figure 1. Forward Current vs. Forward Voltage

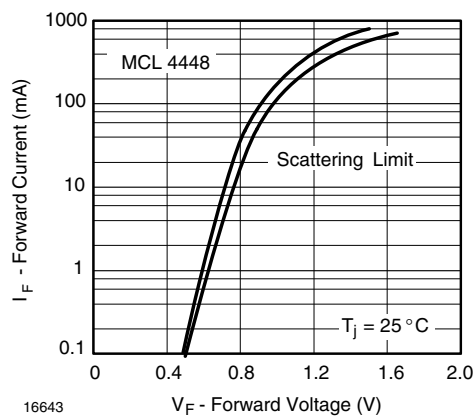


Figure 2. Forward Current vs. Forward Voltage

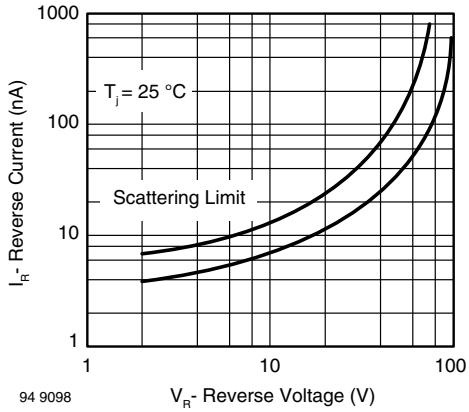


Figure 3. Reverse Current vs. Reverse Voltage

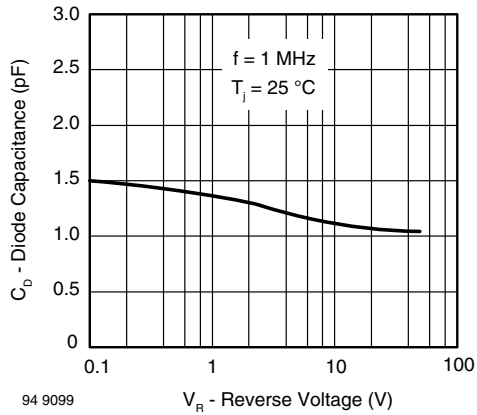


Figure 4. Diode Capacitance vs. Reverse Voltage

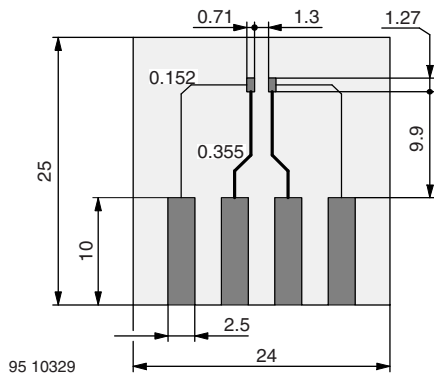
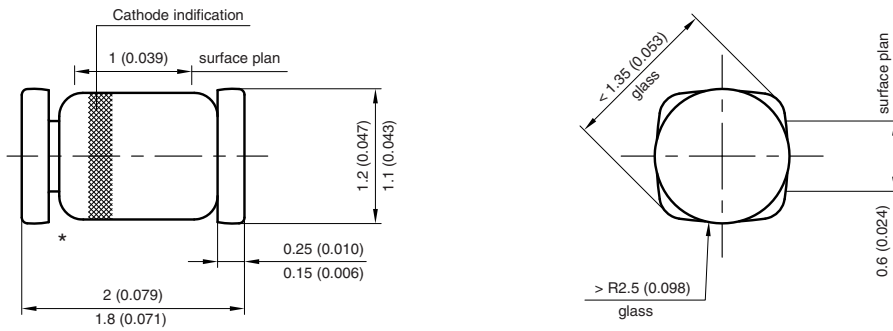


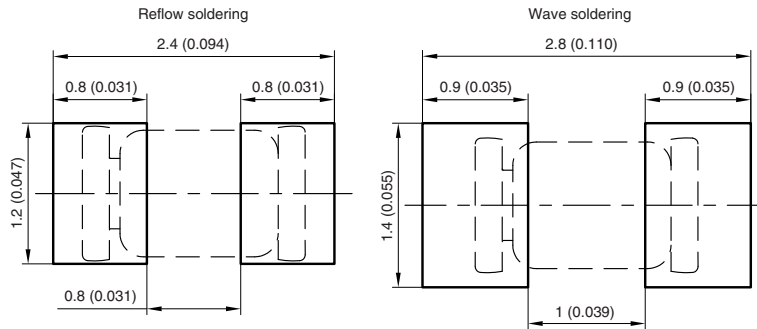
Figure 5. Board for R_{thJA} definition (in mm)

Package Dimensions in millimeter (inches): MicroMELF



* The gap between plug and glass can be either on cathode or anode side

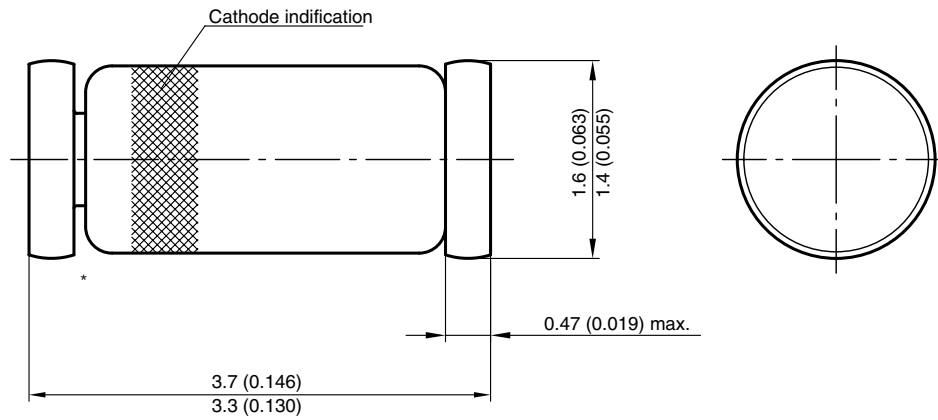
Foot print recommendation:



Created - Date: 26.July.1996
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 96 12072

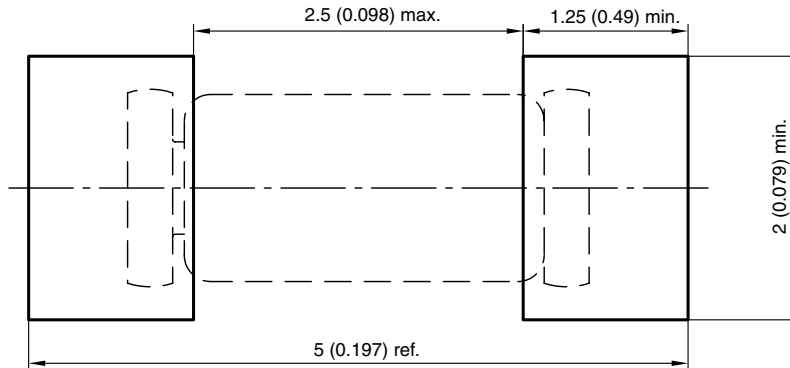


PACKAGE DIMENSIONS in millimeters (inches)



* The gap between plug and glass can be either on cathode or anode side

Foot print recommendation:



Document no.:6.560-5005.01-4
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96 12070



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