



Small Signal Fast Switching Diodes



FEATURES

- Silicon epitaxial planar diode
- 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
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



RoHS COMPLIANT HALOGEN FREE

MECHANICAL DATA

Case: MicroMELF

Weight: approx. 12 mg

Cathode band color: black

Packaging codes/options:

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

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

APPLICATIONS

- Extreme fast switches

PARTS TABLE				
PART	TYPE DIFFERENTIATION	ORDERING CODE	INTERNAL CONSTRUCTION	REMARKS
MCL4148	$V_{RRM} = 100\text{ V}$, V_F at $I_F 50\text{ mA} = 1\text{ V}$	MCL4148-TR3 or MCL4148-TR	Single	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	Single	Tape and reel

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^\circ\text{C}$, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	75	V
Repetitive peak reverse voltage		V_{RRM}	100	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
Thermal resistance 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 °C, unless otherwise specified)							
PARAMETER	TEST CONDITION	SYMBOL	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	I _F = 5 mA	MCL4448	V _F	0.620		0.720	V
	I _F = 50 mA	MCL4148	V _F		0.860	1	V
	I _F = 100 mA	MCL4448	V _F		0.930	1	V
Reverse current	V _R = 20 V		I _R			25	nA
	V _R = 20 V, T _j = 150 °C		I _R			50	μA
	V _R = 75 V		I _R			5	μA
Breakdown voltage	I _R = 100 μA, t _p /T = 0.01, t _p = 0.3 ms		V _(BR)	100			V
Diode capacitance	V _R = 0 V, f = 1 MHz, V _{HF} = 50 mV		C _D			4	pF
Rectification efficiency	V _{HF} = 2 V, f = 100 MHz		η _r	45			%
Reverse recovery time	I _F = I _R = 10 mA, i _R = 1 mA		t _{rr}			8	ns
	I _F = 10 mA, V _R = 6 V, i _R = 0.1 × I _R , R _L = 100 Ω		t _{rr}			4	

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

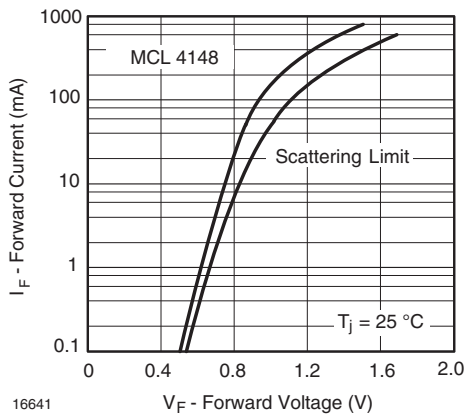


Fig. 1 - Reverse Current vs. Junction Temperature

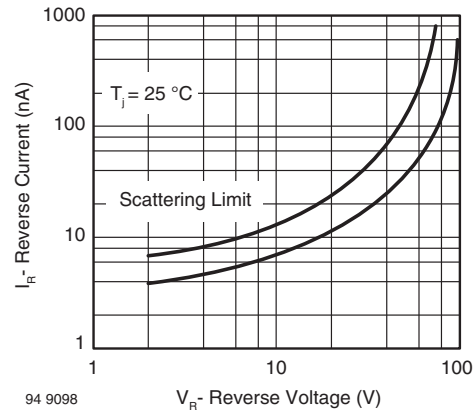


Fig. 3 - Reverse Current vs. Reverse Voltage

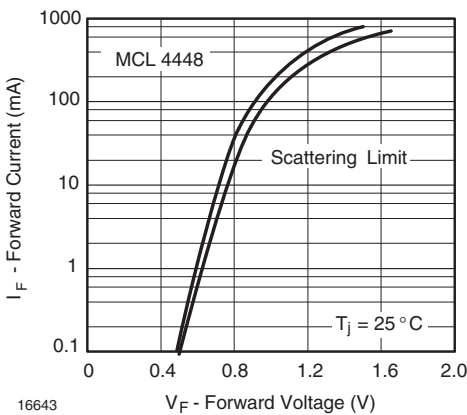


Fig. 2 - Forward Current vs. Forward Voltage

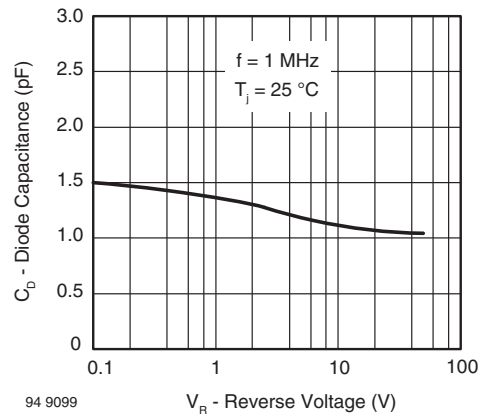


Fig. 4 - Diode Capacitance vs. Reverse Voltage

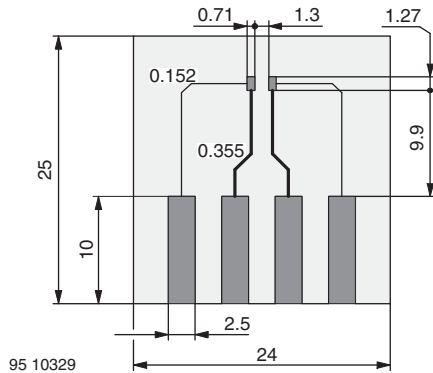
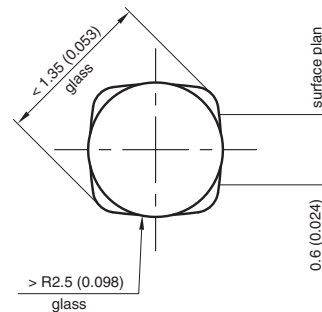
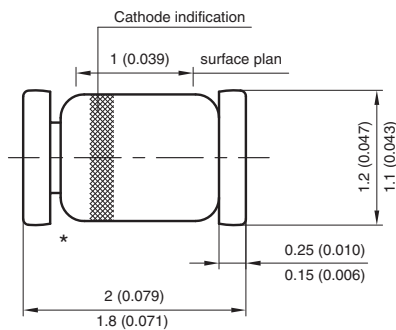


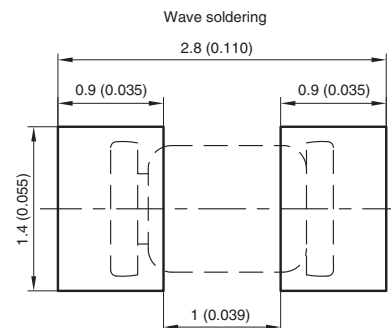
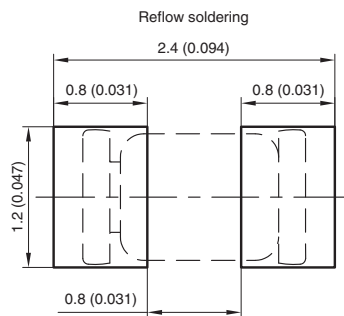
Fig. 5 - Board for R_{thJA} definition (in mm)

PACKAGE DIMENSIONS in millimeters (inches): **MicromELF**



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

Foot print recommendation:



Created - Date: 26.July.1996
 Rev. 13 - Date: 07.June.2006
 Document no.:6.560-5007.01-4
 96 12072



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