

Vishay Semiconductors

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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

· Extreme fast switches

ADDITIONAL RESOURCES



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

PARTS TABLE						
PART	TYPE DIFFERENTIATION	ORDERING CODE	CIRCUIT CONFIGURATION	REMARKS		
MCL4148	$V_{RRM} = 100 \text{ V}, V_F \text{ at } I_F 50 \text{ mA} = 1 \text{ V}$	MCL4148-TR3 or MCL4148-TR	Single	Tape and reel		
MCL4448	$V_{RRM} = 100 \text{ V}, V_F \text{ at } I_F 100 \text{ mA} = 1 \text{ V}$	MCL4448-TR3 or MCL4448-TR	Single	Tape and reel		

ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °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 μs	I _{FSM}	2	А	
Repetitive peak forward current		I _{FRM}	450	mA	
Forward continuous current		I _F	200	mA	
Average forward current	V _R = 0 V	I _{F(AV)}	150	mA	
Power dissipation		P _{tot}	500	mW	

THERMAL CHARACTERISTICS (T _{amb} = 25 °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		Tj	175	°C	
Storage temperature range		T _{stg}	-65 to +175	°C	

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PARAMETER	TEST CONDITION	SYMBOL	SYMBOL	MIN.	TYP.	MAX.	UNIT
	I _F = 5 mA	MCL4448	V_{F}	0.620		0.720	V
Forward voltage	I _F = 50 mA	MCL4148	V_{F}		0.860	1	V
	I _F = 100 mA	MCL4448	V_{F}		0.930	1	V
	V _R = 20 V		I _R			25	nA
Reverse current	V _R = 20 V, T _j = 150 °C		I _R			50	μΑ
	V _R = 75 V		I _R			5	μΑ
Breakdown voltage	$I_R = 100 \ \mu A, t_p/T = 0.01, \ t_p = 0.3 \ ms$		V _(BR)	100			V
Diode capacitance	$V_R = 0 \text{ V, f} = 1 \text{ MHz,}$ $V_{HF} = 50 \text{ mV}$		C _D			4	pF
Rectification efficiency	V _{HF} = 2 V, f = 100 MHz		η_r	45			%
Davis and the same of the same	$I_F = I_R = 10 \text{ mA},$ $I_R = 1 \text{ mA}$		t _{rr}			8	
Reverse recovery time	$I_F = 10 \text{ mA}, V_R = 6 \text{ V},$ $i_R = 0.1 \times I_R, R_L = 100 \Omega$		t _{rr}			4	ns

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

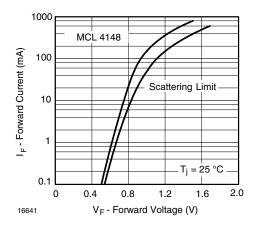


Fig. 1 - Reverse Current vs. Junction Temperature

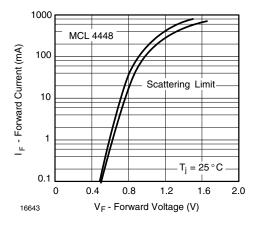


Fig. 2 - Forward Current vs. Forward Voltage

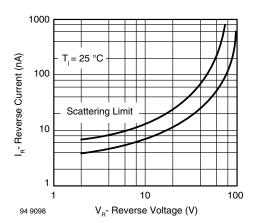


Fig. 3 - Reverse Current vs. Reverse Voltage

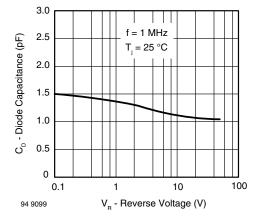


Fig. 4 - Diode Capacitance vs. Reverse Voltage

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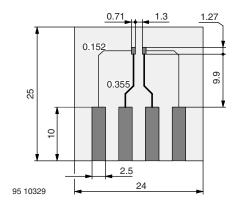
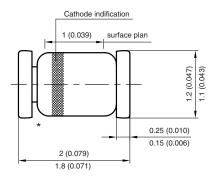
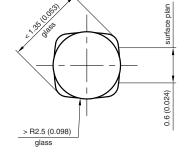


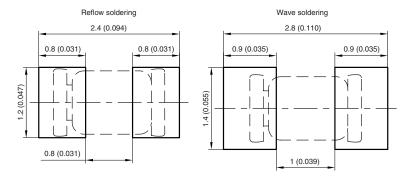
Fig. 5 - Board for RthJA definition (in mm)

PACKAFE DIMENSIONS in millimeters (inches): MicroMELF





Foot print recommendation:



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

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



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