

## Vishay Semiconductors

# **Small Signal Fast Switching Diode**



#### **FEATURES**

- · Silicon epitaxial planar diode
- Electrical data identical with the device 1N4151
- MicroMELF package
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>



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### **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	CIRCUIT CONFIGURATION	REMARKS	
MCL4151	V <sub>RRM</sub> = 75 V	MCL4151-TR3 or MCL4151-TR	Single	Tape and reel	

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified)					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Repetitive peak reverse voltage		$V_{RRM}$	75	V	
Reverse voltage		V <sub>R</sub>	50	V	
Peak forward surge current	t <sub>p</sub> = 1 μs	I <sub>FSM</sub>	2	А	
Repetitive peak forward current		I <sub>FRM</sub>	450	mA	
Forward continuous current		I <sub>F</sub>	200	mA	
Average forward current	$V_R = 0$	I <sub>F(AV)</sub>	150	mA	
Power dissipation		P <sub>tot</sub>	500	mW	

THERMAL CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified)					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Thermal resistance junction to ambient air	Mounted on epoxy-glass hard tissue, fig. 4, 35 µm copper clad, 0.9 mm <sup>2</sup> copper area per electrode	$R_{thJA}$	500	K/W	
Junction temperature		Tj	175	°C	
Storage temperature range		T <sub>stg</sub>	-65 to +175	°C	



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>amb</sub> = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	I <sub>F</sub> = 50 mA	V <sub>F</sub>		0.880	1	V
Reverse current	V <sub>R</sub> = 50 V	I <sub>R</sub>			50	nA
neverse current	$V_R = 50 \text{ V}, T_j = 150 ^{\circ}\text{C}$	I <sub>R</sub>			50	μΑ
Breakdown voltage	$I_R = 5 \mu A, t_p/T = 0.01,$ $t_p = 0.3 \text{ ms}$	V <sub>(BR)</sub>	75			V
Diode capacitance	$V_R = 0 \text{ V, f} = 1 \text{ MHz,}$ $V_{HF} = 50 \text{ mV}$	C <sub>D</sub>			2	pF
Reverse recovery time	$I_F = I_R = 10 \text{ mA},$ $I_R = 1 \text{ mA}$	- t <sub>rr</sub>			4	ns
neverse recovery time	$I_F = 10 \text{ mA}, V_R = 6 \text{ V},$ $I_R = 0.1 \text{ x } I_R, R_L = 100 \Omega$				2	115

## TYPICAL CHARACTERISTICS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

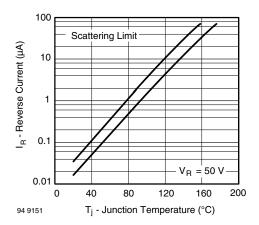


Fig. 1 - Reverse Current vs. Junction Temperature

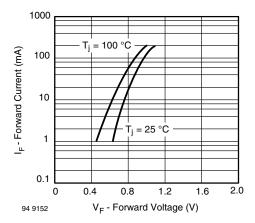


Fig. 2 - Forward Current vs. Forward Voltage

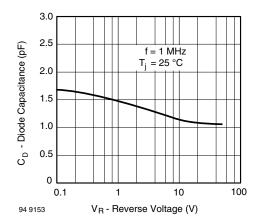


Fig. 3 - Diode Capacitance vs. Reverse Voltage

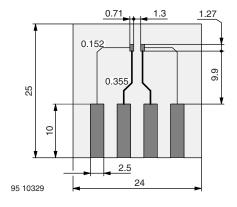
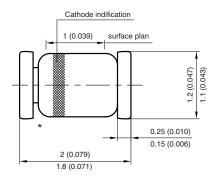
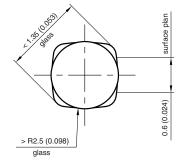


Fig. 4 - Board for R<sub>thJA</sub> Definition (in mm)

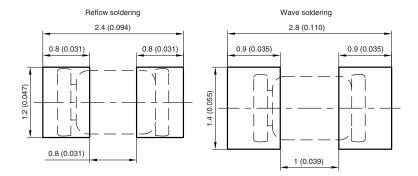
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### PACKAGE DIMENSIONS in millimeters (inches): MicroMELF





#### Foot print recommendation:



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

<sup>\*</sup> The gap between plug and glass can be either on cathode or anode side



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