

Small Signal Fast Switching Diode



FEATURES

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



RoHS
COMPLIANT
HALOGEN
FREE

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 |
|---------|-------------------------|---------------------------|-----------------------|---------------|
| MCL4151 | $V_{RRM} = 75\text{ V}$ | MCL4151-TR3 or MCL4151-TR | Single | 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} | 75 | V |
| Reverse voltage | | V_R | 50 | 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 | $V_R = 0$ | $I_{F(AV)}$ | 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. 4, 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 | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|-----------------------|--|------------|------|-------|------|---------------|
| Forward voltage | $I_F = 50\text{ mA}$ | V_F | | 0.880 | 1 | V |
| Reverse current | $V_R = 50\text{ V}$ | I_R | | | 50 | nA |
| | $V_R = 50\text{ V}, T_j = 150\text{ }^{\circ}\text{C}$ | I_R | | | 50 | μA |
| Breakdown voltage | $I_R = 5\text{ }\mu\text{A}, t_p/T = 0.01,$ $t_p = 0.3\text{ ms}$ | $V_{(BR)}$ | 75 | | | V |
| Diode capacitance | $V_R = 0\text{ V}, f = 1\text{ MHz},$ $V_{HF} = 50\text{ mV}$ | C_D | | | 2 | pF |
| Reverse recovery time | $I_F = I_R = 10\text{ mA},$ $i_R = 1\text{ mA}$ | t_{rr} | | | 4 | ns |
| | $I_F = 10\text{ mA}, V_R = 6\text{ V},$ $i_R = 0.1 \times I_R, R_L = 100\text{ }\Omega$ | | | | 2 | |

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

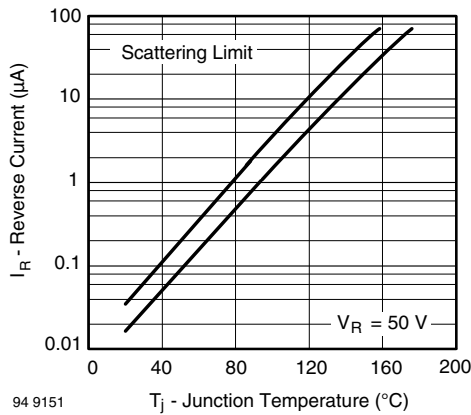


Fig. 1 - Reverse Current vs. Junction Temperature

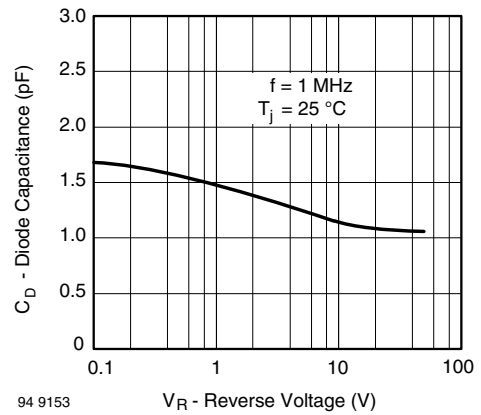


Fig. 3 - Diode Capacitance vs. Reverse Voltage

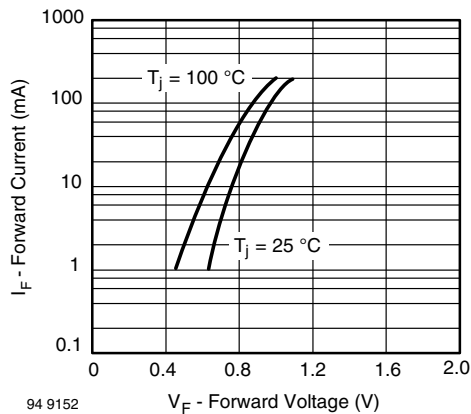


Fig. 2 - Forward Current vs. Forward Voltage

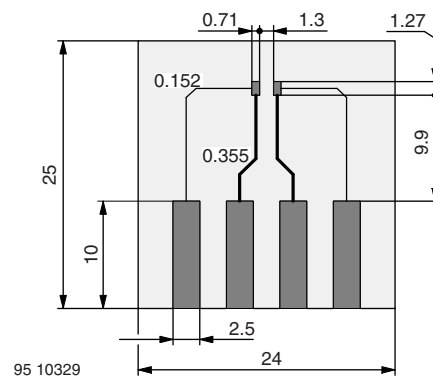
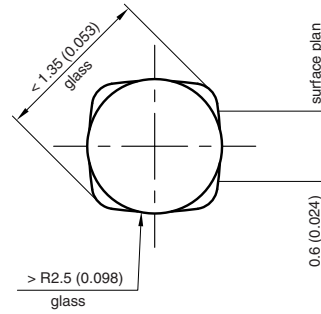
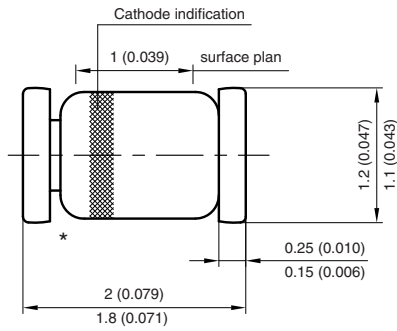


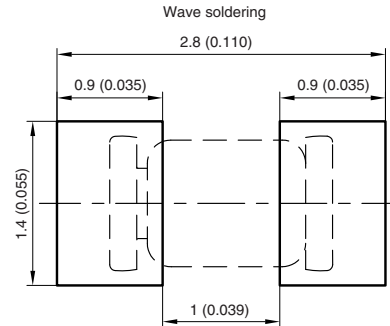
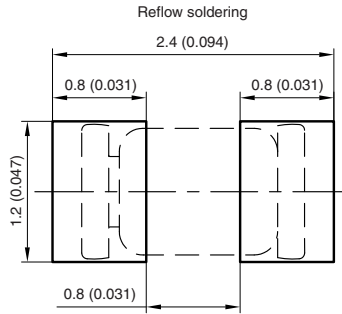
Fig. 4 - Board for R_{thJA} Definition (in mm)

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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