



Small Signal Schottky Diodes



FEATURES

- Integrated protection ring against static discharge
- Low capacitance
- Low leakage current
- Low forward voltage drop
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

DESIGN SUPPORT TOOLS click logo to get started



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

- IHF-detector
- Protection circuit
- Small battery charger
- AC/DC / DC/DC converter for notebooks

| PARTS TABLE | | | | |
|-------------|----------------------|---------------------------|-----------------------|---------------|
| PART | TYPE DIFFERENTIATION | ORDERING CODE | CIRCUIT CONFIGURATION | REMARKS |
| MCL103A | $V_R = 40\text{ V}$ | MCL103A-TR3 or MCL103A-TR | Single | Tape and reel |
| MCL103B | $V_R = 30\text{ V}$ | MCL103B-TR3 or MCL103B-TR | Single | Tape and reel |
| MCL103C | $V_R = 20\text{ V}$ | MCL103C-TR3 or MCL103C-TR | Single | Tape and reel |

| ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^\circ\text{C}$, unless otherwise specified) | | | | | |
|---|---|---------|-----------|-------|------|
| PARAMETER | TEST CONDITION | PART | SYMBOL | VALUE | UNIT |
| Reverse voltage | | MCL103A | V_R | 40 | V |
| | | MCL103B | V_R | 30 | V |
| | | MCL103C | V_R | 20 | V |
| Forward continuous current | | | I_F | 200 | mA |
| Peak forward surge current | $t_p = 300\text{ }\mu\text{s}$, square pulse | | I_{FSM} | 15 | A |
| Power dissipation | | | P_{tot} | 400 | 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 | On PC board 50 mm x 50 mm x 1.6 mm | R_{thJA} | 250 | K/W |
| Junction temperature | | T_j | 125 | $^\circ\text{C}$ |
| Storage temperature range | | T_{stg} | -65 to +150 | $^\circ\text{C}$ |



| ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | | |
|---|---|---------|------------|------|------|------|---------------|
| PARAMETER | TEST CONDITION | SYMBOL | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Reverse breakdown voltage | $I_R = 10\text{ }\mu\text{A}$ | MCL103A | $V_{(BR)}$ | 40 | | | V |
| | | MCL103B | $V_{(BR)}$ | 30 | | | V |
| | | MCL103C | $V_{(BR)}$ | 20 | | | V |
| Leakage current | $V_R = 30\text{ V}$ | MCL103A | I_R | | | 5 | μA |
| | $V_R = 20\text{ V}$ | MCL103B | I_R | | | 5 | μA |
| | $V_R = 10\text{ V}$ | MCL103C | I_R | | | 5 | μA |
| Forward voltage drop | $I_F = 20\text{ mA}$ | | V_F | | | 370 | mV |
| | $I_F = 200\text{ mA}$ | | V_F | | | 600 | mV |
| Diode capacitance | $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | | C_D | | 50 | | pF |
| Reverse recovery time | $I_F = I_R = 50\text{ mA}$ to 200 mA , recovery to $0.1 I_R$ | | t_{rr} | | 10 | | ns |

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

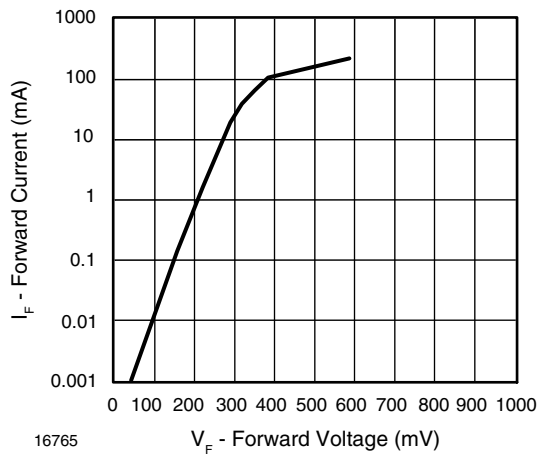


Fig. 1 - Forward Current vs. Forward Voltage

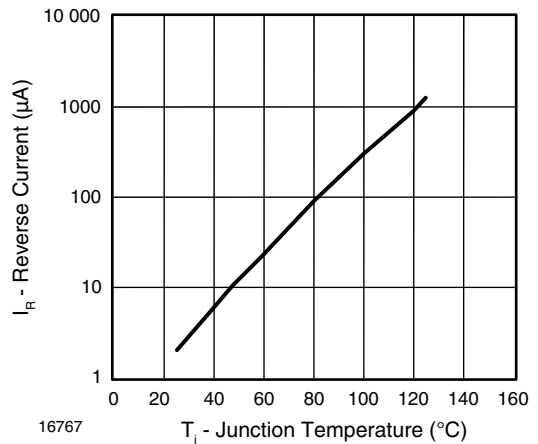


Fig. 3 - Reverse Current vs. Junction Temperature

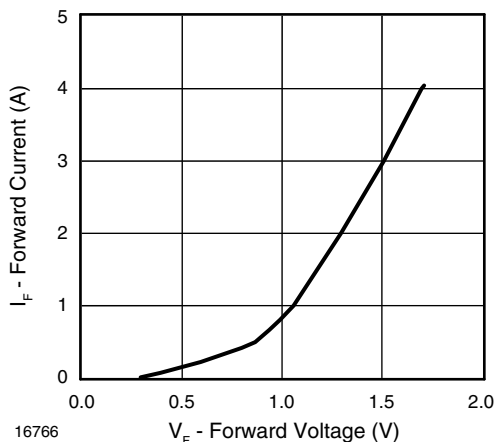


Fig. 2 - Forward Current vs. Forward Voltage

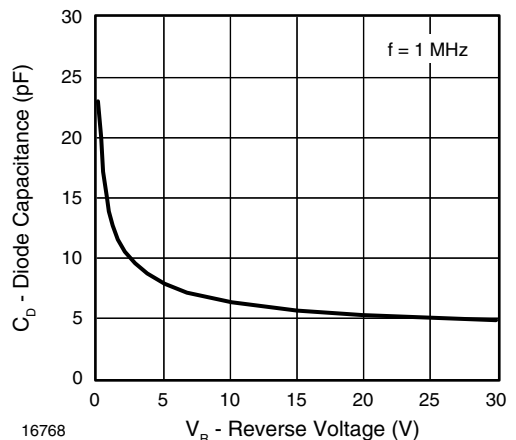


Fig. 4 - Diode Capacitance vs. Reverse Voltage

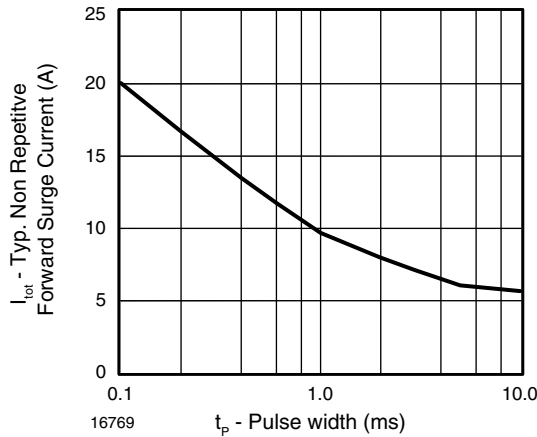
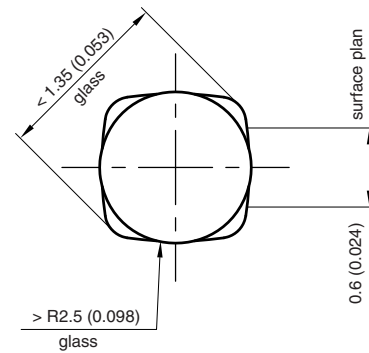
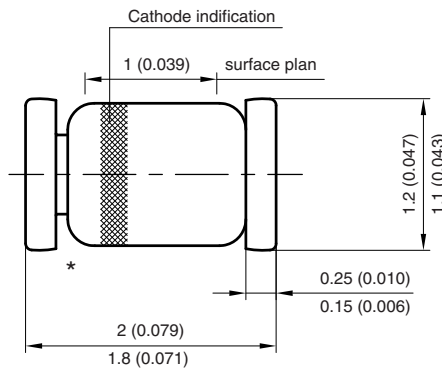


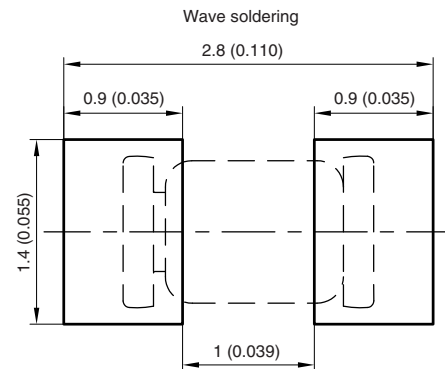
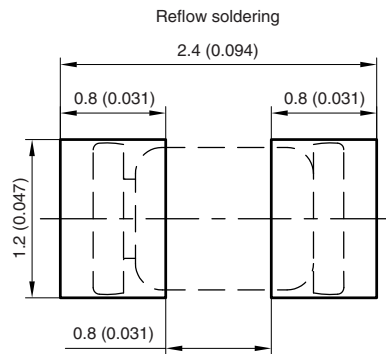
Fig. 5 - Typical Non-Repetitive Forward Surge Current vs. Pulse Width

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
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 96 12072



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