





## Small Signal Schottky Diodes



**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

### 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](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### 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<br>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    | $\mu\text{A}$ |
|   | $V_R = 20\text{ V}$   | MCL103B | $I_R$      |      |      | 5    | $\mu\text{A}$ |
|   | $V_R = 10\text{ V}$   | MCL103C | $I_R$      |      |      | 5    | $\mu\text{A}$ |
| 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 $200\text{ mA}$ , recovery to $0.1 I_R$ |         | $t_{rr}$   |      | 10   |      | ns            |

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

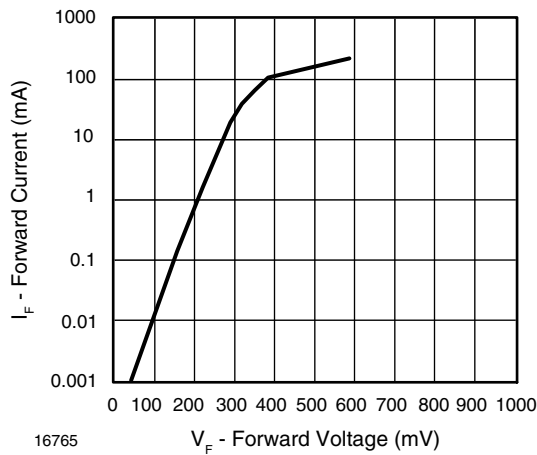


Fig. 1 - Forward Current vs. Forward Voltage

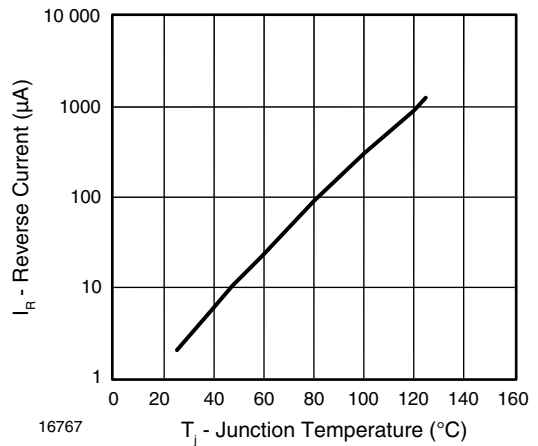


Fig. 3 - Reverse Current vs. Junction Temperature

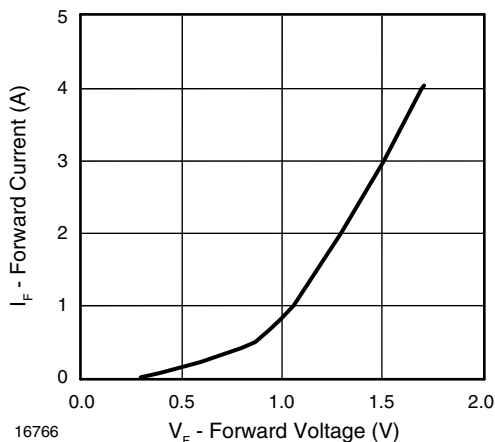


Fig. 2 - Forward Current vs. Forward Voltage

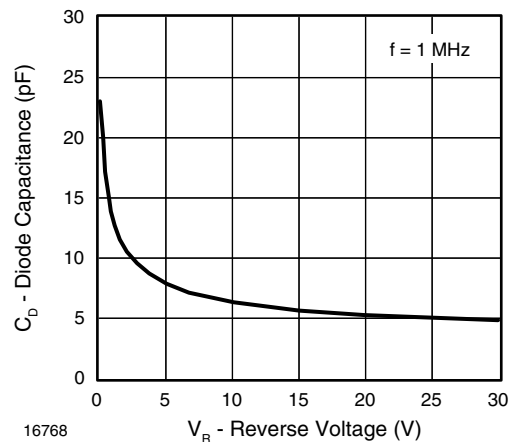


Fig. 4 - Diode Capacitance vs. Reverse Voltage

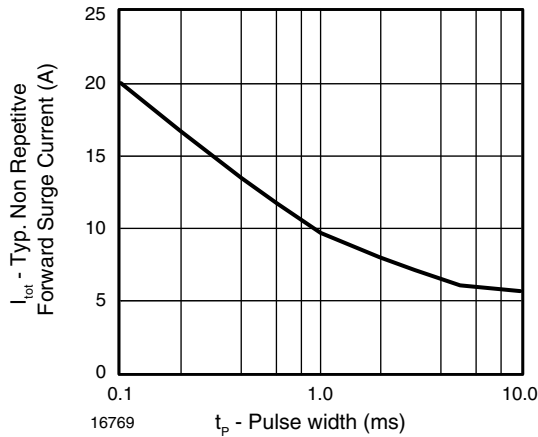
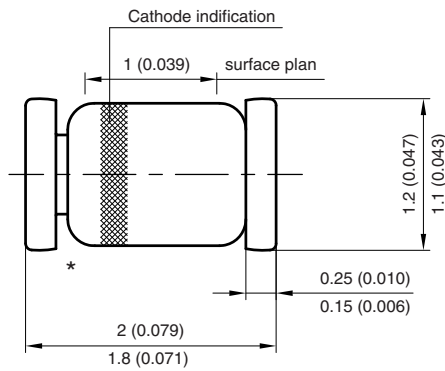
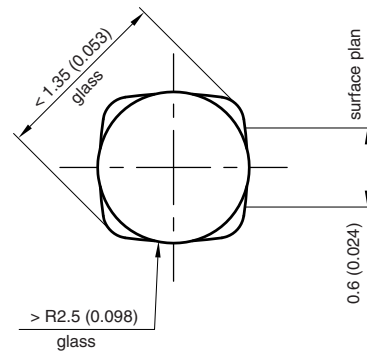


Fig. 5 - Typical Non-Repetitive Forward Surge Current vs. Pulse Width

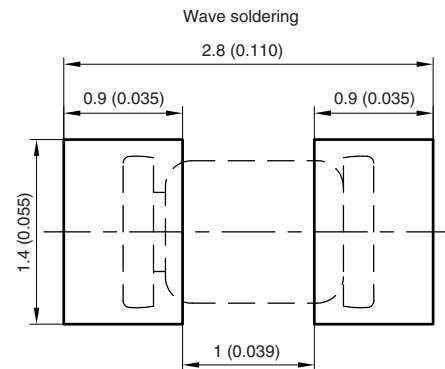
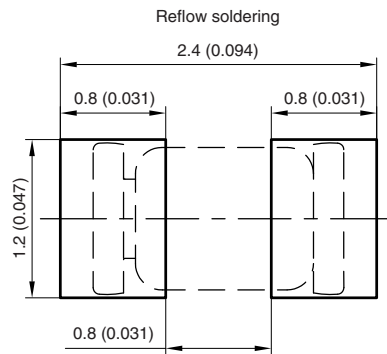
## PACKAGE DIMENSIONS in millimeters (inches): **MicroMELF**



\* 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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