

## Small Signal Schottky Diodes



### FEATURES

- Integrated protection ring against static discharge
- Low capacitance
- Low leakage current
- Low forward voltage drop
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



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

### LINKS TO 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

### 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 | $V_R = 40$ V         | MCL103A-TR3 or MCL103A-TR | Single                | Tape and reel |
| MCL103B | $V_R = 30$ V         | MCL103B-TR3 or MCL103B-TR | Single                | Tape and reel |
| MCL103C | $V_R = 20$ V         | MCL103C-TR3 or MCL103C-TR | Single                | Tape and reel |

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25$ °C, unless otherwise specified)

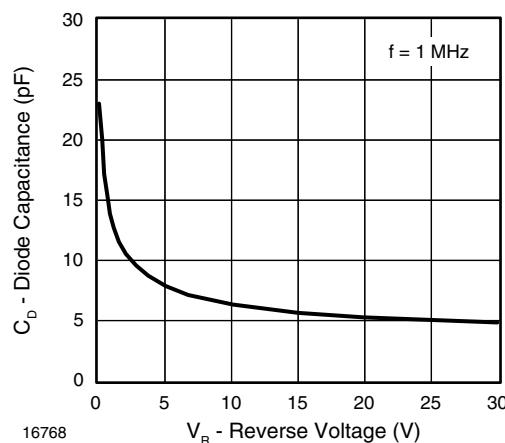
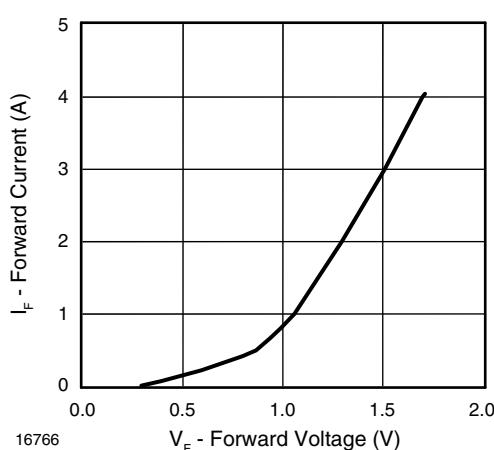
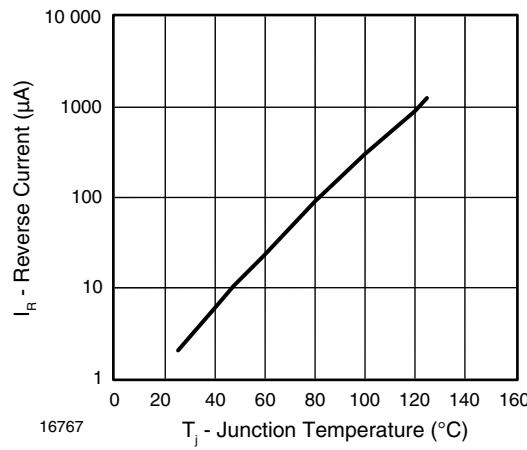
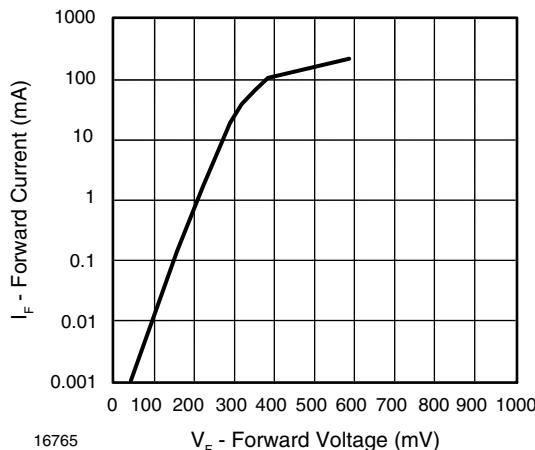
| PARAMETER                  | TEST CONDITION                    | PART    | SYMBOL    | VALUE | UNIT |
|----------------------------|-----------------------------------|---------|-----------|-------|------|
| Reverse voltage            |                                   | MCL103A | $V_R$     | 40    | V    |
|                            |                                   | MCL103B | $V_R$     | 30    | V    |
|                            |                                   | MCL103C | $V_R$     | 20    | V    |
| Forward continuous current |                                   |         | $I_F$     | 200   | mA   |
| Peak forward surge current | $t_p = 300$ $\mu$ s, square pulse |         | $I_{FSM}$ | 15    | A    |
| Power dissipation          |                                   |         | $P_{tot}$ | 400   | mW   |

### THERMAL CHARACTERISTICS ( $T_{amb} = 25$ °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         | °C   |
| Storage temperature range                  |                                       | $T_{stg}$  | -65 to +150 | °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)


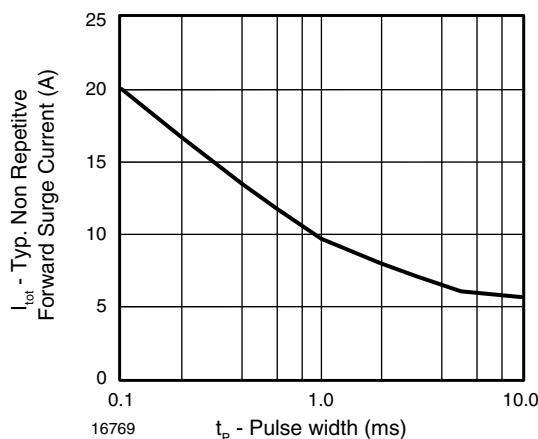
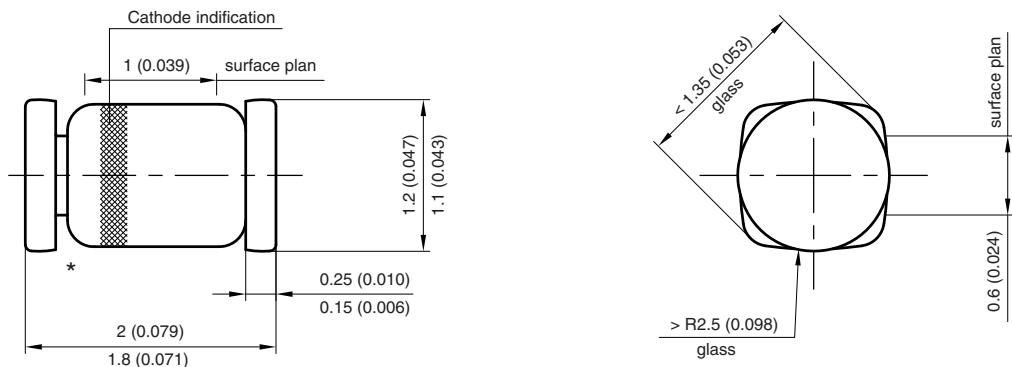


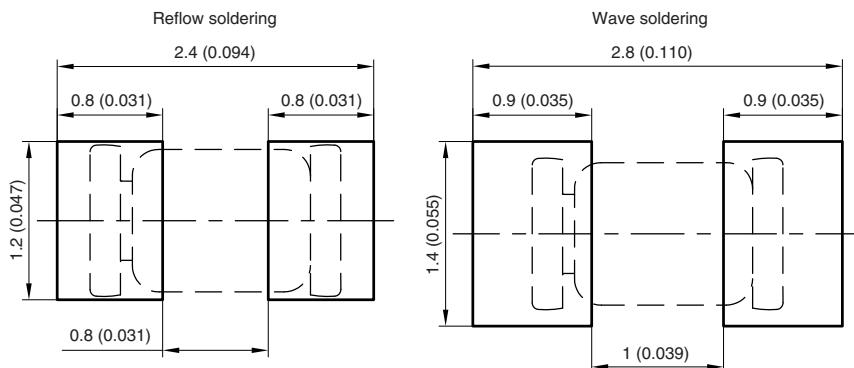
Fig. 5 - Typical Non-Repetitive Forward Surge Current vs. Pulse Width

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



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

Foot print recommendation:



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