# MCL103A, MCL103B, MCL103C



### **Small Signal Schottky Diodes**

### **FEATURES**

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

#### **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 <sub>R</sub> = 40 V	MCL103A-TR3 or MCL103A-TR	Single	Tape and reel		
MCL103B	V <sub>R</sub> = 30 V	MCL103B-TR3 or MCL103B-TR	Single	Tape and reel		
MCL103C	V <sub>R</sub> = 20 V	MCL103C-TR3 or MCL103C-TR	Single	Tape and reel		

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{amb} = 25 \text{ °C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	PART	SYMBOL	VALUE	UNIT	
		MCL103A	V <sub>R</sub>	40	V	
Reverse voltage		MCL103B	V <sub>R</sub>	30	V	
		MCL103C	V <sub>R</sub>	20	V	
Forward continuous current			I <sub>F</sub>	200	mA	
Peak forward surge current	t <sub>p</sub> = 300 μs, square pulse		I <sub>FSM</sub>	15	A	
Power dissipation			P <sub>tot</sub>	400	mW	

<b>THERMAL CHARACTERISTICS</b> (T <sub>amb</sub> = 25 °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 <sub>thJA</sub>	250	K/W		
Junction temperature		Tj	125	°C		
Storage temperature range		T <sub>stg</sub>	-65 to +150	°C		

#### Rev. 1.8, 16-Nov-2021

Document Number: 85632

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#### 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

RoHS COMPLIANT

HALOGEN FREE

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# MCL103A, MCL103B, MCL103C

### **Vishay Semiconductors**

<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>amb</sub> = 25 °C, unless otherwise specified)							
PARAMETER	TEST CONDITION	SYMBOL	SYMBOL	MIN.	TYP.	MAX.	UNIT
		MCL103A	V <sub>(BR)</sub>	40			V
Reverse breakdown voltage	I <sub>R</sub> = 10 μA	MCL103B	V <sub>(BR)</sub>	30			V
		MCL103C	V <sub>(BR)</sub>	20			V
	V <sub>R</sub> = 30 V	MCL103A	I <sub>R</sub>			5	μA
Leakage current	V <sub>R</sub> = 20 V	MCL103B	I <sub>R</sub>			5	μA
	V <sub>R</sub> = 10 V	MCL103C	I <sub>R</sub>			5	μA
	I <sub>F</sub> = 20 mA		V <sub>F</sub>			370	mV
Forward voltage drop	I <sub>F</sub> = 200 mA		V <sub>F</sub>			600	mV
Diode capacitance	V <sub>R</sub> = 0 V, f = 1 MHz		CD		50		pF
Reverse recovery time	$I_F = I_R = 50 \text{ mA to } 200 \text{ mA},$ recovery to 0.1 $I_R$		t <sub>rr</sub>		10		ns

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

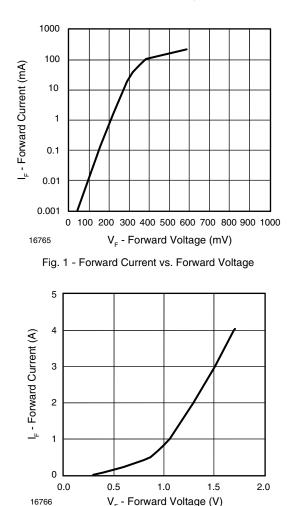


Fig. 2 - Forward Current vs. Forward Voltage

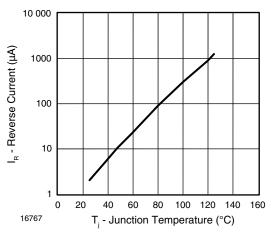


Fig. 3 - Reverse Current vs. Junction Temperature

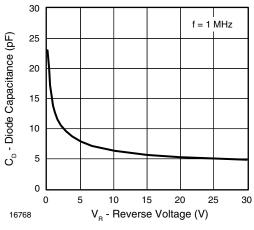


Fig. 4 - Diode Capacitance vs. Reverse Voltage

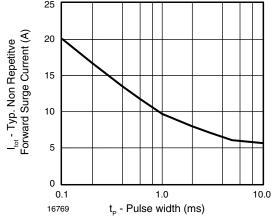
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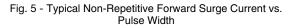
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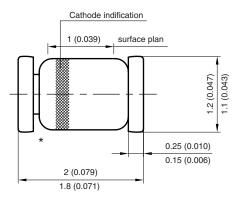
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**Vishay Semiconductors** 



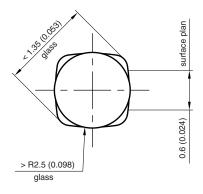


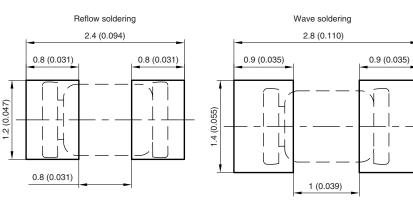
#### PACKAGE DIMENSIONS in millimeters (inches): MicroMELF



\* 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

Rev. 1.8, 16-Nov-2021

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