

SML01SC06C3A / SML01SC06C3B / SML01SC06C3C

- Low Leakage
- Fast Switching
- Low Forward Voltage
- Hermetic Ceramic Surface Mount Package
- Zero Equivalent Reverse Recovery



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise stated)

V _{RRM}	Repetitive Peak Reverse Voltage	600V
V _{RSM}	Surge Peak Reverse Voltage	600V
V _{DC}	Dc Blocking Voltage	600V
I _{F(AVG)} ⁽¹⁾	Average Forward Current, T _J = 175°C	1A
P _D	Total Power Dissipation, T _{SP} = 25°C	4W
	De-rate Above 25°C	20mW/°C
T _J	Junction Temperature Range	-55 to +225°C
T _{STG}	Storage Temperature Range	-55 to +225°C

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
R _{θJSP} (IN)	Thermal Resistance, Junction To Solder Pads T _{SP} = 25°C	50	°C/W
R _{θJA} (PCB) ⁽²⁾	Thermal Resistance, Junction To Ambient, On PCB	115	°C/W
R _{θJA} (PCB) ⁽³⁾	Thermal Resistance, Junction To Ambient, On PCB	175	°C/W

Notes

- (1) IO1 is rated at 1.1A @ T_A = 25°C for PC boards where thermal resistance from mounting point to ambient is sufficiently controlled where T_J(Max) does not exceed 225°C; This equates to R_{θJA} (PCB) ≤ 115°C/W.
- (2) PCB = FR4, 0.0625 Inch (1.59mm) thick, single layer, 1.0-Oz Cu, Pad Size, (1.0" x 1.0"), (25.4mm x 25.4mm), horizontal in still air.
- (3) PCB = FR4, 0.0625 Inch (1.59mm) thick, single layer, 1.0-Oz Cu, Pad Size, (0.067" x 0.105") ‡, (1.70mm x 2.76mm) ‡, horizontal in still air. IO1 is rated at 0.8A @ T_A = 25°C for PC boards where R_{θJA} (PCB) ≤ 175°C/W. De-rate at 4mA/°C above T_A = 25°C in this case.

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SEMELAB 

Semelab Limited

Coventry Road, Lutterworth, Leicestershire, LE17 4JB

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Page: 1 of 5

Telephone: +44 (0) 1455 556565 Email: sales@semelab-tt.com
Fax: +44 (0) 1455 552612

Website: <http://www.semelab-tt.com>

Silicon Carbide Schottky Barrier Diode

SML01SC06C3A / SML01SC06C3B /

SML01SC06C3C



ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise stated)

Symbols	Parameters	Test Conditions	Min.	Typ.	Max.	Units
V_F	Diode Forward Voltage	$I_F = 1.0\text{A}$ $T_J = 25^\circ\text{C}$		1.6	1.8	V
		$I_F = 1.0\text{A}$ $T_J = 175^\circ\text{C}$		2.0	2.4	
I_R	Leakage Current	$V_R = 450\text{V}$ $T_J = 25^\circ\text{C}$			5	μA
		$V_R = 600\text{V}$ $T_J = 25^\circ\text{C}$			100	
		$V_R = 600\text{V}$ $T_J = 175^\circ\text{C}$			500	

DYNAMIC CHARACTERISTICS

Q_C	Total Capacitive Charge ⁽⁴⁾	$V_R = 500\text{V}$ $I_F = 1.0\text{A}$ $d_i/d_t = 500\text{A}/\mu\text{s}$ $T_J = 25^\circ\text{C}$		3.3		nC
C	Total Capacitance ⁽⁴⁾	$V_R = 0\text{V}$ $T_J = 25^\circ\text{C}$ $f = 1.0\text{MHz}$		80		pF
		$V_R = 200\text{V}$ $T_J = 25^\circ\text{C}$ $f = 1.0\text{MHz}$		11		

Notes

(4) Indicative measurements by design.

Silicon Carbide Schottky Barrier Diode

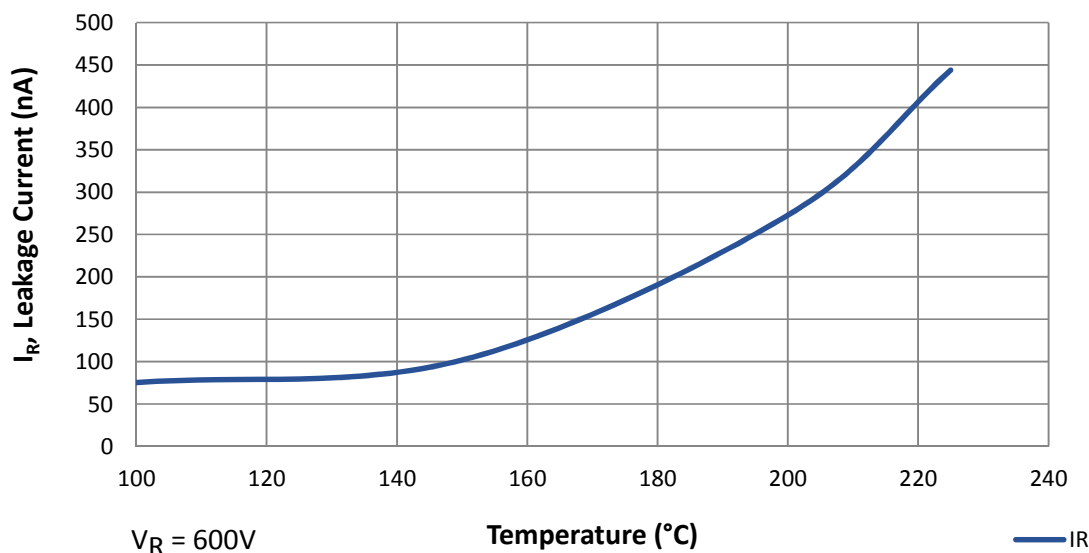
SML01SC06C3A / SML01SC06C3B /

SML01SC06C3C

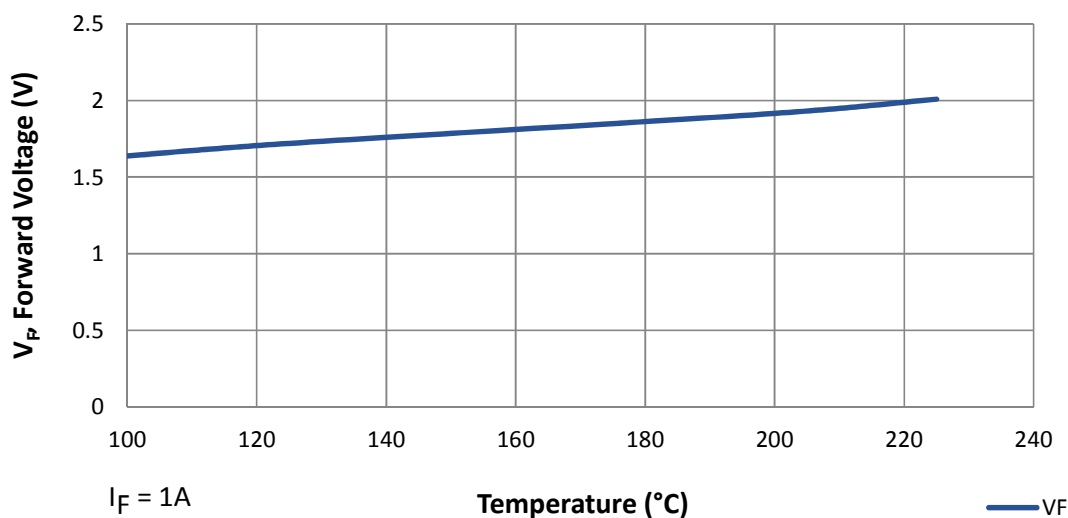


TYPICAL CHARACTERISTICS

Leakage Current (I_R)



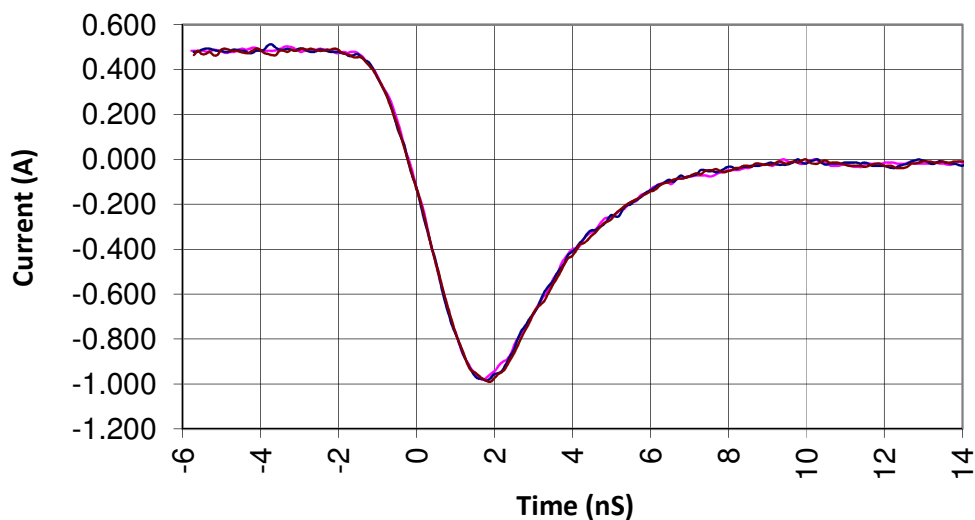
Diode Forward Voltage (V_F)



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SML01SC06C3A / SML01SC06C3B /
SML01SC06C3C



Equivalent Reverse Recovery Time ⁽⁵⁾



$I_F = 500\text{mA}$

$I_R = 1\text{A}$

$I_{RR} = 250\text{mA}$

$V_R = 600\text{V}$

— -55°C — 25°C — 175°C

Notes

- (5) SiC Schottky Diode, no minority carrier recombination thus zero reverse recovery. Recovery time shown is due to a small junction capacitance charge and is independent of junction temperature.

Silicon Carbide Schottky Barrier Diode

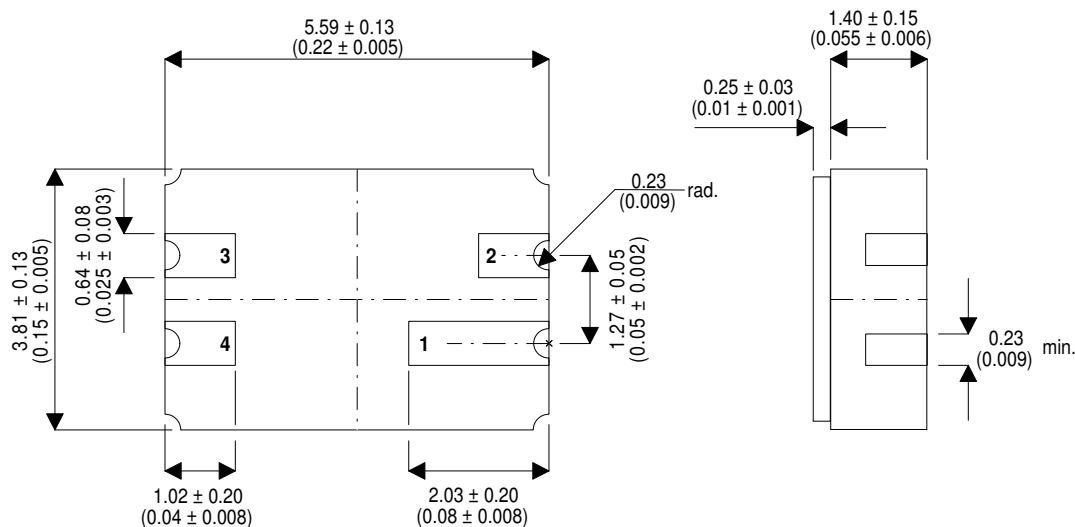
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SML01SC06C3C



MECHANICAL DATA

Dimensions in mm (inches)



LCC3 (MO-041BA)

Underside View

Variant	Pad 1	Pad 2	Pad 3	Pad 4
SML01SC06C3A	Cathode	Anode	N/C	N/C
SML01SC06C3B	Cathode	N/C	Anode	N/C
SML01SC06C3C	Cathode	N/C	N/C	Anode