SILICON CARBIDE SCHOTTKY BARRIER DIODE

SML02SC06D2A / SML02SC06D2B

- Low Leakage
- Fast Switching
- Low Forward Voltage
- Hermetic Ceramic Surface Mount Package
- Suitable For General Purpose, Switching Applications
- 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	2A
P_D	Total Power Dissipation at T_J = 25°C	5W
	Derate Above 25°C	25mW/°C
T_J	Maximum Junction Temperature	225°C
T_{stg}	Storage Temperature Range	-55 to +225°C

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
$R_{\theta JSP(IN)}$	Thermal Resistance, Junction To Solder Pads T_{SP} = 25°C	40	°C/W
$R_{\theta JA(PCB)}$(2)	Thermal Resistance, Junction To Ambient, On PCB (small pads)	115	°C/W
$R_{\theta JA(PCB)}$(3)	Thermal Resistance, Junction To Ambient, On PCB (large pads)	175	°C/W

Notes

(1) I_F 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 $R_{\theta JA(PCB)} \leq 115$°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. I_F is rated at 0.8A @ TA = 25°C for PC boards where $R_{\theta JA(PCB)} \leq 175$°C/W. Derate at 4mA/°C above T_A = 25°C in this case.

‡ Recommended solder pad layout dimensions for this device, as detailed within this datasheet for the D-5A device.

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise stated)

Symbols	Parameters	Test Conditions		Min.	Typ.	Max.	Units
V_F	Diode Forward Voltage	I_F = 2A	T_J = 25°C		1.5	1.8	V
		I_F = 2A	T_J = 175°C		1.8	2.4	
I_R	Leakage Current	V_R = 600V	T_J = 25°C			50	µA
		V_R = 600V	T_J = 175°C			100	

DYNAMIC CHARACTERISTICS

Q_C[4]	Total Capacitive Charge	V_R = 600V d_i/d_t = 500A/µs	I_F = 2A T_J = 25°C		4.8		nC
C	Total Capacitance	V_R = 0V f = 1.0MHz	T_J = 25°C		120		pF
		V_R = 200V f = 1.0MHz	T_J = 25°C		12		

Notes

(4) Indicative by the device design, not a production test.

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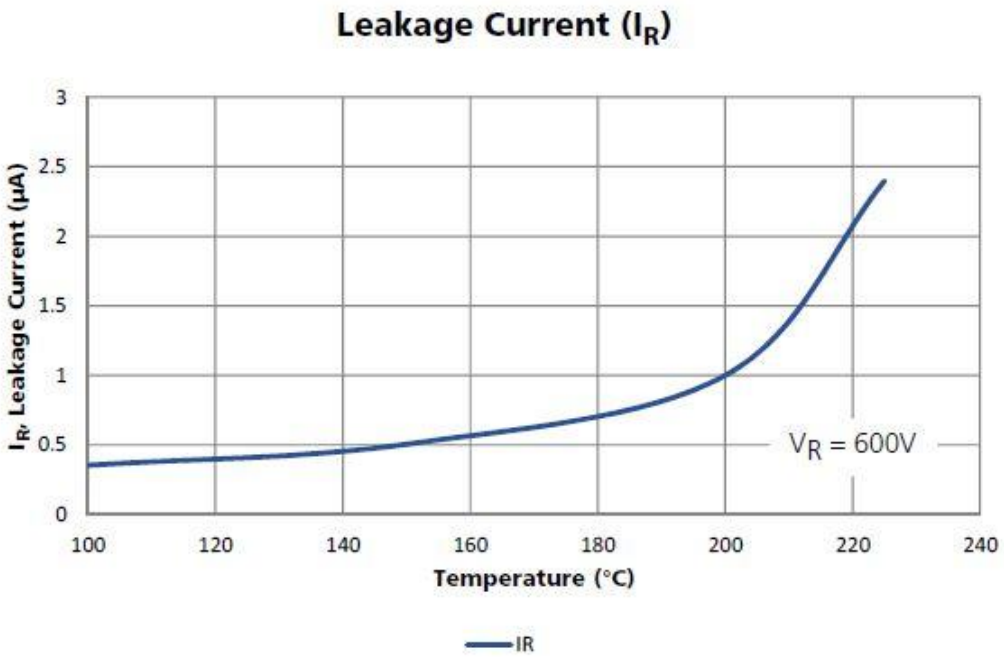
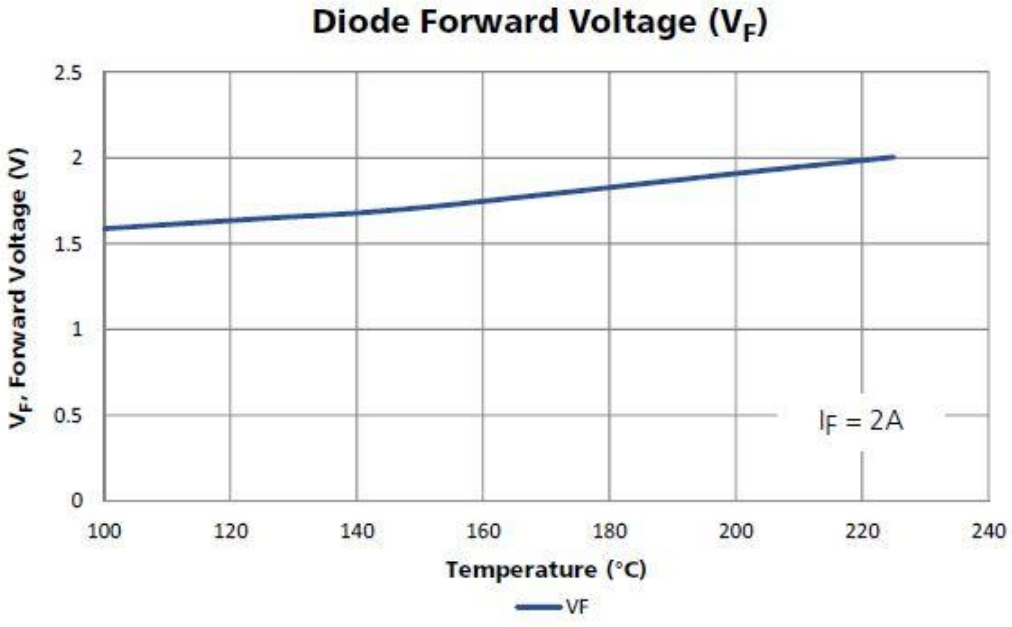
TYPICAL CHARACTERISTICS





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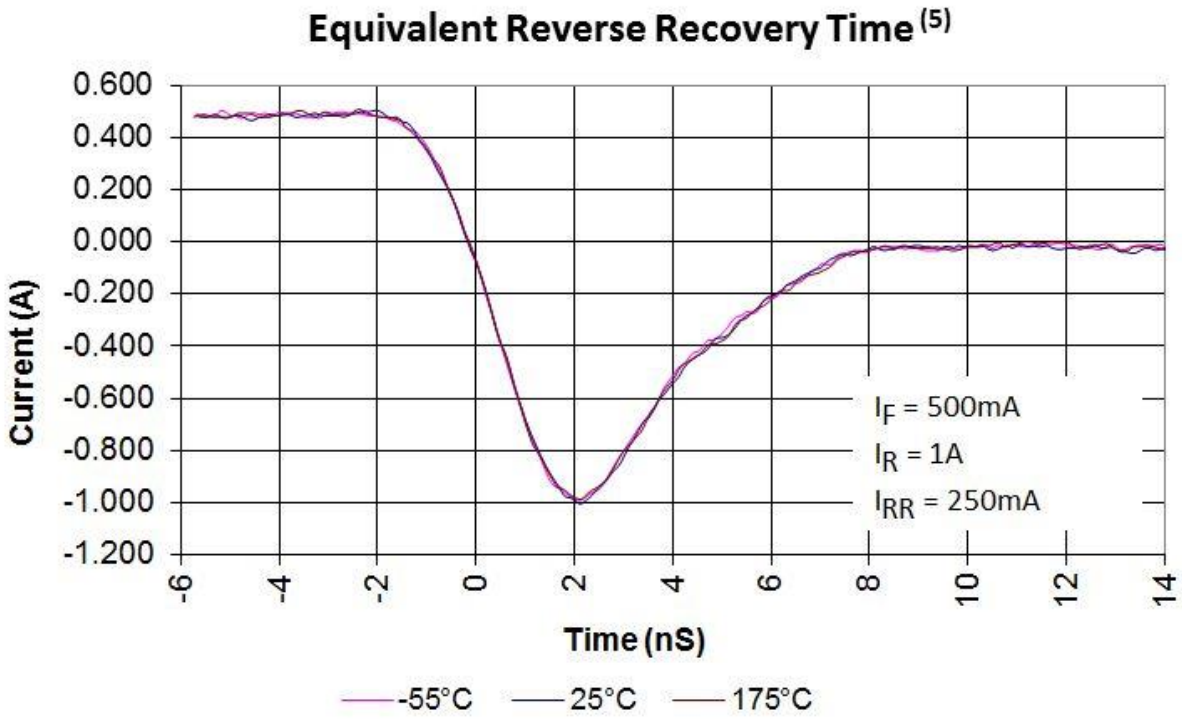

Notes

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

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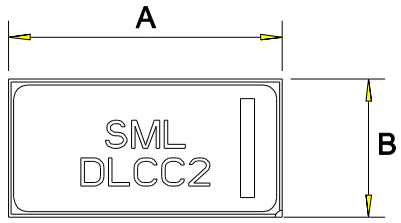
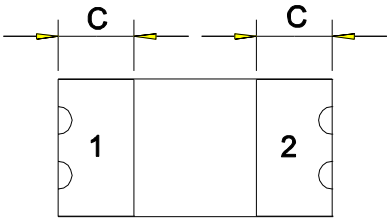
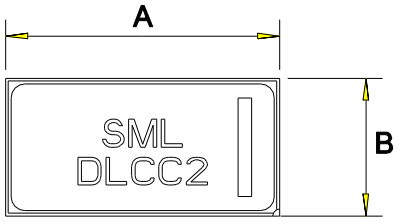
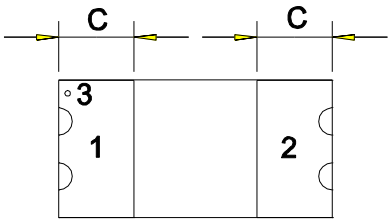
MECHANICAL DATA

Dimensions in mm (inches)









DLCC2 Variant A (D2A)

PAD 1	ANODE	
PAD 2	CATHODE	
DIMENSION	mm	Inches
A	5.00 ±0.10	0.197 ±0.004
B	2.61 ±0.10	0.103 ±0.004
C	1.08 ±0.10	0.043 ±0.004
D	1.76 ±0.10	0.069 ±0.004

DLCC2 Variant B (D2B)

PAD 1	ANODE	
PAD 2	CATHODE	
PAD 3	LID CONTACT TO ANODE*	
DIMENSION	mm	Inches
A	5.00 ±0.10	0.197 ±0.004
B	2.61 ±0.10	0.103 ±0.004
C	1.08 ±0.10	0.043 ±0.004
D	1.76 ±0.10	0.069 ±0.004

SOLDER PAD LAYOUT D-5A

DIMENSION	mm	Inches
A	6.25	0.246
B	1.70	0.067
C	2.67	0.105

Lead Terminal Finish: Au

DLCC2/ D-5A MELF OVERLAY