LSIC2SD065C10A 650 V, 10 A SiC Schottky Barrier Diode

HF RoHS Pb

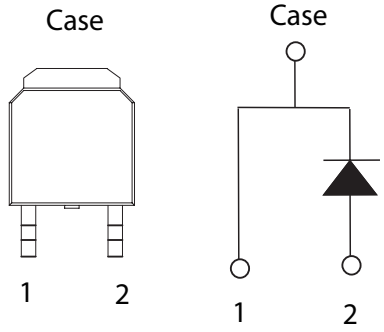
Description

This series of silicon carbide (SiC) Schottky diodes has negligible reverse recovery current, high surge capability, and a maximum operating junction temperature of 175 °C. These diodes series are ideal for applications where improvements in efficiency, reliability, and thermal management are desired.

Features

- AEC-Q101 qualified
- Positive temperature coefficient for safe operation and ease of paralleling
- 175 °C maximum operating junction temperature
- Excellent surge capability
- Extremely fast, temperature-independent switching behavior
- Dramatically reduced switching losses compared to Si bipolar diodes

Circuit Diagram TO-252-2L (DPAK)



Applications

- Boost diodes in PFC or DC/DC stages
- Switch-mode power supplies
- Uninterruptible power supplies
- Solar inverters
- Industrial motor drives
- EV charging stations

Environmental

- Littelfuse "RoHS" logo = RoHS conform
- Littelfuse "HF" logo = HF Halogen Free
- Littelfuse "Pb-free" logo = Pb Pb-free lead plating

Maximum Ratings

Characteristics	Symbol	Conditions	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	-	650	V
DC Blocking Voltage	V_R	T_J = 25 °C	650	V
Continuous Forward Current	I_F	T_C = 25 °C	27	A
		T_C = 135 °C	12.5	
		T_C = 147 °C	10	
Non-Repetitive Forward Surge Current	I_{FSM}	T_C = 25 °C, T_P = 10 ms, Half sine pulse	48	A
Power Dissipation	P_{Tot}	T_C = 25 °C	100	W
		T_C = 110 °C	43	
Operating Junction Temperature	T_J	-	-55 to 175	°C
Storage Temperature	T_{STG}	-	-55 to 150	°C
Soldering Temperature (reflow MSL1)	T_{sold}	-	260	°C

Revised: 01/07/19

GEN2 SiC Schottky Diode

LSIC2SD065C10A, 650 V, 10 A, TO-252-2L (DPAK)

Electrical Characteristics

Characteristics	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	I_F = 10 A, T_J = 25 °C	-	1.5	1.8	V
		I_F = 10 A, T_J = 175 °C	-	1.85	-	
Reverse Current	I_R	V_R = 650 V, T_J = 25 °C	-	<1	50	µA
		V_R = 650 V, T_J = 175 °C	-	25	-	
Total Capacitance	C	V_R = 1 V, f = 1 MHz	-	470	-	pF
		V_R = 200 V, f = 1 MHz	-	60	-	
		V_R = 400 V, f = 1 MHz	-	43	-	
Total Capacitive Charge	Q_C	V_R = 400 V, $Q_c = \int_0^{V_R} C(V)dV$	-	30	-	nC

Thermal Characteristics

Characteristics	Symbol	Value	Unit
Thermal Resistance	$R_{\theta JC}$	1.5	°C/W

Figure 1: Typical Foward Characteristics

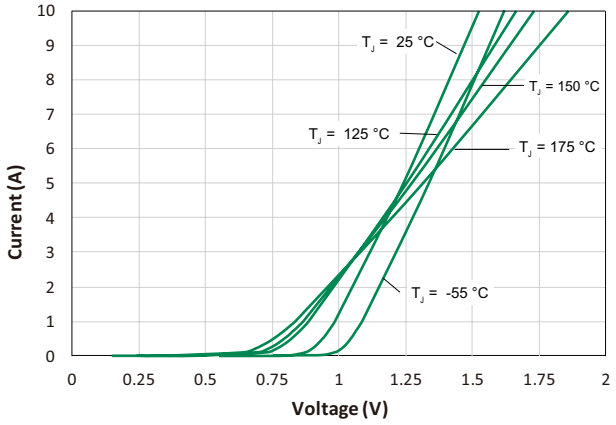


Figure 2: Typical Reverse Characteristics

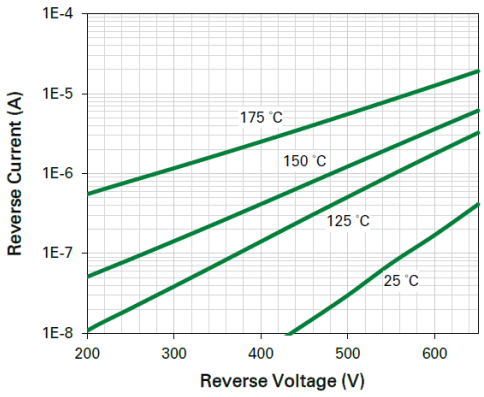


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Figure 3: Power Derating

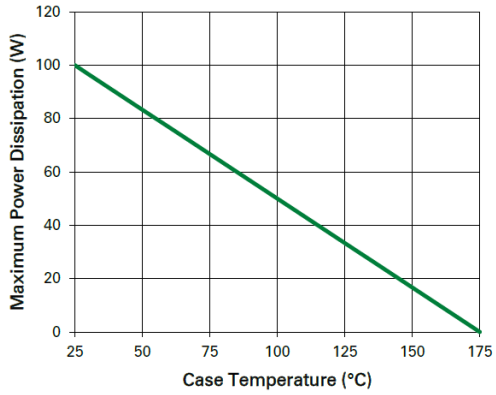


Figure 4: Current Derating

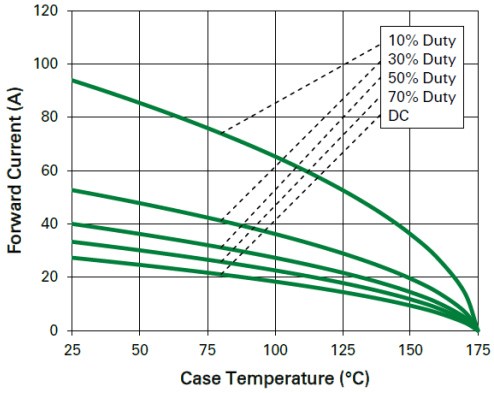


Figure 5: Capacitance vs. Reverse Voltage

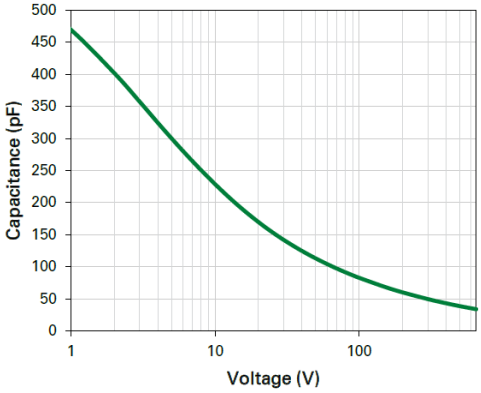


Figure 6: Capacitive Charge vs. Reverse Voltage

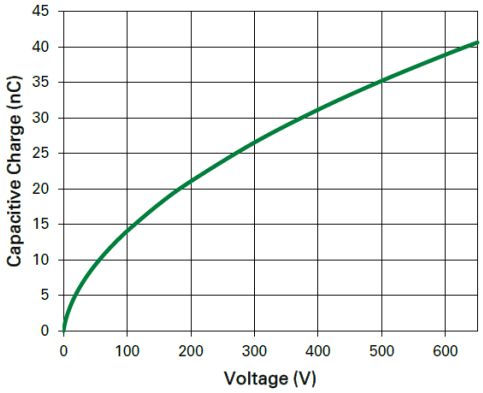


Figure 7: Stored Energy vs. Reverse Voltage

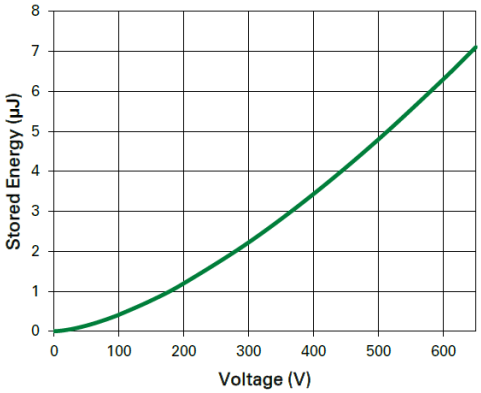
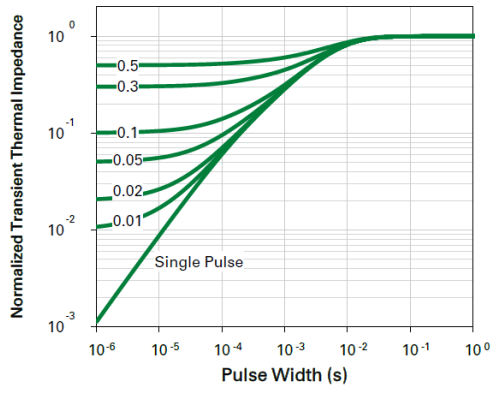


Figure 8: Transient Thermal Impedance



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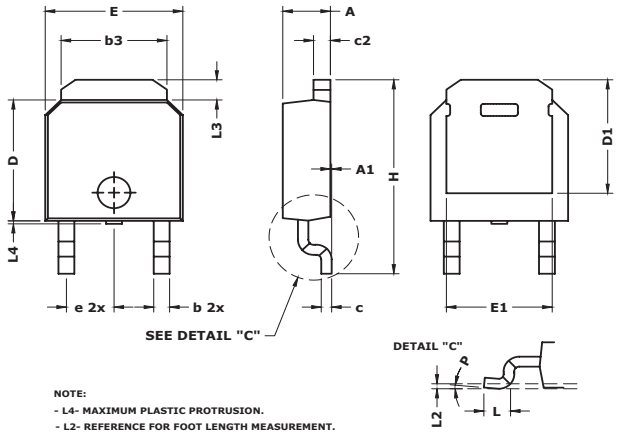
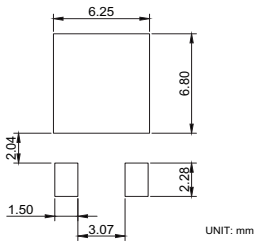
GEN2 SiC Schottky Diode

LSIC2SD065C10A, 650 V, 10 A, TO-252-2L (DPAK)

Dimensions TO-252-2L (DPAK)

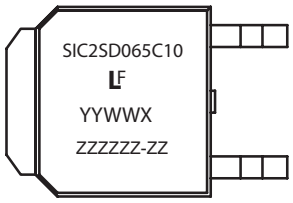


Recommended Solder Pattern Layout



Symbol	Inches			Millimeters		
	Min	Nom	Max	Min	Nom	Max
A	0.085	0.090	0.095	2.16	2.29	2.41
A1	0	0.003	0.005	0	0.08	0.13
b	0.025	0.030	0.035	0.64	0.76	0.89
b3	0.195	0.200	0.215	4.95	5.08	5.46
c	0.018	0.020	0.024	0.46	0.51	0.61
C2	0.018	0.032	0.035	0.46	0.81	0.89
D	0.235	0.240	0.245	5.97	6.10	6.22
D1	0.205	-	-	5.21	-	-
E	0.250	0.260	0.265	6.35	6.60	6.73
E1	0.170	-	-	4.32	-	-
e	0.090 BSC			2.29 BSC		
H	0.370	0.387	0.410	9.40	9.83	10.41
L	0.040	0.045	0.050	1.02	1.14	1.27
L2	0.010 BSC			0.25 BSC		
L3	0.035	-	0.050	0.89	-	1.27
L4	0	-	0.006	0	-	0.15
P	0°	-	8 °	0°	-	8 °

Part Numbering and Marking System



SIC	= SiC Diode
2	= Gen2
SD	= Schottky Diode
065	= Voltage Rating (650 V)
C	= TO-252-2L (DPAK)
10	= Current Rating (10 A)
YY	= Year
WW	= Week
X	= Special code
ZZZZZZ-ZZ	= Lot Number

Packing Options

Part Number	Marking	Packing Mode	M.O.Q
LSIC2SD065C10A	SIC2SD065C10	Tape and Reel	2500

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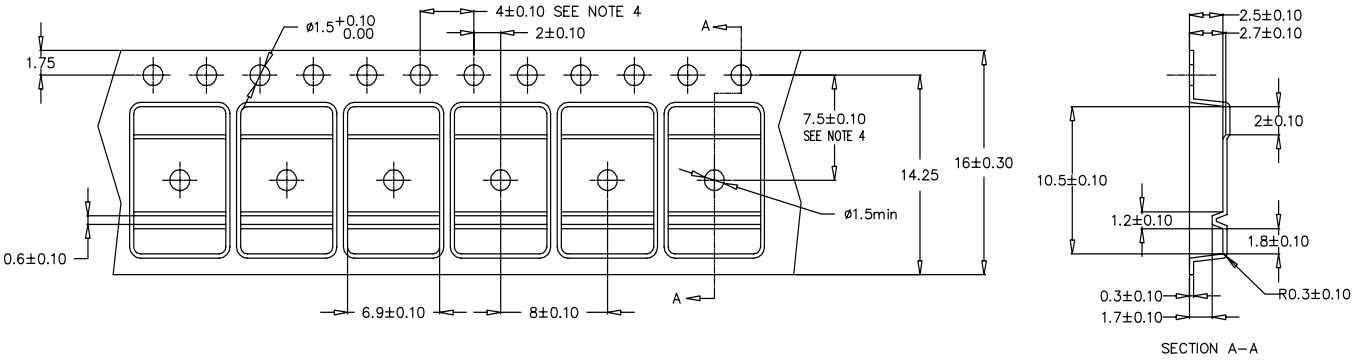
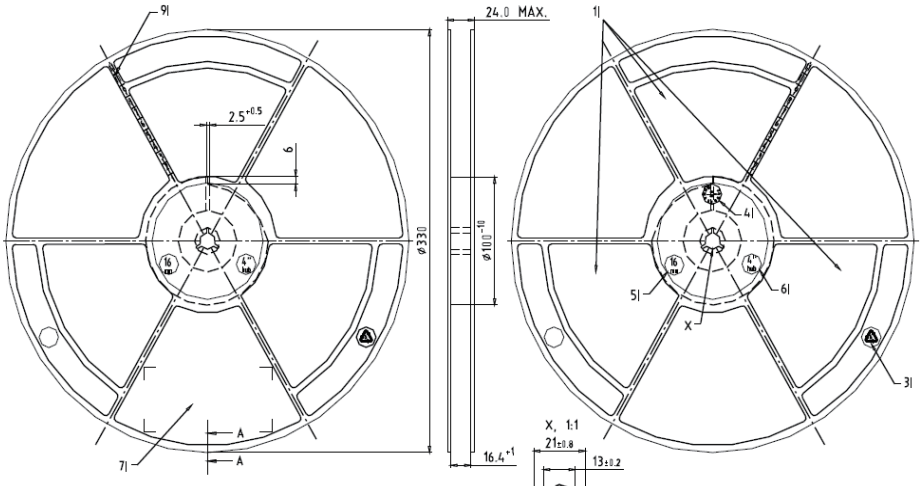
Carrier Tape & Reel Specification TO-252-2L (DPAK)



1. Material: Black Conductive Polysterene
2. 10 sprocket hole pitch cumulative tolerance ± 0.20
3. Camber not to exceed 1 mm in 100 mm.
4. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.
5. Device orientation: TRL (leads perpendicular to the sprocket)
6. General tolerance is ± 0.10 mm unless otherwise specified.



NOTES
1| WINDOW CLEARANCE ON BOTH SIDE DISK.
2| SURFACE RESISTANCE >=10^2 OHM AND <$1x10^{11}$ OHM. REFER TO IEC 61340-5-1.
3| RECYCLE LOGO WITH MATERIAL CODE "6" IN CIRCLE, ONE OR BOTH SIDE DISK.
4| DATE CODE IN CIRCLE ON ONE SIDE OF DISK.
5| TAPE WIDTH "16 mm" IN CIRCLE, TEXT HEIGHT 6 mm, ON BOTH SIDE DISK.
6| HUB SIZE INDICATION ON BOTH SIDE DISK.
7| AREA OF LABEL, MIN 110 x 55.
8| NUMBER OF GROOVES ACCORDING TO PRODUCER, EITHER 3 OR 6.
9| DEPRESSION LINEAR SCALE IS PREFERRED, 10 mm INTERVAL, HEIGHT OF LETTERING 3 mm.
NON CRITICAL DIMENSIONS ACCORDING TO PRODUCER.

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