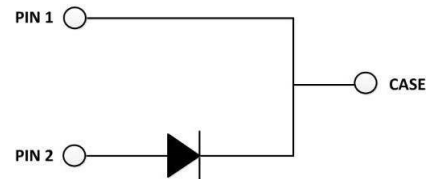


3rd Generation 650V/10A SiC Schottky Barrier Diode

Features

- Revolutionary semiconductor material - Silicon Carbide (SiC)
- No reverse recovery
- High-speed switching performance
- Temperature-independent switching behavior
- System cost / size savings due to reduced cooling requirements
- Junction temperature range from -55°C to 175°C
- RoHS compliant



Package Type: TO-263-2L

Potential Applications

- Industrial power supplies: Industrial UPS
- Battery chargers
- Solar inverters
- Switch mode power supplies



Description

The SDS065J010E3 SiC Schottky Barrier Diode (SBD) has been developed using Sanan’s advanced 3rd generation SiC SBD technology with the highest performance and reliability. It registers higher efficiency, higher operation temperature and lower loss and can be operated at higher frequency than Si-based solutions. As to the Schottky structure, it shows no recovery at turn-off and allows a low leakage current with reverse voltage up to 650V. It can contribute to system miniaturization and achieve lightweight system design. Using RoHS compliant components, it is qualified for use in industrial application.

Product Specifications

Device	V _{RRM}	I _F (135°C)	V _F (25°C)	Q _c	Marking
SDS065J010E3	650V	15A	1.30V	29nC	DS065010E3

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Table 1. Maximum Ratings

(Tc = 25°C, unless otherwise specified)

Parameter	Symbol	Value	Unit	Test conditions
Repetitive peak reverse voltage	V_{RRM}	650	V	$T_C = 25^\circ C$
Surge peak reverse voltage	V_{RSM}	650		$T_C = 25^\circ C$
DC reverse voltage	V_{DC}	650		$T_C = 25^\circ C$
Continuous forward current	I_F	30	A	$T_C = 25^\circ C$
		15		$T_C = 135^\circ C$
		10		$T_C = 155^\circ C$
Surge non-repetitive forward current	I_{FSM}	80	A	$T_C = 25^\circ C, t_p = 10ms,$ half sine pulse
Surge repetitive forward current	I_{FRM}	54	A	$T_C = 25^\circ C, t_p = 10ms,$ half sine wave $D = 0.1$
Power dissipation	P_{tot}	120	W	$T_C = 25^\circ C$
i^2t value	$\int i^2 dt$	32	A^2s	$T_C = 25^\circ C, t_p = 10ms$
Operating junction temperature	T_j	-55~175	$^\circ C$	
Storage temperature	T_{stg}	-55~175	$^\circ C$	

Table 2. Thermal Resistance

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
Thermal resistance from junction to case	$R_{th(j-c)}$	/	1.24	/	$^\circ C/W$	

Table 3. Static Electrical Characteristics

(T_j = 25°C, unless otherwise specified)

Parameter	Symbol	Values			Unit	Test conditions
		Min.	Typ.	Max.		
DC blocking voltage	V _{DC}	650	/	/	V	I _R = 100 μA
Forward voltage	V _F	/	1.30	1.50	V	I _F = 10A, T _j = 25°C
		/	1.55	1.80		I _F = 10A, T _j = 175°C
Reverse current	I _R	/	1	30	μA	V _R = 650V, T _j = 25°C
		/	3	80		V _R = 650V, T _j = 175°C

Table 4. Dynamic Electrical Characteristics

(T_j = 25°C, unless otherwise specified)

Parameter	Symbol	Values			Unit	Test conditions
		Min.	Typ.	Max.		
Total capacitance	C	/	556	/	pF	V _R = 0V, f = 1MHz
		/	55	/		V _R = 200V, f = 1MHz
		/	45	/		V _R = 400V, f = 1MHz
Total capacitive charge	Q _C	/	29	/	nC	V _R = 400V
Capacitance stored energy	E _C	/	4.3	/	μJ	V _R = 400V

Electrical Characteristic Diagrams

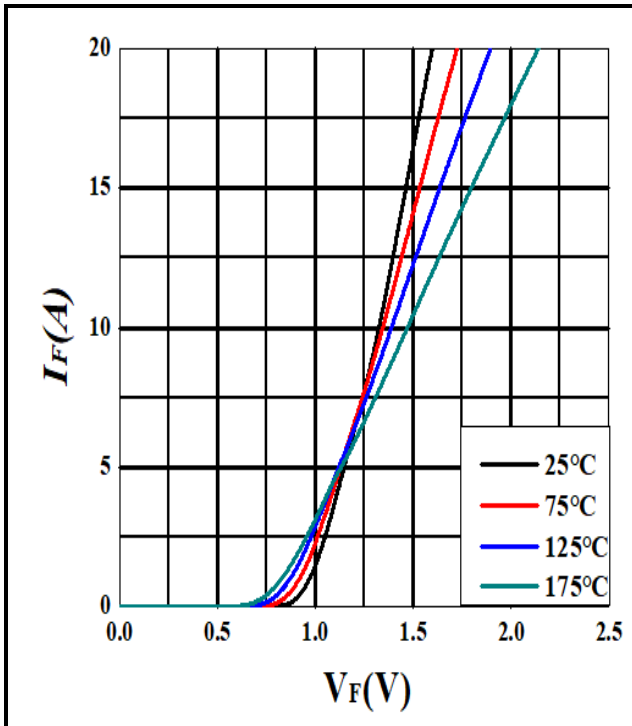


Figure 1. Forward characteristics

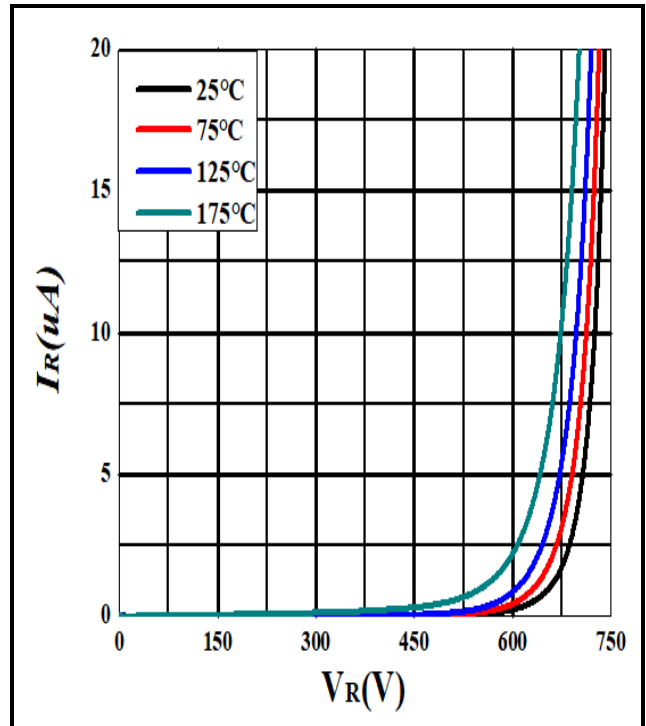


Figure 2. Reverse characteristics

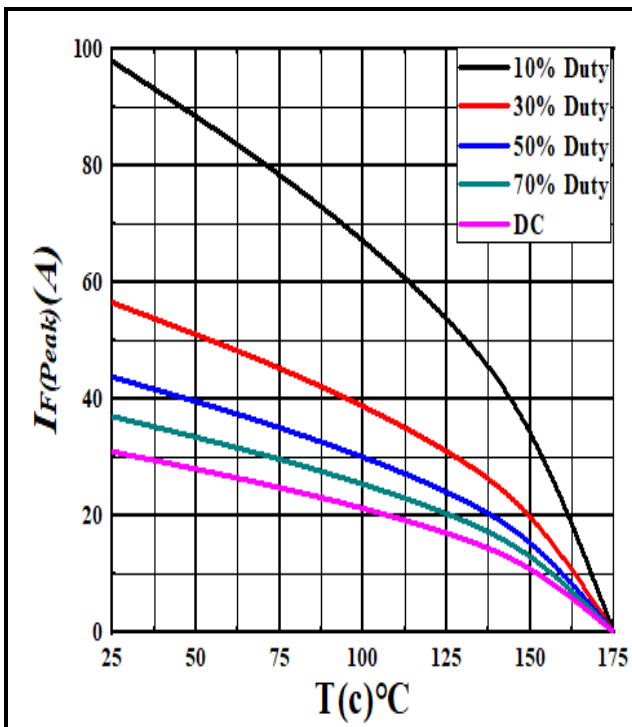


Figure 3. Current derating

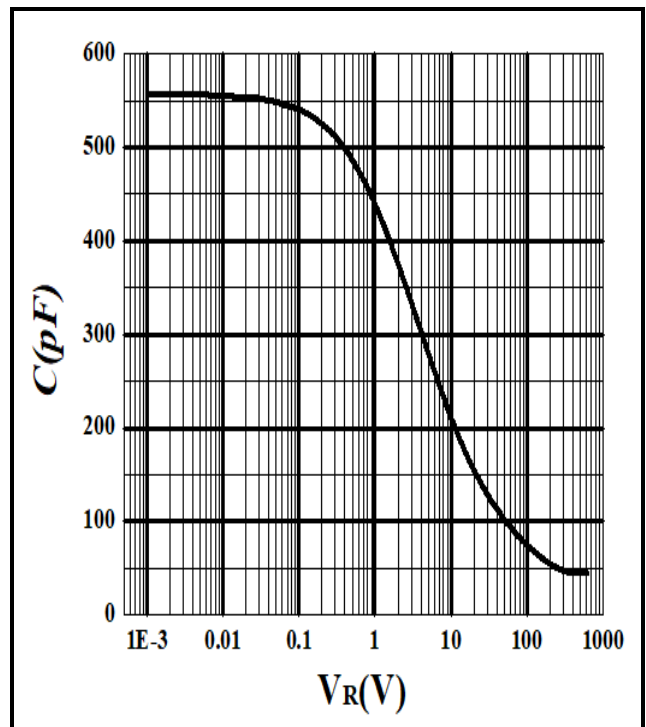


Figure 4. Capacitance vs. reverse voltage

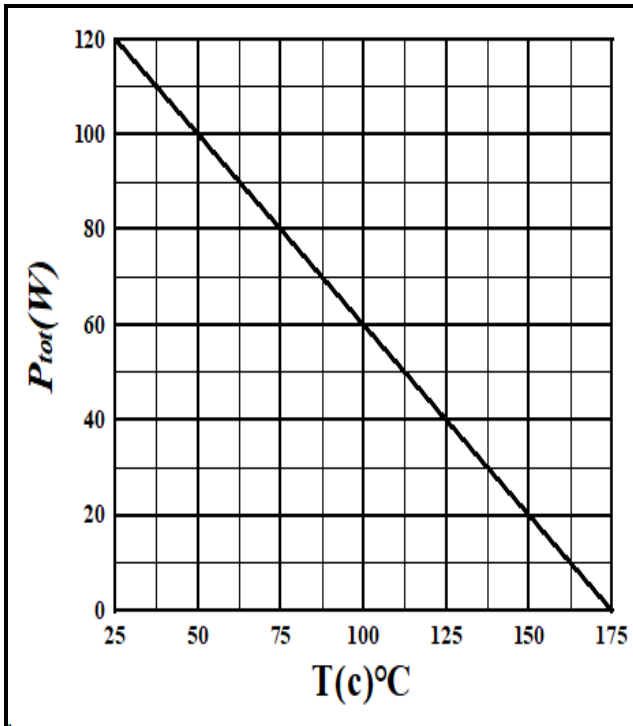


Figure 5. Power derating

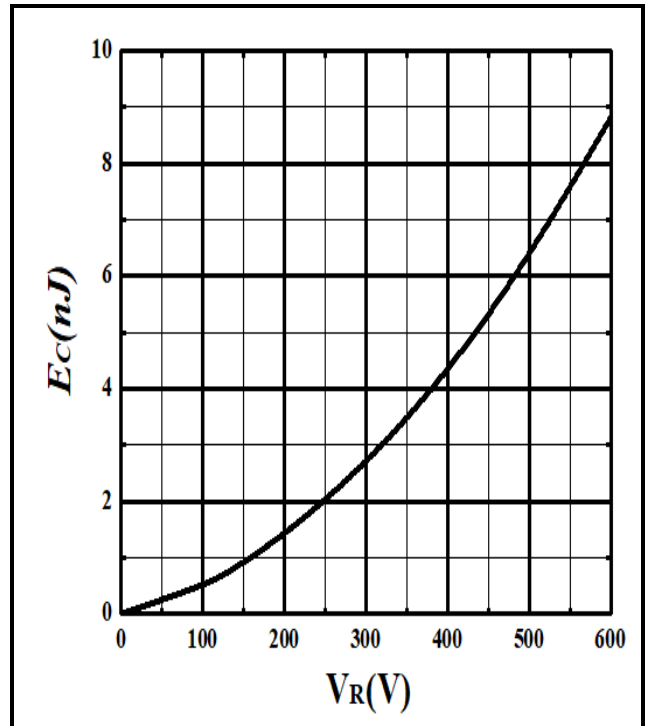


Figure 6. Capacitance stored energy

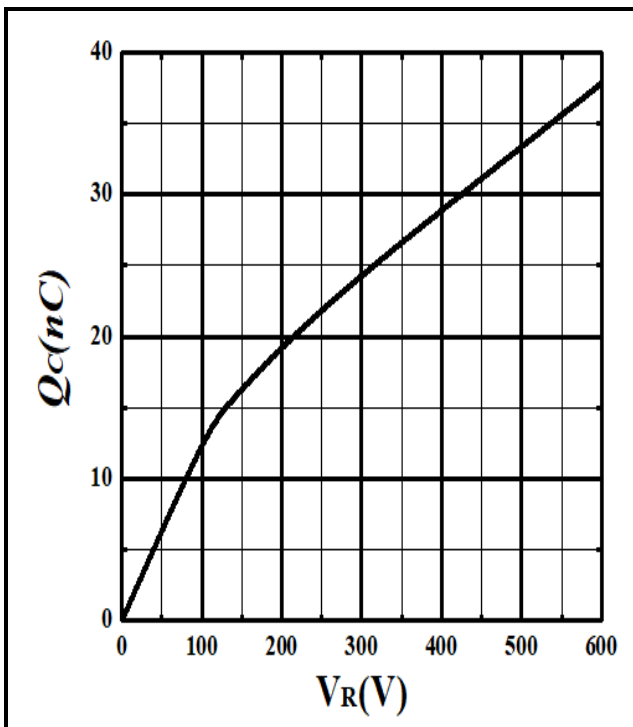
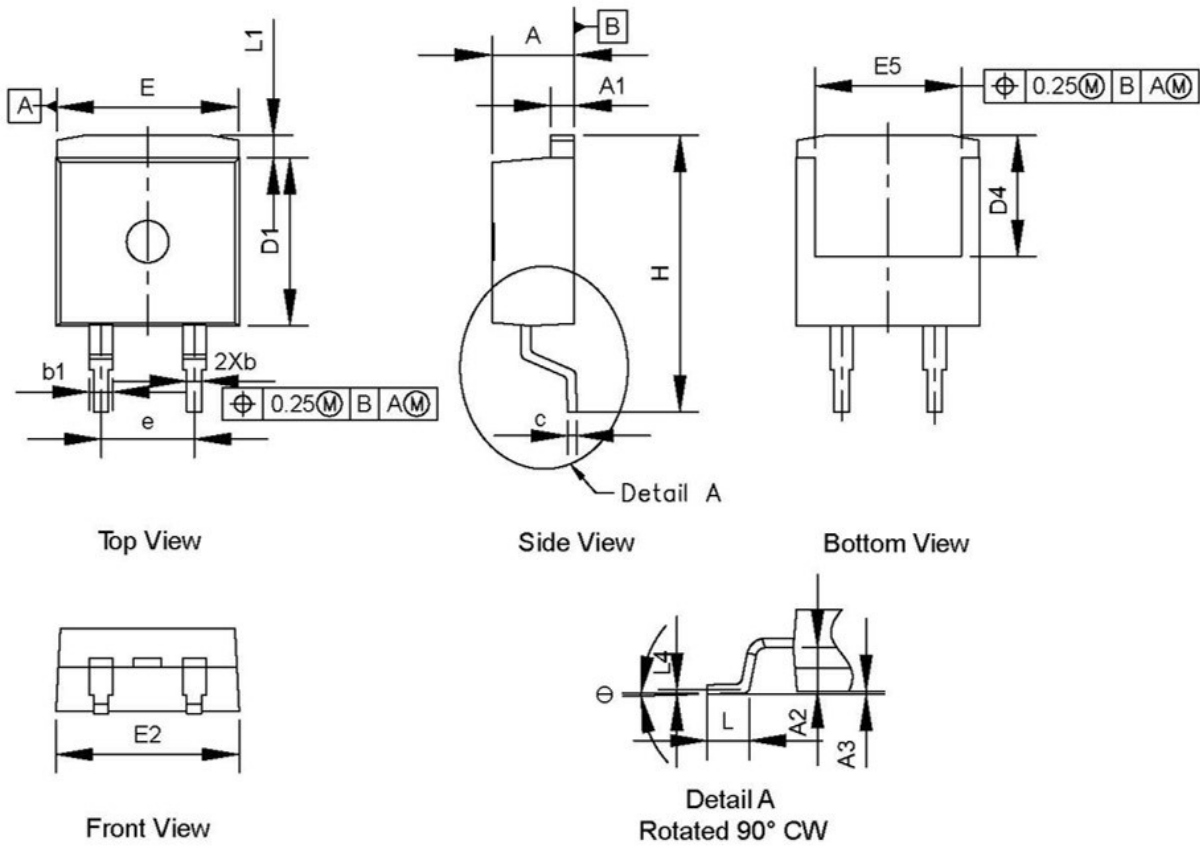


Figure 7. Total capacitance charge vs. reverse voltage

Package Information

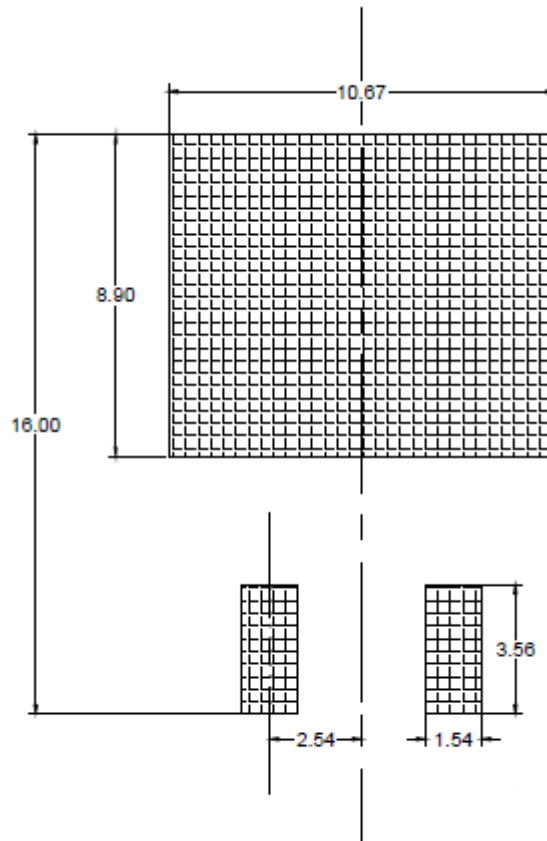


Dimension unit: [mm]

Symbol	Min	Nom	Max
A	4.30	4.50	4.70
A1	1.15	1.30	1.45
A2	2.20	2.40	2.90
A3	0.00	0.13	0.25
b	0.70	0.80	0.95
b1	1.20	1.27	1.36
c	0.40	0.50	0.60
D1	8.59	9.20	9.40
D4	6.60	-	-
E	9.66	9.90	10.28
E2	9.80	10.00	10.20
E5	7.50	-	8.50
e	5.08 BSC		
H	14.70	15.10	15.50
L	2.00	2.30	2.60
L1	-	-	1.676
L4	0.25 BSC		
θ	0°	-	8°

Recommended Solder Pad Layout

Note: All dimensions are in mm



TO-263-2L

Ordering Information

Part number	SDS065J010E3-ISARH
Package	TO-263-2L
Unit quantity	800 EA
Packing type	Tape & Reel

Important Notices – Read Carefully

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