JP065002D3 Specifications

jP^X

3rd Generation 650V/2A SiC Schottky Barrier Diode

1. Basic Information

1.1. General Description

The JP065002D3 SiC Schottky Barrier Diode (SBD) has been developed using JPX'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.

1.2. Features

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

1.3. Applications

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

1.4. Specifications

Device	V$_{RRM}$	I$_F$ (135°C)	V$_F$ (25°C)	Q$_C$
JP065002D3	650V	5A	1.30V	6.8nC
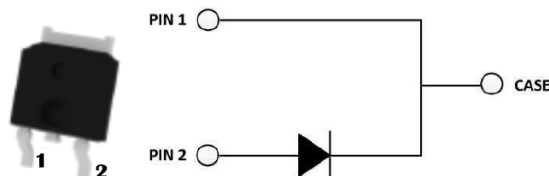
Package Type : TO-252-2L

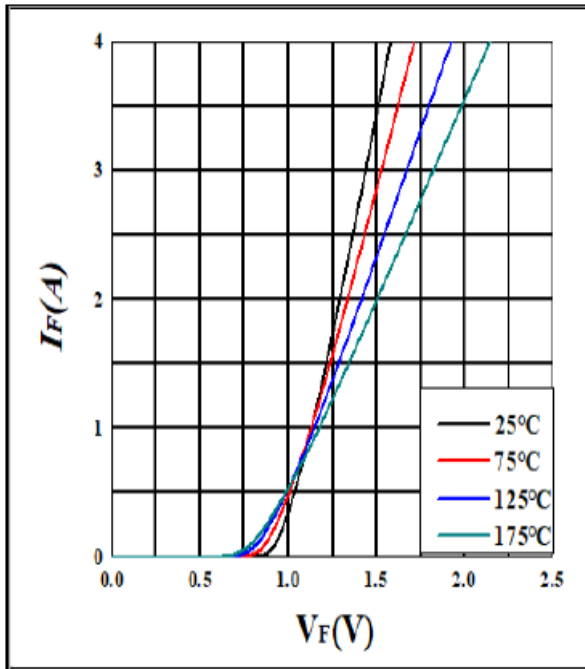## 1.5. Electrical Characteristic Diagrams

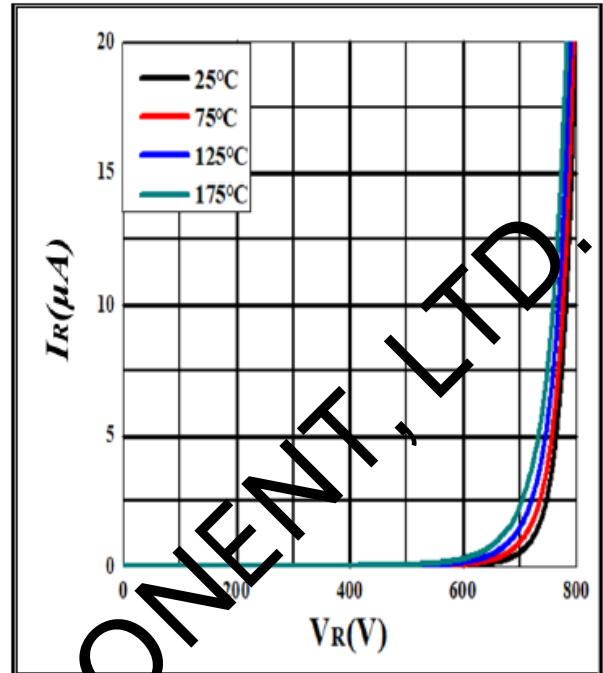Figure 1. Forward characteristics

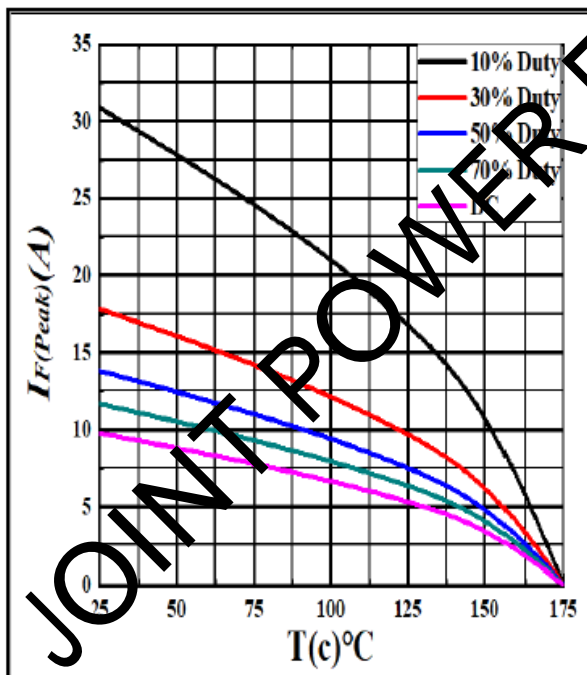

Figure 2. Reverse characteristics

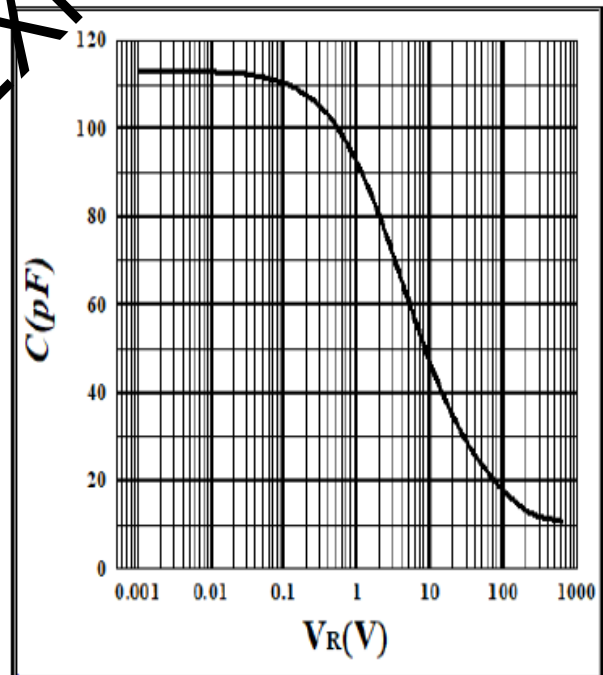Figure 3. Current derating

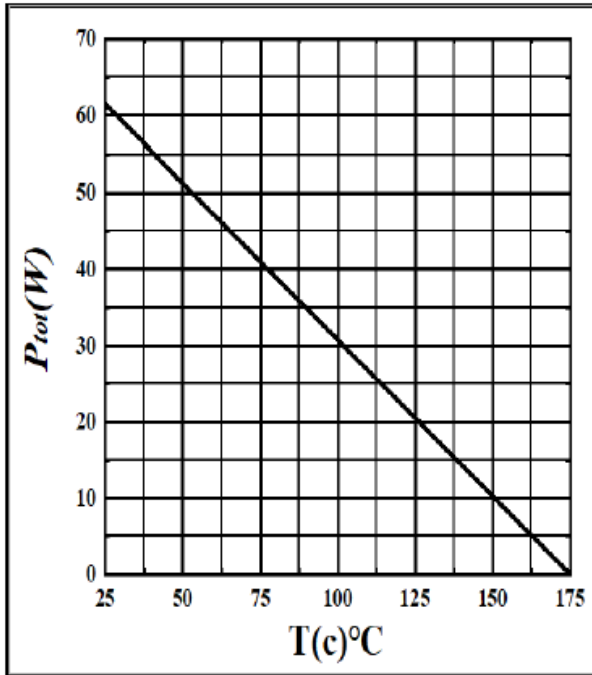Figure 4. Capacitance vs. reverse voltage
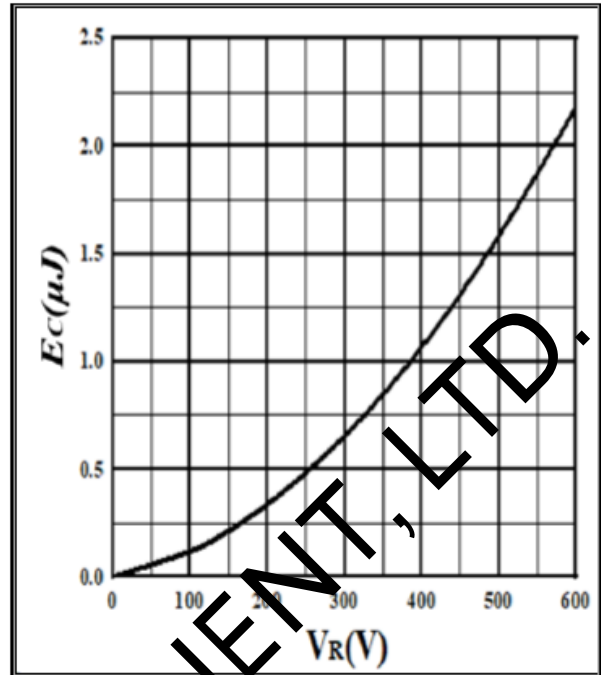
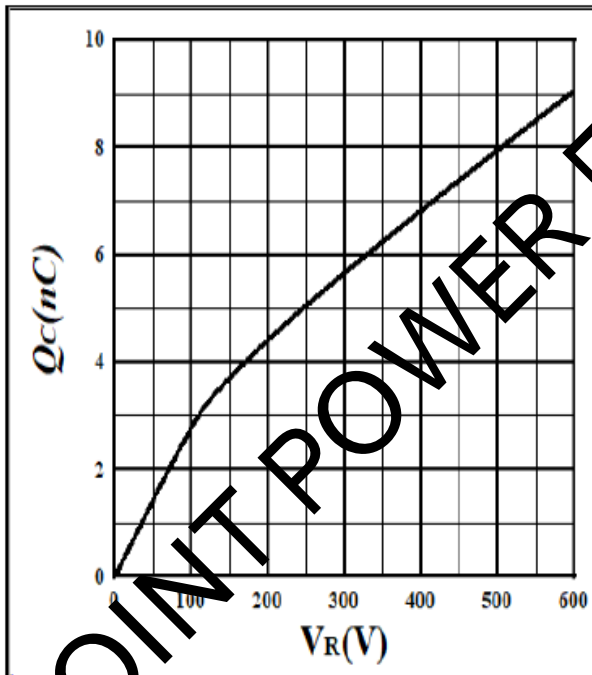Figure 5. Power derating

Figure 6. Capacitance stored energy
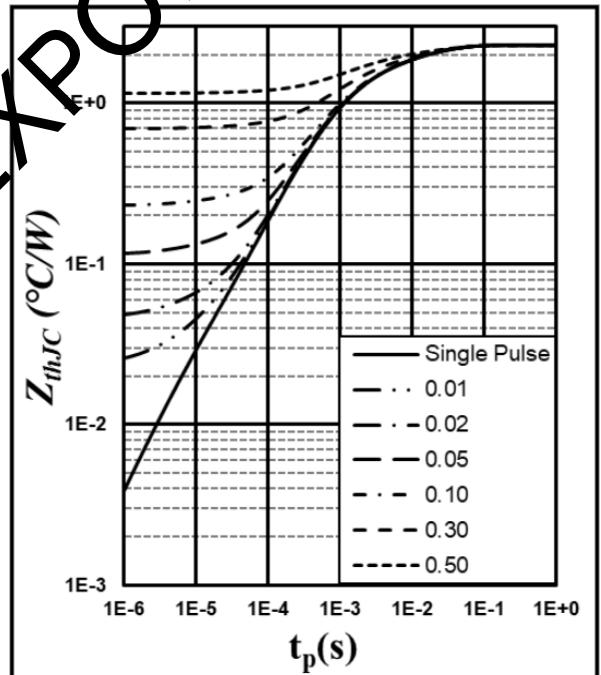

Figure 7. Total capacitance charge vs. reverse voltage

Figure 8. Transient Thermal Impedance (Junction - Case)

1.6. Absolute 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°C
Surge peak reverse voltage	V_{RSM}	650	V	T_C = 25°C
DC reverse voltage	V_{DC}	650	V	T_C = 25°C
Continuous forward current	I_F	9	A	T_C = 25°C
		5		T_C = 135°C
		2		T_C = 155°C
Surge non-repetitive forward current	I_{FSM}	21	A	T_C = 25°C, t_p = 10ms, half sine pulse
Surge repetitive forward current	I_{FRM}	14	A	T_C = 25°C, t_p = 10ms, half sine wave D = 0.1
Power dissipation	P_{tot}	61	W	T_C = 25°C
i²t value	$\int i^2 dt$	2.2	A²s	T_C = 25°C, t_p = 10ms
Operating junction temperature	T_j	-55~175	°C	
Storage temperature	T_{stg}	-55~175	°C	

1.7. Thermal Resistance

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$R_{th(j-c)}$	Thermal resistance from junction to case		/	2.44	/	°C/W

1.8. Static Electrical Characteristics

(Tj = 25°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_{DC}	DC blocking voltage	I_R = 100 µA	650	/	/	V
V_F	Forward voltage	I_F = 2A, Tj = 25°C	/	1.30	1.50	V
		I_F = 2A, Tj = 175°C	/	1.55	1.80	
I_R	Reverse current	V_R = 650V, Tj = 25°C	/	1	8	µA
		V_R = 650V, Tj = 175°C	/	2	16	

1.9. Dynamic Electrical Characteristics

(Tj = 25°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
C	Total capacitance	$V_R = 0V$, f = 1MHz	/	113	/	pF
		$V_R = 200V$, f = 1MHz	/	13	/	
		$V_R = 400V$, f = 1MHz	/	11	/	
Q_C	Total capacitive charge	$V_R = 400V$	/	6.8	/	nC
E_C	Capacitance stored energy	$V_R = 400V$	/	1.0	/	µJ

2. Package Information

Top View   Side View   Bottom View

Front View   Lead of Side View
3: 1
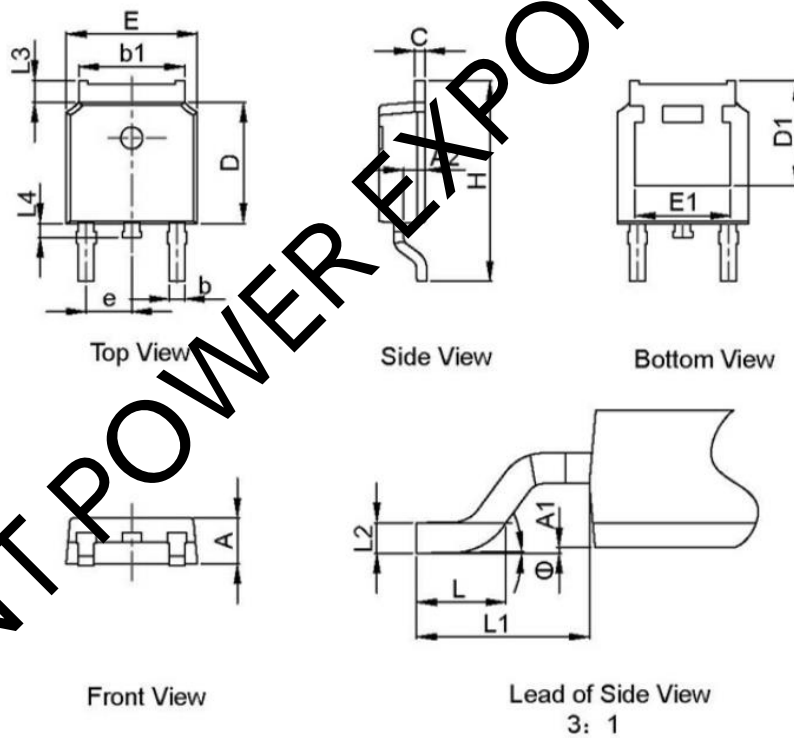
Dimension unit: [mm]			
Symbol	Min	Nom	Max
A	2.20	2.30	2.38
A1	0	-	0.127
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b1	5.20	5.33	5.46
c	0.43	0.53	0.61
D	5.98	6.10	6.22
D1	5.30 REF		
E	6.40	6.60	6.73
E1	4.63	-	-
e	2.286 BSC		
H	9.40	10.10	10.50
L	1.38	1.50	1.75
L1	2.743 REF		
L2	0.51 BSC		
L3	0.88	-	1.28
L4	0.50	-	1.0
Θ	0°	-	8°

3. Recommended Solder Pad Layout

All dimensions are in mm.
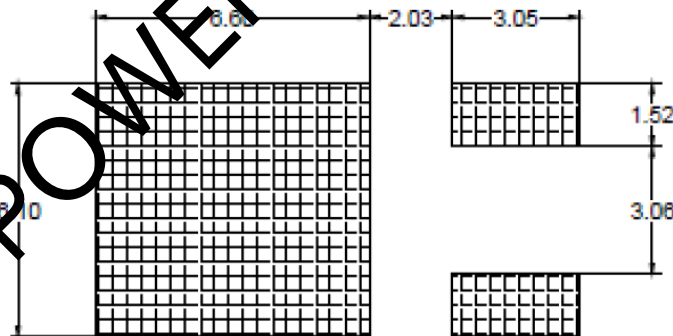
4. Ordering Information

Part Number	JP065002D3
Package	TO-252-2L
Unit Quantity	2500 EA
Packing Type	Tape & Reel

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