

DESCRIPTION

SiC Schottky Diode has no switching loss, provides improved system efficiency against Si diodes by utilizing new semiconductor material-Silicon Carbide, enables higher operating frequency, and helps increasing power density and reduction of system size /cost. Its high reliability ensures robust operation during surge or over_voltage conditions.

FEATURES

- Max Junction Temperature 175°C
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery/No Forward Recovery

MECHANICAL DATA

- Case: JEDEC DFN5×6
- Molding compound meets UL94V-0 flammability rating
- Terminals: Lead solderable per J-STD-002 and JESD22-B102
- Polarity: As marked

TYPICAL APPLICATIONS

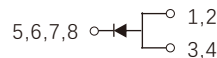
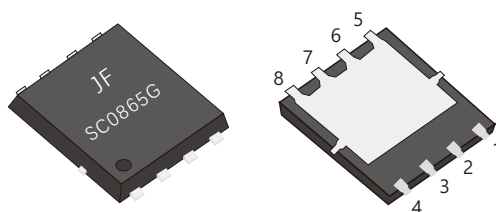
- SMPS, Solar inverter, UPS
- Power Switching Circuits
- Power Factor Correction

KEY PERFORMANCE AND PACKAGE PARAMETERS

Type	V _{DC}	I _F	Q _c	T _J ,max	Package
SC0865G	650V	8A	22nC	175°C	DFN5×6

DFN5×6

SC0865G



MAXIMUM RATINGS

(Ratings at 25°C ambient temperature unless otherwise specified)

Parameter	Symbol	Value	Unit
Maximum Repetitive Peak Reverse Voltage	V_{RRM}	650	V
Continuous Forward Current for $R_{th(j-c)}$	I_F	8($T_c \leq 153^\circ\text{C}$)	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse, $t_p=8.3\text{ms}$)	I_{FSM}	50(25°C)	A
I^2t value	$\int I^2T$	10.4(25°C)	A^2S
Diode dv/dt ruggedness ($V_R=0\ldots 650\text{V}$)	dv/dt	80	V/ns
Power dissipation for $R_{th(j-c,max)}$ ($T_c=25^\circ\text{C}$)	P_{tot}	188	W
Operating junction temperature range	T_j	$-55\ldots 175$	$^\circ\text{C}$
Storage temperature range	T_{stg}	$-55\ldots 175$	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Parameter	Symbol	DFN5×6	Unit
Diode thermal resistance junction-case	$R_{th(j-c)}$	0.8	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS (T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
DC blocking voltage	V _{DC}	T _J =25...175 °C	650	-	-	V
Diode forward voltage	V _F ¹⁾	I _F =8A T _J =25°C I _F =8A T _J =175 °C	- -	1.4 1.7	1.65 2.3	V
Reverse current	I _R ²⁾	V _R =650V T _J =25°C V _R =650V T _J =175°C	- -	- -	20 100	uA

Notes: 1.Pulse test: 300 μs pulse width,1% duty cycle

2.Pulse test: pulse width≤40ms

DYNAMIC CHARACTERISTICS(at T_J=25°C,unless otherwise specified)

Parameter	Symbol	conditions	Value			Unit
			min	typ	max	
Total capacitivecharge	Q _c	V _R =650V,I _F =8A di/dt=200A/uS	-	22	-	nC
Total capacitance	C _j	V _R =0V,f=1MHz V _R =200V,f=1MHz V _R =400V,f=1MHz		520 50 41		pF

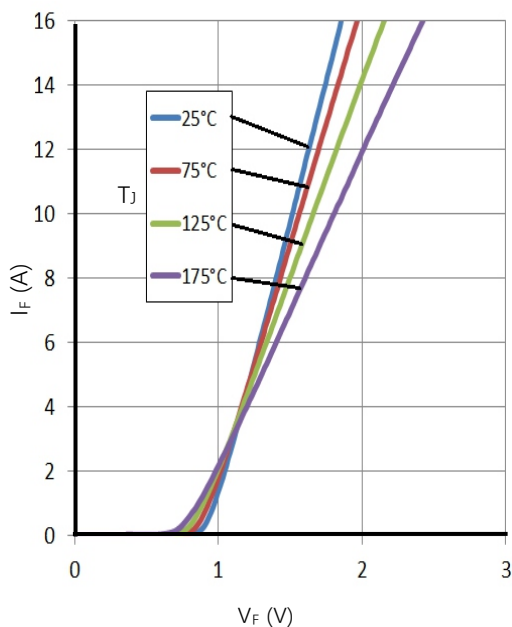


Figure 1. Forward Characteristics

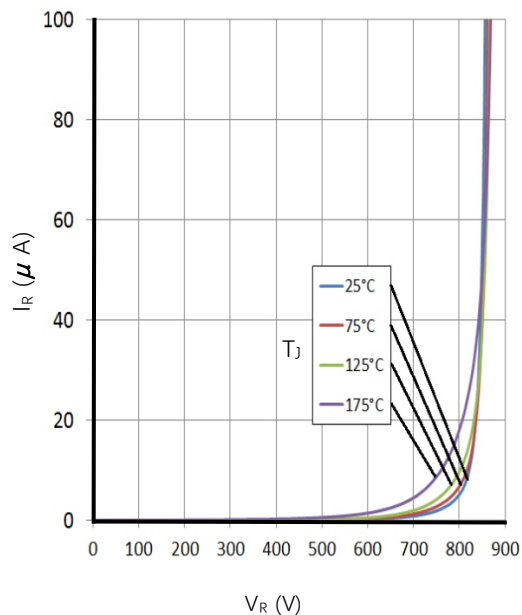


Figure 2. Reverse Characteristics

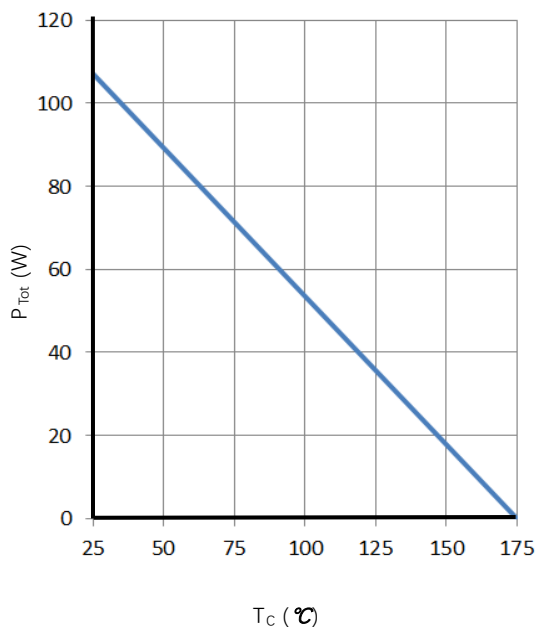


Figure 3. Power Derating

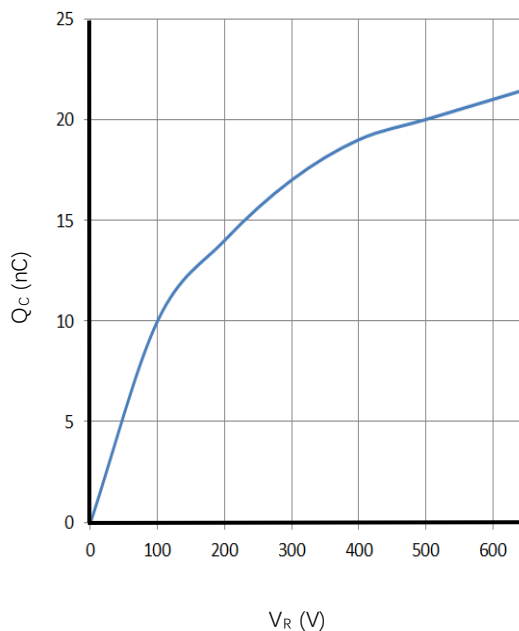


Figure 4. Total Capacitive Charge vs. Reverse Voltage

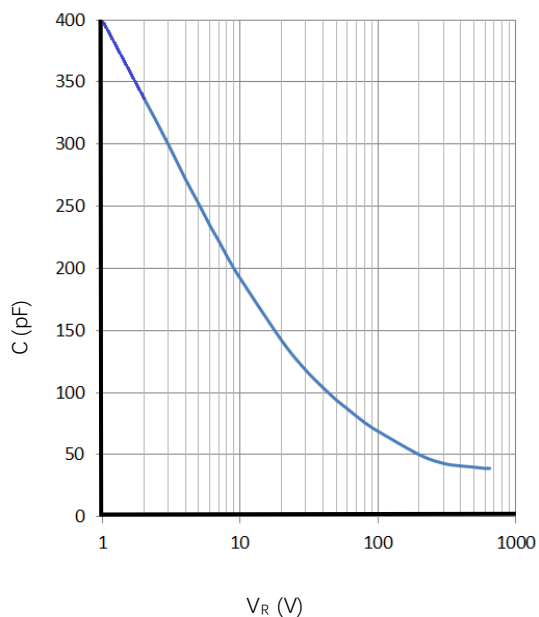


Figure 5. Total Capacitance vs. Reverse Voltage

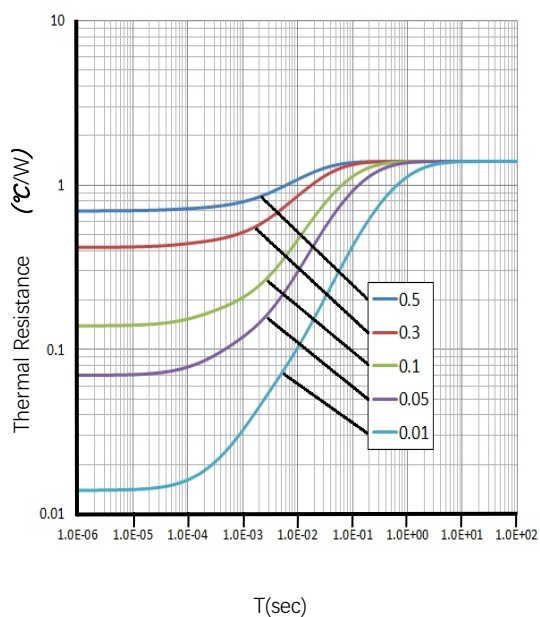


Figure 6. Transient Thermal Impedance

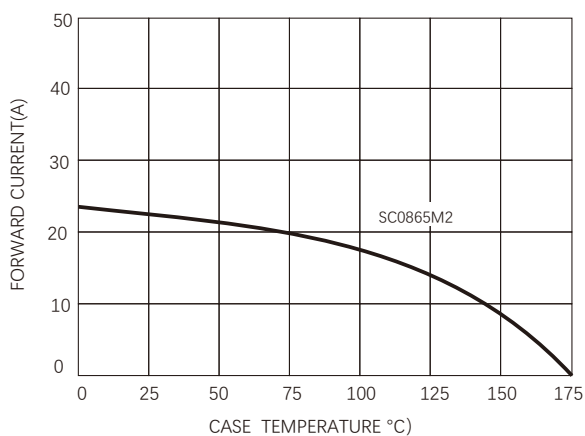
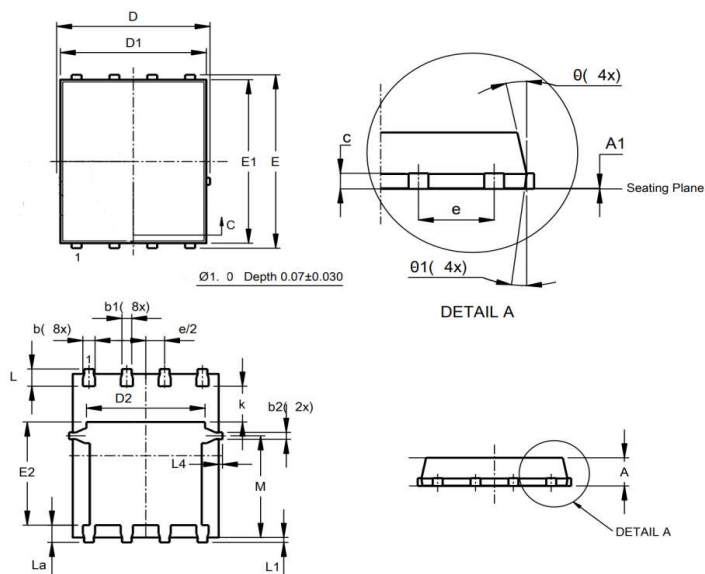


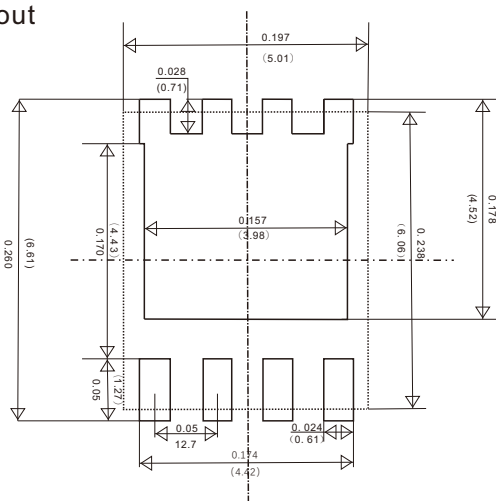
Figure.7-Forward Current Derating Curve

DFN5×6 PACKAGE OUTLINE DIMENSIONS



Dim	Min	Max	Type
A	0.90	1.10	1.00
b	0.23	0.41	0.32
b1	0.24	0.30	0.27
b2	0.16	0.32	0.23
c	0.17	0.27	0.22
D	-	-	5.01
D1	4.80	4.95	4.88
D2	-	-	3.98
E	-	-	6.06
E1	5.72	5.82	5.77
E2	3.42	3.52	3.47
k	-	-	1.33
L	0.56	0.66	0.61
La	0.57	0.67	0.63
L1	0.06	0.15	0.11
L4	-	-	0.06
M	3.00	3.20	3.08
Φ	10	11	10.39

Suggested Pad Layout



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