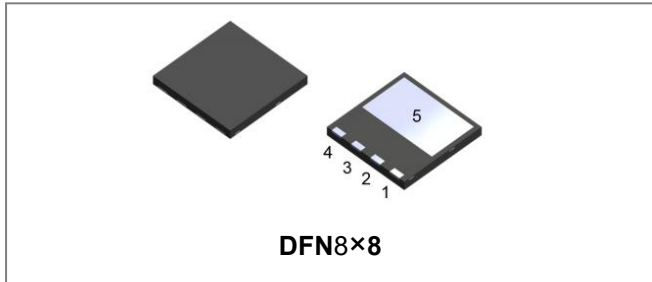


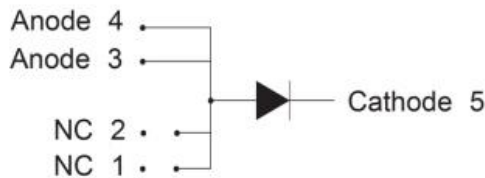
S3D03065L 650V SiC POWER SCHOTTKY RECTIFIER



Description

S3D03065L is a SiC Schottky rectifier packaged in DFN8×8 case. The device is a high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S3D03065L is ideal for energy sensitive, high frequency applications in challenging environments.

Circuit Diagram



Features

- 175°C T_J operation
- Ultra-low switching loss
- Switching speeds independent of operating temperature
- Low total conduction losses
- High forward surge current capability
- High package isolation voltage
- Terminals finish: 100% Pure Tin
- “-A” is an AEC-Q101 qualified device
- Pb – Free Device
- All SMC parts are traceable to the wafer lot
- Additional electrical and life testing can be performed upon request

Applications

- Alternative energy inverters
- Power Factor Correction (PFC)
- Free-Wheeling diodes
- Switching supply output rectification
- Reverse polarity protection

Maximum Ratings

Characteristics	Symbol	Condition	Max.	Units
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_{DC}	-	650	V
Average Rectified Forward Current	$I_{F(AV)1}$	T _C =25°C	17	A
	$I_{F(AV)2}$	T _C =136°C	8	A
	$I_{F(AV)3}$	T _C =157°C	3	A
Repetitive Peak Forward Surge Current	I_{FRM1}	10ms, Half Sine pulse, T _C =25°C	23	A
	I_{FRM2}	10ms, Half Sine pulse, T _C =110°C	15	A
Peak One Cycle Non-Repetitive Surge Current	I_{FSM1}	10ms, Half Sine pulse, T _C =25°C	46	A
	I_{FSM2}	10ms, Half Sine pulse, T _C =110°C	23	A
Non-Repetitive Peak Forward Surge Current	$I_{F,Max1}$	10µs. Pulse, T _C =25°C	390	A
	$I_{F,Max2}$	10µs. Pulse, T _C =110°C	265	A
Power Dissipation	P_{tot1}	T _C =25°C	60	W
	P_{tot2}	T _C =110°C	26	W

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V_{F1}	@ 3A, Pulse, $T_J = 25^\circ\text{C}$	1.4	1.7	V
	V_{F2}	@ 3A, Pulse, $T_J = 175^\circ\text{C}$	1.6	2.0	V
Reverse Current*	I_{R1}	@ $V_R = \text{rated } V_R$ $T_J = 25^\circ\text{C}$	0.03	2	μA
	I_{R2}	@ $V_R = \text{rated } V_R$ $T_J = 175^\circ\text{C}$	0.3	20	μA
Junction Capacitance	C_T	$V_R=0\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$	230	-	pF
Reverse Recovery Charge	Q_c	$I_F = 3\text{A}$, $di/dt = 200\text{A}/\mu\text{s}$ $V_R = 400\text{V}$, $T_J = 25^\circ\text{C}$	14.35	-	nC
Capacitance Stored Energy	E_C	$V_R = 400\text{V}$, $T_J = 25^\circ\text{C}$	3.51	-	μJ

* Pulse width < 300 μs , duty cycle < 2%

Thermal-Mechanical Specifications:

Characteristics	Symbol	Condition	Specification	Units
Junction Temperature	T_J	-	-55 to +175	$^\circ\text{C}$
Storage Temperature	T_{stg}	-	-55 to +175	$^\circ\text{C}$
Typical Thermal Resistance Junction to Case	$R_{\theta JC}$	DC operation	2.5	$^\circ\text{C}/\text{W}$

Marking Diagram


Where XXXXX is YYWWL

S3D = Device Type
 L = Package type
 03 = Forward Current (3A)
 065 = Reverse Voltage (650V)
 SSG = SSG
 YY = Year
 WW = Week
 L = Lot Number

Cautions: Molding resin
 Epoxy resin UL:94V-0

Ordering Information

Device	Package	Shipping
S3D03065L	DFN 8×8	3000/Reel
S3D03065LTR	DFN 8×8	3000/Reel

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging Specification.

Ratings and Characteristics Curves

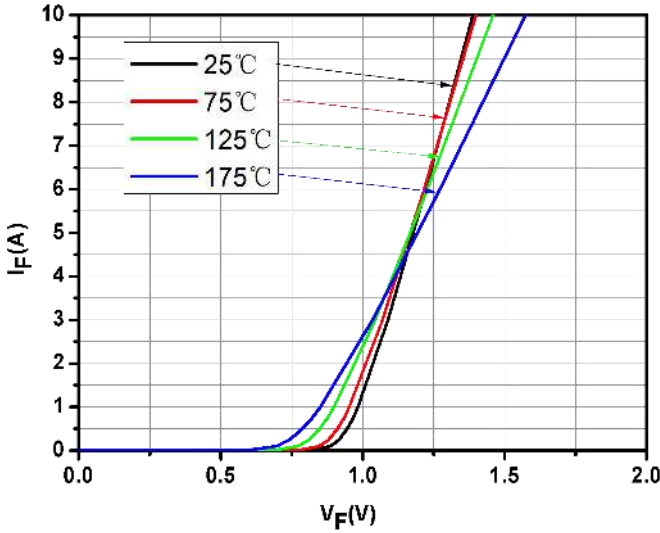


Fig.1-Typical Forward Voltage Characteristics

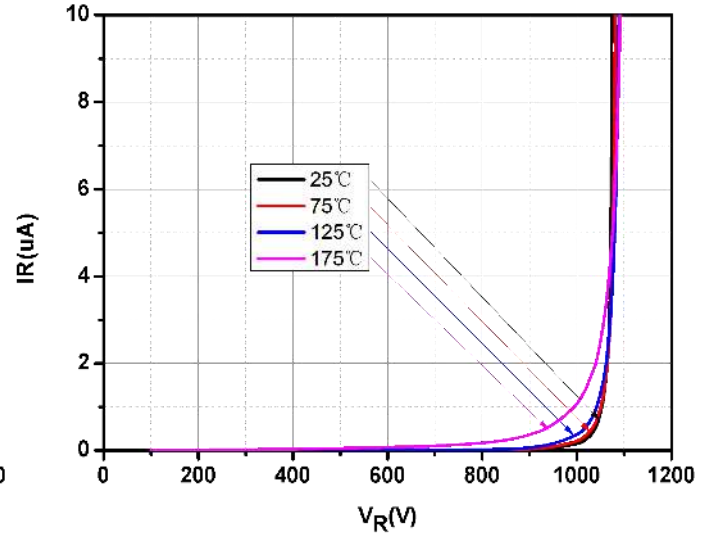


Fig.2-Typical Reverse Characteristics

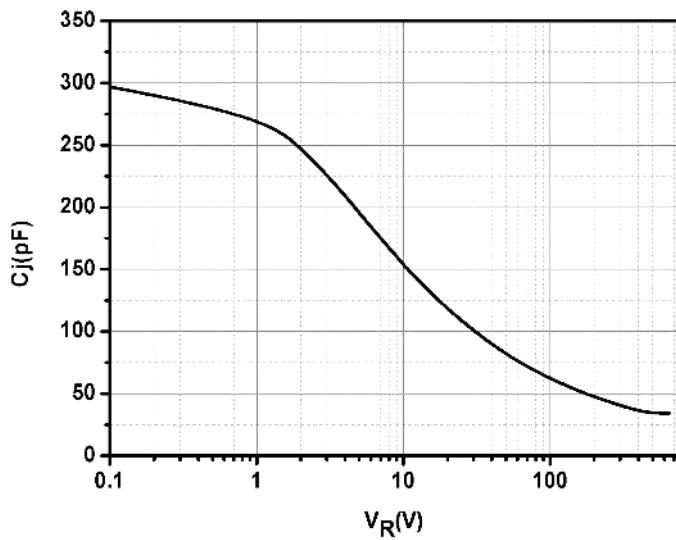


Fig.3-Capacitance vs. Reverse Voltage

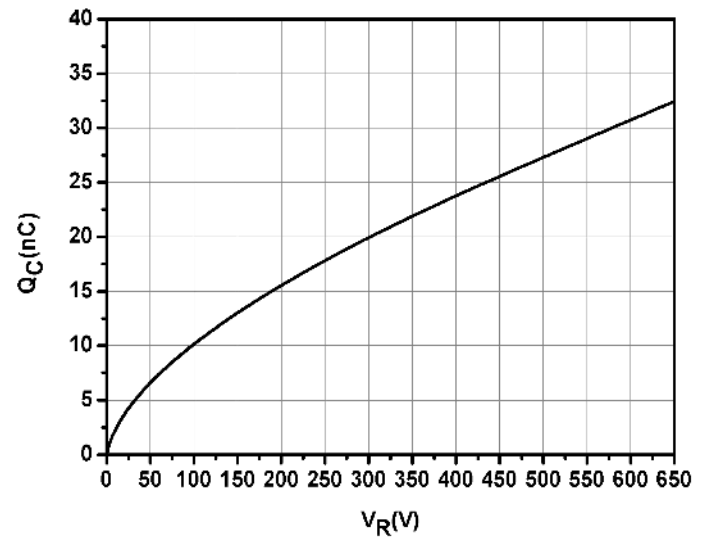


Fig.4-Total Capacitance Charge vs. Reverse Voltage

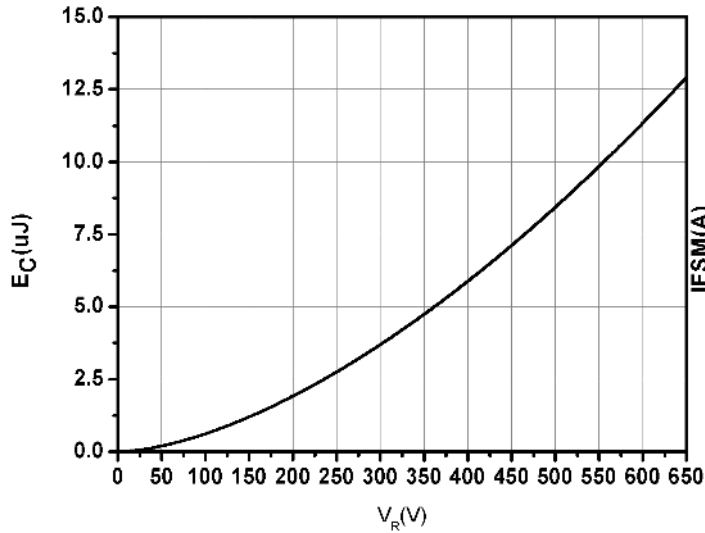


Fig.5-Capacitance Stored Energy

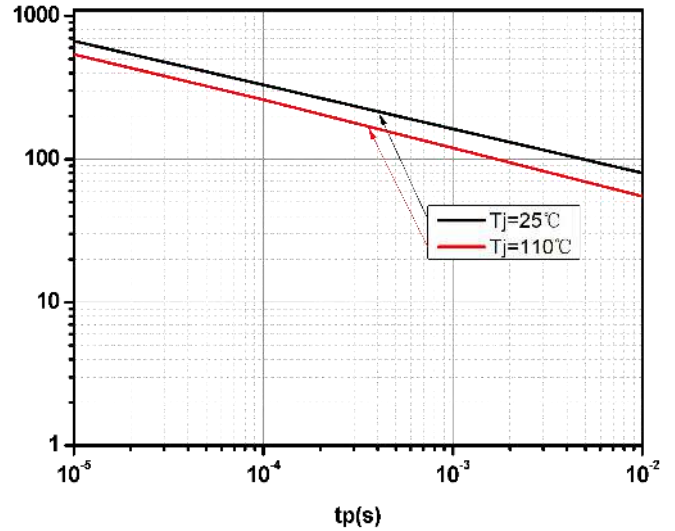


Fig.6-Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

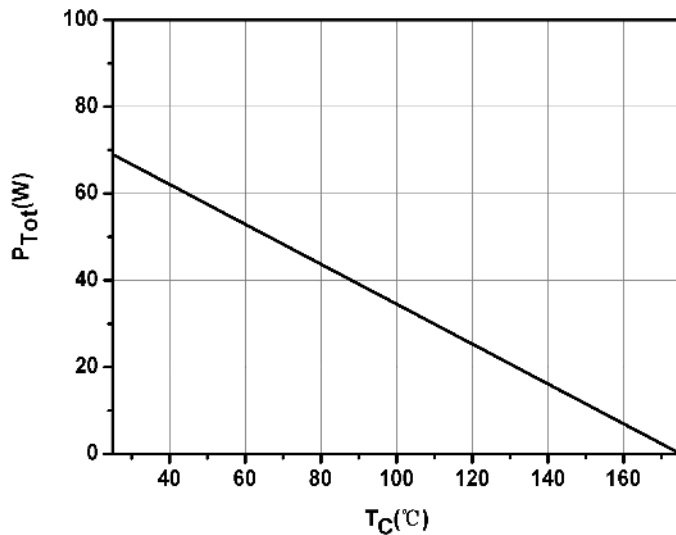


Fig.7-Power Derating

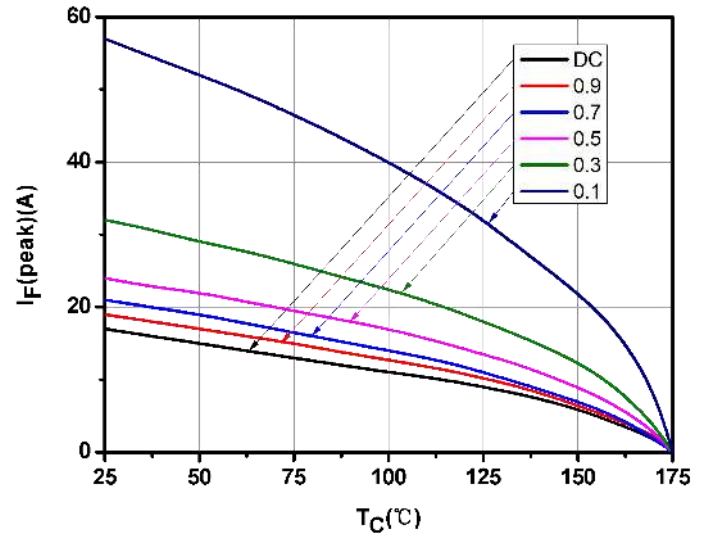
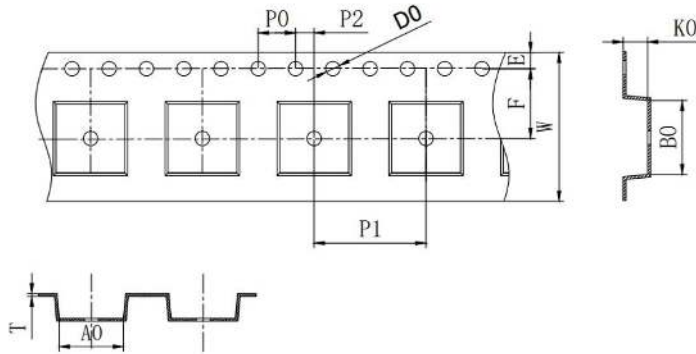


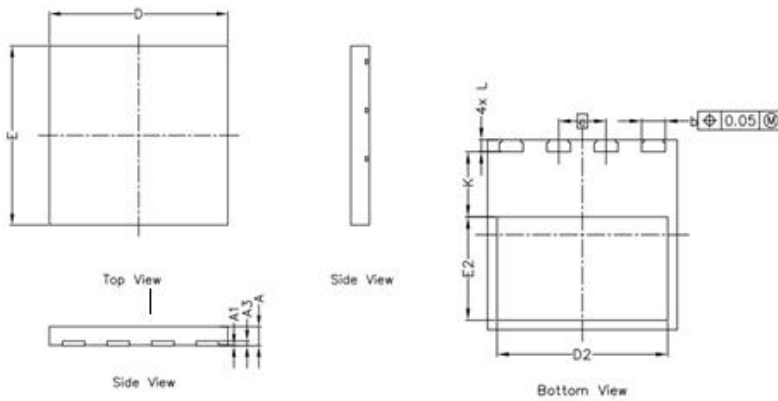
Fig.8-Current Derating

Carrier Tape & Reel Specification DFN8x8



SYMBOL	Millimeters	
	Min.	Max.
A0	8.30	8.50
B0	8.40	8.60
K0	1.20	1.40
P0	3.90	4.10
P1	11.90	12.10
P2	1.95	2.05
T	0.20	0.30
E	1.65	1.85
F	7.40	7.60
D0	1.50	1.60
D1	1.50	
W	15.70	16.30

Mechanical Dimensions DFN8x8



SYMBOL	Millimeters	
	Min.	Max.
A	0.800	0.900
A1	-	0.050
A3	0.195	0.211
D	7.900	8.100
E	7.900	8.100
e	2.00 BSC	
b	0.950	1.050
D2	7.100	7.300
E2	4.250	4.450
L	0.400	0.600
K	2.650	2.850



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