

S3D03065I

3A 650V SIC POWER SCHOTTKY RECTIFIERS



Description

This 650V 3A diode is high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S3D03065I is ideal for energy sensitive, high frequency applications in challenging environments.

Circuit Diagram



Features

- 175°C TJ 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@T_A=25°C unless otherwise specified

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 =135°C	8	A
	I _{F(AV)3}	T _c =165°C	3	A
Repetitive Peak Forward Surge Current	I _{FRM1}	10ms, Half Sine pulse, T _c =25°C	16	A
	I _{FRM2}	10ms, Half Sine pulse, T _c =110°C	14	A
Peak One Cycle Non-Repetitive Surge Current	I _{FSM1}	10ms, Half Sine pulse, T _c =25°C	27	A
	I _{FSM2}	10ms, Half Sine pulse, T _c =110°C	25	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	89	W
	P _{tot2}	T _c =110°C	39	W

Electrical Characteristics@T_A=25°C unless otherwise specified

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V _{F1}	@ 3A, Pulse, T _J = 25 °C	1.4	1.7	V
	V _{F2}	@ 3A, Pulse, T _J = 175 °C	1.6	2.0	V
Reverse Current*	I _{R1}	@V _R = rated V _R T _J = 25 °C	0.03	2	µA
	I _{R2}	@V _R = rated V _R T _J = 175 °C	0.3	20	µA
Junction Capacitance	C _T	V _R =0V, T _J =25°C, f=1MHz	230	-	pF
Reverse Recovery Charge	Q _c	I _F = 3A, di/dt = 200A/µs V _R = 400 V, T _J = 25°C	14.35	-	nC
Capacitance Stored Energy	EC	V _R = 400 V, T _J = 25°C	3.51	-	µJ

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



Thermal-Mechanical Specifications@T_A=25°C unless otherwise specified

Characteristics	Symbol	S3D03065I	Units
Junction Temperature	T _J	-55 to +175	°C
Storage Temperature	T _{stg}	-55 to +175	°C
Typical Thermal Resistance Junction to Case	R _{θJC}	3.3	°C/W

Ordering Information

Device	Package	Shipping
S3D03065I	TO-220-Isolation	50pcs / tube
S3D03065I-A	TO-220-Isolation	50pcs / tube

Ratings and Characteristics Curves

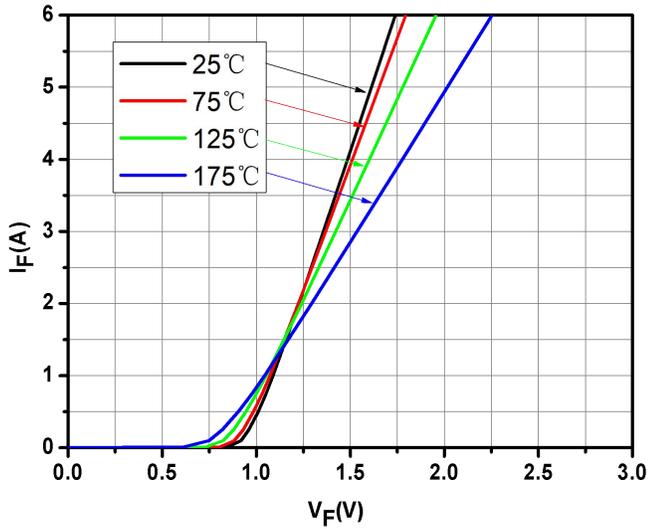


Fig.1-Typical Forward Voltage Characteristics

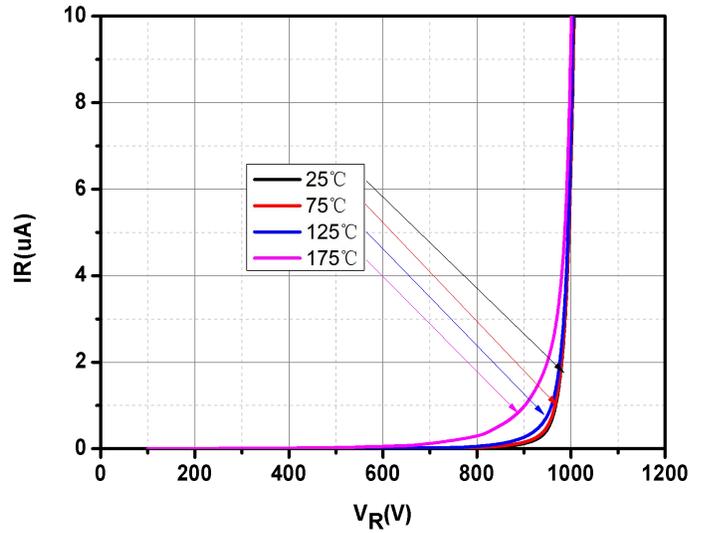


Fig.2-Typical Reverse Characteristics

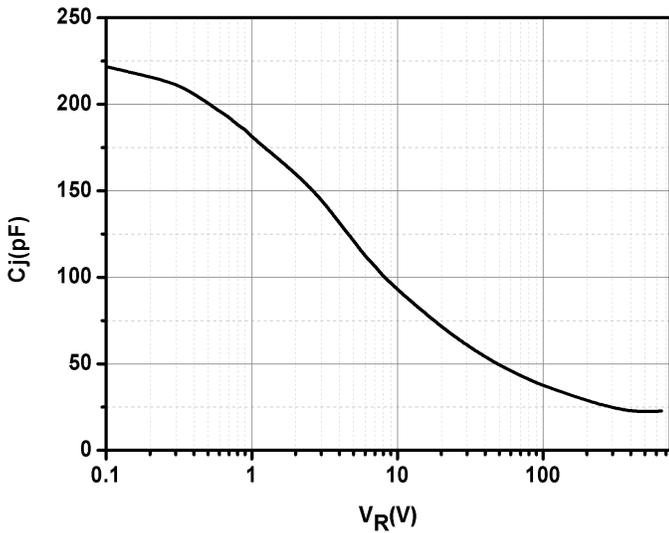


Fig.3-Capacitance vs. Reverse Voltage

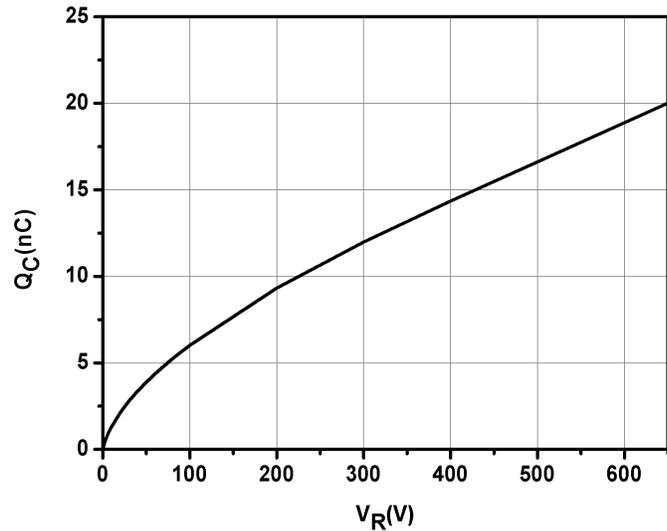


Fig.4-Total Capacitance Charge vs. Reverse Voltage

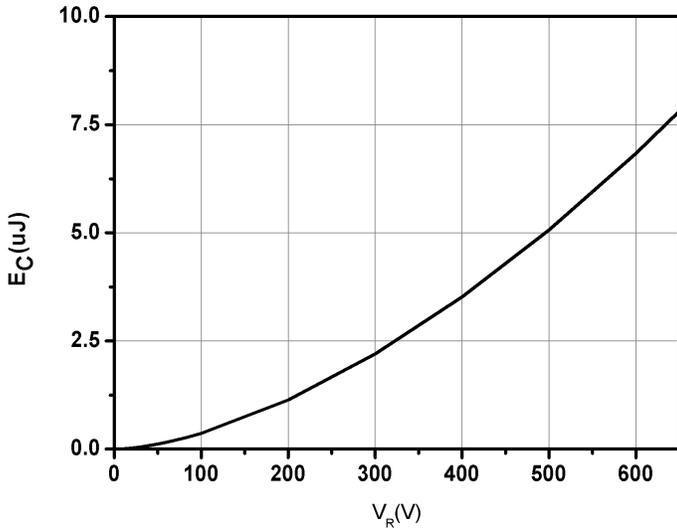


Fig.5-Capacitance Stored Energy

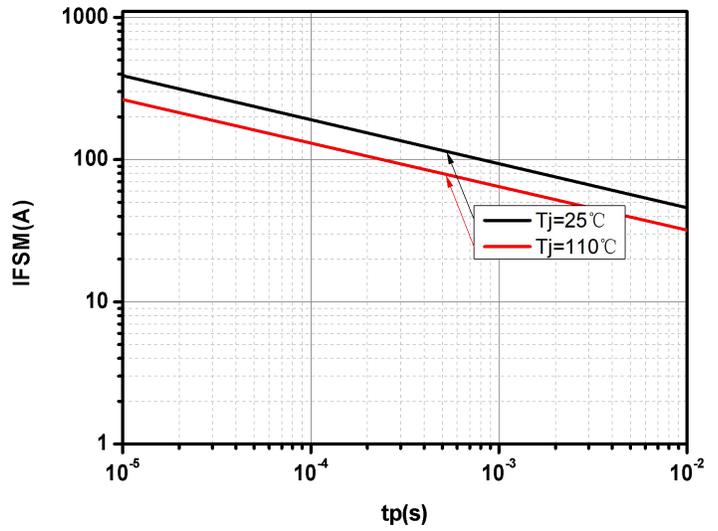


Fig.6-Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

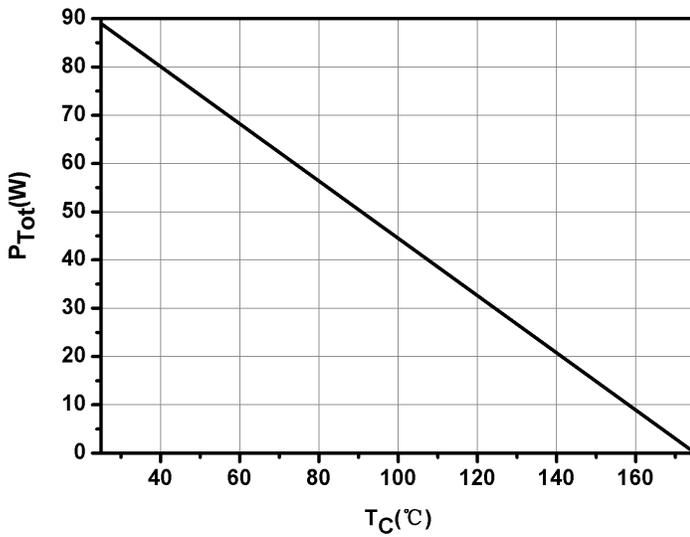


Fig.7-Power Derating

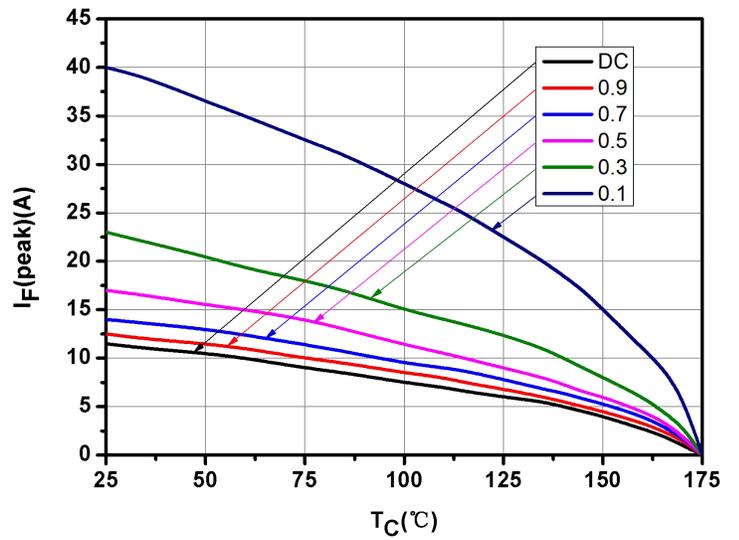


Fig.8-Current Derating

Marking Diagram

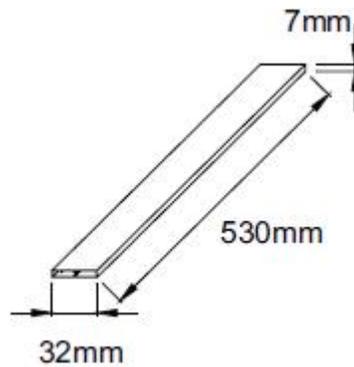


Where XXXXX is YYWWL

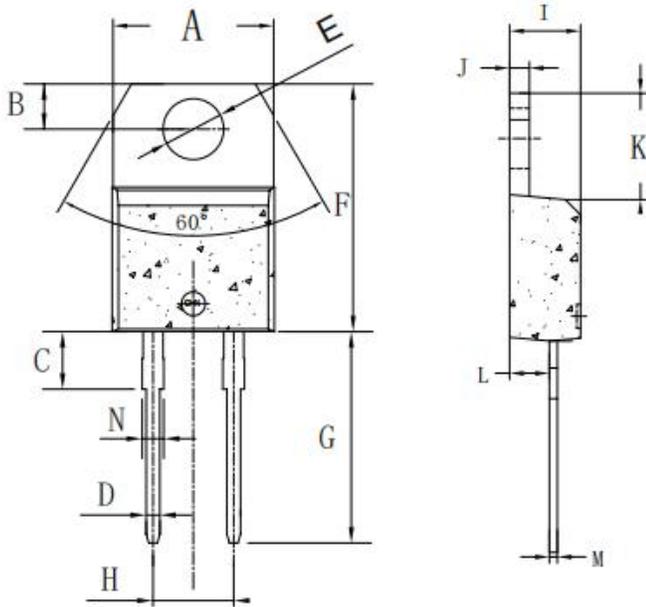
S3D = Device Type
I = Package type
03 = Forward Current (3A)
065 = Reverse Voltage (650V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

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

Tube Specification(TO-220-Isolation)



Mechanical Dimensions TO-220-Isolation



Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	9.7	-	10.4
B	2.65	-	3.1
C	2.8	-	4.2
D	0.7	-	0.92
E	3.75	-	3.95
F	14.8	-	16.1
G	13.05	-	13.6
H	4.9	-	5.3
I	4.38	-	4.61
J	1.15	-	1.36
K	5.85	-	6.82
L	2.35	-	2.75
M	0.35	-	0.65
N	1.18	-	1.42

Notes: New Mechanical Dimensions is performed from date code 25041.

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