

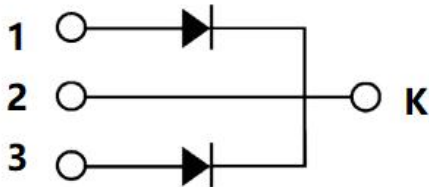
S3D10065E2 650V SiC POWER SCHOTTKY RECTIFIER



Description

S3D10065E2 is a SiC Schottky rectifier packaged in DPAK(TO-252-2) 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 S3D10065E2 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 _R	-	650	V
Average Rectified Forward Current	I _{F(AV)}	T _c =150°C	5 (per leg) 10 (per device)	A
Peak One Cycle Non-Repetitive Surge Current	I _{FSM}	10ms, Half Sine pulse, T _J =25°C	70(per leg)	A
Repetitive Peak Forward Surge Current	I _{FRM}	10 ms, Half Sine pulse , T _J =25°C	30(per leg)	A
Non-Repetitive Peak Forward Surge Current	I _{F,Max}	10µs. Pulse, T _J =25°C	700(per leg)	A
Power Dissipation	P _{tot}	T _J =25°C	103(per leg)	W

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V _{F1}	@ 5A, Pulse, T _J = 25 °C	1.4	1.7	V
	V _{F2}	@ 5A, Pulse, T _J = 175 °C	1.6	2.4	V
Reverse Current*	I _{R1}	@V _R = rated V _R T _J = 25 °C	0.002	8	uA
	I _{R2}	@V _R = rated V _R T _J = 175 °C	0.06	25	uA
Junction Capacitance	C _T	V _R =0V, T _J =25°C, f=1MHz	382	-	pF
Reverse Recovery Charge	Q _c	I _F = 6A, di/dt = 500A/μs V _R = 400 V, T _J = 25°C	23.8	-	nC
Capacitance Stored Energy	E _c	V _R = 400 V, T _J = 25°C	5.88	-	μJ

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

Thermal-Mechanical Specifications:

Characteristics	Symbol	Condition	Specification	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}	DC operation	3.0(per leg) 1.5(both leg)	°C/W

Marking Diagram


Where XXXXX is YYWWL

S3D = Device Type
 E2 = Package type
 10 = Forward Current (10A)
 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
S3D10065E2	DPAK(TO-252-2)	2500pcs / reel
S3D10065E2TR	DPAK(TO-252-2)	2500pcs / 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 (per leg)

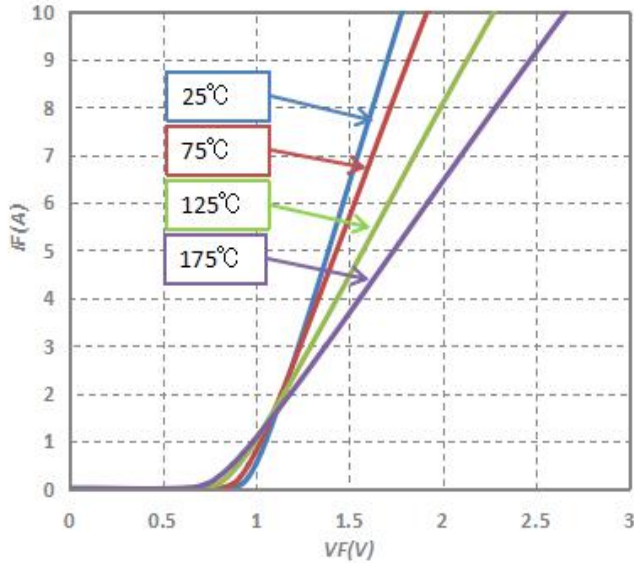


Fig.1-Typical Forward Voltage Characteristics

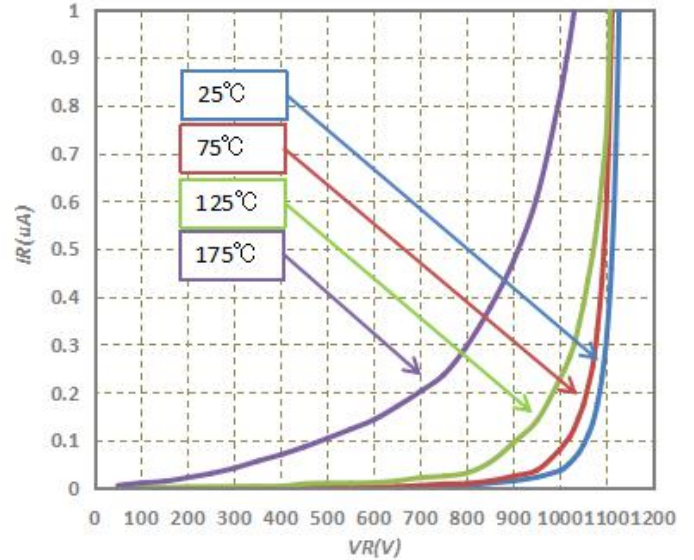


Fig.2-Typical Reverse Characteristics

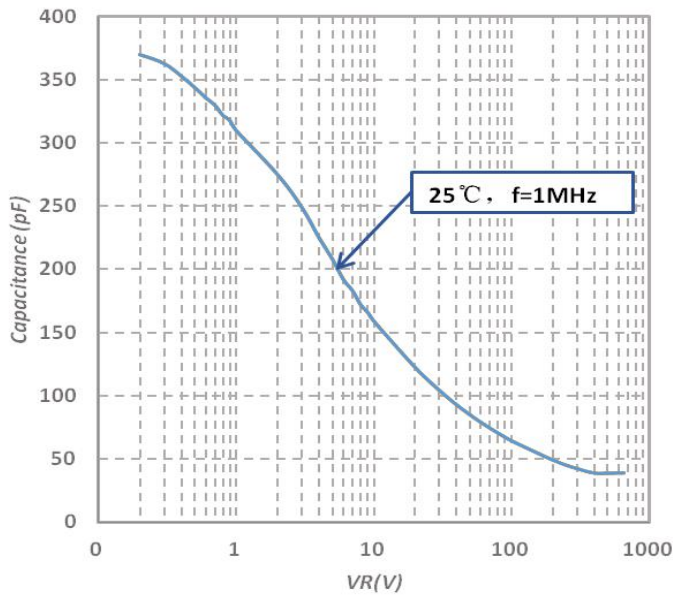


Fig.3-Capacitance vs. Reverse Voltage

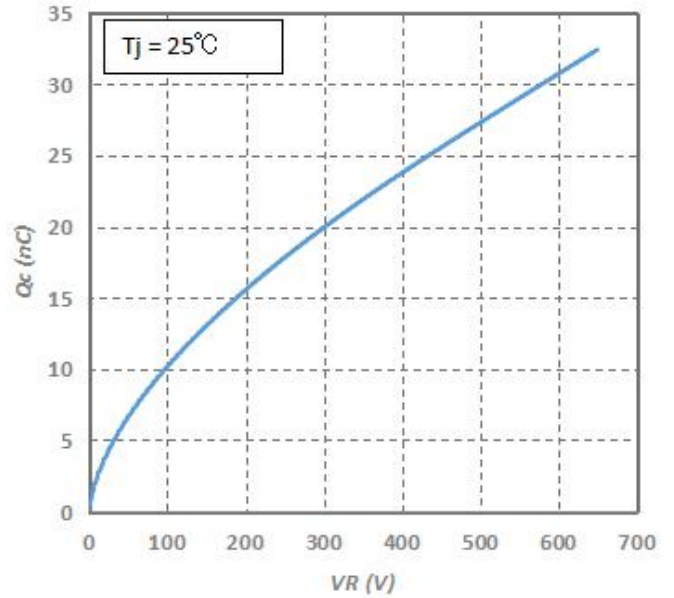


Fig.4-Total Capacitance Charge vs. Reverse Voltage

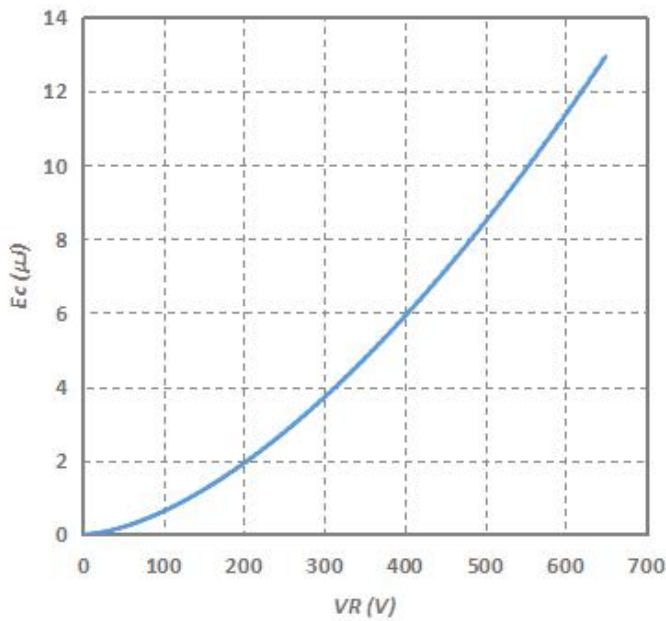


Fig.5-Capacitance Stored Energy

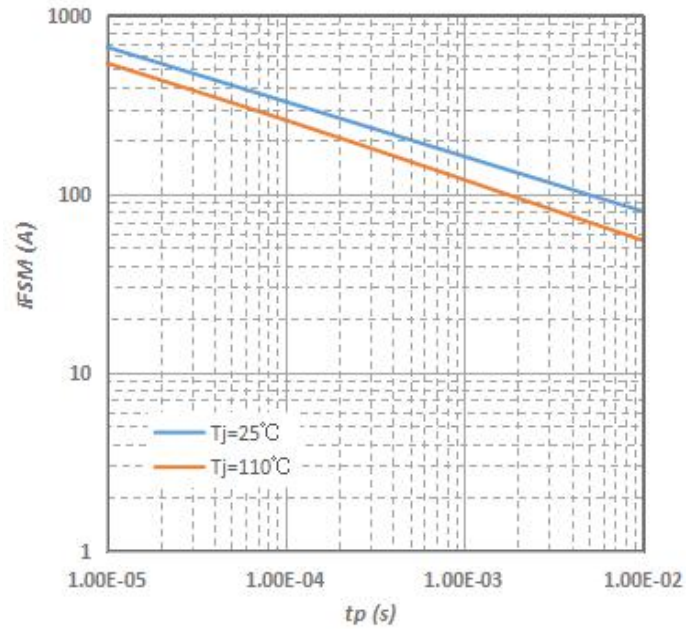


Fig.6-Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

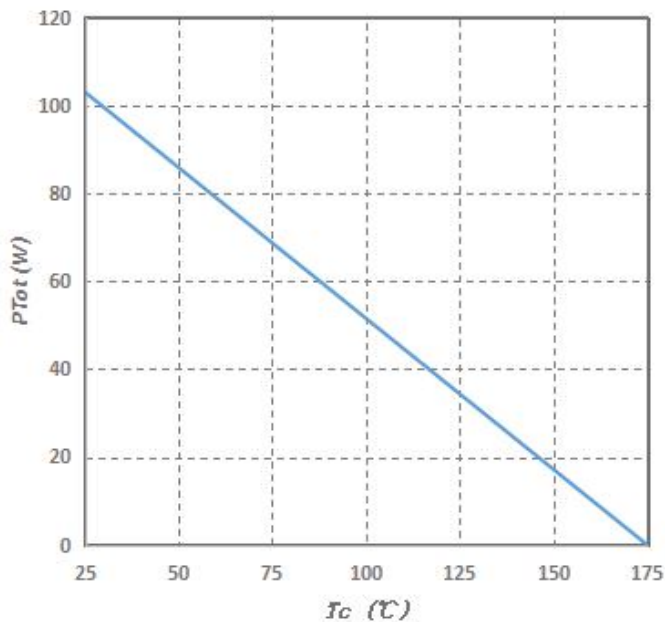


Fig.7-Power Derating

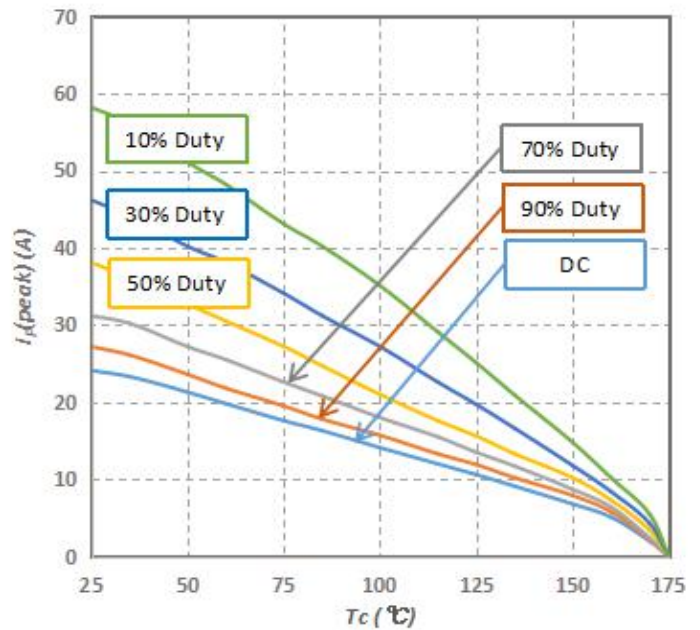
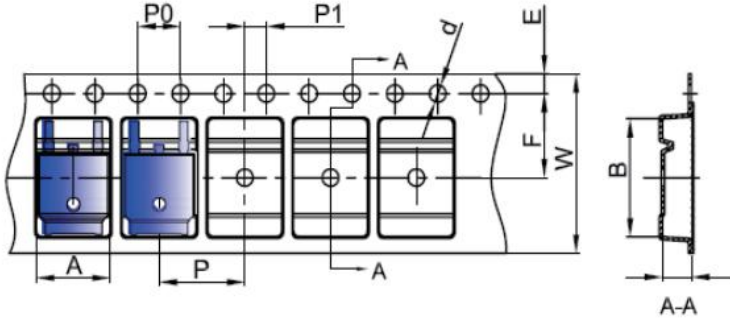


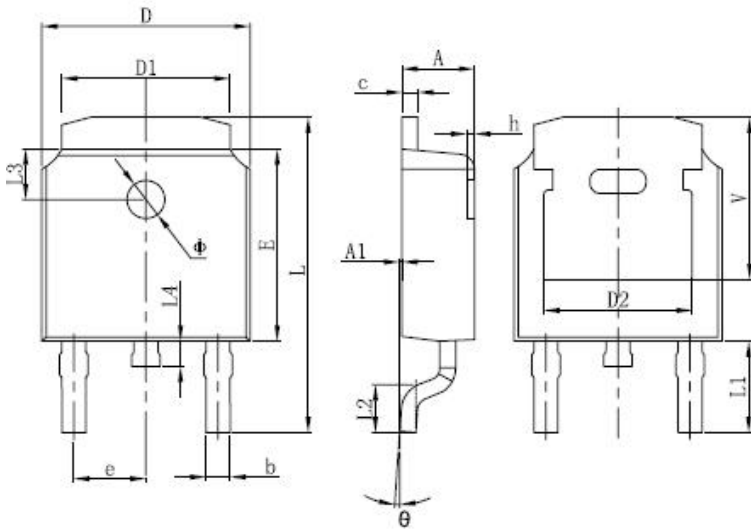
Fig.8-Current Derating

Carrier Tape & Reel Specification DPAK(TO-252-2)



SYMBOL	Millimeters	
	Min.	Max.
A	6.80	7.00
B	10.40	10.60
C	2.60	2.80
d	Φ1.45	Φ1.65
E	1.65	1.85
F	7.40	7.60
P0	3.90	4.10
P	7.90	8.10
P1	1.90	2.10
W	15.90	16.30

Mechanical Dimensions DPAK(TO-252-2)



SYMBOL	Dimensions in millimeters		
	Min.	Typ.	Max.
A	2.18	-	2.39
A1	-	-	0.13
b	0.64	-	0.89
c	0.46	-	0.89
D	6.35	-	6.73
D2	4.32	-	-
E	5.97	6.10	6.22
e	2.29BSC		
L	9.40	-	10.41
L2	1.40	1.52	1.78
L4	-	-	1.02
θ	0°	-	10°
V	5.21	-	-



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