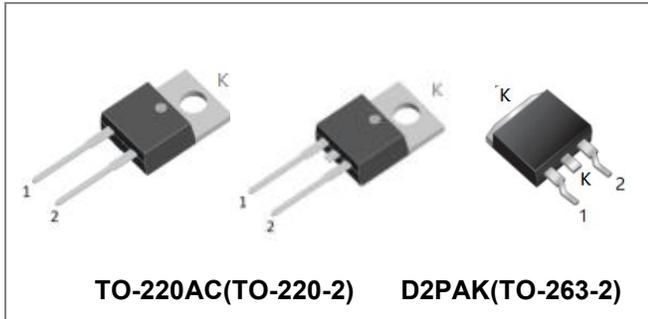


S3D12065A S3D12065G 650V SiC POWER SCHOTTKY RECTIFIERS



Description

S3D12065A/S3D12065G are SiC Schottky rectifiers packaged in TO-220AC(TO-220-2)/D2PAK(TO-263-2) case. The devices are high voltage Schottky rectifiers that have very low total conduction losses and very stable switching characteristics over temperature extremes. The S3D12065A/S3D12065G are 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 _{VRWM} V _{DC}	-	650	V
Average Rectified Forward Current	I _{F(AV)1}	T _c =25°C	35	A
	I _{F(AV)2}	T _c =136°C	16	A
	I _{F(AV)3}	T _c =157°C	12	A
Repetitive Peak Forward Surge Current	I _{FRM1}	10ms, Half Sine pulse, T _J =25°C	51.5	A
	I _{FRM2}	10ms, Half Sine pulse, T _J =110°C	33.5	A
Peak One Cycle Non-Repetitive Surge Current	I _{FSM1}	10ms, Half Sine pulse, T _J =25°C	104	A
	I _{FSM2}	10ms, Half Sine pulse, T _J =110°C	82	A

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V _{F1}	@ 12A, Pulse, T _J = 25 °C	1.5	1.7	V
	V _{F2}	@ 12A, Pulse, T _J = 175 °C	1.9	2.4	V
Reverse Current*	I _{R1}	@V _R = rated V _R T _J = 25 °C	0.02	16	uA
	I _{R2}	@V _R = rated V _R T _J = 175 °C	1	50	uA
Junction Capacitance	C _T	VR=0V, T _J =25°C, f=1MHz	764	-	pF

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

Thermal-Mechanical Specifications:

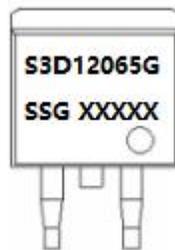
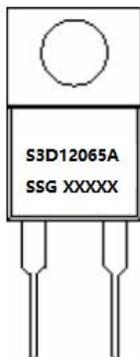
Characteristics	Symbol	S3D12065A	S3D12065G	Units
Junction Temperature	T _J	-55 to +175		°C
Storage Temperature	T _{stg}	-55 to +175		°C
Typical Thermal Resistance Junction to Case	R _{θJC}	1.7	1.65	°C/W

Ordering Information

Device	Package	Shipping
S3D12065A	TO-220AC(TO-220-2)	50pcs / tube
S3D12065G	D2PAK(TO-263-2)	800pcs /Reel
S3D12065GTR	D2PAK(TO-263-2)	800pcs /Reel

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

Marking Diagram



Where XXXXX is YYWWL

S3D = Device Type
 A/ = Package type
 12 = Forward Current (12A)
 065 = Reverse Voltage (650V)
 SSG = SSG
 YY = Year
 WW = Week
 L = Lot Number

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

Ratings and Characteristics Curves

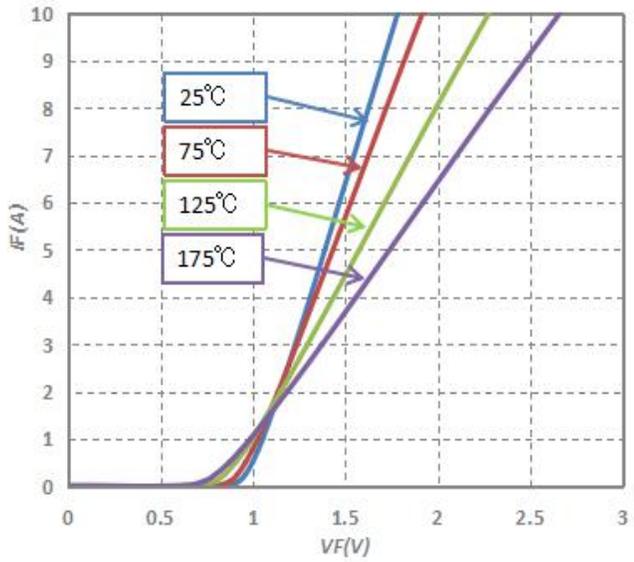


Fig.1-Typical Forward Voltage Characteristics

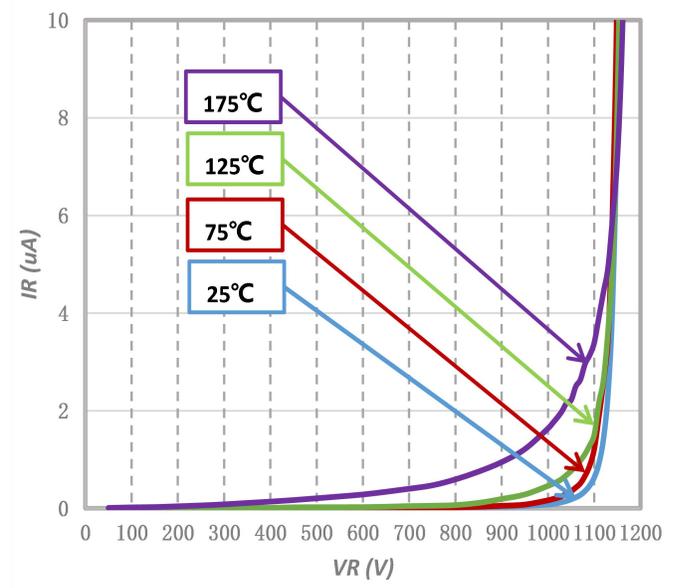


Fig.2-Typical Reverse Characteristics

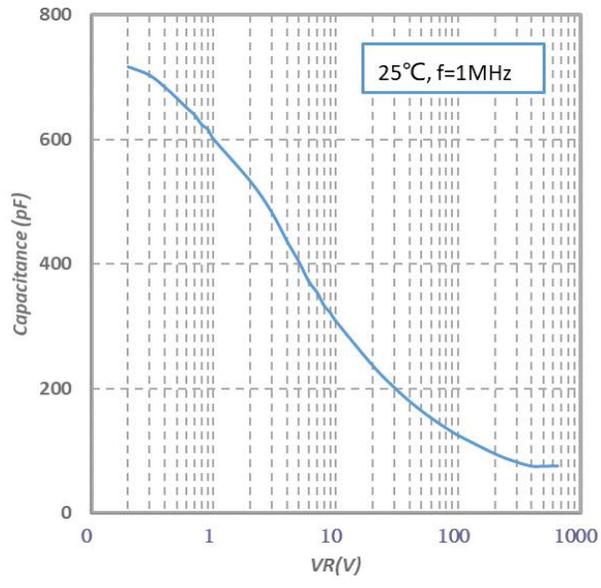
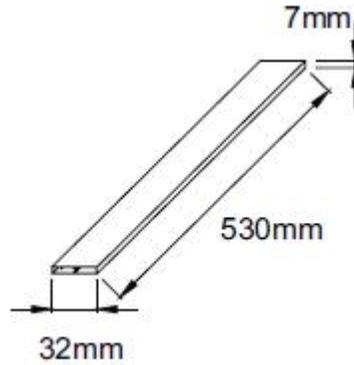
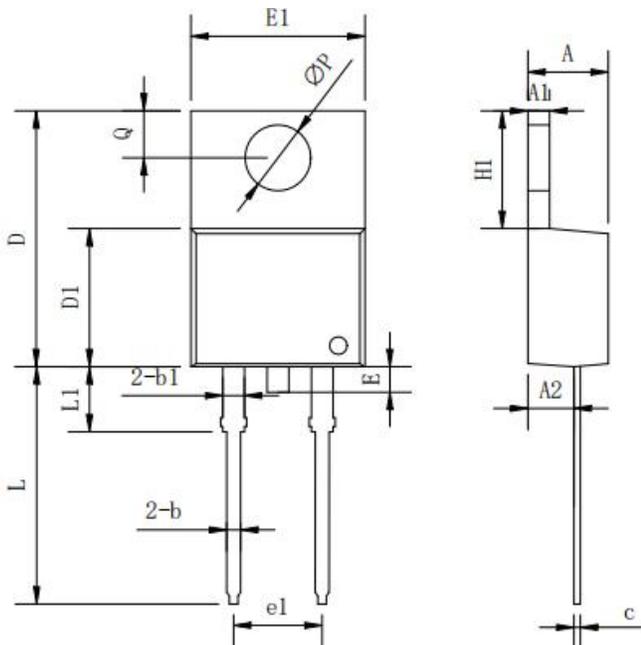


Fig.3-Capacitance vs. Reverse Voltage

Tube Specification(TO-220-2)

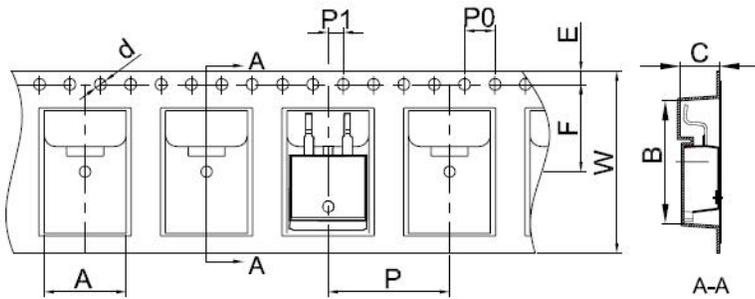


Mechanical Dimensions TO-220AC(TO-220-2)



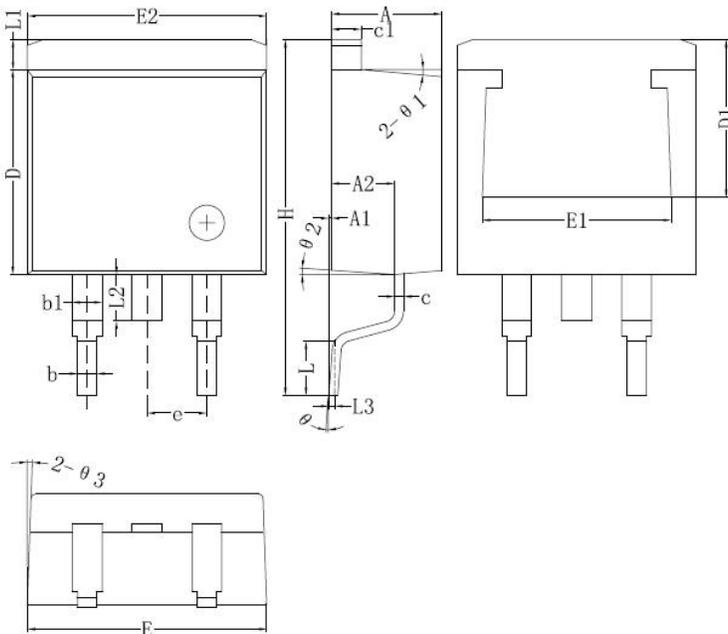
Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	3.56	-	4.83
A1	0.51	-	1.40
A2	2.03	-	2.92
b	0.38	-	1.02
b1	1.14	-	1.78
c	0.31	-	0.61
D	14.22	-	16.51
D1	8.38	-	9.42
E	-	-	1.78
E1	9.65	10.16	10.67
e1	-	5.08	-
H1	5.84	-	6.86
L	12.70	-	14.73
L1	-	-	6.35
ΦP	-	3.56	-

Carrier Tape & Reel Specification D2PAK(TO-263-2)



SYMBOL	Millimeters	
	Min.	Max.
A	10.70	10.90
B	16.03	16.23
C	5.11	5.31
d	1.45	1.65
E	1.65	1.85
F	11.40	11.60
P0	3.90	4.10
P	15.90	16.10
P1	1.90	2.10
W	23.90	24.30

Mechanical Dimensions D2PAK(TO-263-2)



Symbol	Dimensions in millimeters	
	Min.	Max.
A	4.06	4.83
A1	0	0.26
b	0.51	0.99
b1	1.14	1.78
c	0.31	0.74
c1	1.14	1.65
D	8.38	8.65
D1	6.86	
E1	6.22	
E2	9.65	10.67
e	2.54BSC	
H	14.60	15.88
L	1.78	2.80
L1	-	1.68
L2	-	1.78
L3	0.255BSC	
θ	0	8°



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