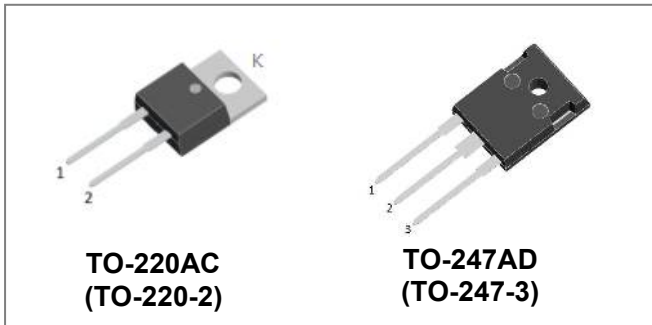


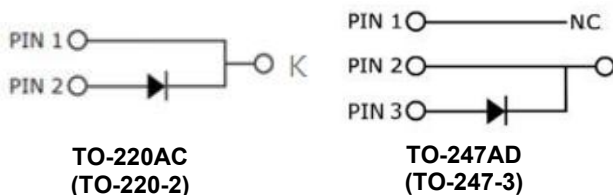
## S3D20065A S3D20065D1 20A 650V SiC POWER SCHOTTKY RECTIFIER



### Description

S3D20065A S3D20065D1 are single SiC Schottky rectifier packaged in TO-220AC(TO-220-2) and TO-247AD (TO-247-3) case. The devices are high voltage Schottky rectifiers that have very low total conduction losses and very stable switching characteristics over temperature extremes. S3D20065A S3D20065D1 are ideal for energy sensitive, high frequency applications in challenging environments.

### Circuit Diagram



### Features

- 175°C T<sub>J</sub> 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
- 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	V <sub>RRM</sub>	-	650	V
Working Peak Reverse Voltage	V <sub>RWM</sub>			
DC Blocking Voltage	V <sub>R</sub>			
Average Rectified Forward Current	I <sub>F(AV)</sub>	50% duty cycle @T <sub>c</sub> =150°C, rectangular wave form	20	A
Peak One Cycle Non-Repetitive Surge Current	I <sub>FSM</sub>	10ms, Half Sine pulse@T <sub>c</sub> =25°C	90	A

### Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V <sub>F1</sub>	@ 20A, Pulse, T <sub>J</sub> = 25 °C	1.5	1.8	V
	V <sub>F2</sub>	@ 20A, Pulse, T <sub>J</sub> = 175 °C	2.0	2.4	V
Reverse Current *	I <sub>R1</sub>	@V <sub>R</sub> = rated V <sub>R</sub> T <sub>J</sub> = 25 °C	2	60	uA
	I <sub>R2</sub>	@V <sub>R</sub> = rated V <sub>R</sub> T <sub>J</sub> = 175 °C	10	220	uA
Junction Capacitance	C <sub>T</sub>	VR=0V, Tj=25°C, f=1MHz	1190	-	pF

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

### Thermal-Mechanical Specifications:

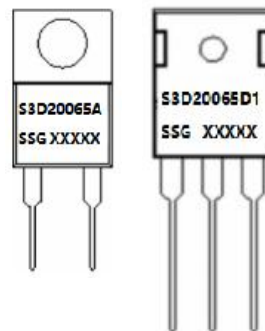
Characteristics	Symbol	S3D20065A	S3D20065D1	Units
Junction Temperature	T <sub>J</sub>	-55 to +175		°C
Storage Temperature	T <sub>stg</sub>	-55 to +175		°C
Typical Thermal Resistance Junction to Case	R <sub>θJC</sub>	1.7	1.3	°C/W

### Ordering Information

Device	Package	Shipping
S3D20065A	TO-220AC (TO-220-2)	50pcs / tube
S3D20065D1	TO-247AD (TO-247-3)	25pcs / tube

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

### Marking Diagram

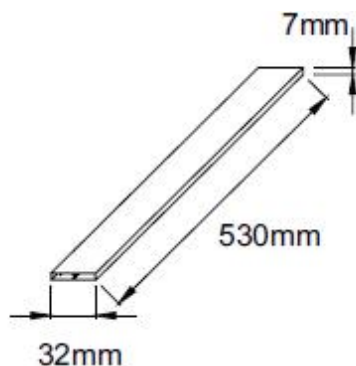


Where XXXXX is YYWWL

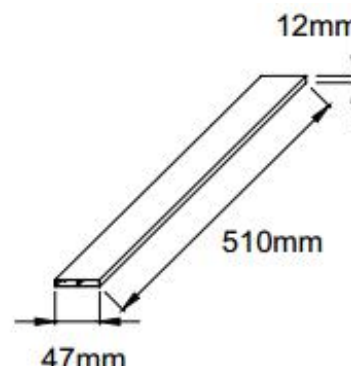
S3D = Device Type  
A/D1 = Package type  
20 = Forward Current (10A)  
065 = Reverse Voltage (650V)  
SSG = SSG  
YY = Year  
WW = Week  
L = Lot Number

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

### Tube Specification TO-220AC(TO-220-2)/TO-247AD(TO-247-3)

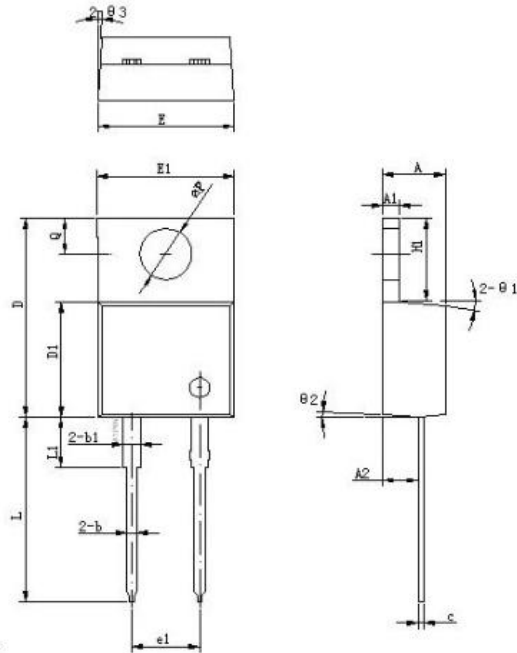


TO-220AC(TO-220-2)



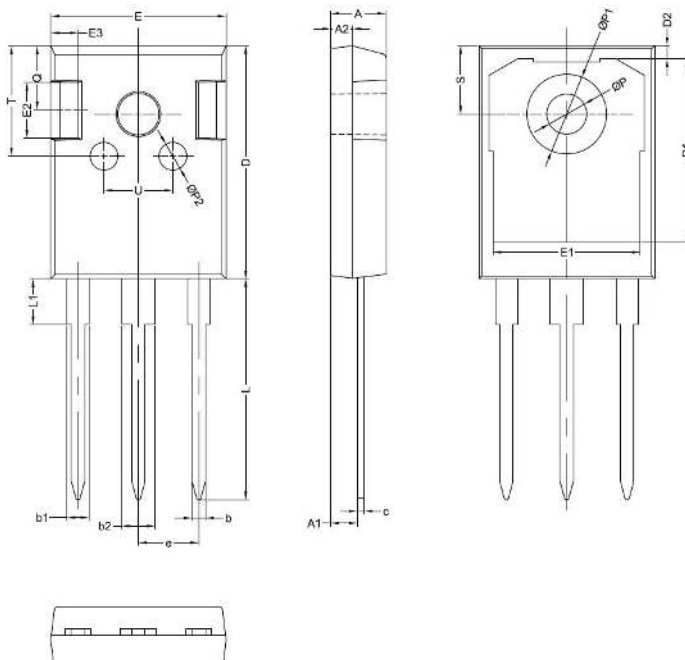
TO-247AD(TO-247-3L)

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



Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	4.55	4.70	4.85
A1	1.17	1.27	1.37
A2	2.59	2.69	2.89
b	0.71	0.81	0.96
b1		1.27	
c	0.36	0.38	0.61
D	14.64	14.94	15.24
D1	8.55	8.70	8.90
E	10.01	10.16	10.31
E1	9.98	10.18	10.38
e1		5.08	
H1	6.04	6.24	6.44
L	13.00	13.86	14.08
L1		3.80	
ΦP	3.74	3.84	4.04
Q	2.54	2.74	2.94
Θ1		5°	
Θ2		4°	
Θ3		4°	

**Mechanical Dimensions TO-247AD(TO-247-3)**



SYMBOL	Millimeters		
	MIN.	TYP.	MAX.
A	4.80	5.00	5.20
A1	2.20	2.41	2.61
A2	1.90	2.00	2.10
b	1.10	1.20	1.40
b1	1.80	2.00	2.20
b2	2.80	3.00	3.20
c	0.50	0.60	0.75
D	20.30	21.00	21.20
D1		16.55	
D2		1.20	
E	15.45	15.80	16.00
E1		13.30	
E2		5.00	
E3		2.50	
e		5.44	
L	19.42	19.92	20.70
L1		4.13	
P	3.50	3.60	3.70
P1	7.1		7.40
P2		2.50	
Q		5.80	
S	6.05	6.15	6.25
T		10.00	
U		6.20	



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