

S3D08065A S3D08065E S3D08065G 650V SiC POWER SCHOTTKY RECTIFIERS

Description

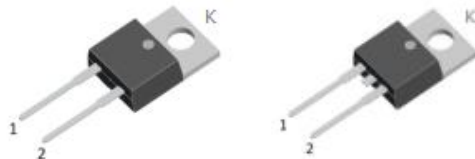
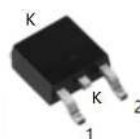
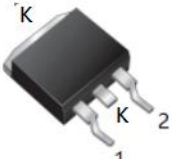
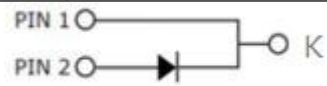
S3D08065A/S3D08065E/S3D08065G are SiC Schottky rectifiers packaged in TO-220AC(TO-220-2)/DPAK(TO-252-2)/D²PAK(TO-263-2) case. The devices are high voltage Schottky rectifiers that have very low total conduction losses and very stable switching characteristics over temperature extremes. The S3D08065A/S3D08065E/S3D08065G are ideal for energy sensitive, high frequency applications in challenging environments.

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

S3D08065A	S3D08065E	S3D08065G
		
TO-220AC (TO-220-2)	DPAK (TO-252-2)	D ² PAK (TO-263-2)
		

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	$I_{F(AV)1}$	$T_c=25^{\circ}C$	23	A
	$I_{F(AV)2}$	$T_c=136^{\circ}C$	11	A
	$I_{F(AV)3}$	$T_c=157^{\circ}C$	8	A
Repetitive Peak Forward Surge Current	I_{FRM1}	10ms, Half Sine pulse, $T_J=25^{\circ}C$	37.5	A
	I_{FRM2}	10ms, Half Sine pulse, $T_J=110^{\circ}C$	25.5	A
Peak One Cycle Non-Repetitive Surge Current	I_{FSM1}	10ms, Half Sine pulse, $T_J=25^{\circ}C$	71	A
	I_{FSM2}	10ms, Half Sine pulse, $T_J=110^{\circ}C$	60	A
Non-Repetitive Peak Forward Surge Current	$I_{F,Max}$	10 μ s. Pulse, $T_J=25^{\circ}C$	650	A
	$I_{F,Max}$	10 μ s. Pulse, $T_J=110^{\circ}C$	530	A
Power Dissipation	P_{tot1}	$T_J=25^{\circ}C$	100	W
	P_{tot1}	$T_J=110^{\circ}C$	43.5	W
TO-220 Mounting Torque		M3 Screw	1	Nm
		6-32 Screw	8.8	bf-in

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V_{F1}	@ 8A, Pulse, $T_J = 25^{\circ}C$	1.5	1.8	V
	V_{F2}	@ 8A, Pulse, $T_J = 175^{\circ}C$	2.1	2.4	V
Reverse Current*	I_{R1}	@ $V_R = \text{rated } V_R$ $T_J = 25^{\circ}C$	0.5	51	μ A
	I_{R2}	@ $V_R = \text{rated } V_R$ $T_J = 175^{\circ}C$	12	204	μ A
Junction Capacitance	C_T	$V_R=0V, T_J=25^{\circ}C, f=1MHz$	661	-	pF
Reverse Recovery Charge	Q_c	$I_F = 8A, di/dt = 200A/\mu s$ $V_R = 400V, T_J = 25^{\circ}C$	20	-	nC
Capacitance Stored Energy	E_c	$V_R = 400V$	3.1	-	μ J

* Pulse width < 300 μ s, duty cycle < 2%

Thermal-Mechanical Specifications:

Characteristics	Symbol	S3D08065A	S3D08065E	S3D08065G	Units
Junction Temperature	T_J	-55 to +175			$^{\circ}C$
Storage Temperature	T_{stg}	-55 to +175			$^{\circ}C$
Typical Thermal Resistance Junction to Case	R_{qJC}	1.7	1.5	1.65	$^{\circ}C/W$

- China - Germany - Korea - Singapore - United States •
- <http://www.smc-diodes.com> - sales@smc-diodes.com •

Ordering Information

Device	Package	Shipping
S3D08065A	TO-220AC(TO-220-2)	50pcs / tube
S3D08065E	DPAK(TO-252-2)	2500pcs / reel
S3D08065ETR	DPAK(TO-252-2)	2500pcs / reel
S3D08065G	D2PAK(TO-263-2)	800 pcs / reel
S3D08065GTR	D2PAK(TO-263-2)	800 pcs / 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

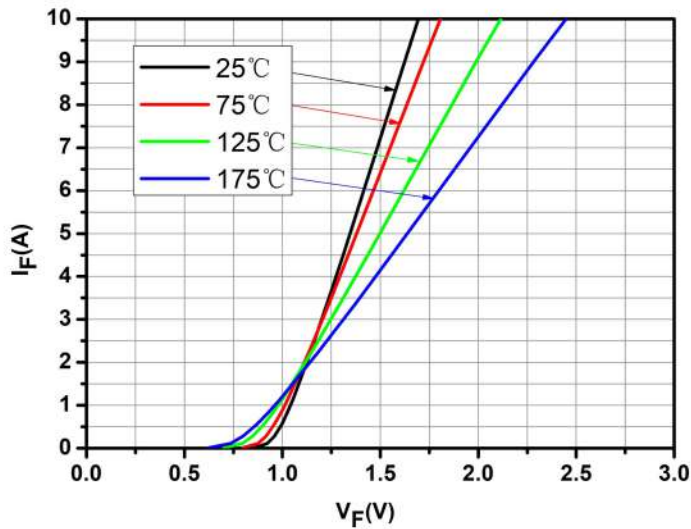


Fig.1-Typical Forward Voltage Characteristics

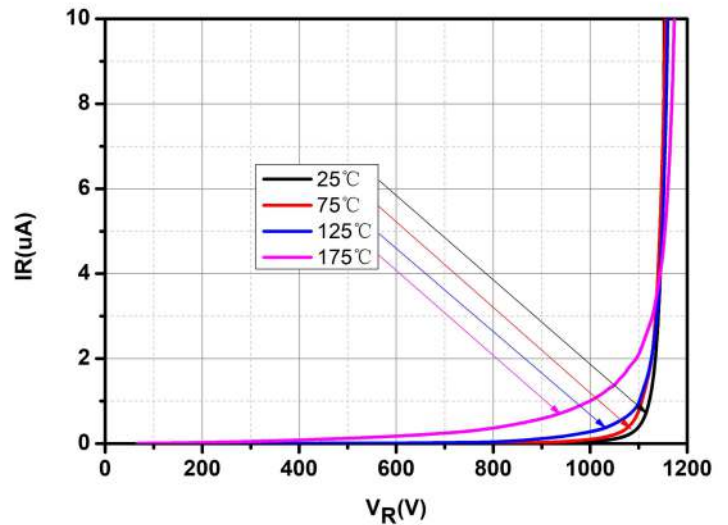


Fig.2-Typical Reverse Characteristics

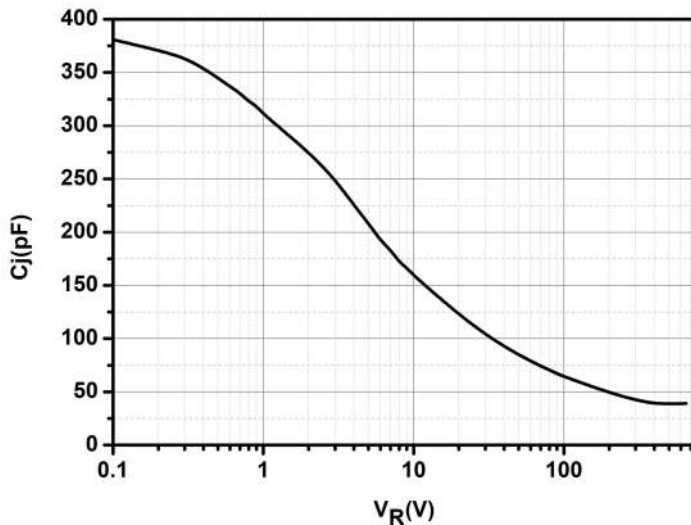
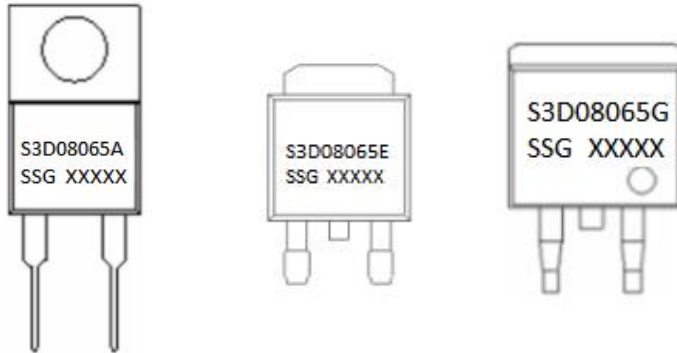


Fig.3-Capacitance vs. Reverse Voltage

Marking Diagram

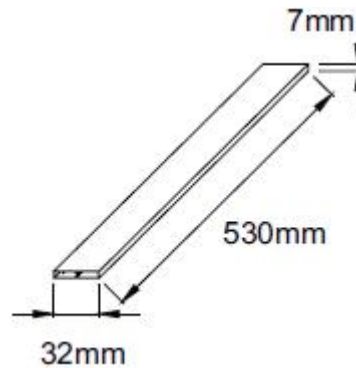


Where XXXXX is YYWWL

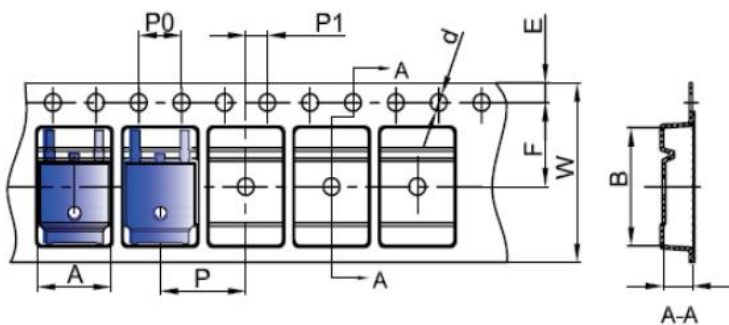
S3D = Device Type
A/E/G = Package type
08 = Forward Current (8A)
65 = Reverse Voltage (650V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

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

Tube Specification(TO-220-2)

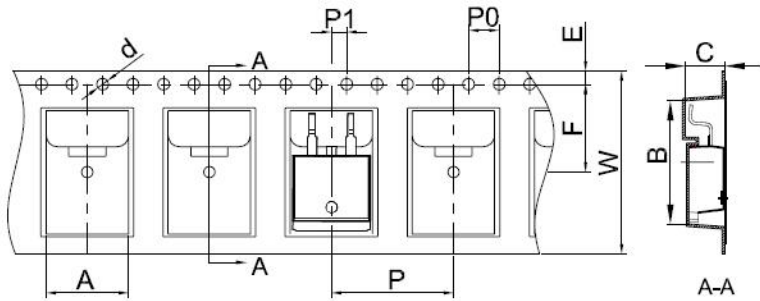


Carrier Tape & Reel Specification DPAK(TO-252-2)



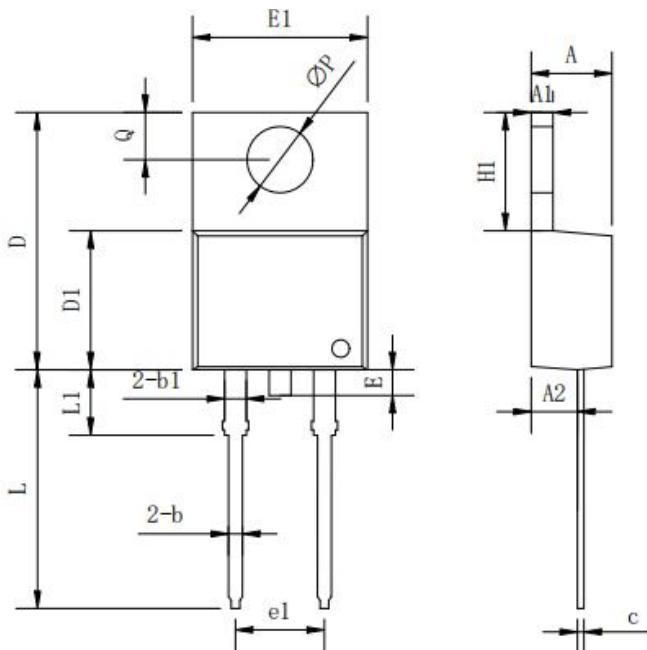
SYMBOL	Millimeters	
	Min.	Max.
A	6.80	7.00
B	10.40	10.60
C	2.60	2.80
d	Φ1.45	Φ1.65
E	1.65	1.85
F	7.40	7.60
P0	3.90	4.10
P	7.90	8.10
P1	1.90	2.10
W	15.90	16.30

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



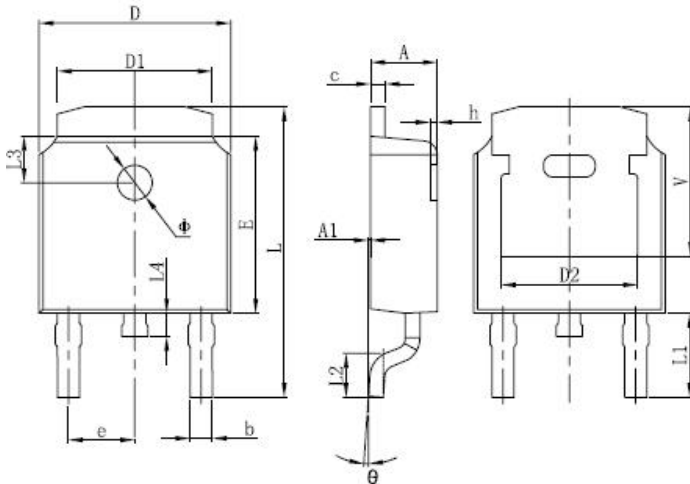
SYMBOL	Millimeters	
	Min.	Max.
A	10.70	10.90
B	16.03	16.23
C	5.11	5.31
d	1.45	1.65
E	1.65	1.85
F	11.40	11.60
P0	3.90	4.10
P	15.90	16.10
P1	1.90	2.10
W	23.90	24.30

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



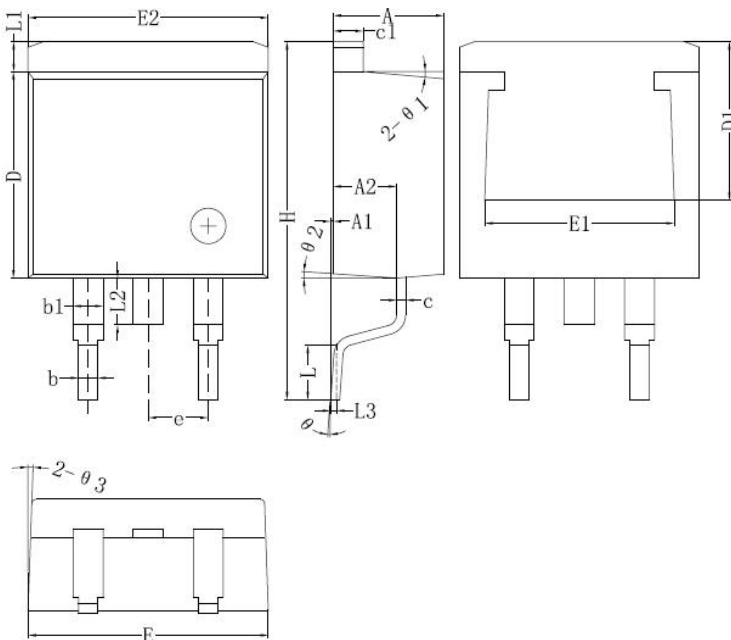
Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	3.56	-	4.83
A1	0.51	-	1.40
A2	2.03	-	2.92
b	0.38	-	1.02
b1	1.14	-	1.78
c	0.31	-	0.61
D	14.22	-	16.51
D1	8.38	-	9.42
E	-	-	1.78
E1	9.65	10.16	10.67
e1	-	5.08	-
H1	5.84	-	6.86
L	12.70	-	14.73
L1	-	-	6.35
ΦP	-	3.56	-

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
∅	0°	-	10°
V	5.21	-	-

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	9.65
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	-	2.20
L3	0.255BSC	
∅	0	8°

Technical Data
Data Sheet N2425, REV. C



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