

S4D05120A S4D05120E S4D05120G 1200V SiC POWER SCHOTTKY RECTIFIERS

Description



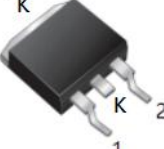
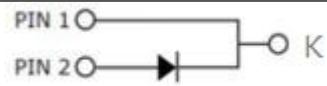
S4D05120A/S4D05120E/S4D05120G are SiC Schottky rectifiers packaged in TO-220AC(TO-220-2)/DPAK(TO-252-2)/D²PAK(TO-263-2) case. The devices are high voltage Schottky rectifiers that have very low total conduction losses and very stable switching characteristics over temperature extremes. The S4D05120A/S4D05120E/S4D05120G 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
- 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

S4D05120A	S4D05120E	S4D05120G
		
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	V _{RRM}	-	1200	V
Working Peak Reverse Voltage	V _{RWM}			
DC Blocking Voltage	V _R			
Average Rectified Forward Current	I _{F(AV)}	T _C =150°C	5	A
Peak One Cycle Non-Repetitive Surge Current	I _{FSM}	10ms, Half Sine pulse, T _J =25°C	46	A
Repetitive Peak Forward Surge Current	I _{FRM}	10 ms, Half Sine pulse, T _J =25°C	26	A

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V_{F1}	@ 5A, Pulse, $T_J = 25\text{ }^\circ\text{C}$	1.65	1.8	V
	V_{F2}	@ 5A, Pulse, $T_J = 175\text{ }^\circ\text{C}$	2.2	3.0	V
Reverse Current*	I_{R1}	@ $V_R = \text{rated } V_R$ $T_J = 25\text{ }^\circ\text{C}$	20	200	μA
	I_{R2}	@ $V_R = \text{rated } V_R$ $T_J = 175\text{ }^\circ\text{C}$	40	300	μA
Junction Capacitance	C_T	$V_R=0\text{V}, T_J=25\text{ }^\circ\text{C}, f=1\text{MHz}$	302	-	pF

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

Thermal-Mechanical Specifications:

Characteristics	Symbol	S4D05120A	S4D05120E	S4D05120G	Units
Junction Temperature	T_J	-55 to +175			$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +175			$^\circ\text{C}$
Maximum Thermal Resistance Junction to Case	R_{qJC}	1.7	1.5	1.65	$^\circ\text{C/W}$

Ordering Information

Device	Package	Shipping
S4D05120A	TO-220AC(TO-220-2)	50pcs / tube
S4D05120E	DPAK(TO-252-2)	2500pcs / reel
S4D05120G	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

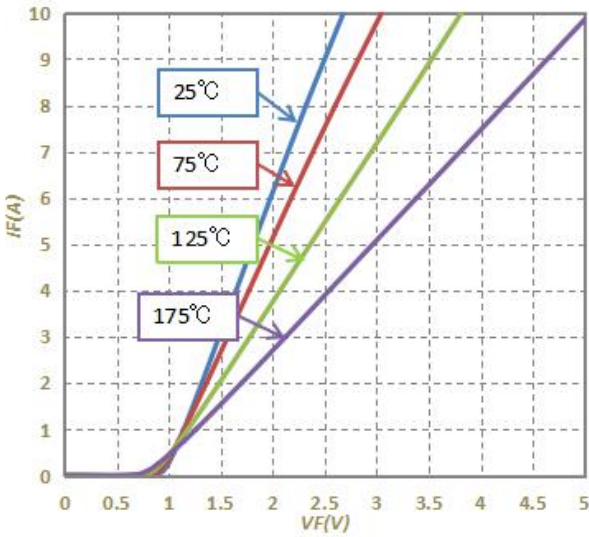


Fig.1-Typical Forward Voltage Characteristics

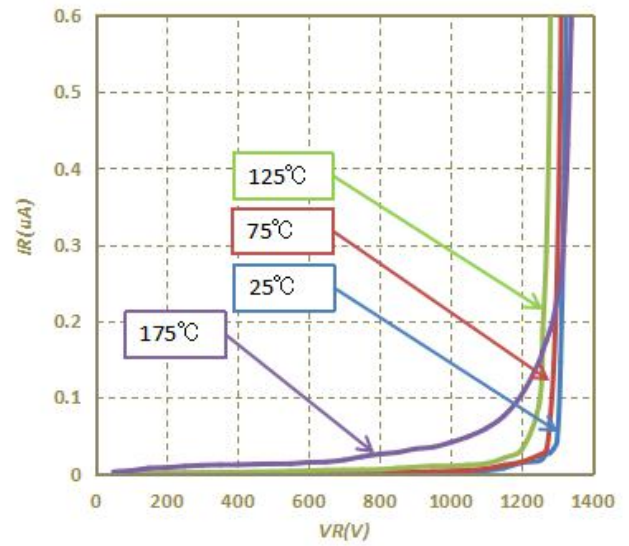


Fig.2-Typical Reverse Characteristics

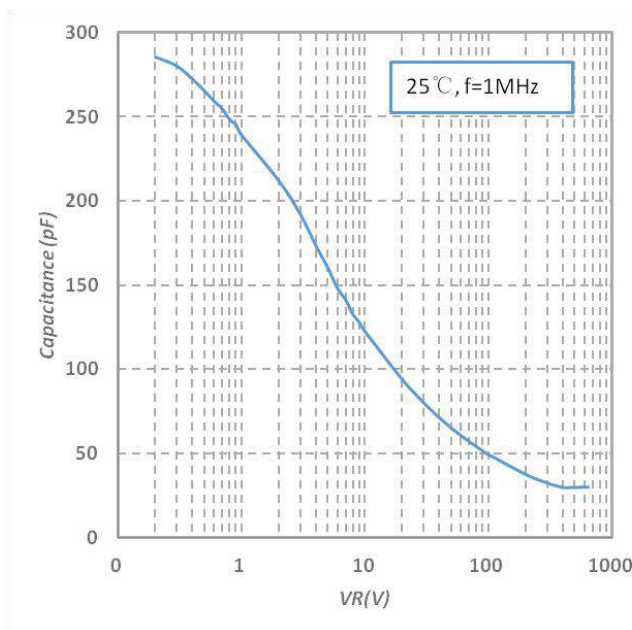
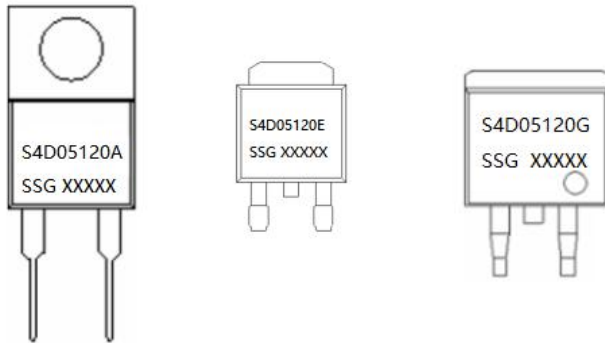


Fig.3-Capacitance vs. Reverse Voltage

Marking Diagram

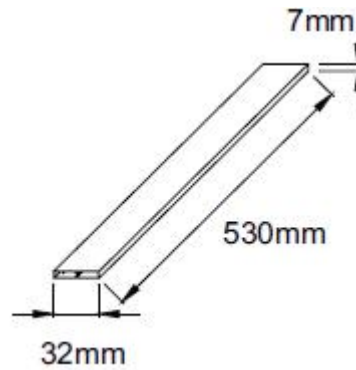


Where XXXXX is YYWWL

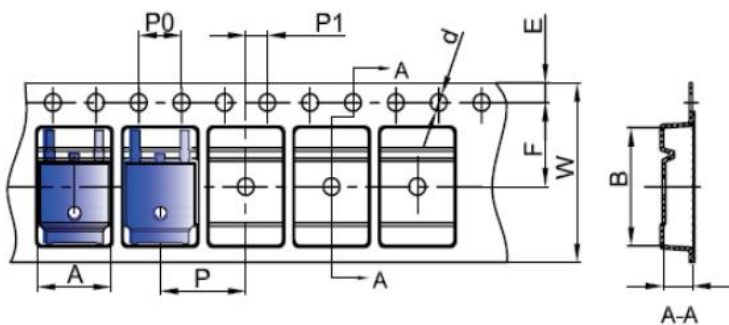
S4D = Device Type
A/E/G = Package type
05 = Forward Current (5A)
120 = Reverse Voltage (1200V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

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

Tube Specification(TO-220-2)

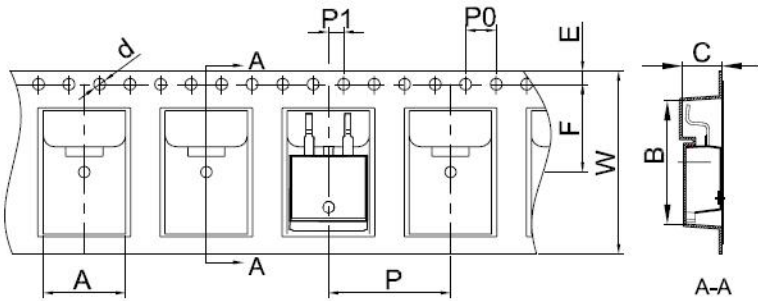


Carrier Tape & Reel Specification DPAK(TO-252-2)



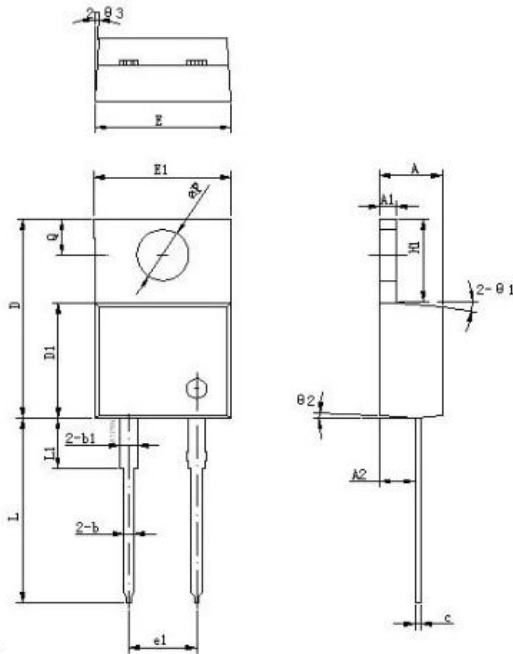
SYMBOL	Millimeters	
	Min.	Max.
A	6.80	7.00
B	10.40	10.60
C	2.60	2.80
d	Φ1.45	Φ1.65
E	1.65	1.85
F	7.40	7.60
P0	3.90	4.10
P	7.90	8.10
P1	1.90	2.10
W	15.90	16.30

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



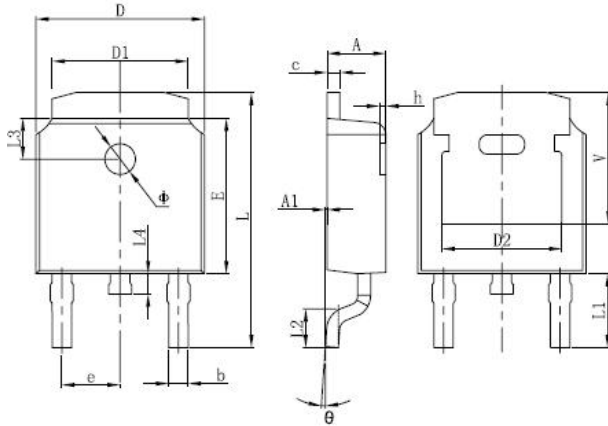
SYMBOL	Millimeters	
	Min.	Max.
A	10.70	10.90
B	16.03	16.23
C	5.11	5.31
d	1.45	1.65
E	1.65	1.85
F	11.40	11.60
P0	3.90	4.10
P	15.90	16.10
P1	1.90	2.10
W	23.90	24.30

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



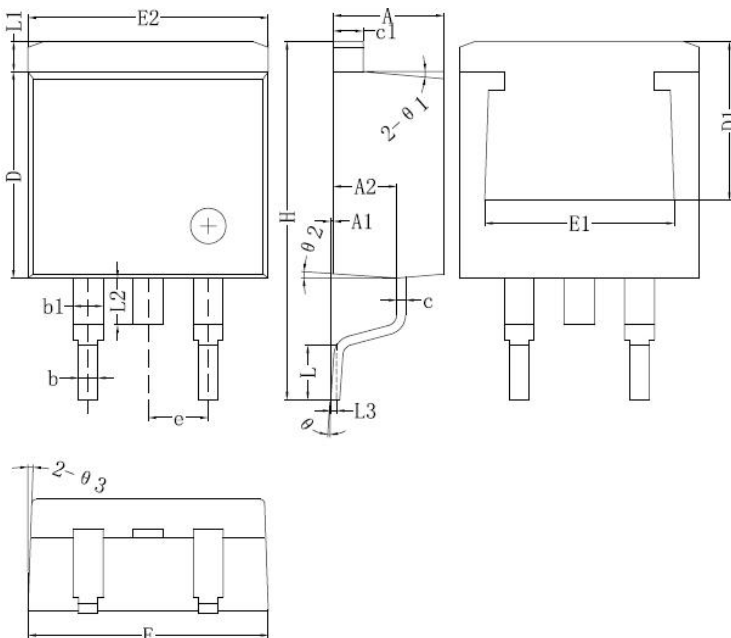
Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	4.55	4.70	4.85
A1	1.17	1.27	1.37
A2	2.59	2.69	2.89
b	0.71	0.81	0.96
b1		1.27	
c	0.36	0.38	0.61
D	14.64	14.94	15.24
D1	8.55	8.70	8.90
E	10.01	10.16	10.31
E1	9.98	10.18	10.38
e1		5.08	
H1	6.04	6.24	6.44
L	13.00	13.86	14.08
L1		3.80	
ØP	3.74	3.84	4.04
Q	2.54	2.74	2.94
Ø1		5°	
Ø2		4°	
Ø3		4°	

Mechanical Dimensions DPAK(TO-252-2)



SYMBOL	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.40	0.086	0.094
A1	0	0.13	0	0.005
b	0.635	0.889	0.025	0.035
c	0.460	0.889	0.018	0.035
D	6.50	6.70	0.250	0.265
D1	4.95	5.46	0.195	0.215
D2	4.32 REF.		0.170 REF.	
E	6.00	6.20	0.235	0.245
e	2.286 BSC		0.090 BSC	
L	9.398	10.414	0.370	0.410
L1	1.778 REF.		0.108 REF.	
L2	1.40	1.78	0.055	0.07
L3	1.60 REF.		0.063 REF.	
L4	0.60	1.02	0.024	0.040
Φ	1.10	1.30	0.043	0.051
Θ	0°	10°	0°	10°
h	0	0.30	0	0.012
V	5.21 REF.		0.205 REF.	

Mechanical Dimensions D²PAK(TO-263-2)



Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	4.55	4.70	4.85
A1	0	0.10	0.25
A2	2.59	2.69	2.89
b	0.71	0.81	0.96
b1		1.27	
c	0.36	0.38	0.61
c1	1.17	1.27	1.37
D	8.55	8.70	8.85
D1	6.40		
E	10.01	10.16	10.31
E1	7.6		
E2	9.98	10.08	10.18
e		2.54	
H	14.6	15.1	15.6
L	2.00	2.30	2.70
L1	1.17	1.27	1.40
L2			2.20
L3		0.25BSC	
Θ	0	-	8°
Θ1		5°	
Θ2		4°	
Θ3		4°	

Technical Data
Data Sheet N2365, REV. B



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