

S4D05120A S4D05120E S4D05120G 1200V SiC POWER SCHOTTKY RECTIFIERS

Description

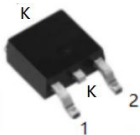
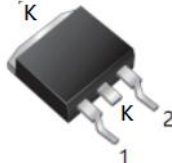
S4D05120A/S4D05120E/S4D05120G are SiC Schottky rectifiers packaged in TO-220AC(TO-220-2)/DPAK(TO-252-2)/D²PAK(TO-263-2) case. The devices are high voltage Schottky rectifiers that have very low total conduction losses and very stable switching characteristics over temperature extremes. The S4D05120A/S4D05120E/S4D05120G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

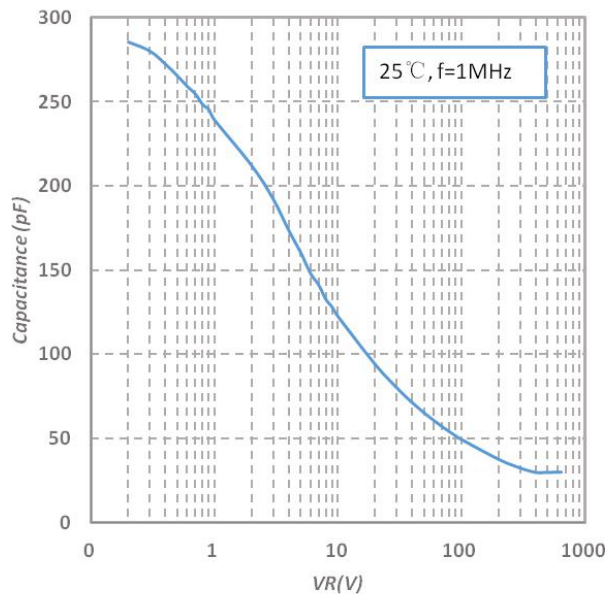
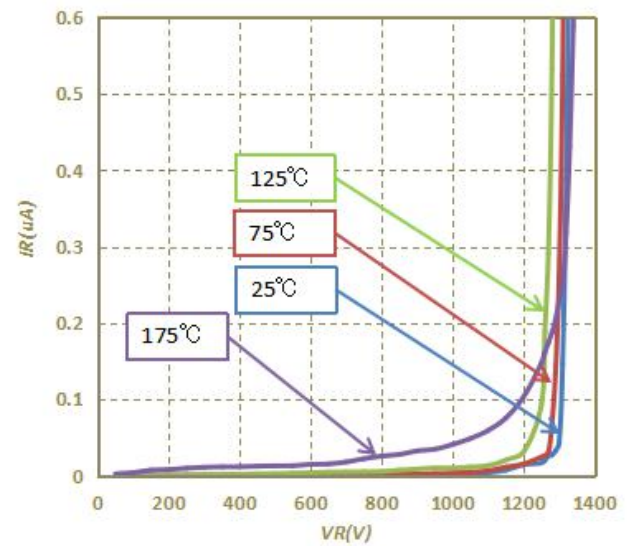
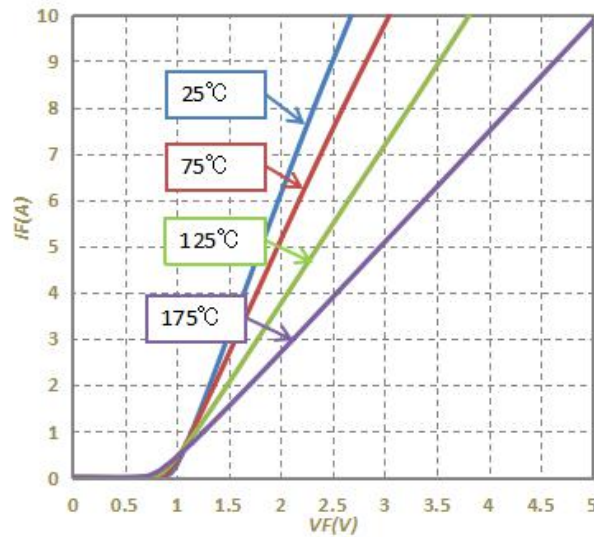
Characteristics	Symbol	S4D05120A	S4D05120E	S4D05120G	Units
Junction Temperature	T_J	-55 to +175			$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-55 to +175			$^{\circ}\text{C}$
Maximum Thermal Resistance Junction to Case	R_{qJC}	1.7	1.5	1.65	$^{\circ}\text{C/W}$

Ordering Information

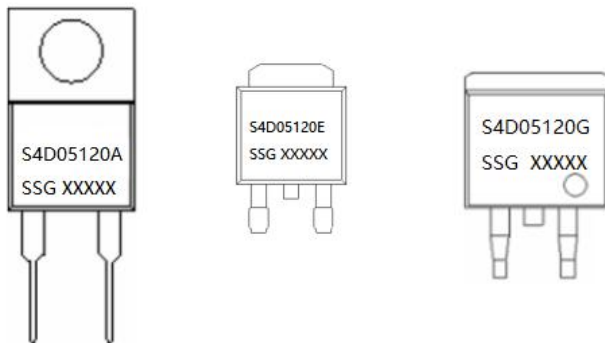
Device	Package	Shipping
S4D05120A	TO-220AC(TO-220-2)	50pcs / tube
S4D05120E	DPAK(TO-252-2)	2500pcs / reel
S4D05120G	D2PAK(TO-263-2)	800 pcs / reel

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



Marking Diagram

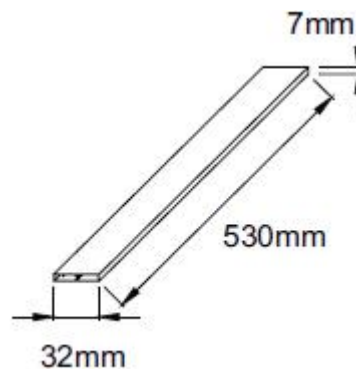


Where XXXXX is YYWWL

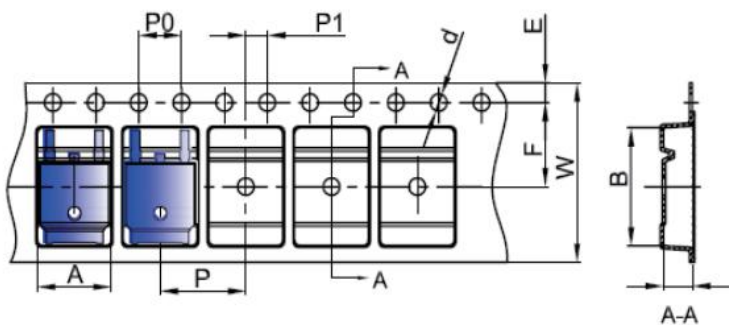
S4D = Device Type
A/E/G = Package type
05 = Forward Current (5A)
120 = Reverse Voltage (1200V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

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

Tube Specification(TO-220-2)

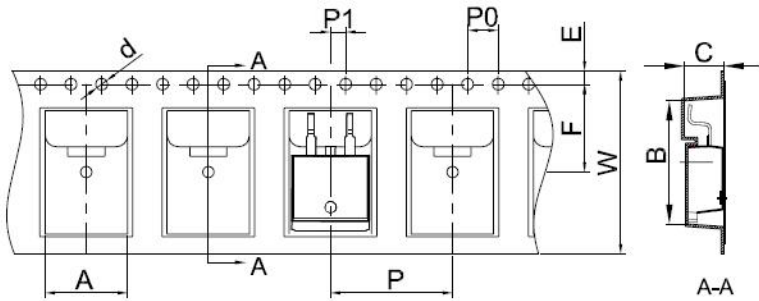


Carrier Tape & Reel Specification DPAK(TO-252-2)



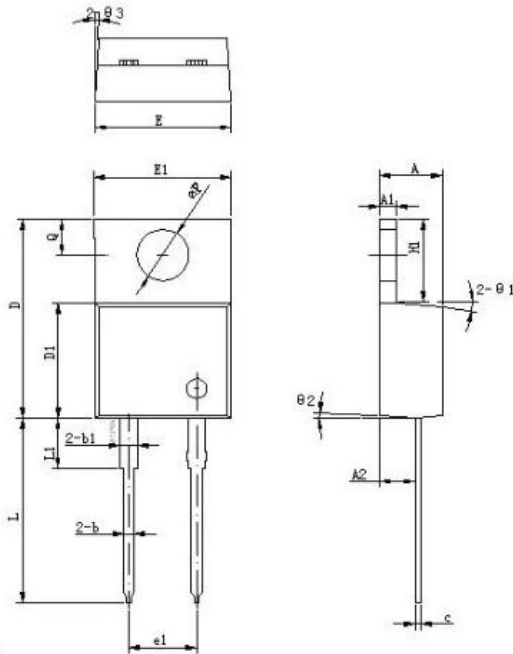
SYMBOL	Millimeters	
	Min.	Max.
A	6.80	7.00
B	10.40	10.60
C	2.60	2.80
d	Φ1.45	Φ1.65
E	1.65	1.85
F	7.40	7.60
P0	3.90	4.10
P	7.90	8.10
P1	1.90	2.10
W	15.90	16.30

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



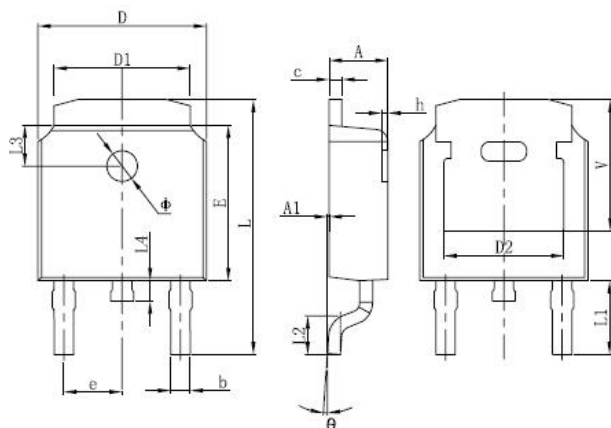
SYMBOL	Millimeters	
	Min.	Max.
A	10.70	10.90
B	16.03	16.23
C	5.11	5.31
d	1.45	1.65
E	1.65	1.85
F	11.40	11.60
P0	3.90	4.10
P	15.90	16.10
P1	1.90	2.10
W	23.90	24.30

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



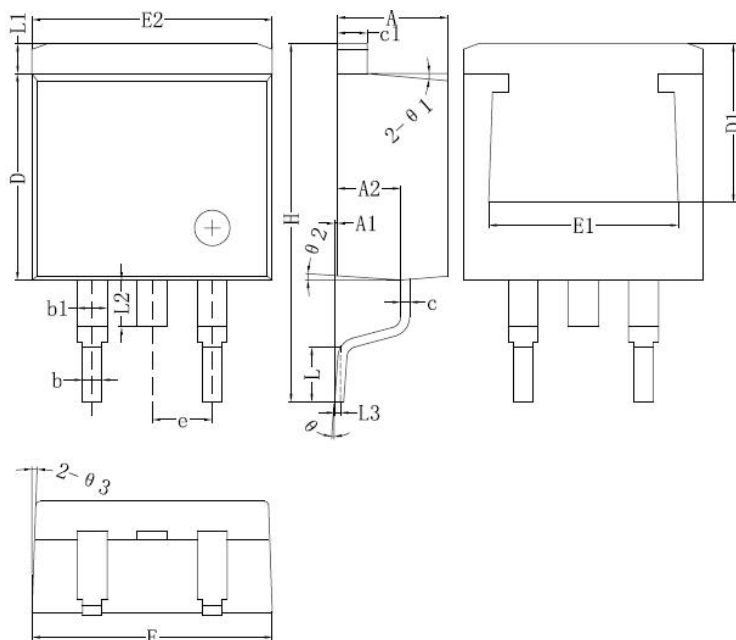
Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	4.55	4.70	4.85
A1	1.17	1.27	1.37
A2	2.59	2.69	2.89
b	0.71	0.81	0.96
b1		1.27	
c	0.36	0.38	0.61
D	14.64	14.94	15.24
D1	8.55	8.70	8.90
E	10.01	10.16	10.31
E1	9.98	10.18	10.38
e1		5.08	
H1	6.04	6.24	6.44
L	13.00	13.86	14.08
L1		3.80	
ΦP	3.74	3.84	4.04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