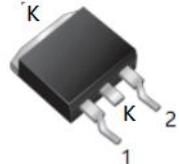


## S4D20120G 1200V SIC POWER SCHOTTKY RECTIFIERS

D<sup>2</sup>PAK(TO-263-2)

### Description

This 1200V 20A diode is high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S4D20120G is ideal for energy sensitive, high frequency applications in challenging environments.

### Circuit Diagram



### Features

- 175°C TJ 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	$V_{RRM}$	-		
Working Peak Reverse Voltage	$V_{RWM}$			
DC Blocking Voltage	$V_R$		1200	V
Average Rectified Forward Current	$I_{F(AV)1}$	@ $T_c=25^\circ C$	57	A
	$I_{F(AV)2}$	@ $T_c=150^\circ C$	20	A
Repetitive Peak Forward Surge Current	$I_{FRM1}$	10 ms, Half Sine pulse, $T_c = 25^\circ C$	140	A
	$I_{FRM2}$	10 ms, Half Sine pulse, $T_c = 110^\circ C$	110	A
Peak One Cycle Non-Repetitive Surge Current	$I_{FSM1}$	10ms, Half Sine pulse, $T_c = 25^\circ C$	240	A
	$I_{FSM2}$	10ms, Half Sine pulse, $T_c = 110^\circ C$	195	A
Non-Repetitive Peak Forward Surge Current	$I_{F,Max1}$	10μs. Pulse, $T_c = 25^\circ C$	1150	A
	$I_{F,Max2}$	10μs. Pulse, $T_c = 110^\circ C$	950	A
Power Dissipation	$P_{tot1}$	$T_c = 25^\circ C$	245.9	W
	$P_{tot2}$	$T_c = 110^\circ C$	106.6	W

## Electrical Characteristics:

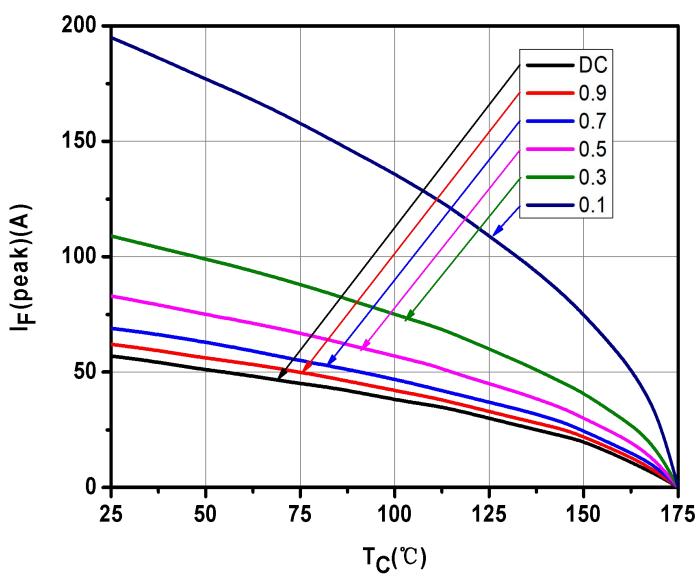
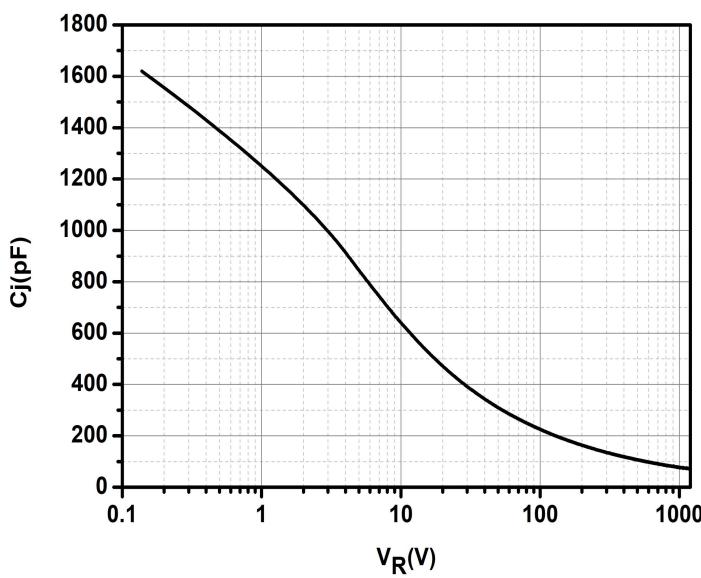
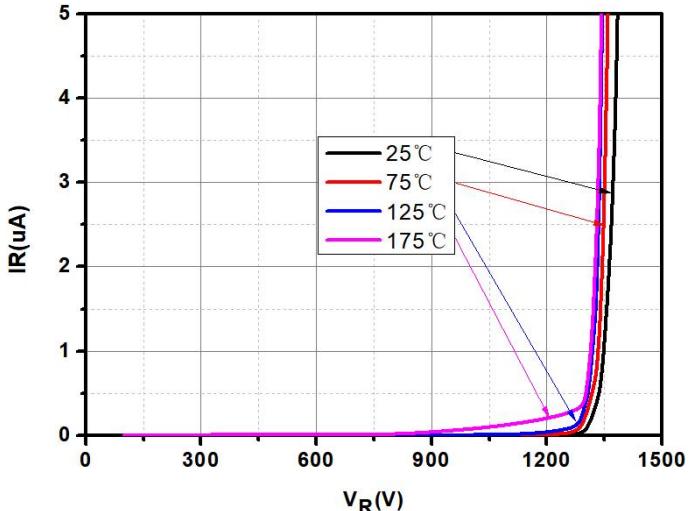
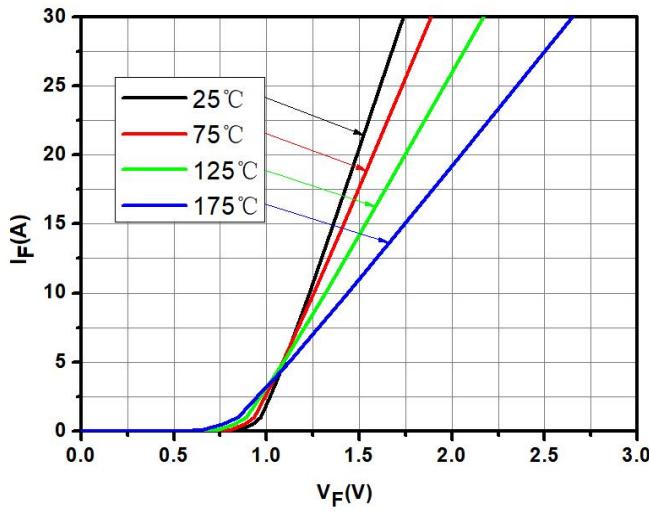
Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	$V_{F1}$	@ 20A, Pulse, $T_j = 25^\circ C$	1.5	1.8	V
	$V_{F2}$	@ 20A, Pulse, $T_j = 175^\circ C$	2.2	3.0	V
Reverse Current*	$I_{R1}$	@ $V_R = \text{rated } V_R$ $T_j = 25^\circ C$	1	25	uA
	$I_{R2}$	@ $V_R = \text{rated } V_R$ $T_j = 175^\circ C$	10	150	uA
Junction Capacitance	$C_T$	$VR=0V, T_j=25^\circ C, f=1MHz$	1620	-	pF
Reverse Recovery Charge	$Q_c$	$I_F = 20A, di/dt = 200A/\mu s$ $VR = 800 V, T_j = 25^\circ C$	124.89	-	nC
Capacitance Stored Energy	$E_c$	$V_R = 800 V, T_j = 25^\circ C$	64.20	-	μJ

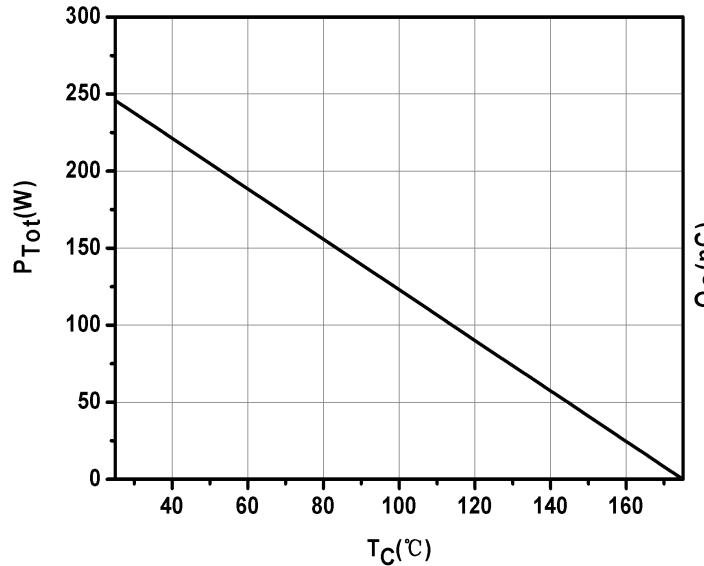
\* Pulse width < 300 μs, duty cycle < 2%

## Thermal-Mechanical Specifications:

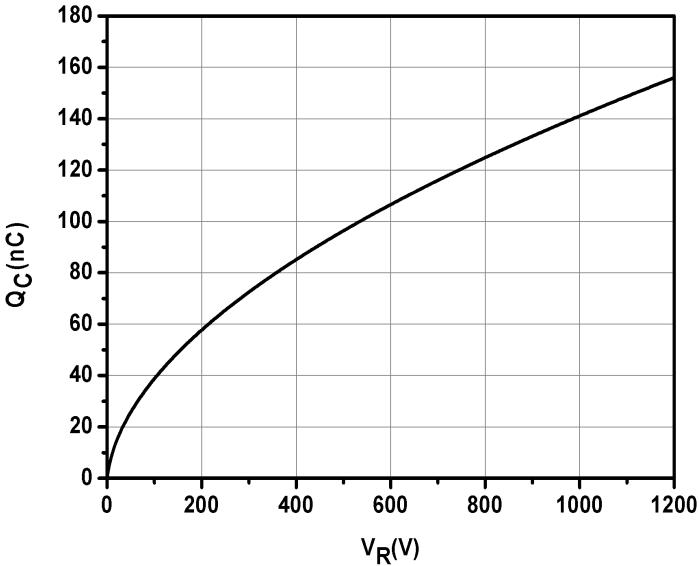
Characteristics	Symbol	Condition	Specification	Units
Junction Temperature	$T_j$	-	-55 to +175	°C
Storage Temperature	$T_{stg}$	-	-55 to +175	°C
Typical Thermal Resistance Junction to Case	$R_{\theta jc}$	DC operation	0.6	°C/W

## Ratings and Characteristics Curves

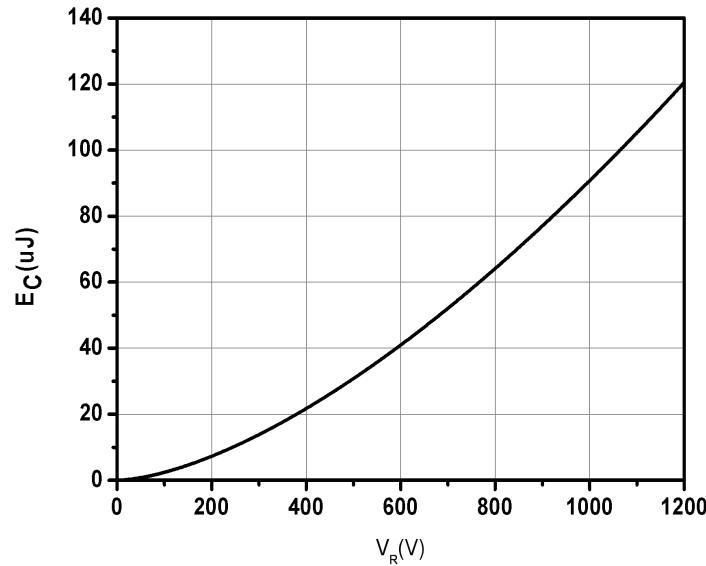




**Fig.5-Power Derating**



**Fig.6-Total Capacitance Charge vs. Reverse Voltage**



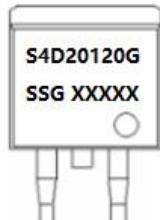
**Fig.7-Capacitance Stored Energy**

## Ordering Information

Device	Package	Shipping
S4D20120G	D2PAK(TO-263-2)	800pcs/reel
S4D20120GTR	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

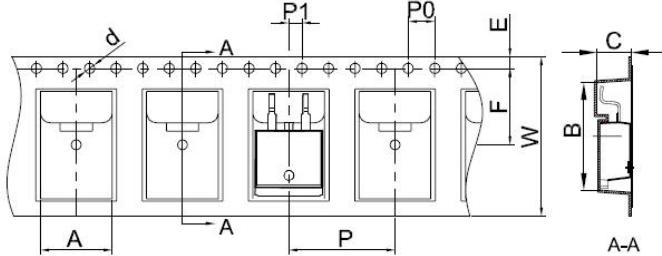


Where XXXXX is YYWWL

S4D = Device Type  
 G = Package type  
 20 = Forward Current (20A)  
 120 = Reverse Voltage (1200V)  
 SSG = SSG  
 YY = Year  
 WW = Week  
 L = Lot Number

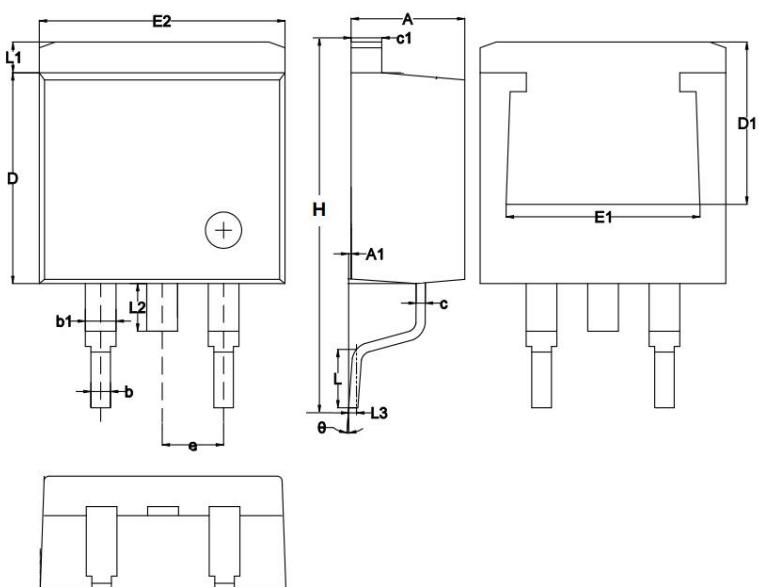
Cautions : Molding resin  
Epoxy resin UL : 94V-0

## Carrier Tape & Reel Specification



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



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	6.4	
E1	6.22	
E2	9.65	10.67
e	2.54BSC	
H	14.6	15.88
L	1.78	2.8
L1	-	1.68
L2	-	2.2
L3	0.255BSC	
θ	0	8°

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