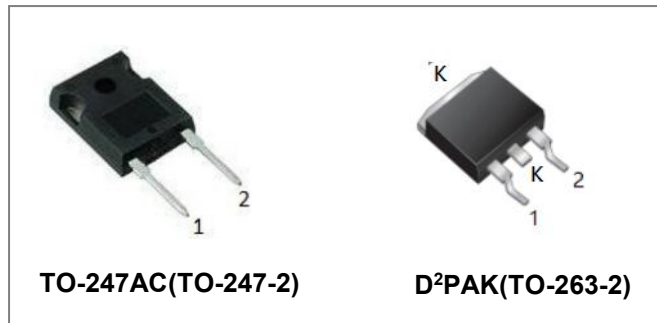


S4D30120H S4D30120G 1200V SIC POWER SCHOTTKY RECTIFIERS



Description

This 1200V 30A diode is high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S4D30120H/S4D30120G is ideal for energy sensitive, high frequency applications in challenging environments.

Circuit Diagram



TO-247AC(TO-247-2)

D²PAK(TO-263-2)

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
- 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}	-	1200	V
Working Peak Reverse Voltage	V_{RWM}			
DC Blocking Voltage	V_R			
Average Rectified Forward Current	$I_F (AV)1$	$T_C = 25^\circ C$	94	A
	$I_F (AV)2$	$T_C = 155^\circ C$	30	A
Peak One Cycle Non-Repetitive Surge Current	I_{FSM1}	10ms, Half Sine pulse, $T_C = 25^\circ C$	300	A
	I_{FSM2}	10ms, Half Sine pulse, $T_C = 110^\circ C$	246	A
Repetitive Peak Forward Surge Current	I_{FRM1}	10ms, Half Sine pulse, $T_C = 25^\circ C$	121	A
	I_{FRM2}	10ms, Half Sine pulse, $T_C = 110^\circ C$	68	A
Power Dissipation	P_{tot1}	$T_C = 25^\circ C$	441	W
	P_{tot1}	$T_C = 110^\circ C$	191	W
I²t Value	i^2t1	10ms, $T_C = 25^\circ C$	271	A²s
	i^2t2	10ms, $T_C = 25^\circ C$	218	A²s

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V _{F1}	@ 30A, Pulse, T _J = 25 °C	1.5	1.8	V
	V _{F2}	@ 30A, Pulse, T _J = 175 °C	2.2	3.0	V
Reverse Current*	I _{R1}	@V _R = rated V _R , T _J = 25 °C	1	20	uA
	I _{R2}	@V _R = rated V _R , T _J = 175 °C	5	200	uA
Junction Capacitance	C _T	V _R =1V, f=1MHz, T _J =25°C,	2581	-	pF
Reverse Recovery Charge	Q _c	V _R = 800 V, T _J =25°C	152	-	nC
Capacitance Stored Energy	E _C	V _R = 800 V, T _J =25°C	44	-	μJ

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

Thermal-Mechanical Specifications:

Characteristics	Symbol	Condition	S4D30120H	S4D30120G	Units
Junction Temperature	T _J	-	-55 to +175		°C
Storage Temperature	T _{stg}	-	-55 to +175		°C
Typical Thermal Resistance Junction to Case	R _{θJC}	DC operation, T _J =25°C	0.34	0.34	°C/W

Electrostatic Discharge (ESD) Classifications:

Parameter	Symbol	Value
Human Body Model	HBM	Class 3B (≥ 8000 V)
Charge Device Model	CDM	Class C3 (≥ 1000 V)

Ordering Information

Device	Package	Shipping
S4D30120H	TO-247AC(TO-247-2)	25pcs / tube
S4D30120G	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.

Ratings and Characteristics Curves

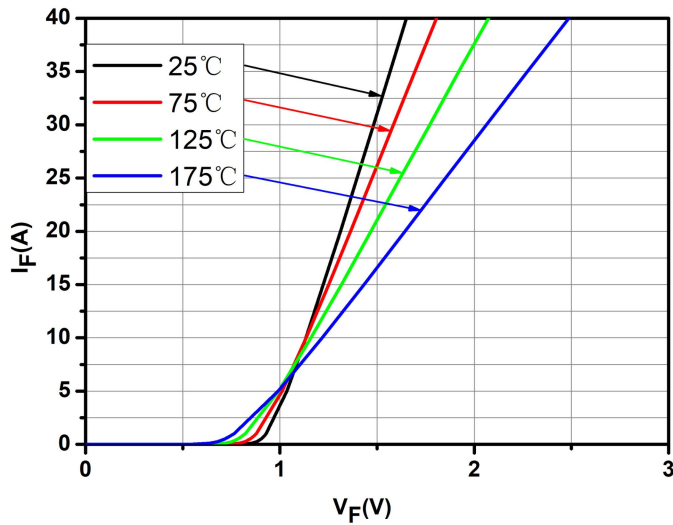


Fig.1-Typical Forward Voltage Characteristics

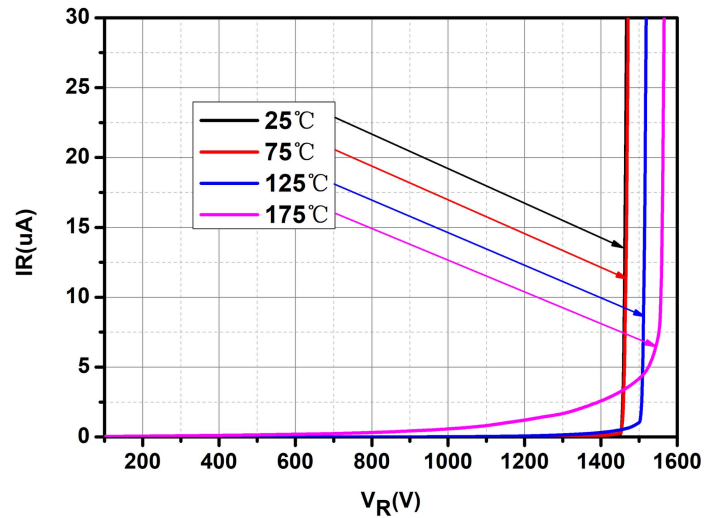


Fig.2-Typical Reverse Characteristics

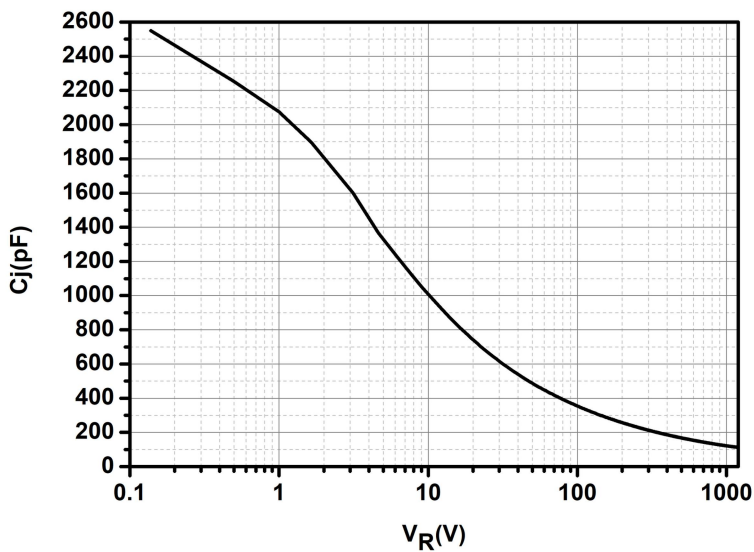


Fig.3-Capacitance vs. Reverse Voltage

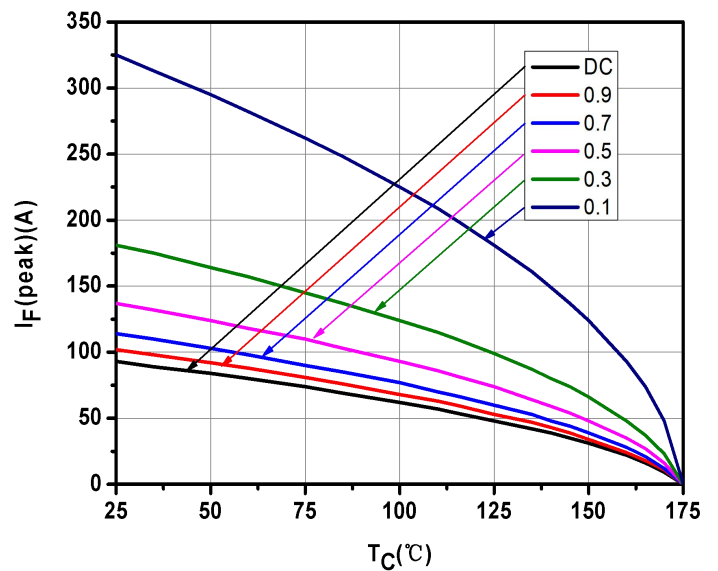


Fig.4-Current Derating

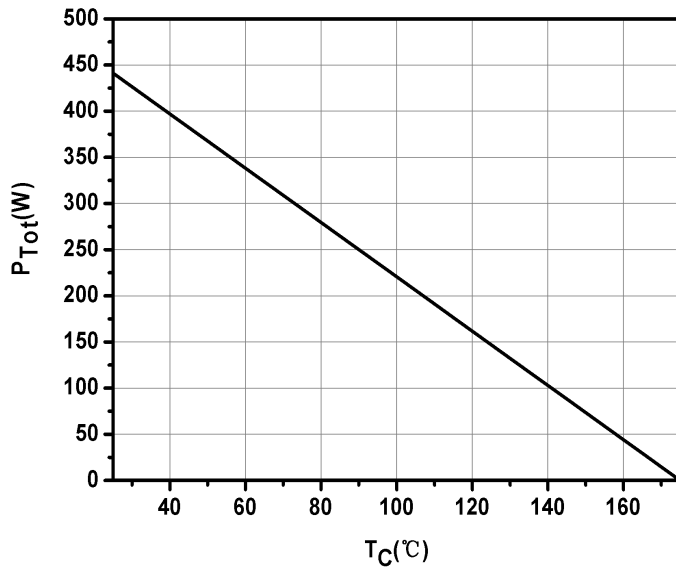


Fig.5-Power Derating

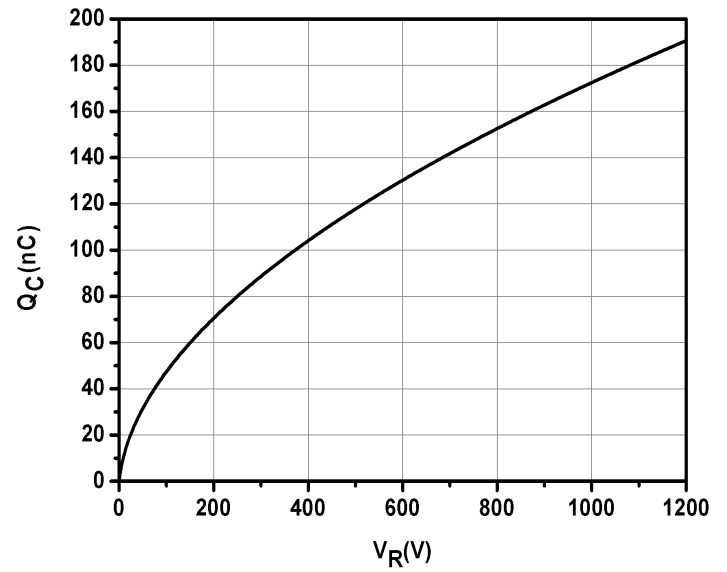


Fig.6-Total Capacitance Charge vs. Reverse Voltage

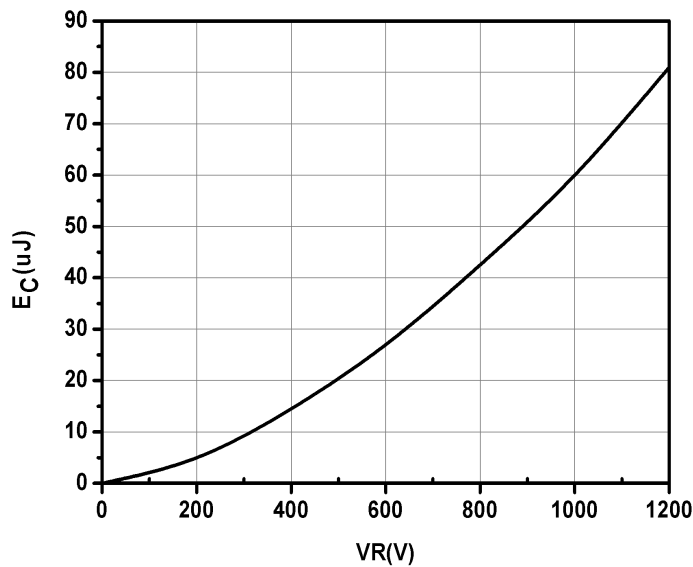
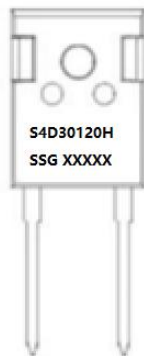


Fig.7-Capacitance Stored Energy

Marking Diagram

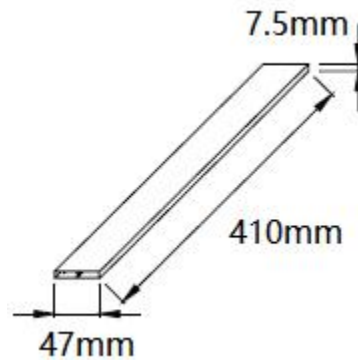


Where XXXXX is YYWWL

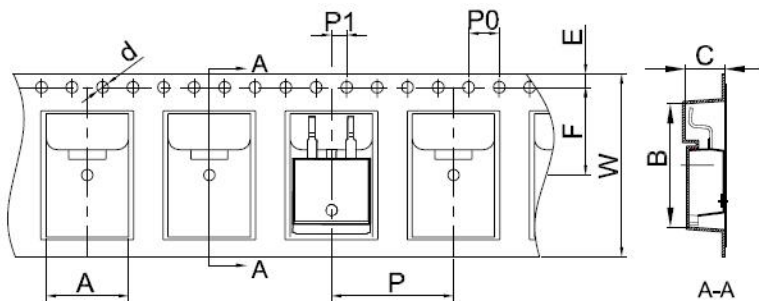
S4D = Device Type
H/G = Package type
30 = Forward Current (30A)
120 = Reverse Voltage (1200V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

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

Tube Specification TO-247AC(TO-247-2)

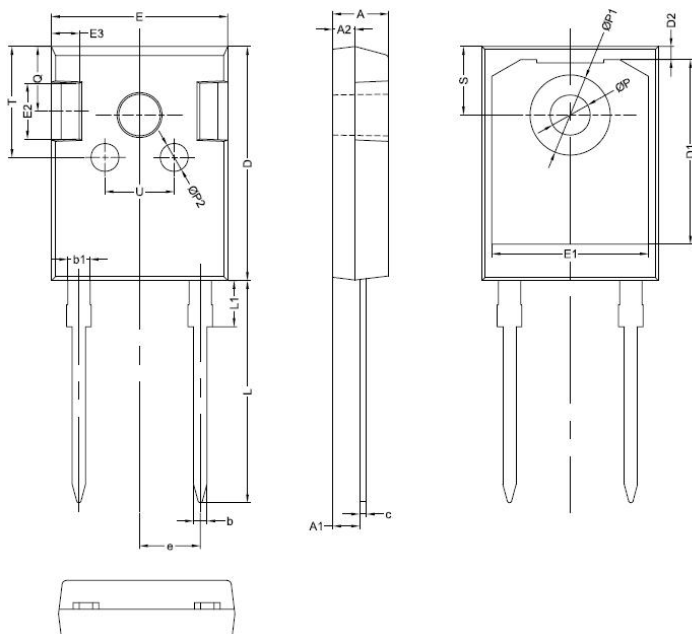


Carrier Tape & Reel Specification D2PAK(TO-263-2)



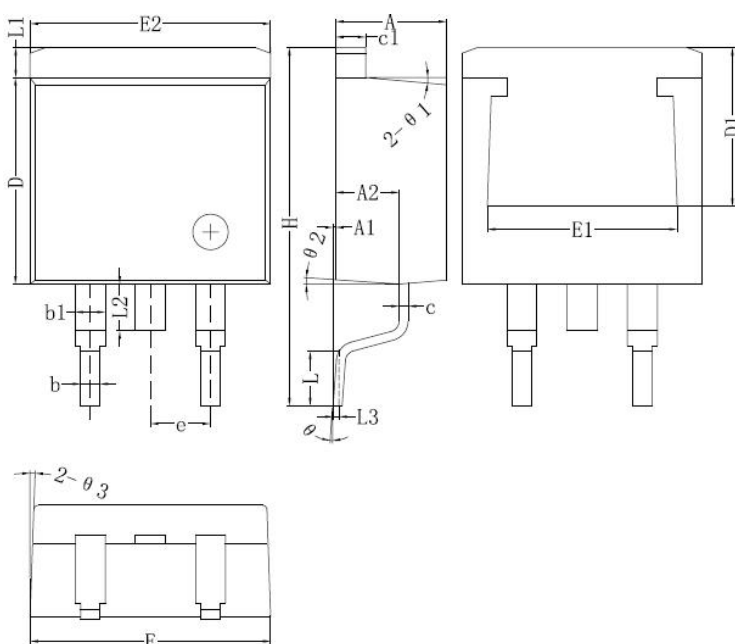
SYMBOL	Millimeters	
	Min.	Max.
A	10.70	10.90
B	16.03	16.23
C	5.11	5.31
d	1.45	1.65
E	1.65	1.85
F	11.40	11.60
P0	3.90	4.10
P	15.90	16.10
P1	1.90	2.10
W	23.90	24.30

Mechanical Dimensions TO-247AC(TO-247-2)



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	1.35
b1	1.80	2.00	2.20
c	0.50	0.60	0.75
D	20.30	21.00	21.20
D1		16.58	
D2		1.17	
E	15.60	15.80	16.00
E1		14.02	
E2		5.00	
E3		2.50	
e		5.44	
L	19.42	19.92	20.42
L1		4.13	
P	3.50	3.60	3.70
P1	7.1	7.19	7.40
P2		2.50	
Q		5.80	
S	6.05	6.15	6.25
T		10.00	
U		6.20	

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	6.4	
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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