Technical Data
Data Sheet N3214, REV.-

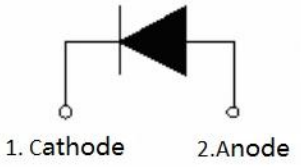
S7D030120H
1200V SIC POWER SCHOTTKY RECTIFIER

TO-247AC(TO-247-2)

Description

S7D030120H is a SiC Schottky rectifier packaged in TO-247AC(TO-247-2) case. The device is a high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S7D030120H is ideal for energy sensitive, high frequency applications in challenging environments.

Circuit Diagram



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

Technical Data
Data Sheet N3214, REV.-

Maximum Ratings:

Characteristics	Symbol	Condition	Max.	Units
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_{DC}	-	1200	V
Average Rectified Forward Current	$I_{F(AV)1}$	Tc=25˚C	114	A
	$I_{F(AV)3}$	Tc=158˚C	30	A
Repetitive Peak Forward Surge Current	I_{FRM1}	10ms, Half Sine pulse, T_C=25˚C	162	A
	I_{FRM2}	10ms, Half Sine pulse, T_C=110˚C	97	A
Peak One Cycle Non-Repetitive Surge Current	I_{FSM1}	10ms, Half Sine pulse, T_C=25˚C	232	A
	I_{FSM2}	10ms, Half Sine pulse, T_C=110˚C	140	A
Power Dissipation	P_{tot1}	T_C=25˚C	441	W
	P_{tot2}	T_C=110˚C	191	W

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=0V, T_J=25˚C, f=1MHz	1850	-	pF
Reverse Recovery Charge	Q_c	I_F = 30A, di/dt=200A/μs V_R = 800 V, T_J =25˚C	151	-	nC
Capacitance Stored Energy	E_C	V_R = 800 V, T_J =25˚C	45	-	μJ

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

Technical Data
Data Sheet N3214, REV.-

Thermal-Mechanical Specifications:

Characteristics	Symbol	Condition	Specification	Units
Junction Temperature	T_J	-	-55 to +175	℃
Storage Temperature	T_{stg}	-	-55 to +175	℃
Typical Thermal Resistance Junction to Case	$R_{\theta JC}$	DC operation	0.34	℃/W

Ordering Information

Device	Package	Plating	Shipping
S7D030120H	TO-247AC(TO-247-2)	Pure Sn	25pcs / tube

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

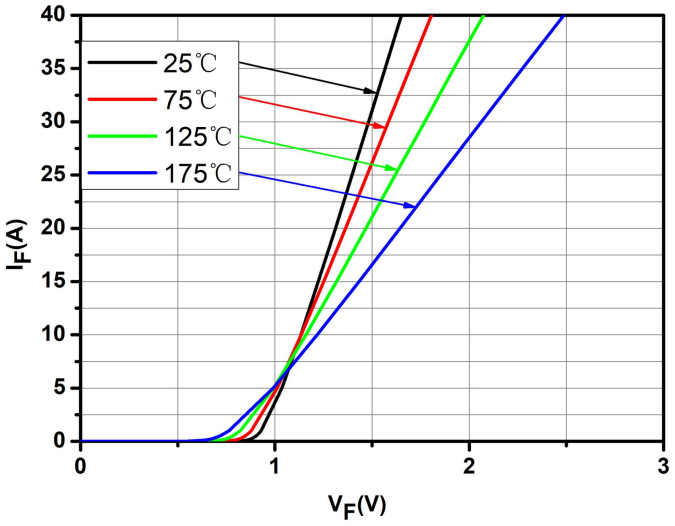


Fig.1-Typical Forward Voltage

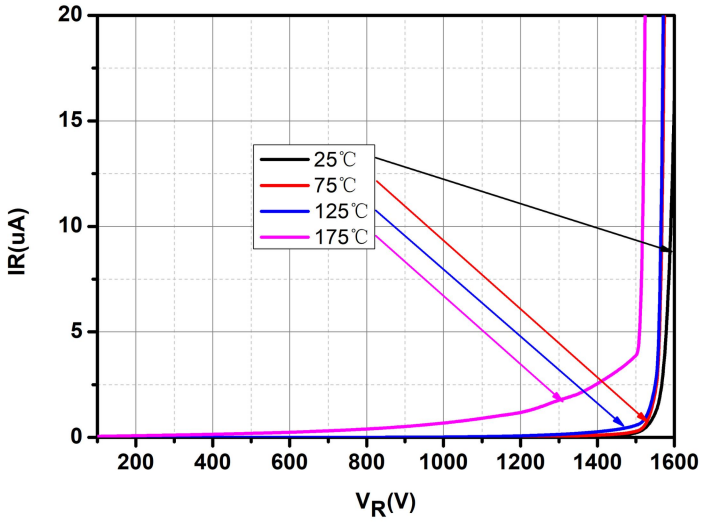


Fig.2-Typical Reverse Characteristics

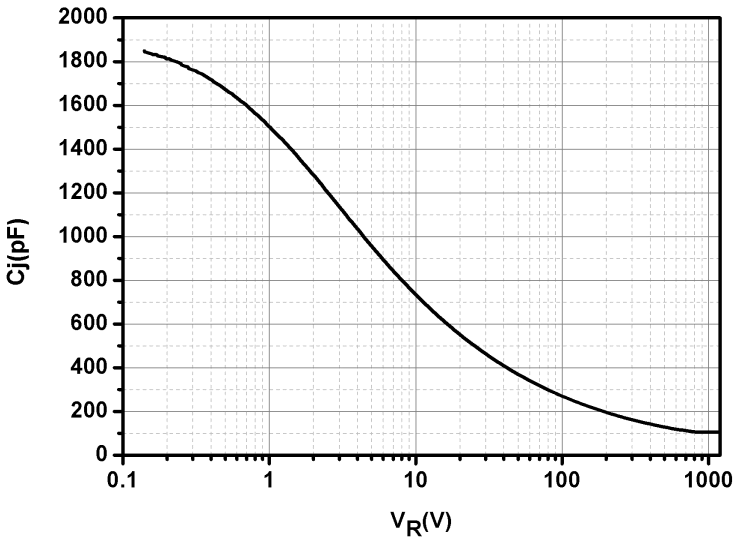


Fig.3-Capacitance vs. Reverse Voltage

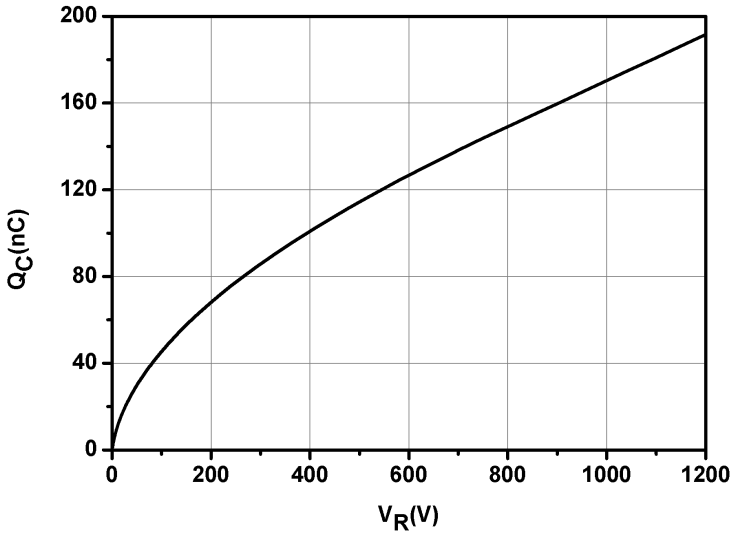


Fig.4-Total Capacitance Charge vs. Reverse Voltage

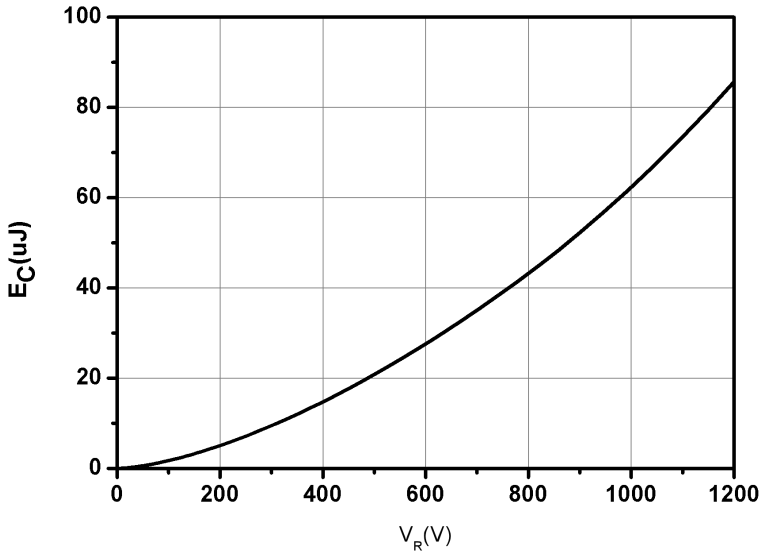


Fig.5-Capacitance Stored Energy

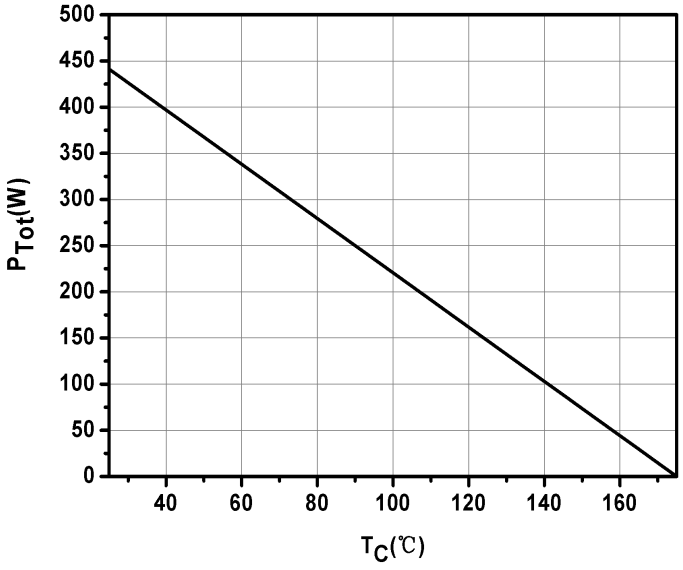


Fig.6-Power Derating

Technical Data
Data Sheet N3214, REV.-

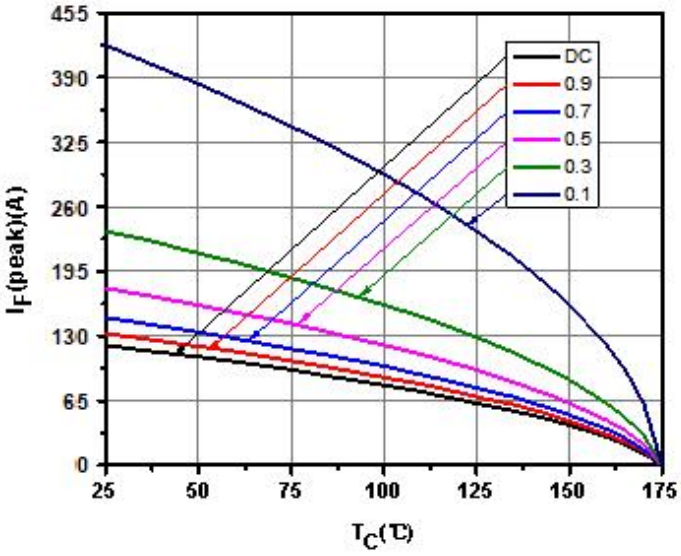
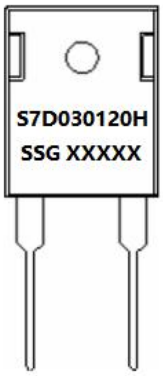


Fig.7-Power Derating

Marking Diagram

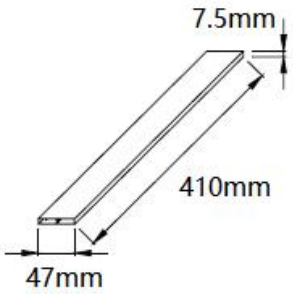


Where XXXXX is YYWWL

S7D	= Device Type
H	= Package type
030	= Forward Current (30A)
120	= Reverse Voltage (1200V)
SSG	= SSG
YY	= Year
WW	= Week
L	= Lot Number

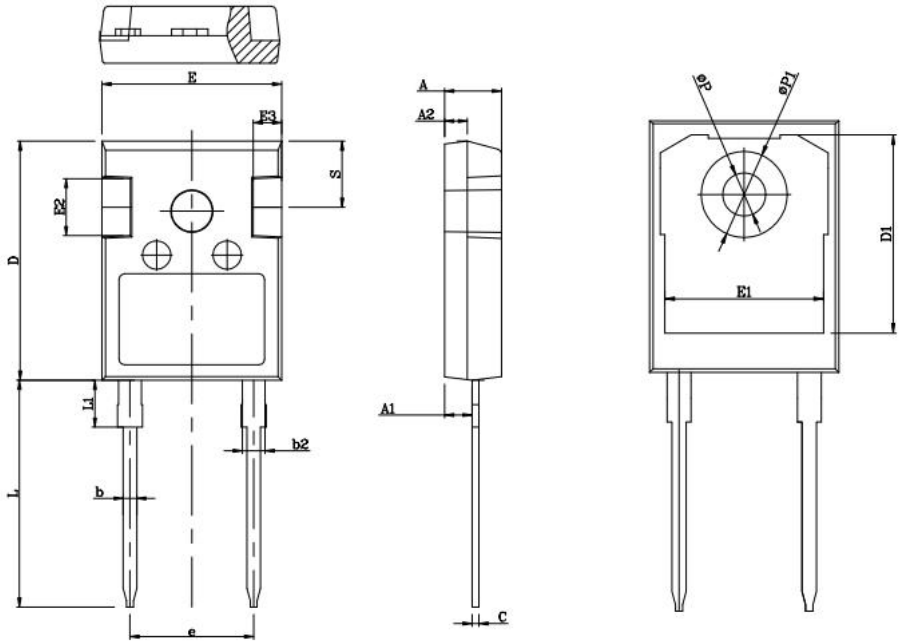
Cautions : Molding resin
Epoxy resin UL:94V-0

Tube Specification



TO-247AC(TO-247-2)

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



SYMBOL	mm			SYMBOL	mm		
	Min	Nom	Max		Min	Nom	Max
A	4.80	5.00	5.20	E1	13.00	13.26	13.56
A1	2.23	2.41	2.59	E2	4.80	5.00	5.20
A2	1.85	2.00	2.15	E3	2.30	2.50	2.70
b	1.11	1.21	1.36	e	10.88BSC		
b2	1.91	2.01	2.21	L	19.82	19.92	20.22
c	0.51	0.61	0.75	L1	3.94	4.12	4.30
D	20.80	21.00	21.30	ØP	3.40	3.60	3.80
D1	16.25	16.55	16.85	ØP1	7.08	7.19	7.30
E	15.50	15.80	16.10	S	6.15BSC		

Technical Data
Data Sheet N3214, REV.-

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