Technical Data
Data Sheet N2462, REV.A

S5D05170H S5D05170A
1700V SIC POWER SCHOTTKY RECTIFIERS

Description

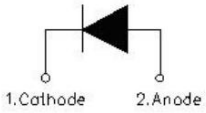
S5D05170H/S5D05170A are SiC Schottky rectifiers packaged in TO-247AC(TO-247-2) and TO-220AC(TO-220-2) case. The device is high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S5D05170H/S5D05170A are ideal for 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

S5D05170A	S5D05170H
	
TO-220AC (TO-220-2)	TO-247AC (TO-247-2)
	

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Maximum Ratings

Characteristics	Symbol	Condition	Max.	Units
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	-	1700	V
Average Rectified Forward Current	$I_{F\ (AV)1}$	Tc=25°C	22	A
	$I_{F\ (AV)2}$	Tc=161°C	5	A
Peak One Cycle Non-Repetitive Surge Current	I_{FSM1}	10ms, Half Sine pulse, Tc =25°C	115	A
	I_{FSM2}	10ms, Half Sine pulse, Tc =110°C	105	A
Repetitive Peak Forward Surge Current	I_{FRM1}	10 ms, Half Sine pulse , Tc =25°C	69	A
	I_{FRM2}	10 ms, Half Sine pulse , Tc =110°C	63	A
Non-Repetitive Peak Forward Surge Current	$I_{F,Max1}$	10μs. Pulse, Tc =25℃	200	A
	$I_{F,Max2}$	10μs. Pulse, Tc =110℃	160	A
Power Dissipation	P_{tot1}	Tc =25℃	166.7	W
	P_{tot2}	Tc =110℃	72.2	W

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V_{F1}	@ 5A, Pulse, T_J = 25 °C	1.5	1.8	V
	V_{F2}	@ 5A, Pulse, T_J = 175 °C	2.4	2.6	V
Reverse Current*	I_{R1}	@V_R = rated V_R, T_J = 25 °C	1	10	uA
	I_{R2}	@V_R = rated V_R, T_J = 175 °C	10	100	uA
Junction Capacitance	C_{T1}	VR=0V, f=1MHz, Tj=25℃,	497	-	pF
	C_{T2}	VR=1700V, f=1MHz, Tj=25℃,	28.6	-	pF
Reverse Recovery Charge	Q_c	I_F = 5A, di/dt = 200A/μs V_R = 1700 V, T_J =25°C	65.84	-	nC
Capacitance Stored Energy	E_C	V_R = 1700 V, T_J =25°C	67.91	-	μJ

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

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Thermal-Mechanical Specifications:

Characteristics	Symbol	S5D05170H	S5D05170A	Units
Junction Temperature	T_J	--55 to +175		°C
Storage Temperature	T_{stg}	--55 to +175		°C
Typical Thermal Resistance Junction to Case	$R_{\theta JC}$	0.8	0.9	°C/W

Ordering Information

Device	Package	Shipping
S5D05170H	TO-247AC(TO-247-2)	25pcs / tube
S5D05170A	TO-220AC(TO-220-2)	50pcs / tube

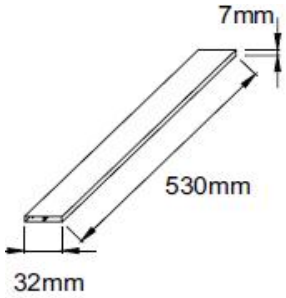
Marking Diagram

Where XXXXX is YYWWL

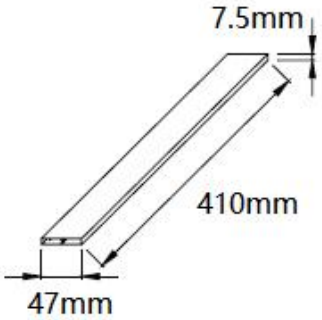
S5D = Device Type
H/A = Package type
05 = Forward Current (5A)
170 = Reverse Voltage (1700V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

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

Tube Specification



TO-220AC(TO-220-2)



TO-247AC(TO-247-2)

Ratings and Characteristics Curves

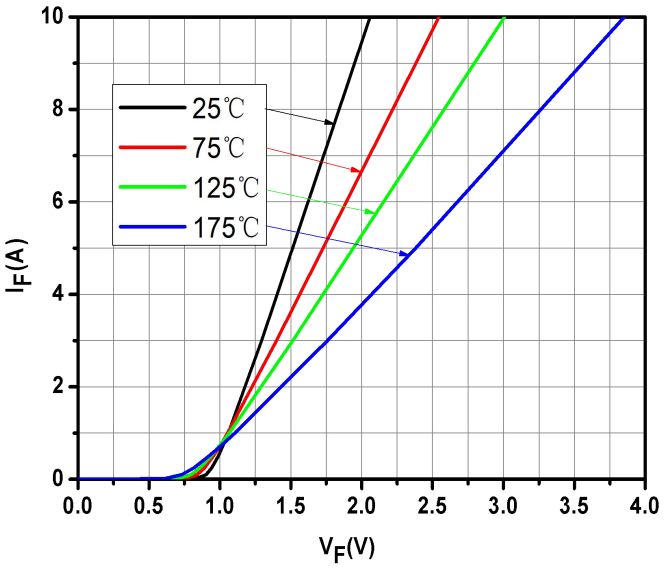


Fig.1-Typical Forward Voltage Characteristics

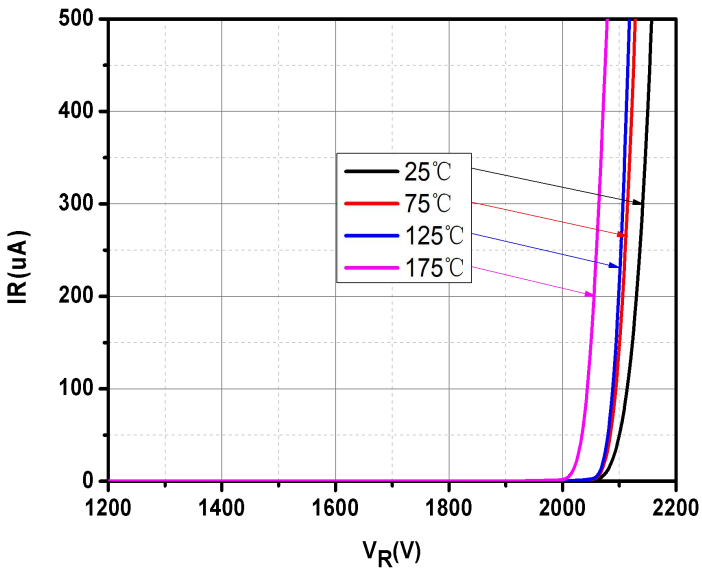


Fig.2-Typical Reverse Characteristics

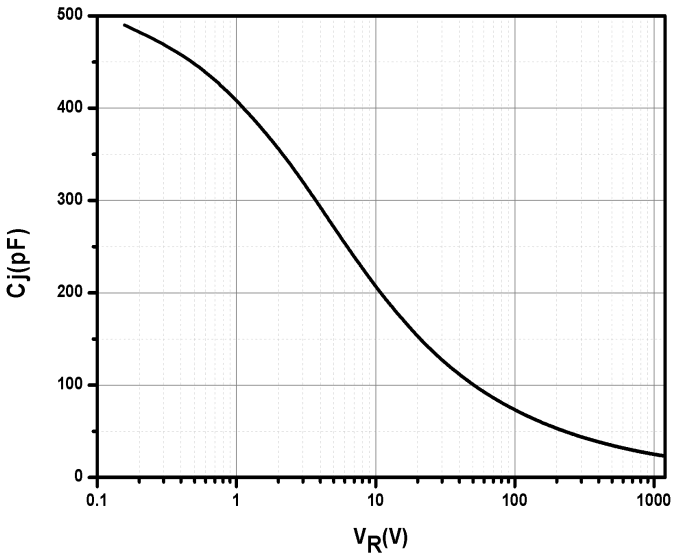


Fig.3-Capacitance vs. Reverse Voltage

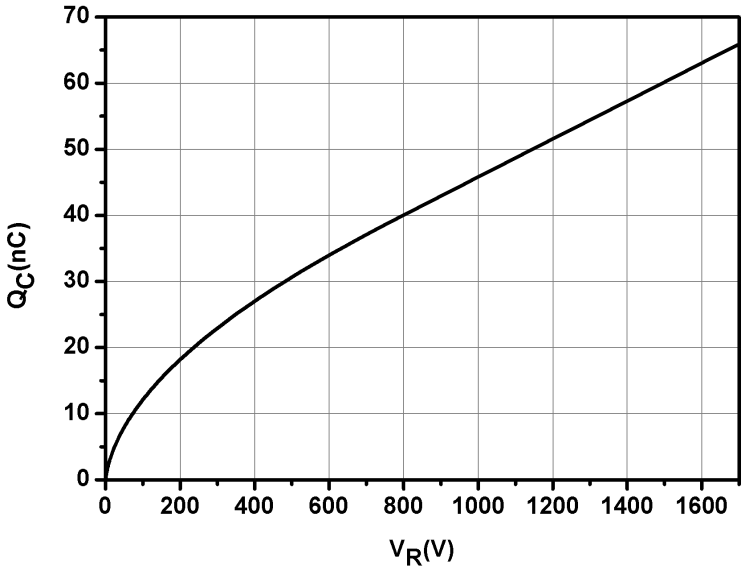


Fig.4-Total Capacitance Charge vs. Reverse Voltage

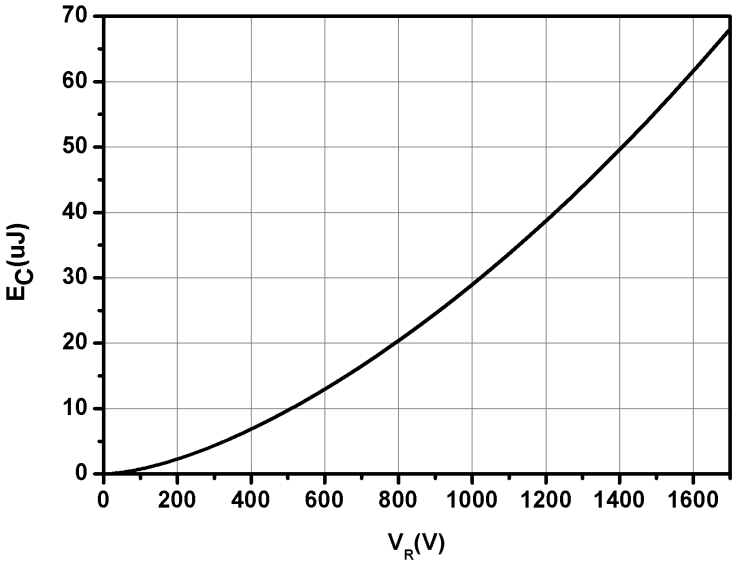


Fig.5-Capacitance Stored Energy

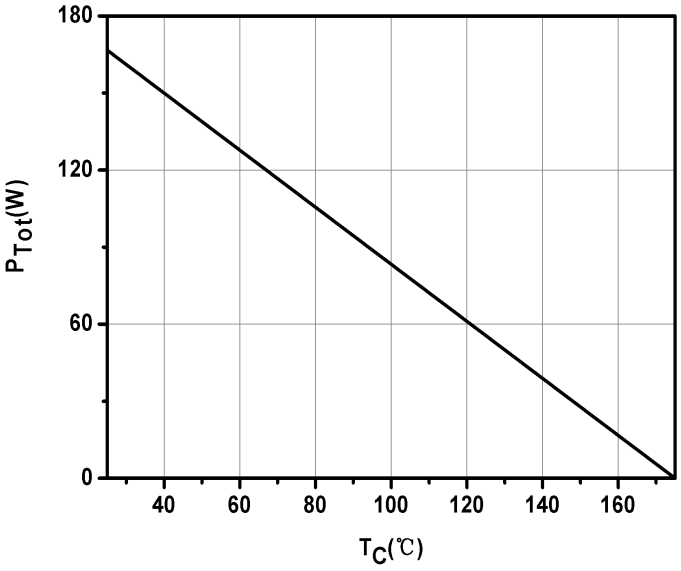


Fig.7-Power Derating

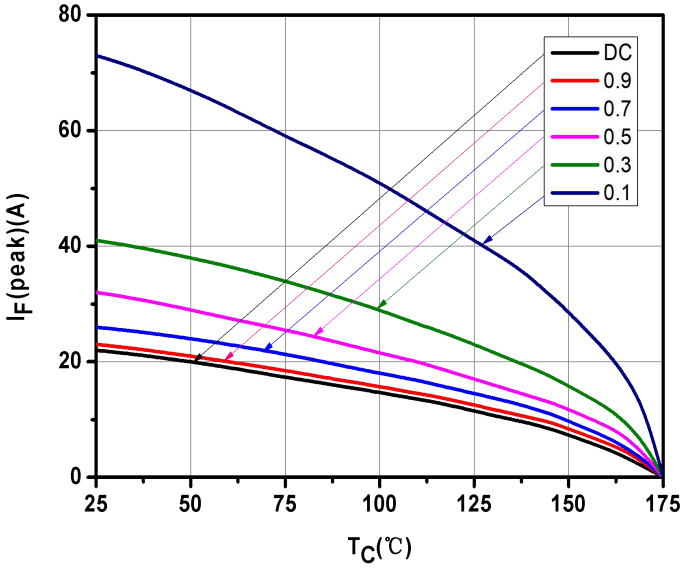
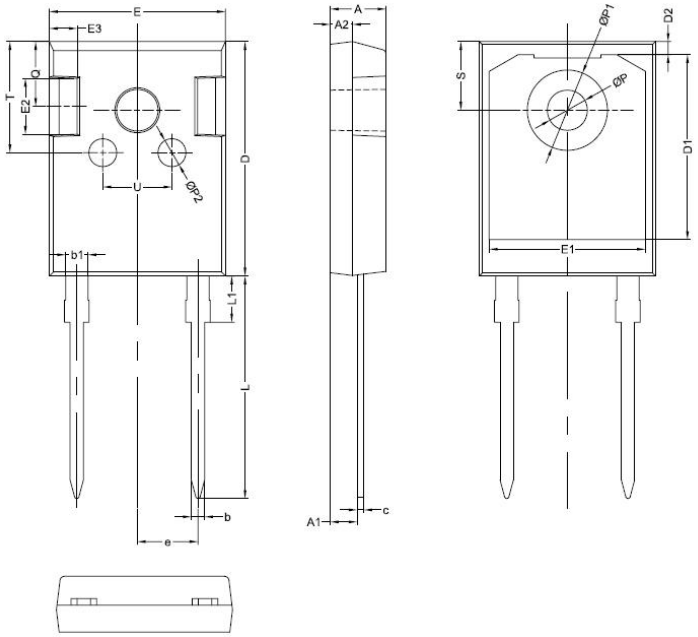


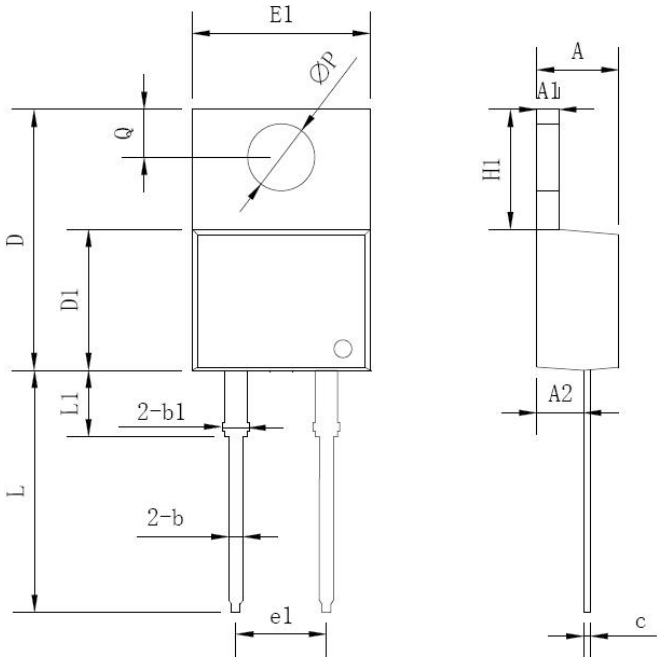
Fig.8-Current Derating

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 TO-220AC(TO-220-2)



Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	3.56	-	4.83
A1	0.51	-	1.40
A2	2.03	-	2.92
b	0.38	-	1.02
b1	1.14	-	1.78
c	0.31	-	0.61
D	14.22	-	16.51
D1	8.38	-	9.42
E1	9.65	10.16	10.67
e1	-	5.08	-
H1	5.84	-	6.86
L	12.70	-	14.73
L1	-	-	6.35
ΦP	-	3.56	-
Q	2.54	-	3.43

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