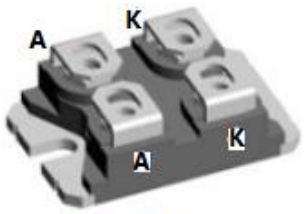
Technical Data
Data Sheet N2597, REV.-

S5D50170S2
1700V SIC POWER SCHOTTKY RECTIFIER

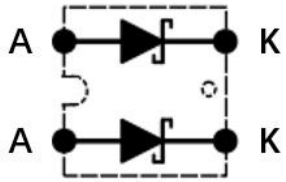


SOT-227

Description

S5D50170S2 is a SiC Schottky rectifier packaged in SOT-277 case. The device is high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S5D50170S2 is ideal for energy sensitive, high frequency applications in challenging environments.

Circuit Diagram



Features

- 175°C T_J operation
- Low Reverse Leakage Current
- Switching speeds independent of operating temperature
- Low total conduction losses
- High forward surge current capability
- High package isolation voltage
- Low VF for High Temperature Operation
- 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 Working Peak Reverse Voltage DC Blocking Voltage(per leg)	V_{RRM} V_{RWM} V_R	-	1700	V
Average Rectified Forward Current(per leg)	$I_{F\ (AV)1}$	T_C =25°C	54	A
	$I_{F\ (AV)2}$	T_C =137°C	25	A
Peak One Cycle Non-Repetitive Surge Current(per leg)	I_{FSM1}	10ms, Half Sine pulse, T_C =25°C	280	A
	I_{FSM2}	10ms, Half Sine pulse, T_C =110°C	210	A
Repetitive Peak Forward Surge Current(per leg)	I_{FRM1}	10ms, Half Sine pulse , T_C =25°C	168	A
	I_{FRM2}	10ms, Half Sine pulse , T_C =110°C	122	A
Power Dissipation(per leg)	P_{tot1}	T_C =25℃	263	W
	P_{tot2}	T_C =110℃	114	W
I^2t Value(per leg)	$\int i^2t1$	10ms, Tc=25℃	312	A^2s
	$\int i^2t2$	10ms, Tc=25℃	310	A^2s

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Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*(per leg)	V_{F1}	@ 25A, Pulse, T_J = 25 °C	1.55	1.8	V
	V_{F2}	@ 25A, Pulse, T_J = 175 °C	2.5	3.0	V
Reverse Current*(per leg)	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	20	200	uA
Junction Capacitance(per leg)	C_T	VR=0V, f=1MHz, Tj=25℃,	2252	-	pF
Reverse Recovery Charge(per leg)	Q_c	V_R = 1700 V, T_J =25°C	279	-	nC
Capacitance Stored Energy(per leg)	E_C	V_R = 1700 V, T_J =25°C	303	-	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(per leg)	$R_{\theta JC}$	DC operation, Tj=25℃	0.57	°C/W

Ordering Information

Device	Package	Shipping
S5D50170S2	SOT-227	36pcs / BULK

Ratings and Characteristics Curves(per leg)

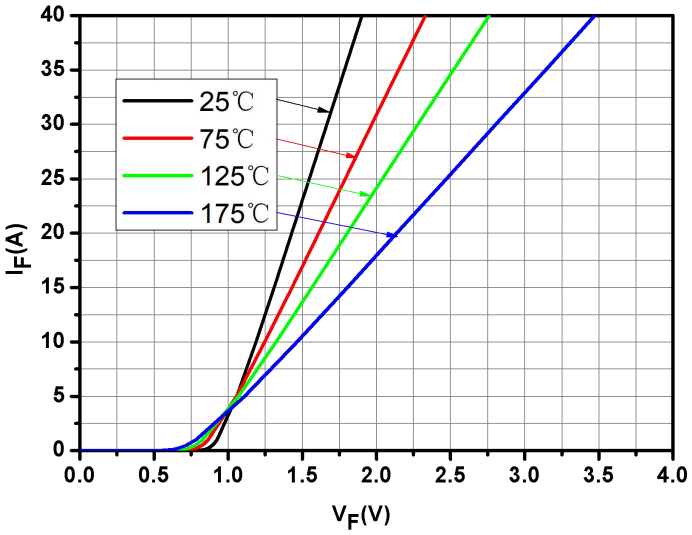

Fig.1-Typical Forward Voltage Characteristics

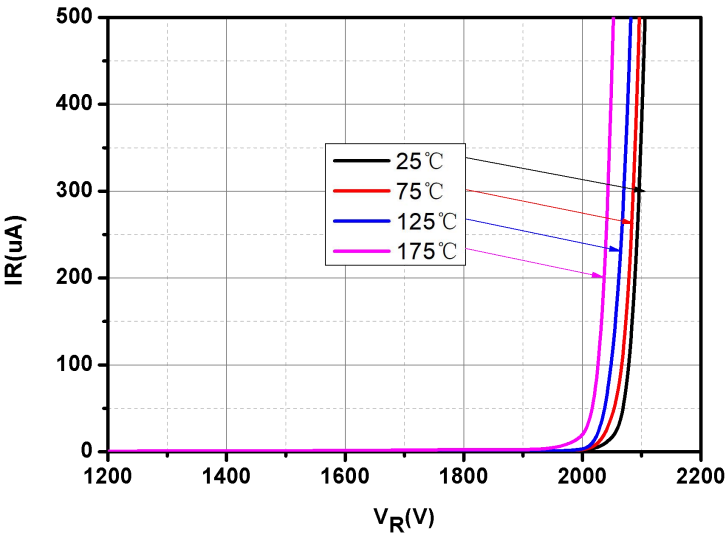

Fig.2-Typical Reverse Characteristics

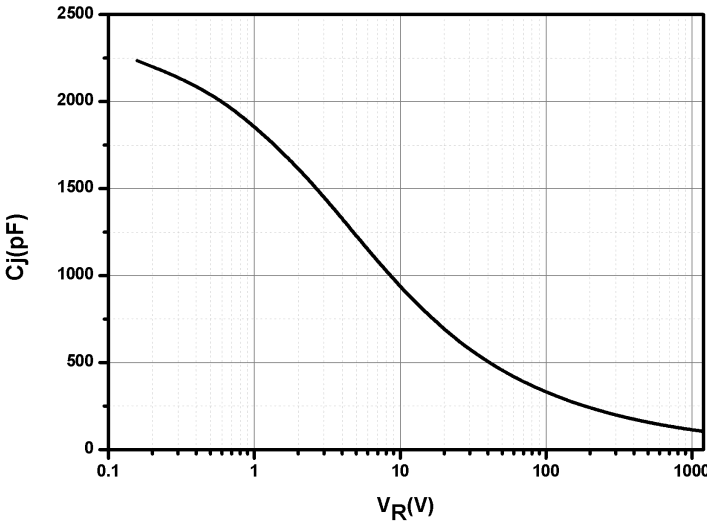

Fig.3-Capacitance vs. Reverse Voltage

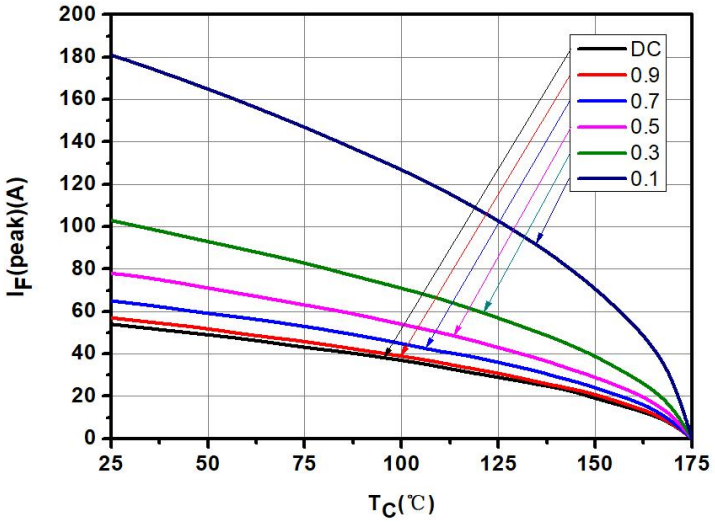

Fig.4-Current Derating

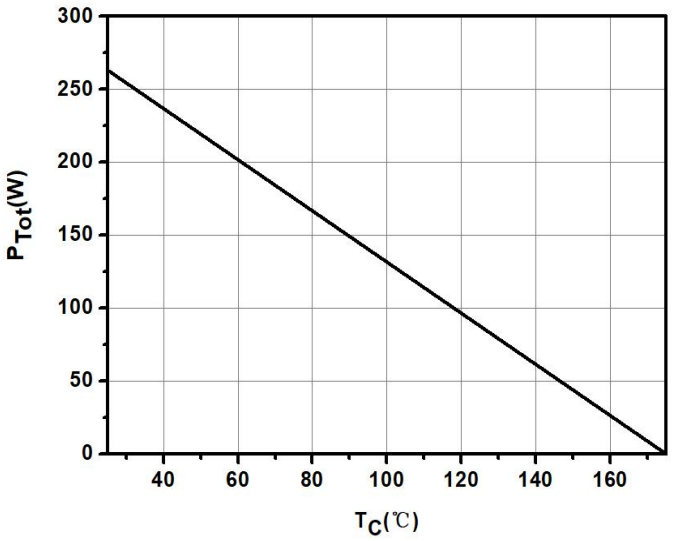

Fig.5-Power Derating

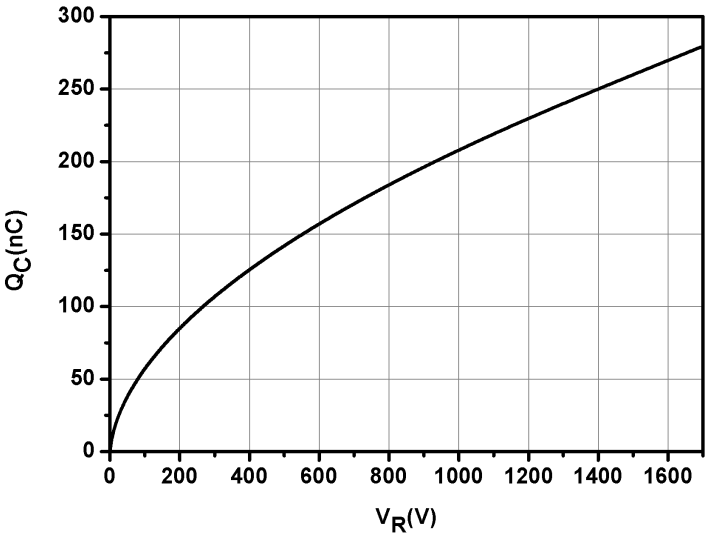

Fig.6-Total Capacitance Charge vs. Reverse Voltage

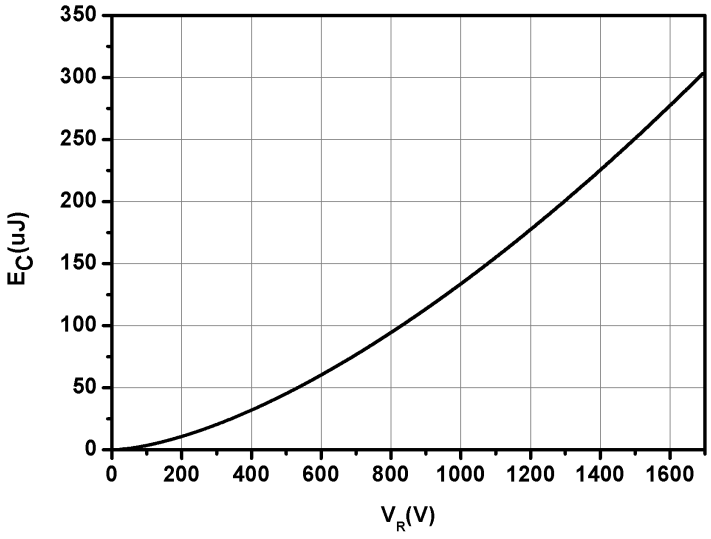

Fig.7-Capacitance Stored Energy

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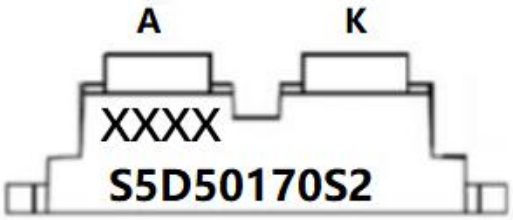
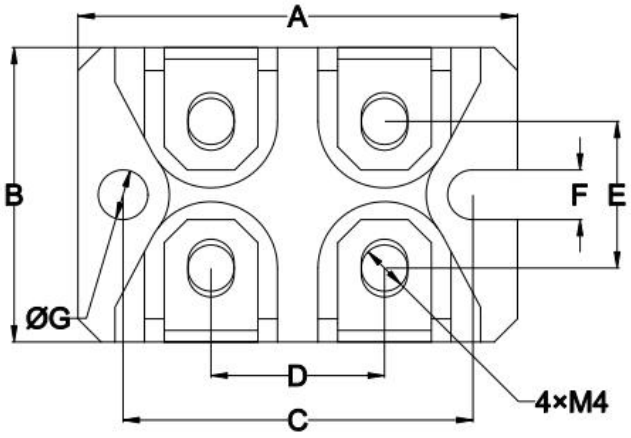
Marking Diagram



Where XXXX is YYWW

S5D	= Device Type
S2	= Package type
50	= Forward Current (50A)
170	= Reverse Voltage (1700V)
SSG	= SSG
YY	= Year
WW	= Week

Mechanical Dimensions SOT-227



SYMBOL	Dimensions in millimeters	
	Min.	Max.
A	37.8	38.2
B	24.8	25.2
C	29.9	30.5
D	14.5	15.5
E	12.2	13.2
F	4.1	4.31
G	φ4.1	φ4.31
H	11	12.5
I	1.9	2.1
K	4.3	6.5

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