Technical Data
Data Sheet N2544, REV.-

SD080N12S1
1200V SIC POWER SCHOTTKY RECTIFIER

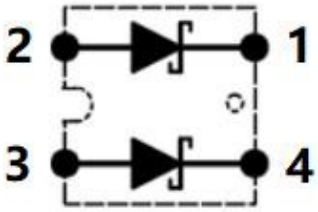


SOT-227

Description

SD080N12S1 is a SiC Schottky rectifier packaged in SOT-227 case. The device is high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The SD080N12S1 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**
- **Pb − Free Device**
- **All 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	-	1200	V
Average Rectified Forward Current(per leg)	$I_{F\ (AV)1}$	T_C =25°C	128	A
	$I_{F\ (AV)2}$	T_C =155°C	41	A
Peak One Cycle Non-Repetitive Surge Current(per leg)	I_{FSM1}	10ms, Half Sine pulse, T_C =25°C	340	A
	I_{FSM2}	10ms, Half Sine pulse, T_C =110°C	245	A
Repetitive Peak Forward Surge Current(per leg)	I_{FRM1}	10ms, Half Sine pulse , T_C =25°C	161	A
	I_{FRM2}	10ms, Half Sine pulse , T_C =110°C	91	A
Power Dissipation(per leg)	P_{tot1}	T_C =25℃	667	W
	P_{tot2}	T_C =110℃	289	W
I^2t Value(per leg)	$\int i^2t1$	10ms, Tc=25℃	305	A^2s
	$\int i^2t2$	10ms, Tc=25℃	300	A^2s

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*(per leg)	V_{F1}	@ 40A, Pulse, T_J = 25 °C	1.5	1.8	V
	V_{F2}	@ 40A, Pulse, T_J = 175 °C	2.2	3.0	V
Reverse Current*(per leg)	I_{R1}	@V_R = rated V_R, T_J = 25 °C	2	100	uA
	I_{R2}	@V_R = rated V_R, T_J = 175 °C	10	300	uA
Junction Capacitance(per leg)	C_T	VR=0V, f=1MHz, Tj=25℃,	2530	-	pF
Reverse Recovery Charge(per leg)	Q_c	V_R = 800 V, T_J =25°C	195	-	nC
Capacitance Stored Energy(per leg)	E_C	V_R = 800 V, T_J =25°C	100	-	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℃	0.66	°C/W

Ordering Information

Device	Package	Shipping
SD080N12S1	SOT-227	12pcs / TUBE

Ratings and Characteristics Curves(per leg)

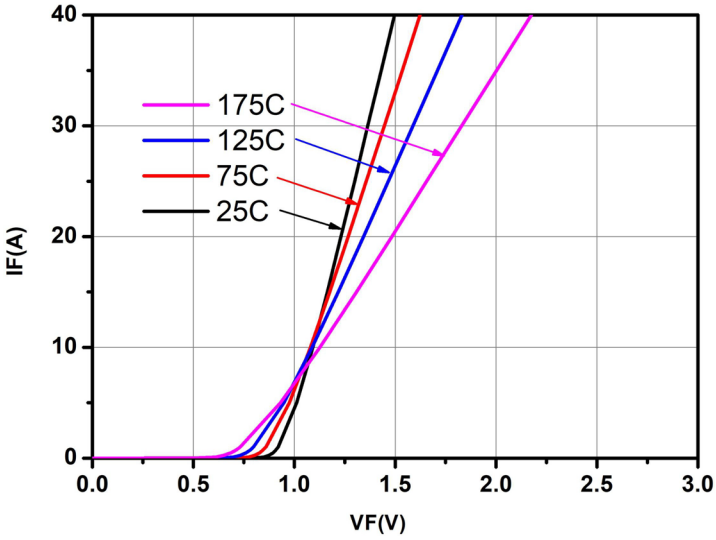


Fig.1-Typical Forward Voltage Characteristics

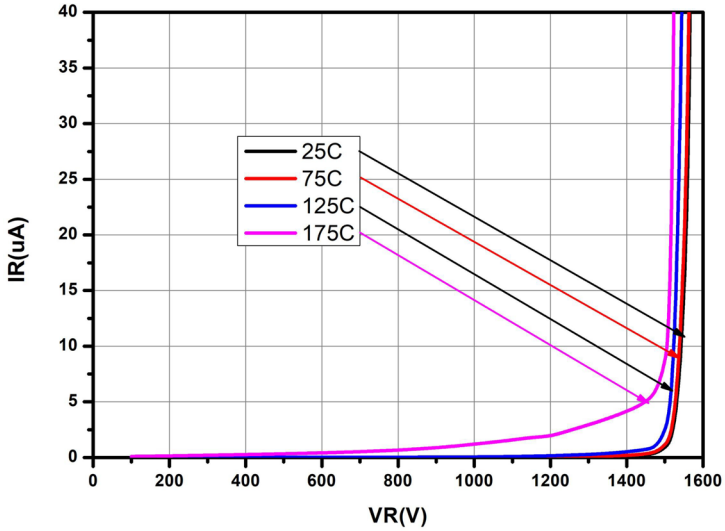


Fig.2-Typical Reverse Characteristics

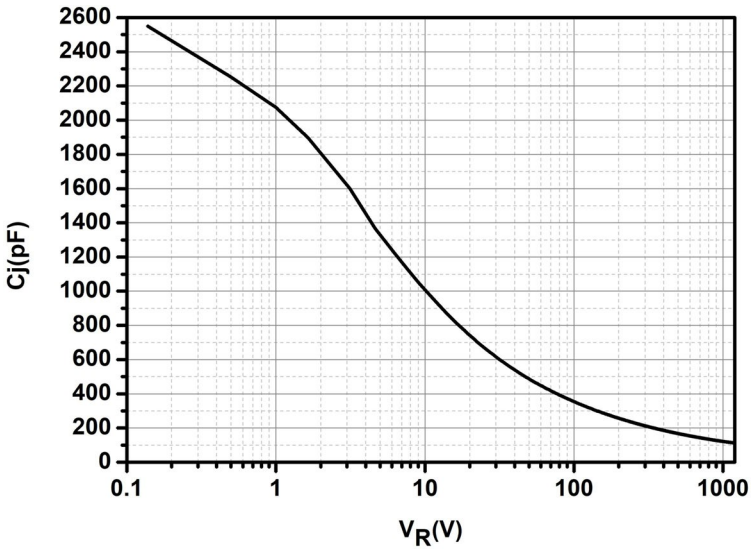


Fig.3-Capacitance vs. Reverse Voltage

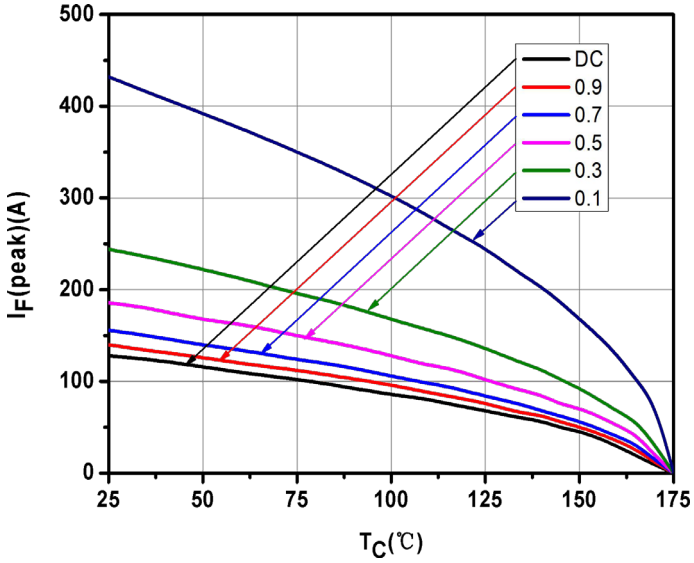


Fig.4-Current Derating

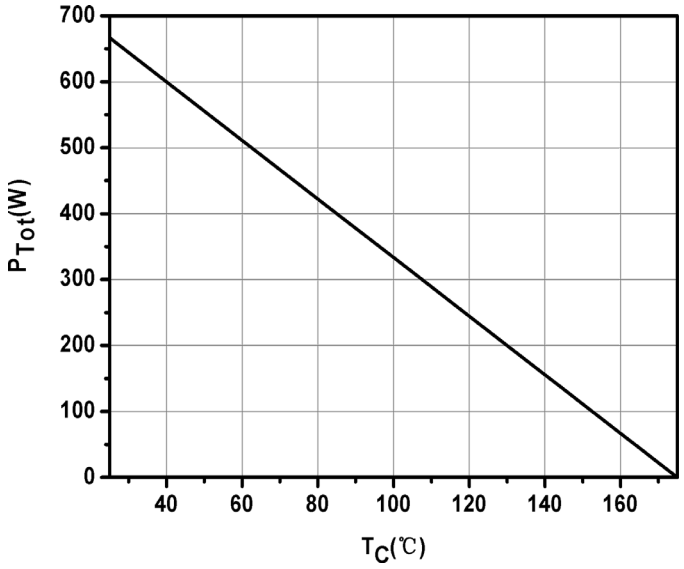


Fig.5-Power Derating

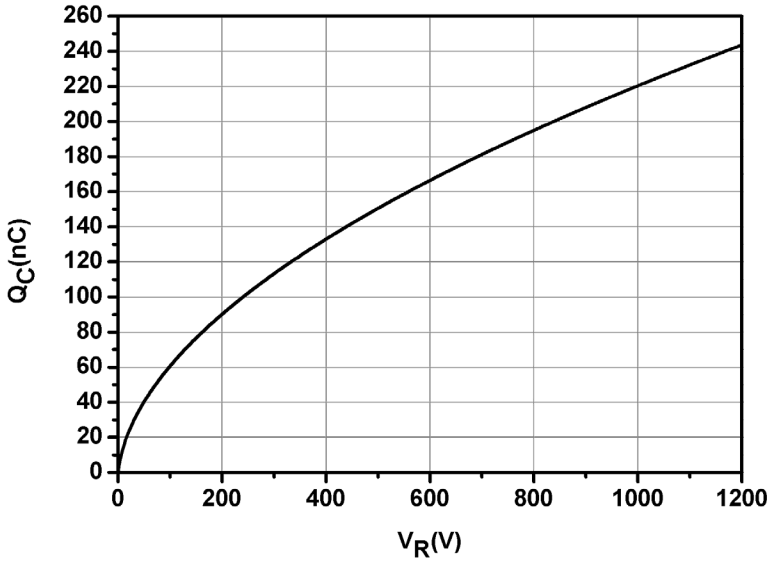


Fig.6-Total Capacitance Charge vs. Reverse Voltage

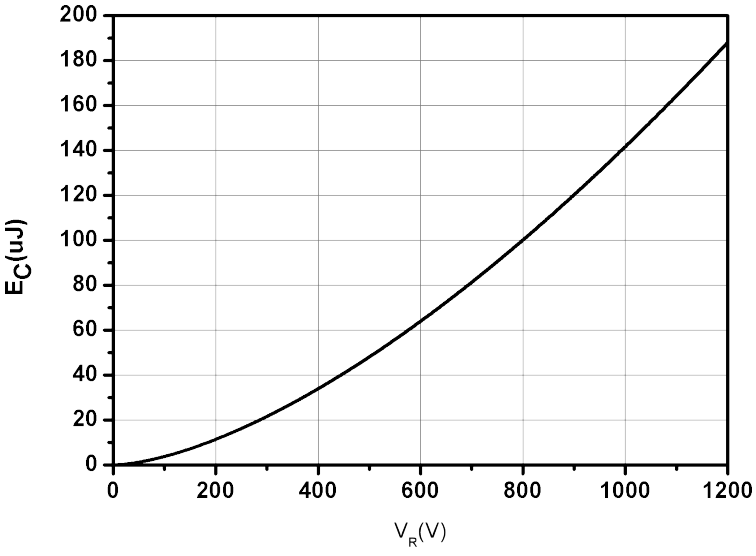
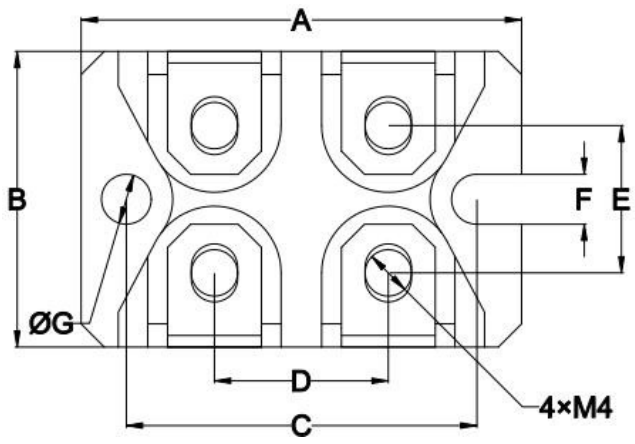


Fig.7-Capacitance Stored Energy

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