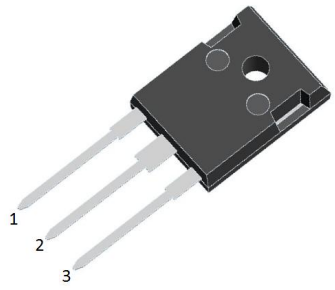
Technical Data
Data Sheet N2275, Rev.C

SICRS50650WT
650V SIC POWER SCHOTTKY RECTIFIER

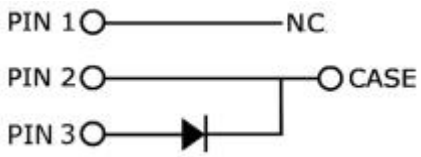


TO-247AD

Description

SICRS50650WT is single SiC Schottky rectifiers packaged in TO-247AD case.The device is a high voltage Schottky rectifier pair that has very low total conduction losses and very stable switching characteristics over temperature extremes. The SICRS50650WT are 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
- Guard ring for enhanced ruggedness and long term reliability
- Pb − Free Device
- Terminals finish: 100% Pure Tin
- 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	V_{RRM} V_{RWM} V_R	-	650	V
Average Rectified Forward Current	$I_{F\ (AV)}$	50% duty cycle @Tc=130°C, rectangular wave form	50	A
Peak One Cycle Non-Repetitive Surge Current (Per Leg)	I_{FSM}	10ms, Half Sine pulse, T_C = 25 °C	400	A
Non-Repetitive Peak Forward Surge Current (Per Leg)	$I_{F,MAX}$	10us, Pulse, T_C = 25 °C	2000	A

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Electrical Characteristics:

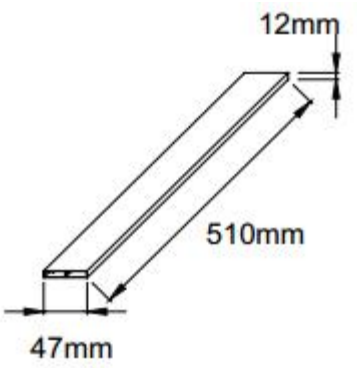
Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop(Per Leg)*	V_{F1}	@ 50A, Pulse, T_J = 25 °C	-	1.70	V
	V_{F2}	@ 50A, Pulse, T_J = 175°C	-	2.20	V
Reverse Current at DC condition(Per Leg)*	I_{R1}	@V_R = rated V_R T_J = 25 °C	-	500	μA
	I_{R2}	@V_R = rated V_R T_J = 175 °C	-	1000	μA
Total Capacitive charge(Per Leg)	Q_C	V_r = 400 V, I_F = 50A dI_F/dt = 200 A/μs, T_j = 25 °C	249.5	-	nC
Junction Capacitance(Per Leg)	C_T	@V_R = 0V, T_C = 25 °C, f_{SIG} = 1MHz	4	-	nF
Voltage Rate of Change	dv/dt	-	-	10,000	V/μs

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

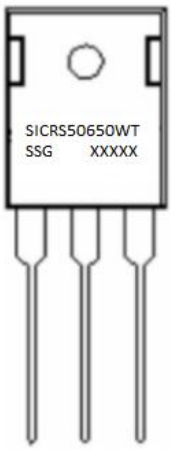
Thermal-Mechanical Specifications:

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	$R_{\theta JC}$	DC operation	0.5	°C/W
Approximate Weight	wt	-	6.28	g
Case Style	TO-247AD			

Tube Specification



Marking Diagram



Where XXXXX is YYWWL

SICR	= Device Type
S	= Single
50	= Forward Current 50A)
650	= Reverse Voltage (650V)
WT	= Configuration
SSG	= SSG
YY	= Year
WW	= Week
L	= Lot Number

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

Ratings and Characteristics Curves

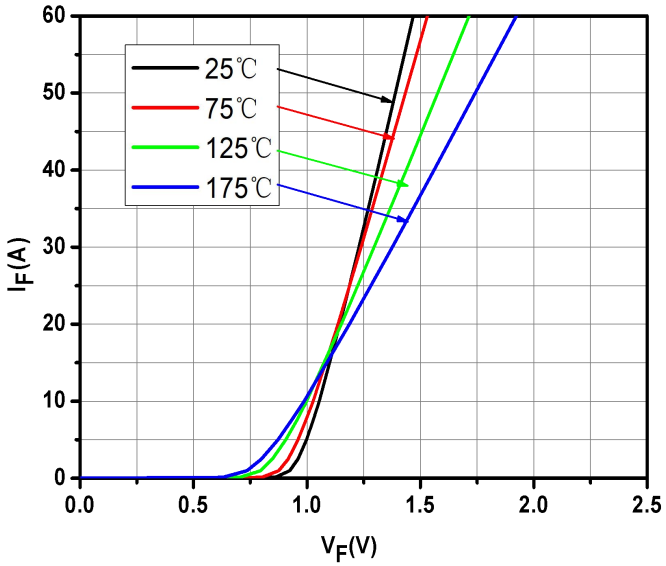


Fig.1-Typical Forward Voltage Characteristics

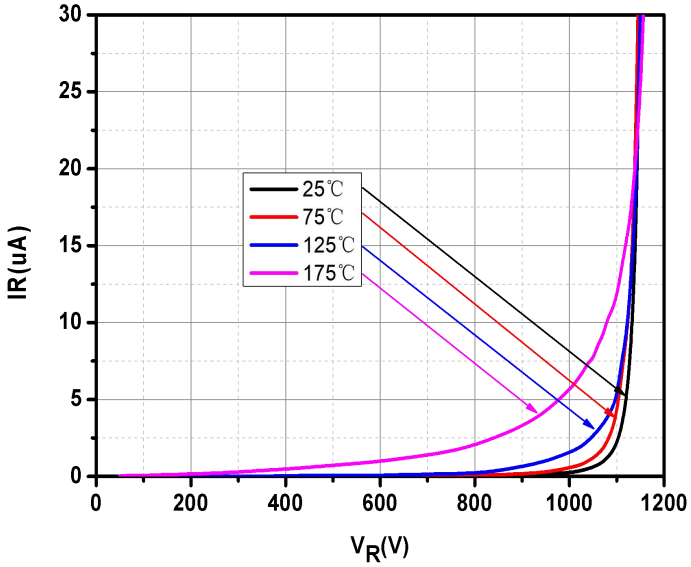


Fig.2-Typical Reverse Characteristics

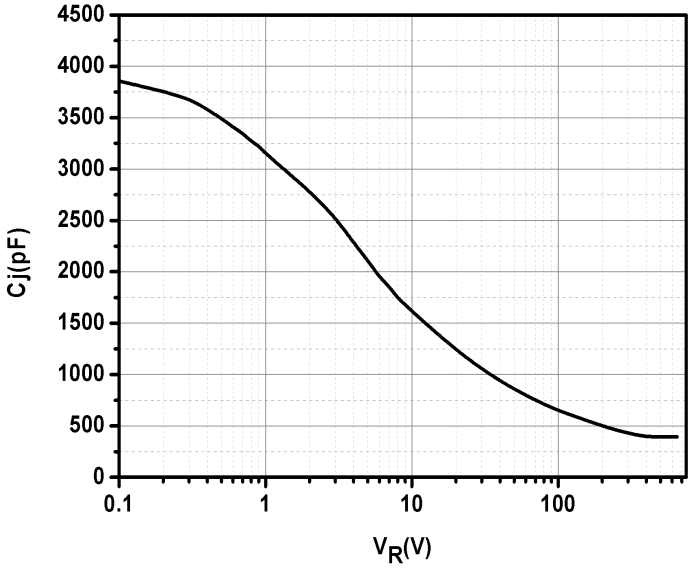


Fig.3-Capacitance vs. Reverse Voltage

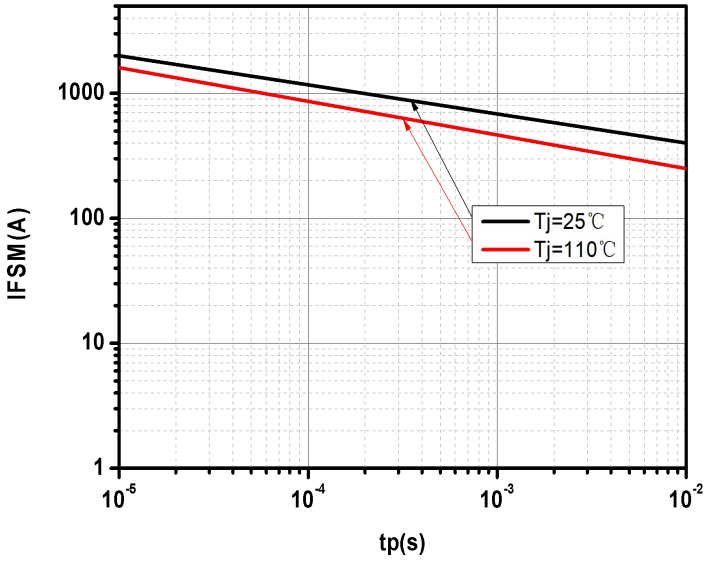


Fig.4-Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

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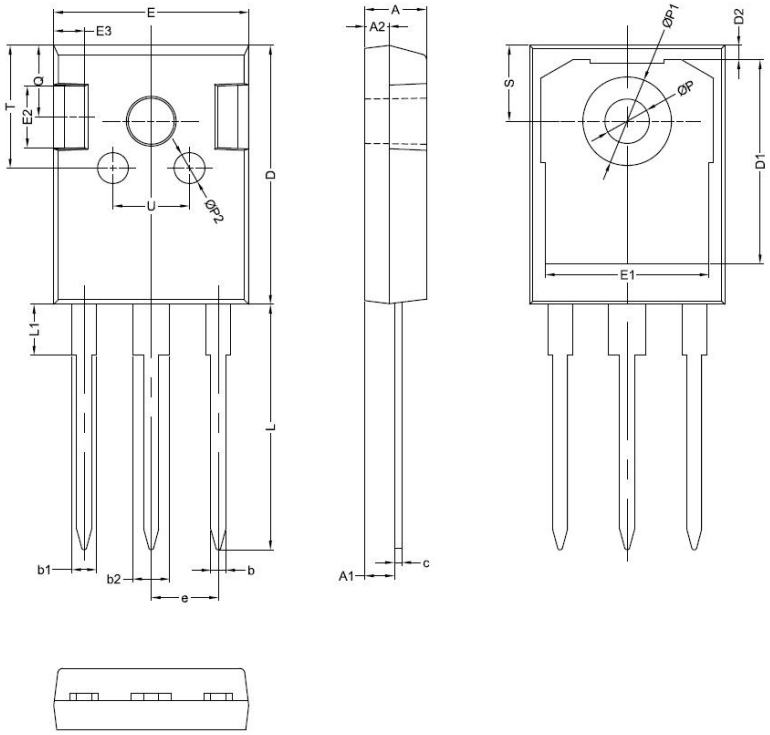
Mechanical Dimensions TO-247AD



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	1.40
b1	1.80	2.00	2.20
b2	2.80	3.00	3.20
c	0.50	0.60	0.75
D	20.30	21.00	21.20
D1		16.55	
D2		1.20	
E	15.45	15.80	16.00
E1		13.30	
E2		5.00	
E3		2.50	
e		5.44	
L	19.42	19.92	20.70
L1		4.13	
P	3.50	3.60	3.70
P1	7.1		7.40
P2		2.50	
Q		5.80	
S	6.05	6.15	6.25
T		10.00	
U		6.20	

Ordering Information

Device	Package	Plating	Weight	Shipping
SICRS50650WT	TO-247AD	Pure Sn	6.28g	25pcs / tube

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