

SICRS50650WT

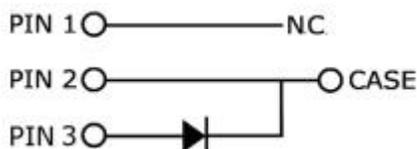
650V SIC POWER SCHOTTKY RECTIFIER



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



Applications

- Alternative energy inverters
- Power Factor Correction (PFC)
- Free-Wheeling diodes
- Switching supply output rectification
- Reverse polarity protection

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

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 @T _c =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

Electrical Characteristics:

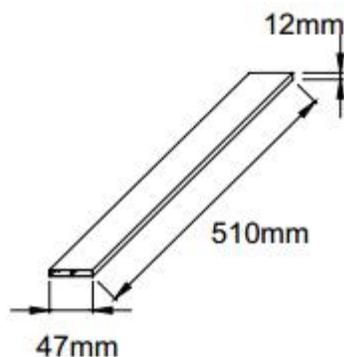
Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop(Per Leg)*	V _{F1}	@ 50A, Pulse, T _J = 25 °C	-	1.70	V
	V _{F2}	@ 50A, Pulse, T _J = 175°C	-	2.20	V
Reverse Current at DC condition(Per Leg)*	I _{R1}	@V _R = rated V _R T _J = 25 °C	-	500	μA
	I _{R2}	@V _R = rated V _R T _J = 175 °C	-	1000	μA
Total Capacitive charge(Per Leg)	Q _C	V _r = 400 V, I _F = 50A dI _F /dt = -500 A/μs, T _J = 25 °C	110	-	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%

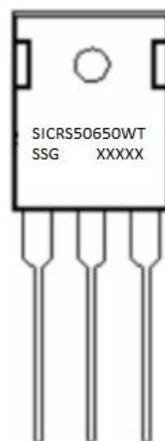
Thermal-Mechanical Specifications:

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 _{θJC}	DC operation	0.5	°C/W
Approximate Weight	wt	-	6.28	g
Case Style	TO-247AD			

Tube Specification



Marking Diagram

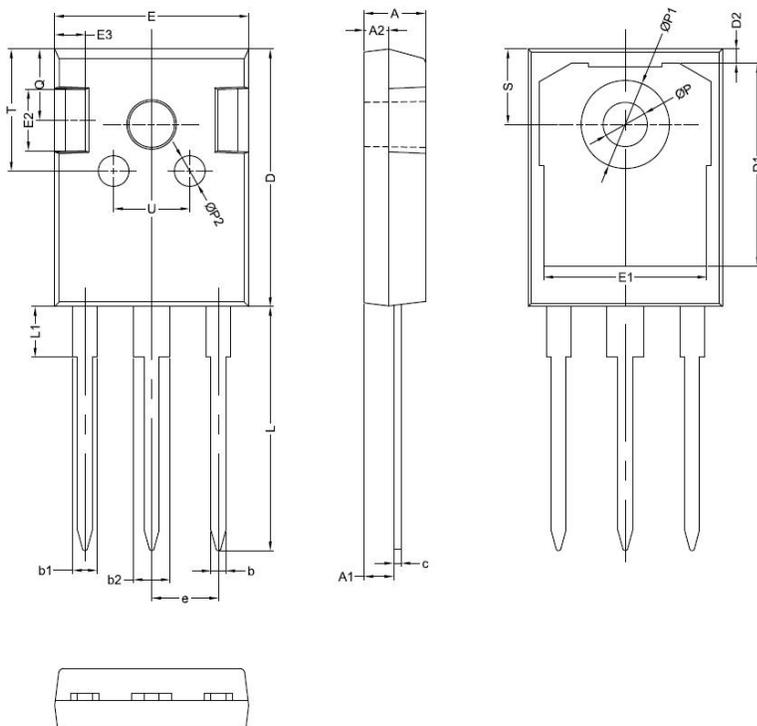


Where XXXXX is YYWWL

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

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

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.



DISCLAIMER:

- 1- The information given herein, including the specifications and dimensions, is subject to change without prior notice to improve product characteristics. Before ordering, purchasers are advised to contact the SMC Diode Solutions sales department for the latest version of the datasheet(s).
- 2- In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, medical equipment, and safety equipment), safety should be ensured by using semiconductor devices that feature assured safety or by means of users' fail-safe precautions or other arrangement.
- 3- In no event shall SMC Diode Solutions be liable for any damages that may result from an accident or any other cause during operation of the user's units according to the datasheet(s). SMC Diode Solution assumes no responsibility for any intellectual property claims or any other problems that may result from applications of information, products or circuits described in the datasheets.
- 4- In no event shall SMC Diode Solutions be liable for any failure in a semiconductor device or any secondary damage resulting from use at a value exceeding the absolute maximum rating.
- 5- No license is granted by the datasheet(s) under any patents or other rights of any third party or SMC Diode Solutions.
- 6- The datasheet(s) may not be reproduced or duplicated, in any form, in whole or part, without the expressed written permission of SMC Diode Solutions.
- 7- The products (technologies) described in the datasheet(s) are not to be provided to any party whose purpose in their application will hinder maintenance of international peace and safety nor are they to be applied to that purpose by their direct purchasers or any third party. When exporting these products (technologies), the necessary procedures are to be taken in accordance with related laws and regulations..