

# SICRS50650WT

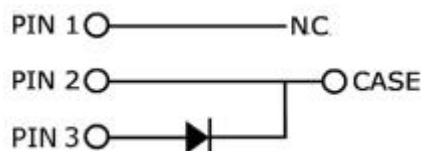
## 650V SiC POWER SCHOTTKY RECTIFIER



### 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



### Features

- 175°C T<sub>J</sub> 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 <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	-	650	V
Average Rectified Forward Current	I <sub>F(AV)</sub>	50% duty cycle @T <sub>c</sub> =130°C, rectangular wave form	50	A
Peak One Cycle Non-Repetitive Surge Current (Per Leg)	I <sub>FSM</sub>	10ms, Half Sine pulse, T <sub>c</sub> = 25 °C	400	A

**Electrical Characteristics:**

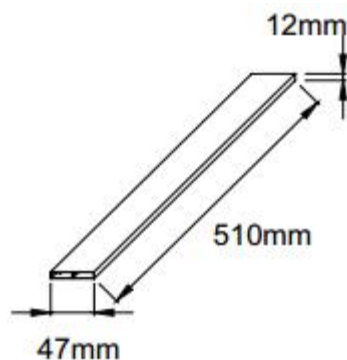
Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop(Per Leg)*	V <sub>F1</sub>	@ 50A, Pulse, T <sub>J</sub> = 25 °C	-	1.70	V
	V <sub>F2</sub>	@ 50A, Pulse, T <sub>J</sub> = 175°C	-	2.20	V
Reverse Current at DC condition(Per Leg)*	I <sub>R1</sub>	@V <sub>R</sub> = rated V <sub>R</sub> T <sub>J</sub> = 25 °C	-	500	μA
	I <sub>R2</sub>	@V <sub>R</sub> = rated V <sub>R</sub> T <sub>J</sub> = 175 °C	-	1000	μA
Total Capacitive charge(Per Leg)	Q <sub>C</sub>	V <sub>r</sub> = 400 V, I <sub>F</sub> = 50A dI <sub>F</sub> /dt = -500 A/μs, T <sub>J</sub> = 25 °C	110	-	nC
Junction Capacitance(Per Leg)	C <sub>T</sub>	@V <sub>R</sub> = 0V, T <sub>C</sub> = 25 °C, f <sub>SIG</sub> = 1MHz	4	-	nF
Voltage Rate of Change	dv/dt	-	-	10,000	V/μs

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

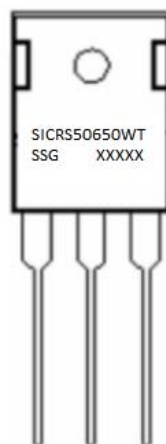
**Thermal-Mechanical Specifications:**

Characteristics	Symbol	Condition	Specification	Units
Junction Temperature	T <sub>J</sub>	-	-55 to +175	°C
Storage Temperature	T <sub>stg</sub>	-	-55 to +175	°C
Typical Thermal Resistance Junction to Case	R <sub>θJC</sub>	DC operation	0.5	°C/W
Approximate Weight	wt	-	6.28	g
Case Style	TO-247AD			

**Tube Specification**



**Marking Diagram**

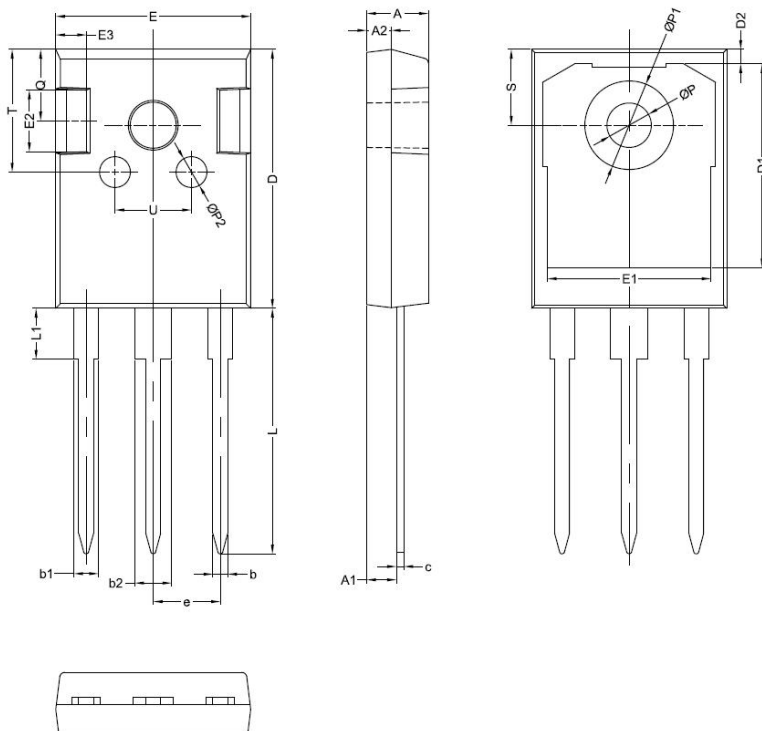


Where XXXXX is YYWWL

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.



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