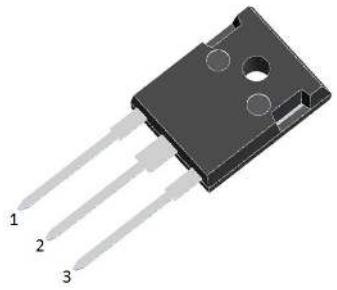
Technical Data
Data Sheet N1996, Rev.-

SICR20650WT
650V SIC POWER SCHOTTKY RECTIFIER

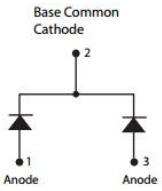


TO-247AD

Description

SICR20650WT 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 SICR20650WT 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**
- **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=115°C, rectangular wave form	10(Per Leg) 20(Per Device)	A
Peak One Cycle Non-Repetitive Surge Current (Per Leg)	I_{FSM}	10ms, Half Sine pulse, T_C = 25 °C	40	A

Technical Data
Data Sheet N1996, Rev.-

Electrical Characteristics:

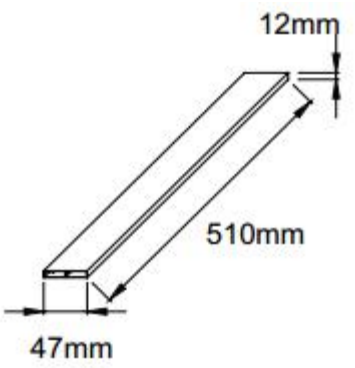
Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop(Per Leg)*	V_{F1}	@ 10A, Pulse, T_J = 25 °C	1.5	1.7	V
	V_{F2}	@ 10A, Pulse, T_J = 175 °C	1.6	2.1	V
Reverse Current at DC condition(Per Leg)*	I_{R1}	@V_R = rated V_R T_J = 25 °C	30	150	μA
	I_{R2}	@V_R = rated V_R T_J = 175 °C	210	1500	μA
Total Capacitive charge(Per Leg)	Q_C	V_r = 400 V, I_F = 10A dIF/dt = -200 A/μs, T_j = 150 °C	12	-	nC
Junction Capacitance(Per Leg)	C_T	@V_R = 0V, T_C = 25 °C, f_{SIG} = 1MHz	650	-	pF
Voltage Rate of Change	dv/dt	-	-	10,000	V/μs

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

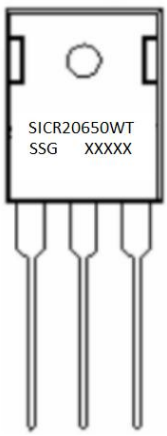
Thermal-Mechanical Specifications:

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	0.84	°C/W
Approximate Weight	wt	-	6.28	g
Case Style	TO-247AD			

Tube Specification



Marking Diagram



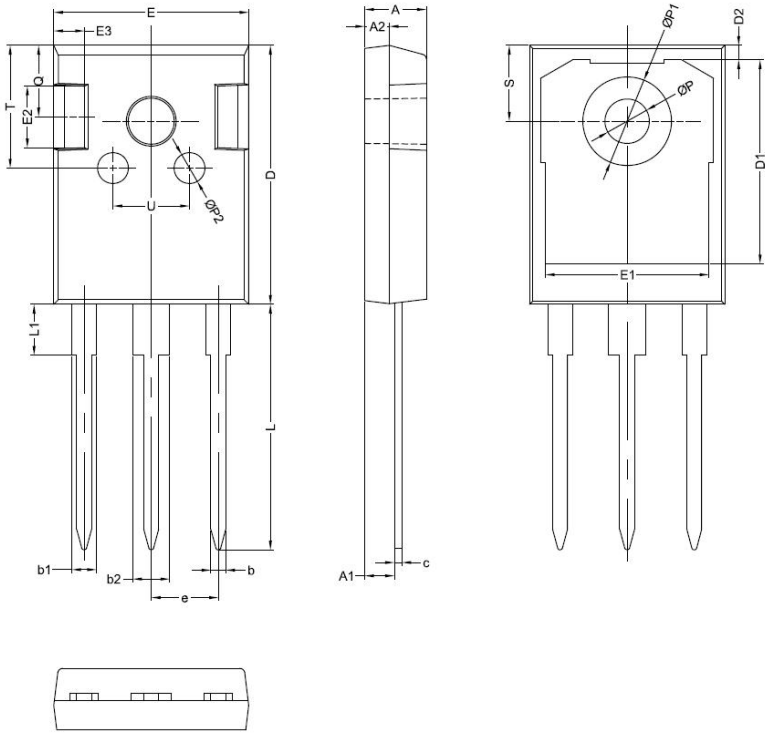
Where XXXXX is YYWWL

SICR	= Device Type
20	= Forward Current (20A)
650	= Reverse Voltage (650V)
WT	= Configuration
SSG	= SSG
YY	= Year
WW	= Week
L	= Lot Number

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

Technical Data
Data Sheet N1996, Rev.-

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
SICR20650WT	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.

Technical Data
Data Sheet N1996, Rev.-

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