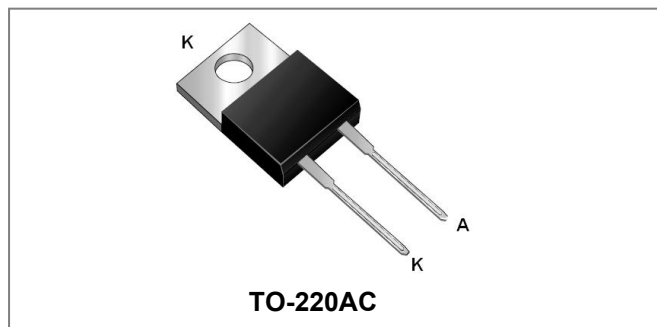


SICR10650

650V SiC POWER SCHOTTKY RECTIFIER



Description

SICR10650 is single SiC Schottky rectifiers packaged in TO-220AC 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 SICR10650 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
- 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	V _{RRM}	-	650	V
Working Peak Reverse Voltage	V _{RWM}			
DC Blocking Voltage	V _R			
Average Rectified Forward Current	I _{F(AV)}	50% duty cycle @T _c =150°C, rectangular wave form	10	A
Peak One Cycle Non-Repetitive Surge Current	I _{FSM}	8.3ms, Half Sine pulse, T _c = 25 °C	110	A

Electrical Characteristics:

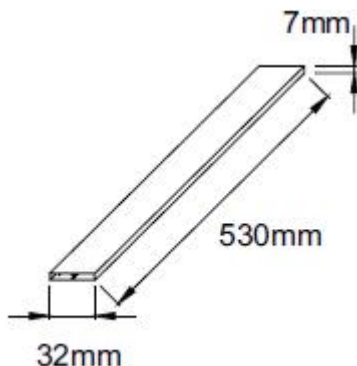
Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V _{F1}	@ 10A, Pulse, T _J = 25 °C	1.51	1.7	V
	V _{F2}	@ 10A, Pulse, T _J = 175 °C	1.75	2.5	V
Reverse Current at DC condition*	I _{R1}	@V _R = rated V _R T _J = 25 °C	25	100	μA
Reverse Current *	I _{R2}	@V _R = rated V _R T _J = 175 °C	32	200	μA
Junction Capacitance	C _T	@V _R = 0V, T _C = 25 °C, f _{SIG} = 1MHz	695	740	pF
		@V _R = 200V, T _C = 25 °C, f _{SIG} = 1MHz	73	78	
		@V _R = 400V, T _C = 25 °C, f _{SIG} = 1MHz	70	75	
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	1.36	°C/W
Approximate Weight	wt	-	1.8	g
Case Style		TO-220AC		

Tube Specification



Marking Diagram



Where XXXXX is YYWWL

SICR = Device Type
 10 = Forward Current (10A)
 650 = Reverse Voltage (650V)
 SSG = SSG
 YY = Year
 WW = Week
 L = Lot Number

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

Ratings and Characteristics Curves

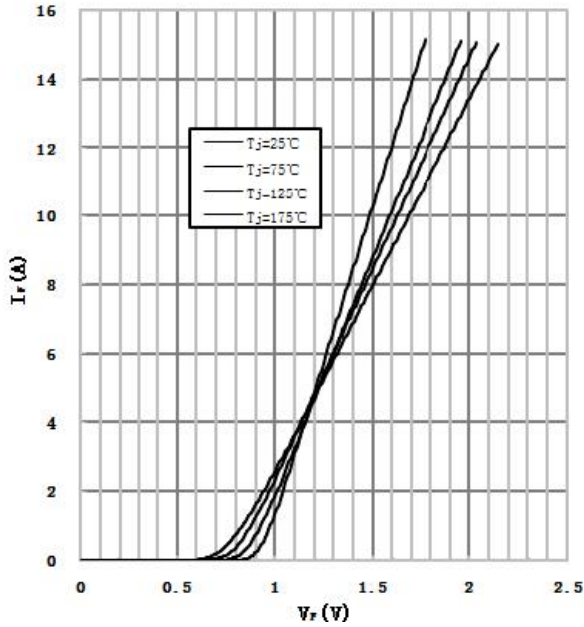


Fig.1-Typical Forward Voltage Characteristics

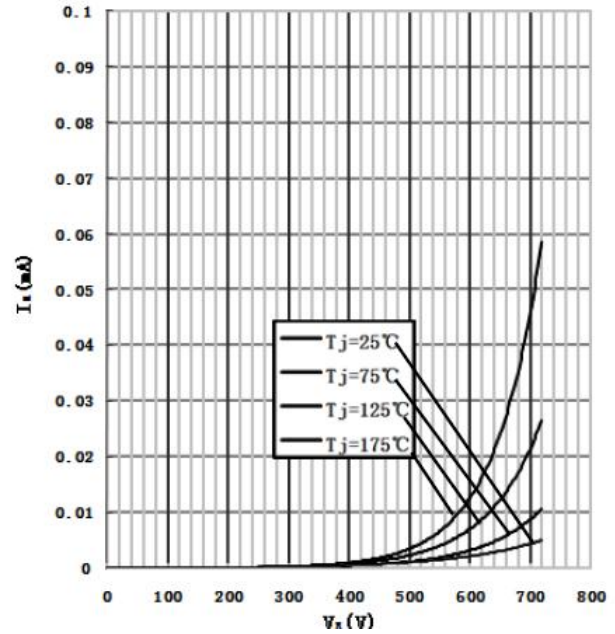


Fig.2-Typical Reverse Characteristics

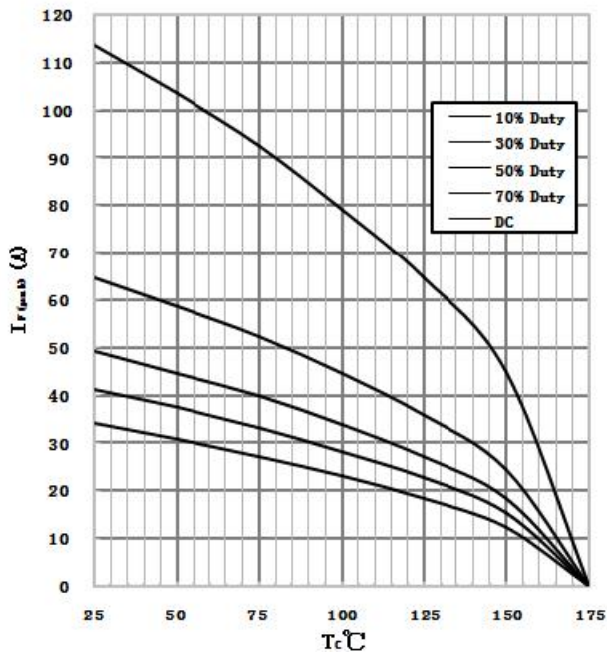


Fig.3-Forward Current Derating Curve

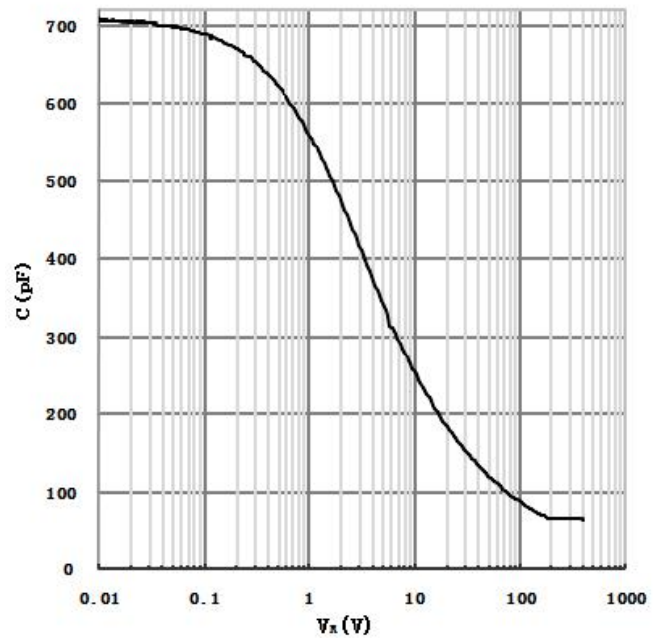
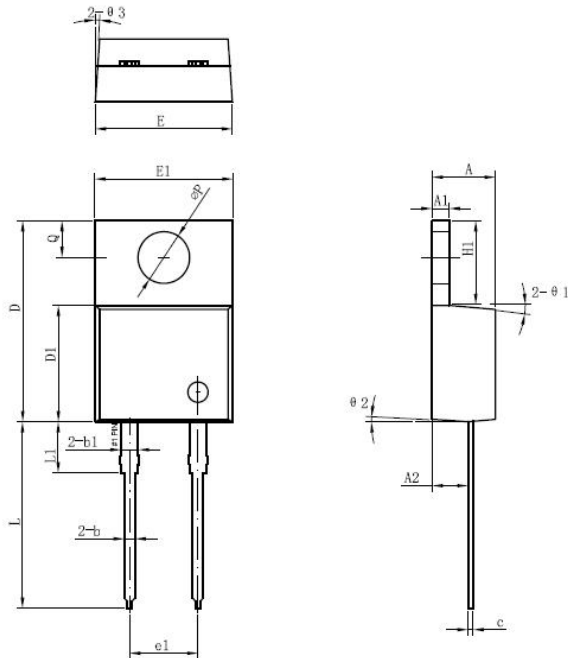


Fig.4-Typical Junction Capacitance

Mechanical Dimensions TO-220AC



Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	4.40	4.70	4.85
A1	1.17	1.27	1.37
A2	2.40	2.69	2.89
b	0.61	0.81	0.96
b1	1.17	1.27	1.37
c	0.31	0.38	0.70
D	14.64	14.94	15.75
D1	8.50	8.07	8.90
E	10.00	10.16	10.40
E1	9.98	10.18	10.38
e1	4.95	5.08	5.18
H1	6.04	6.24	6.60
L	13.00	13.86	14.08
L1	3.50	3.80	3.96
ΦP	3.74	3.84	4.04
Q	2.54	2.74	2.95
θ1		5°	
θ2		4°	
θ3		4°	

Ordering Information

Device	Package	Weight	Shipping
SICR10650	TO-220AC	1.8g	50pcs / 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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