

SICR5650 / SICRB5650 / SICRD5650 / SICRF5650 650V SiC POWER SCHOTTKY RECTIFIER

Description

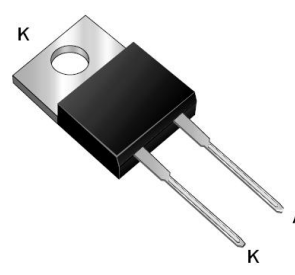
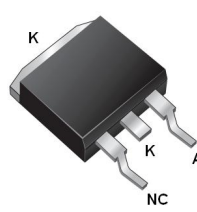



SICR5650/ SICRB5650/ SICRD5650/ SICRF5650 are all single SiC Schottky rectifiers packaged in TO-220AC, D2PAK, DPAK and ITO-220AC case. The device is a high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The SICR5650/ SICRB5650/ SICRD5650/ SICRF5650 are ideal for energy sensitive, high frequency applications in challenging environments.

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
- High package isolation voltage
- 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

SICR5650	SICRB5650	SICRD5650	SICRF5650
			
TO-220AC	D ² PAK	DPAK	ITO-220AC
			

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 =105°C, rectangular wave form	5	A
Peak One Cycle Non-Repetitive Surge Current	I _{FSM}	8.3ms, Half Sine pulse	60	A

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V_{F1}	@ 5A, Pulse, $T_J = 25\text{ }^\circ\text{C}$	1.5	1.7	V
	V_{F2}	@ 5A, Pulse, $T_J = 150\text{ }^\circ\text{C}$	1.98	2.5	V
Reverse Current at DC condition*	I_{R1}	@ $V_R = \text{rated } V_R$ $T_J = 25\text{ }^\circ\text{C}$	5	60	μA
Reverse Current *	I_{R2}	@ $V_R = \text{rated } V_R$ $T_J = 125\text{ }^\circ\text{C}$	70	250	μA
Junction Capacitance	C_T	@ $V_R = 5\text{V}$, $T_C = 25\text{ }^\circ\text{C}$ $f_{SIG} = 1\text{MHz}$	-	TBD	pF
Series Inductance	L_S	Measured lead to lead 5 mm from package body	-	TBD	nH
Voltage Rate of Change	dv/dt	-	-	10,000	V/ μs
RSM Isolation Voltage ($t = 1.0$ second, R. H. $\leq 30\%$, $T_A = 25\text{ }^\circ\text{C}$)	V_{ISO}	Clip mounting, the epoxy body away from the heatsink edge by more than 0.110" along the lead direction.	-	4500	V
		Clip mounting, the epoxy body is inside the heatsink.	-	3500	
		Screw mounting, the epoxy body is inside the heatsink.	-	1500	

* Pulse width $< 300\text{ }\mu\text{s}$, duty cycle $< 2\%$

Thermal-Mechanical Specifications:

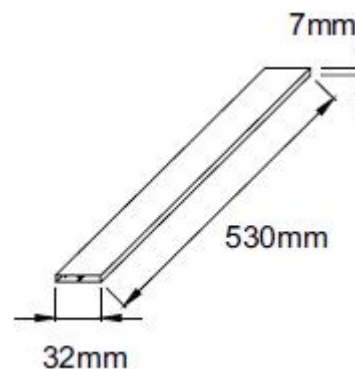
Characteristics	Symbol	SICR5650	SICRB5650	SICRD5650	SICRF5650	Units
Junction Temperature	T_J	-55 to +175				$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +175				$^\circ\text{C}$
Maximum Thermal Resistance Junction to Case	$R_{\theta JC}$	2.4	2.4	2.4	4.2	$^\circ\text{C/W}$

Ordering Information

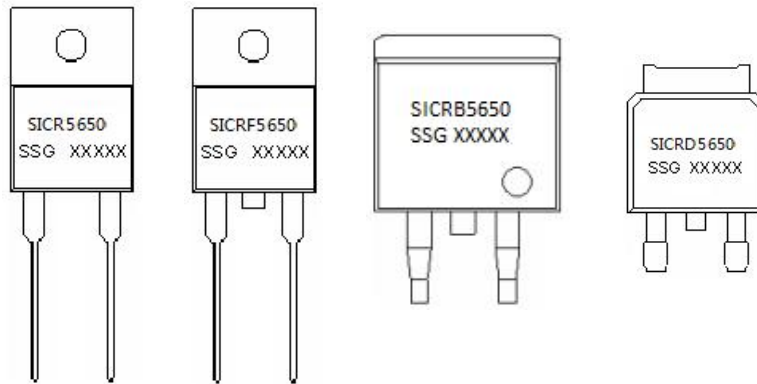
Device	Package	Weight	Shipping
SICR5650	TO-220AC	1.8g	50pcs / tube
SICRB5650	D ² PAK	1.85g	800pcs / reel
SICRD5650	DPAK	0.39g	2500pcs / reel
SICRF5650	ITO-220AC	1.8g	50pcs / tube

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

Tube Specification(TO-220AC/ITO-220AC)



Marking Diagram

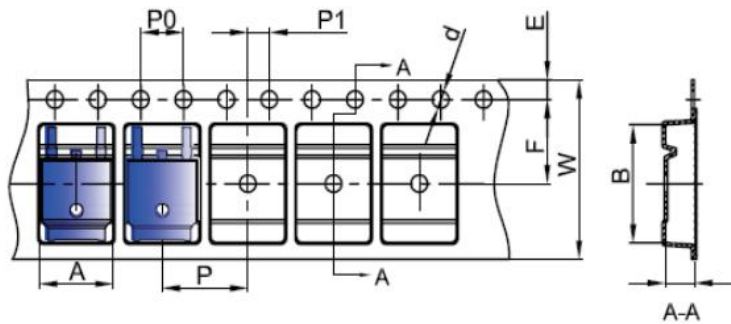


Where XXXXX is YYWWL

SICR = Device Type
B/D/F = Package type
5 = Forward Current (5A)
650 = Reverse Voltage (650V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

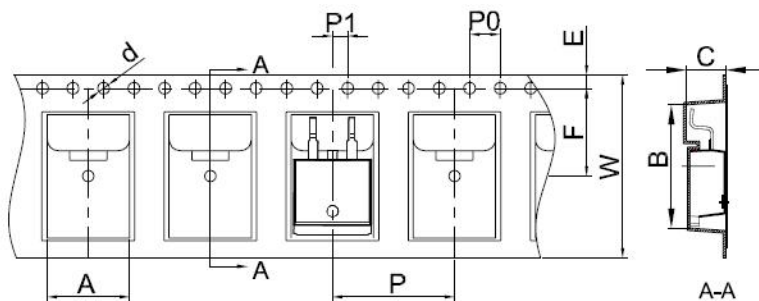
Cautions: Molding resin
Epoxy resin UL:94V-0

Carrier Tape & Reel Specification DPAK



SYMBOL	Millimeters	
	Min.	Max.
A	6.80	7.00
B	10.40	10.60
C	2.60	2.80
d	Φ1.45	Φ1.65
E	1.65	1.85
F	7.40	7.60
P0	3.90	4.10
P	7.90	8.10
P1	1.90	2.10
W	15.90	16.30

Carrier Tape & Reel Specification D2PAK



SYMBOL	Millimeters	
	Min.	Max.
A	10.70	10.90
B	16.03	16.23
C	5.11	5.31
d	1.45	1.65
E	1.65	1.85
F	11.40	11.60
P0	3.90	4.10
P	15.90	16.10
P1	1.90	2.10
W	23.90	24.30

Technical Data
Data Sheet N1870, Draft 1



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