

SICR10650CT / SICRB10650CT / SICRD10650CT / SICRF10650CT 650V SiC POWER SCHOTTKY RECTIFIER

Description


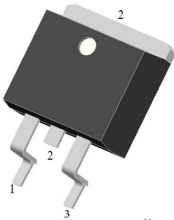
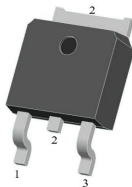

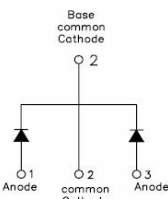
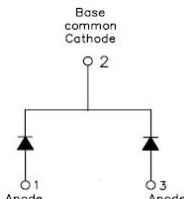
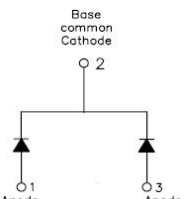
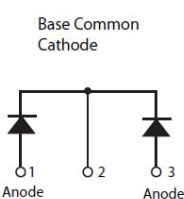
SICR10650CT/ SICRB10650CT/ SICRD10650CT/ SICRF10650CT are all common cathode SiC Schottky rectifiers packaged in TO-220AB, D2PAK, DPAK and ITO-220AB case. The device is a high voltage Schottky rectifier pair that has very low total conduction losses and very stable switching characteristics over temperature extremes. The SICR10650CT/ SICRB10650CT/ SICRD10650CT/ SICRF10650CT are ideal for energy sensitive, high frequency applications in challenging environments.

Features

- 175°C T_J operation
- Center tap configuration
- 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

Applications

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

SICR10650CT	SICRB10650CT	SICRD10650CT	SICRF10650CT
			
			
TO-220AB	D ² PAK	DPAK	ITO-220AB

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 @ $T_c=105^\circ\text{C}$, rectangular wave form	5(Per Leg) 10(Per Device)	A
Peak One Cycle Non-Repetitive Surge Current(Per Leg)	I_{FSM}	8.3ms, Half Sine pulse	60	A

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop(Per Leg)*	V_{F1}	@ 5A, Pulse, $T_J = 25^\circ\text{C}$	1.5	1.7	V
	V_{F2}	@ 5A, Pulse, $T_J = 150^\circ\text{C}$	1.98	2.5	V
Reverse Current at DC condition (Per Leg)*	I_{R1}	@ $V_R = \text{rated } V_R$ $T_J = 25^\circ\text{C}$	5	60	μA
Reverse Current (Per Leg)*	I_{R2}	@ $V_R = \text{rated } V_R$ $T_J = 125^\circ\text{C}$	70	250	μA
Junction Capacitance (Per Leg)	C_T	@ $V_R = 5\text{V}$, $T_C = 25^\circ\text{C}$ $f_{SIG} = 1\text{MHz}$	-	TBD	pF
Series Inductance (Per Leg)	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. $\leq 30\%$, $T_A = 25^\circ\text{C}$)	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 $< 300 \mu\text{s}$, duty cycle $< 2\%$

Thermal-Mechanical Specifications:

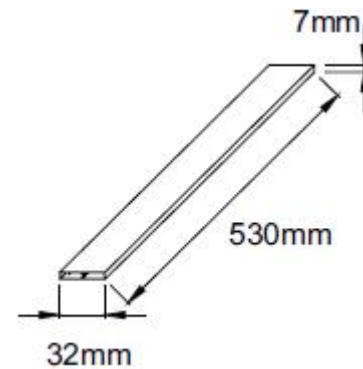
Characteristics	Symbol	SICR 10650CT	SICRB 10650CT	SICRD 10650CT	SICRF 10650CT	Units
Junction Temperature	T_J	-55 to +175				$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +175				$^\circ\text{C}$
Maximum Thermal Resistance Junction to Case	$R_{\theta JC}$	2.4	2.4	2.4	4.2	$^\circ\text{C/W}$

Ordering Information

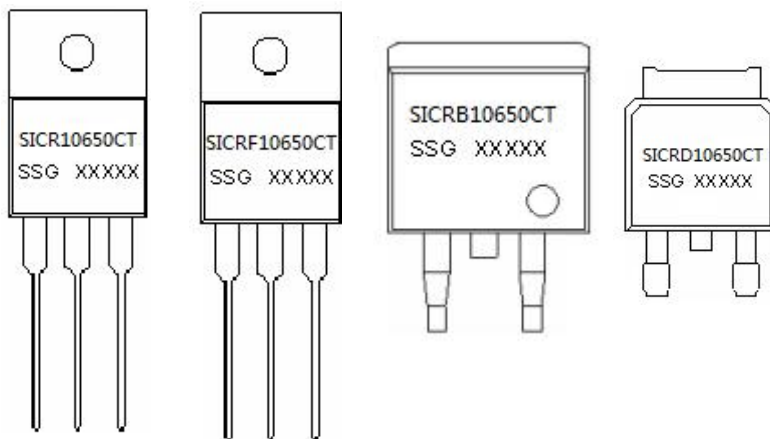
Device	Package	Weight	Shipping
SICR10650CT	TO-220AB	1.8g	50pcs / tube
SICRB10650CT	D ² PAK	1.85g	800pcs / reel
SICRD10650CT	DDPAK	0.39g	2500pcs / reel
SICRF10650CT	ITO-220AB	1.8g	50pcs / tube

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-220AB/ITO-220AB)



Marking Diagram

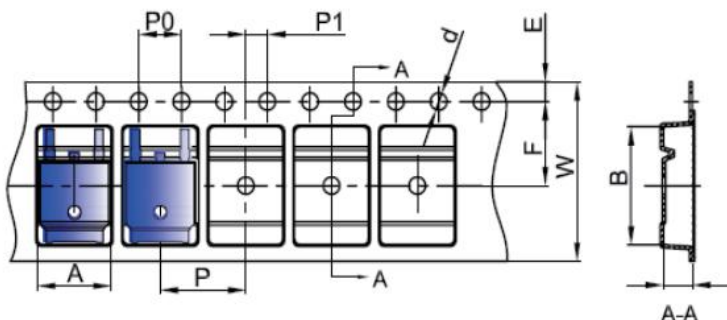


Where XXXXX is YYWWL

SICR = Device Type
B/D/F = Package type
10 = Forward Current (10A)
650 = Reverse Voltage (650V)
CT = Configuration
SSG = SSG
YY = Year
WW = Week
L = Lot Number

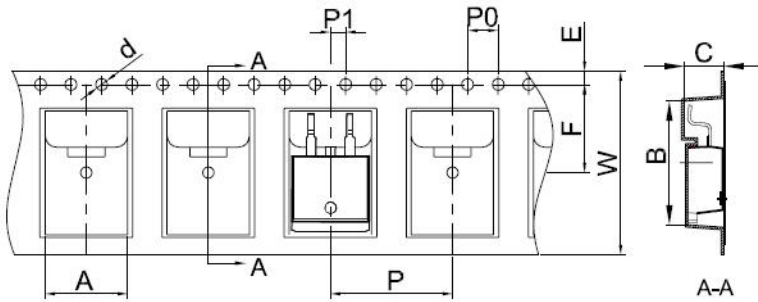
Cautions: Molding resin
Epoxy resin UL:94V-0

Carrier Tape Specification DPAK



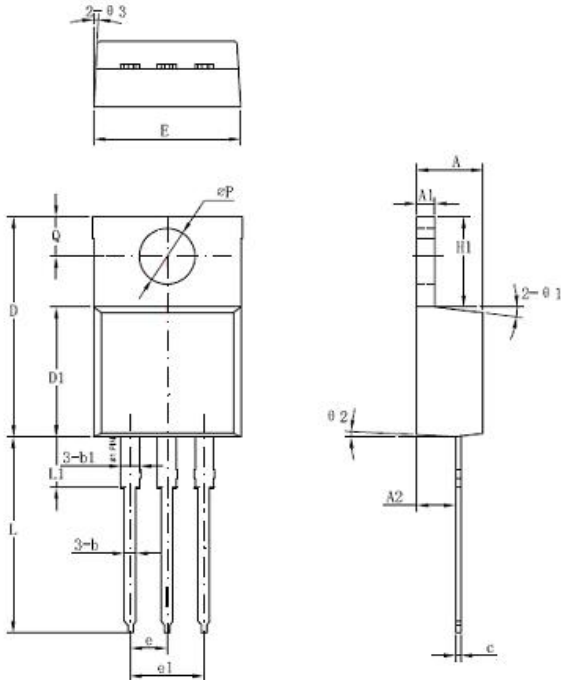
SYMBOL	Millimeters	
	Min.	Max.
A	6.80	7.00
B	10.40	10.60
C	2.60	2.80
d	Φ1.45	Φ1.65
E	1.65	1.85
F	7.40	7.60
P0	3.90	4.10
P	7.90	8.10
P1	1.90	2.10
W	15.90	16.30

Carrier Tape Specification D2PAK



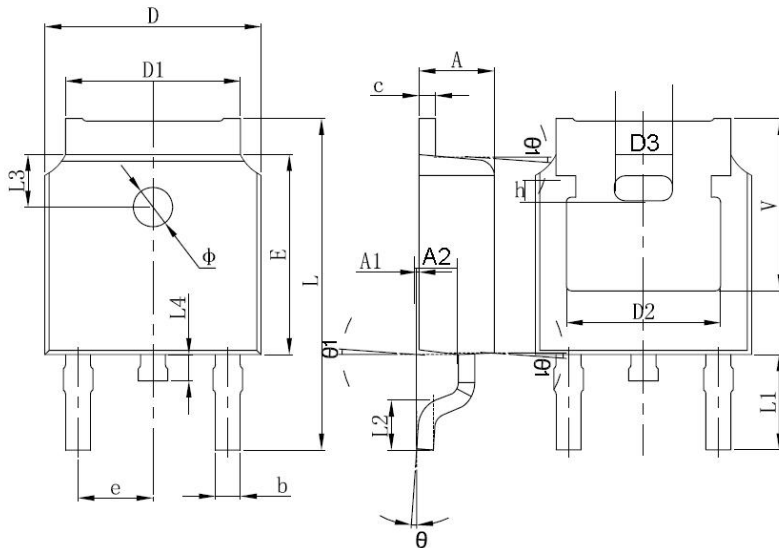
SYMBOL	Millimeters	
	Min.	Max.
A	10.70	10.90
B	16.03	16.23
C	5.11	5.31
d	1.45	1.65
E	1.65	1.85
F	11.40	11.60
P0	3.90	4.10
P	15.90	16.10
P1	1.90	2.10
W	23.90	24.30

Mechanical Dimensions TO-220AB



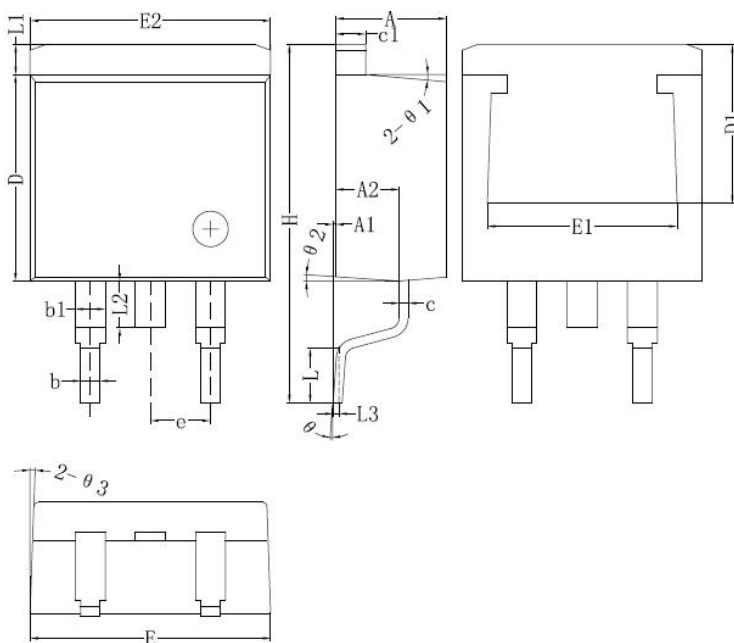
Symbol	Dimensions in millimeters		
	Min	Typical	Max
A	4.42	4.57	4.72
A1	1.17	1.27	1.37
A2	2.52	2.69	2.89
b	0.71	0.81	0.96
b1	1.17	1.27	1.37
c	0.31	0.38	0.61
D	14.94	15.24	15.54
D1	8.85	9.00	9.15
E	10.01	10.16	10.31
e		2.54	
e1	4.98	5.06	5.18
H1	6.04	6.24	6.44
L	12.7	13.56	13.80
L1	3.56	3.5	3.96
ΦP	3.74	3.84	4.04
Q	2.54	2.74	2.94
Q1		7°	
Q2		3°	
Q3		4°	

Mechanical Dimensions DPAK



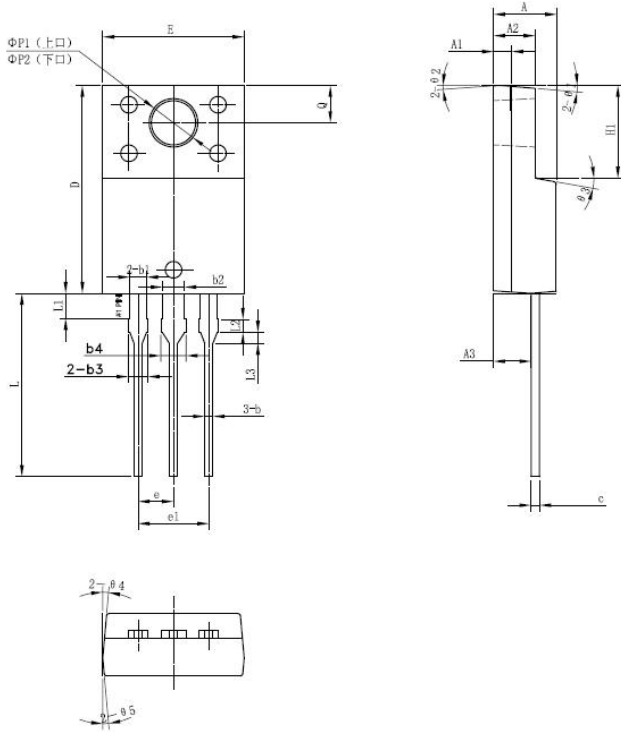
SYMBOL	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.40	0.087	0.094
A1	0.00	0.127	0.000	0.005
b	0.66	0.86	0.026	0.034
c	0.46	0.60	0.018	0.024
D	6.50	6.70	0.256	0.264
D1	5.13	5.46	0.202	0.215
D2	4.83 REF.		0.190 REF.	
E	6.00	6.20	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.70	10.40	0.381	0.409
L1	2.90 REF.		0.144 REF.	
L2	1.40	1.70	0.055	0.067
L3	1.60 REF.		0.063 REF.	
L4	0.60	1.00	0.024	0.039
Φ	1.10	1.30	0.043	0.051
Θ	0°	8°	0°	8°
h	0.00	0.30	0.000	0.012
V	5.35 REF.		0.211 REF.	

Mechanical Dimensions D²PAK



Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	4.55	4.70	4.85
A1	0	0.10	0.25
A2	2.59	2.69	2.89
b	0.71	0.81	0.96
b1		1.27	
c	0.36	0.38	0.61
c1	1.17	1.27	1.37
D	8.55	8.70	8.85
D1	6.40		
E	10.01	10.16	10.31
E1	7.6		
E2	9.98	10.08	10.18
e		2.54	
H	14.6	15.1	15.6
L	2.00	2.30	2.70
L1	1.17	1.27	1.40
L2			2.20
L3		0.25BSC	
e	0	-	8°
e1		5°	
e2		4°	
e3		4°	

Mechanical Dimensions ITO-220AB



SYMBOL	Millimeters		
	MIN.	TYP.	MAX.
A	4.30	4.50	4.70
A1	1.10	1.30	1.50
A2	2.50	3.00	3.20
A3	2.50	2.70	2.90
b	0.50	0.60	0.75
b1	1.10	1.20	1.35
b2	1.50	1.60	1.75
b3	1.20	1.30	1.45
b4	1.60	1.70	1.85
c	0.50	0.60	0.75
D	14.80	15.00	15.20
E	9.96	10.16	10.36
e		2.55	
e1		5.10	
H1	6.50	6.70	6.90
L	12.70	13.20	13.70
L1	1.60	1.80	2.00
L2	0.80	1.00	1.20
L3	0.60	0.80	1.00
$\Phi P1$ (上口)	3.30	3.50	3.70
$\Phi P2$ (下口)	2.99	3.19	3.39
Q	2.50	2.70	2.90
$\Theta 1$		5°	
$\Theta 2$		4°	
$\Theta 3$		10°	
$\Theta 4$		5°	
$\Theta 5$		5°	

Technical Data
Data Sheet N1871, Draft 1



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