

**JCT151A-650RH 12A SCR**

Rev.A.1.0

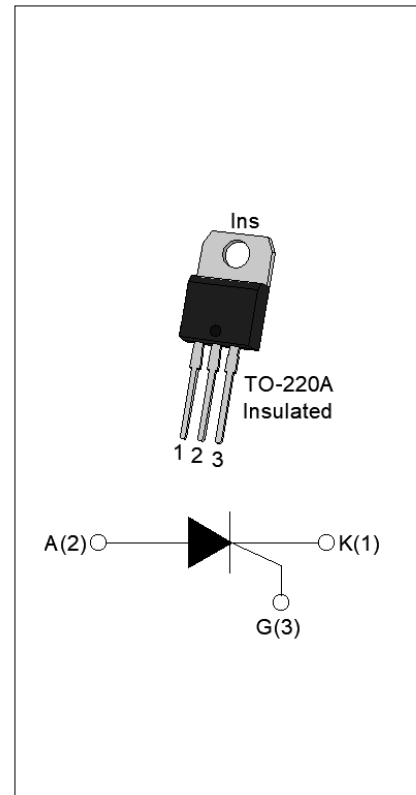
DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT151A-650RH of silicon controlled rectifiers provides high dV/dt rate with strong resistance to electromagnetic interference. It is especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc. From all three terminals to external heatsink, JCT151A-650RH provides a rated insulation voltage of 2500 V_{RMS} , complying with UL standards (File ref: E252906).

Package TO-220A is RoHS compliant.

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{DRM}/V_{RRM}	650	V
I_{GT}	≤ 15	mA

**ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Value	Unit
Storage junction temperature range	T_{stg}	-40-150	$^{\circ}C$
Operating junction temperature range	T_j	-40-150	$^{\circ}C$
Repetitive peak off-state voltage ($T_j=25^{\circ}C$)	V_{DRM}	650	V
Repetitive peak reverse voltage ($T_j=25^{\circ}C$)	V_{RRM}	650	V
Average on-state current ($T_c \leq 120^{\circ}C$)	$I_{T(AV)}$	7.5	A
RMS on-state current ($T_c \leq 120^{\circ}C$)	$I_{T(RMS)}$	12	A
Non repetitive surge peak on-state current ($t_p=10ms$, $T_j=25^{\circ}C$)	I_{TSM}	120	A
Non repetitive surge peak on-state current ($t_p=8.3ms$, $T_j=25^{\circ}C$)		132	
I^2t value for fusing ($t_p=10ms$, $T_j=25^{\circ}C$)	I^2t	72	A^2s
Critical rate of rise of on-state current ($I_G=2 \times I_{GT}$, $f=100Hz$, $T_j=150^{\circ}C$)	di/dt	100	$A/\mu s$

Peak gate current ($t_p=20\mu s$, $T_j=150^\circ C$)	I_{GM}	4	A
Average gate power dissipation ($T_j=150^\circ C$)	$P_{G(AV)}$	1	W
Peak gate power	P_{GM}	10	W
Peak pulse voltage ($T_j=25^\circ C$; non-repetitive, off-state; FIG.7)	V_{pp}	0.7	kV

ELECTRICAL CHARACTERISTICS ($T_j=25^\circ C$ unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	$V_D=12V$ $R_L=33\Omega$	-	-	15	mA
V_{GT}		-	-	1	V
V_{GD}	$V_D=V_{DRM}$ $T_j=150^\circ C$ $R_L=3.3k\Omega$	0.2	-	-	V
I_L	$I_G=1.2I_{GT}$	-	-	40	mA
I_H	$I_T=100mA$	-	-	30	mA
dV/dt	$V_D=436V$ Gate Open $T_j=125^\circ C$	800	-	-	V/ μs
	$V_D=436V$ Gate Open $T_j=150^\circ C$	500	-	-	
t_{on}	$I_G=20mA$ $I_A=200mA$ $I_R=20mA$ $T_j=25^\circ C$	-	3	-	μs
t_{off}		-	50	-	

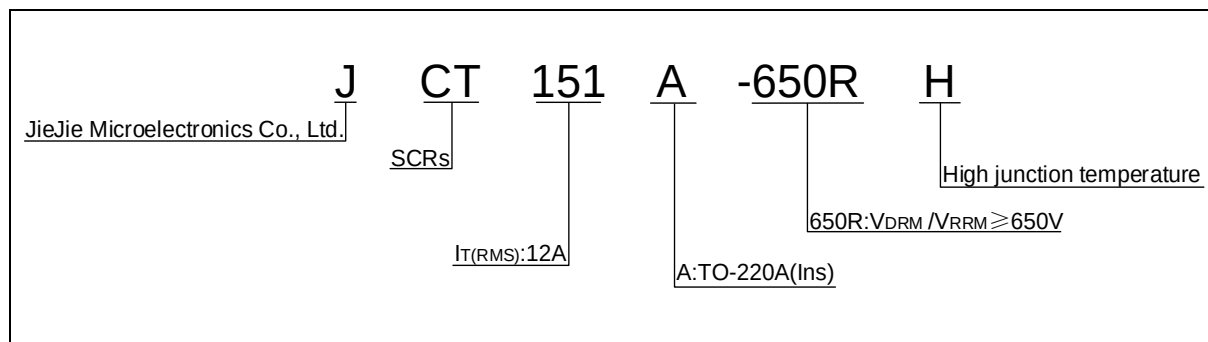
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=23A$ $t_p=380\mu s$	$T_j=25^\circ C$	1.6	V
V_{TO}	Threshold voltage	$T_j=150^\circ C$	0.74	V
R_D	Dynamic resistance	$T_j=150^\circ C$	33	m Ω
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ C$	5	μA
I_{RRM}		$T_j=150^\circ C$	0.2	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (DC)	1.8	$^\circ C/W$
$R_{th(j-a)}$	junction to ambient (DC)	65	$^\circ C/W$

ORDERING INFORMATION



MARKING

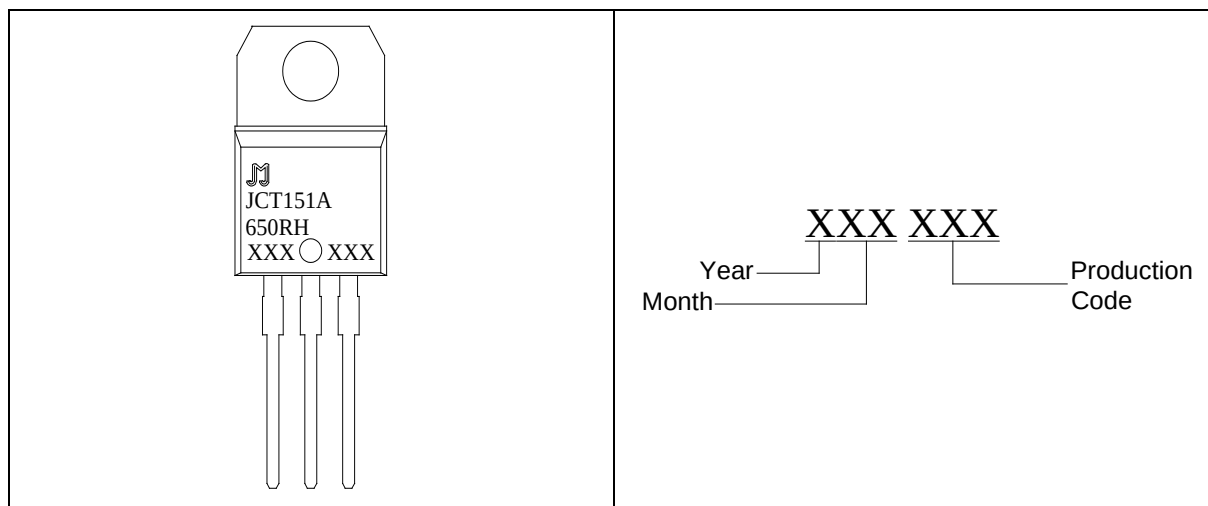


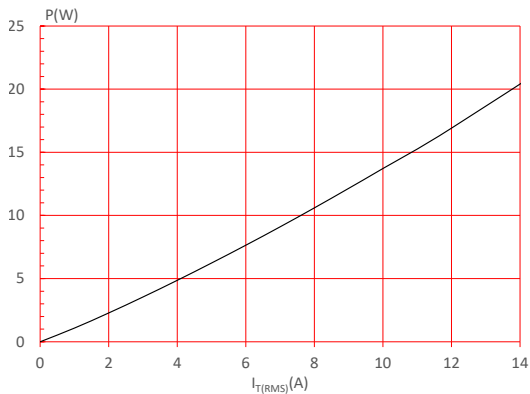
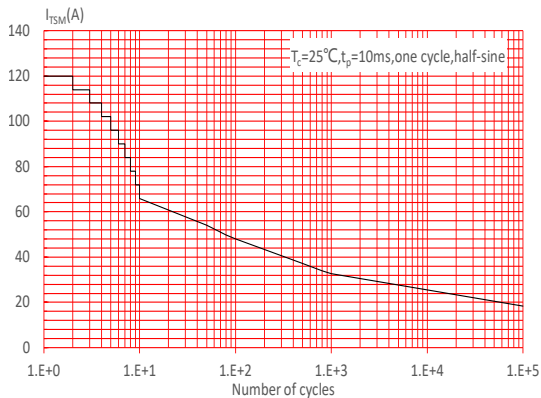
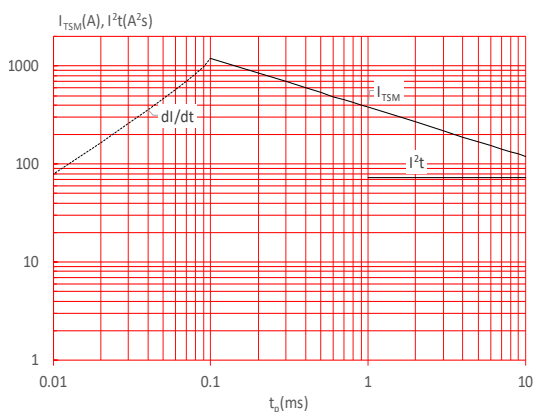
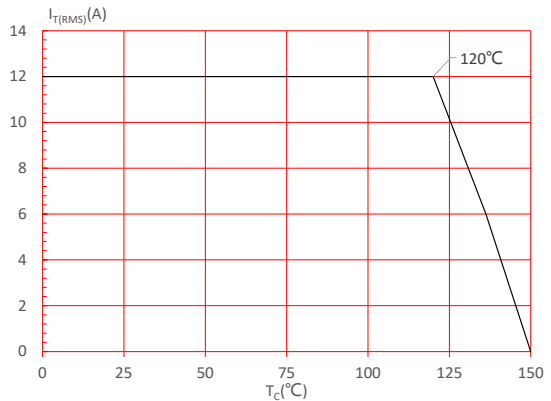
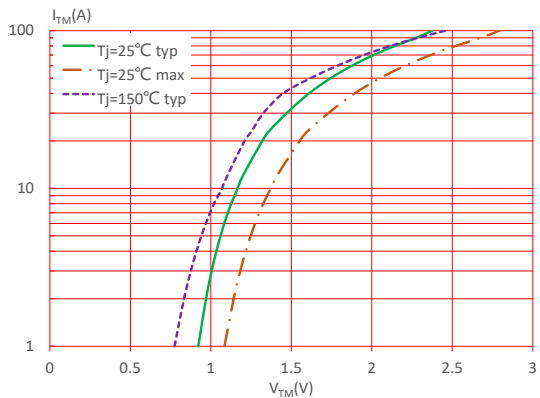
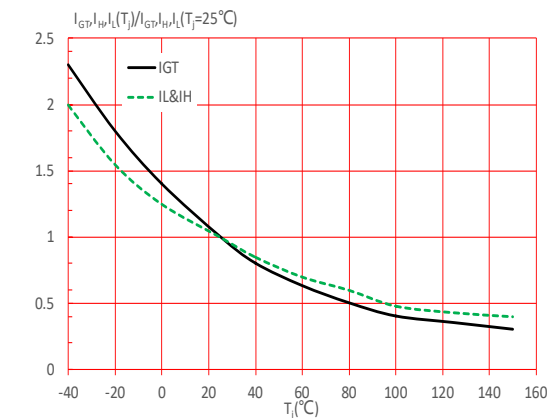
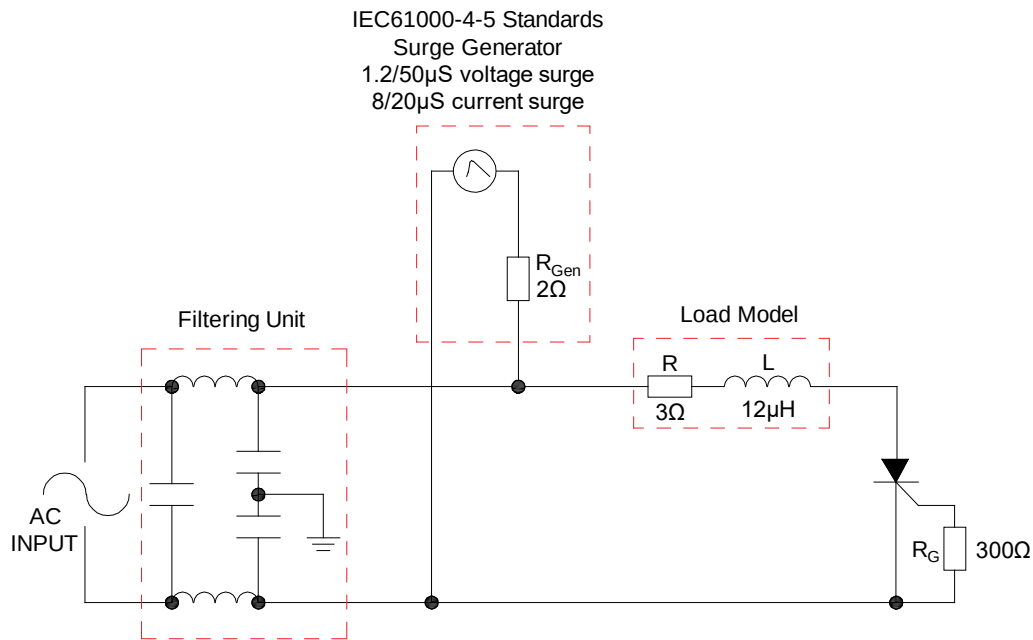
FIG.1: Maximum power dissipation versus RMS on-state current**FIG.3:** Surge peak on-state current versus number of cycles**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10ms$, and corresponding value of I^2t ($di/dt < 100A/\mu s$)**FIG.2:** RMS on-state current versus case temperature**FIG.4:** On-state characteristics**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature

FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.



LEAD FORMING AND SOLDERING

Refer to the application note “Assembly Instructions for Thyristors in Through-hole Package” released by JieJie Microelectronics

ORDERING INFORMATION

Order code	Voltage $V_{\text{DRM}}/V_{\text{RRM}}$ (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
JCT151A-650RH	650	15	TO-220A(Ins)	50	Tube

Document Revision History

Date	Revision	Changes
Aug.21, 2025	A.1.0	Last update

Technical drawing of a cable gland with dimensions and labels:

- Top View:** Shows a rectangular base with a central circular hole. Dimensions include E (width), $L3$ (height of the base), and H (total height). A central hole has a diameter of $\phi 3.7-3.9mm$.
- Front View:** Shows the side profile of the gland. Dimensions include $L1$ (height of the base), $L2$ (height of the cable entry), B (width of the cable entry), G (width of the base), and C (width of the cable entry).
- Side View:** Shows the side profile of the gland. Dimensions include A (width of the base), $C2$ (width of the base), F (height of the base), D (height of the cable entry), $C3$ (width of the cable entry), and $V1$ (angle of the cable entry).
- Bottom View:** Shows the bottom profile of the gland. Dimensions include $H1$ (height of the base) and $E1$ (width of the base).

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.40	0.386		0.409
E1	1.00		1.40	0.039		0.055
F	6.25		6.85	0.246		0.270
G	2.40		2.70	0.094		0.106
H	28.00		29.80	1.102		1.173
H1	1.80		2.20	0.071		0.087
L1	3.45		4.05	0.136		0.159
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

Technical drawing of a 3D printed part, showing three views: top, front, and side. The dimensions are as follows:

- Top View:**
 - Overall width: 520 ± 0.5
 - Overall depth: 530 ± 0.5
 - Distance from left edge to center of circular feature: 5
 - Distance from top edge to center of circular feature: 80
 - Radius of circular feature: $\phi 4.5$
 - Distance from center of circular feature to bottom edge: 5.5
 - Distance from center of circular feature to right edge: 3
 - Label: "printing area"
- Front View:**
 - Overall width: 520 ± 0.5
 - Overall depth: 530 ± 0.5
 - Distance from left edge to center of circular feature: 5
 - Distance from top edge to center of circular feature: 80
 - Radius of circular feature: $\phi 4.5$
 - Distance from center of circular feature to bottom edge: 5.5
 - Distance from center of circular feature to right edge: 3
 - Label: "printing area"
- Side View:**
 - Overall width: 520 ± 0.5
 - Overall depth: 530 ± 0.5
 - Distance from left edge to center of circular feature: 5
 - Distance from top edge to center of circular feature: 80
 - Radius of circular feature: $\phi 4.5$
 - Distance from center of circular feature to bottom edge: 5.5
 - Distance from center of circular feature to right edge: 3
 - Label: "printing area"

PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220A	TUBE	50	1,000	5,000

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