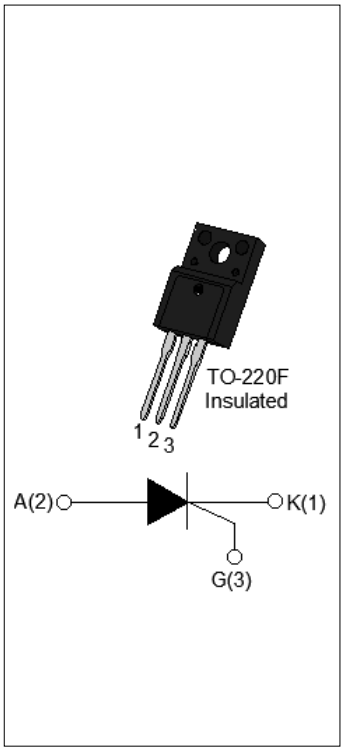
JCT151F-650RH 12A SCR

Rev.A.1.0

DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT151F-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, JCT151F-650RH provides a rated insulation voltage of 2000 V_{RMS}, complying with UL standards (File ref: E252906). Package TO-220F 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	℃
Operating junction temperature range	T_j	-40-150	℃
Repetitive peak off-state voltage (T_j=25℃)	V_{DRM}	650	V
Repetitive peak reverse voltage (T_j=25℃)	V_{RRM}	650	V
Average on-state current (T_C≤116℃)	$I_{T(AV)}$	7.5	A
RMS on-state current (T_C≤116℃)	$I_{T(RMS)}$	12	A
Non repetitive surge peak on-state current (t_p=10ms, T_j=25℃)	I_{TSM}	120	A
Non repetitive surge peak on-state current (t_p=8.3ms, T_j=25℃)		132	
I^2t value for fusing (t_p=10ms , T_j=25℃)	I^2t	72	A^2s
Critical rate of rise of on-state current (I_G=2×I_{GT}, f=100Hz , T_j=150℃)	dI/dt	100	A/μs
Peak gate current (t_p=20μs , T_j=150℃)	I_{GM}	4	A

Average gate power dissipation (T_j=150℃)	$P_{G(AV)}$	1	W
Peak gate power	P_{GM}	10	W
Peak pulse voltage (T_j=25℃; non-repetitive,off-state;FIG.7)	V_{pp}	0.7	kV

ELECTRICAL CHARACTERISTICS (T_j=25℃ unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	V_D=12V R_L=33Ω	-	-	15	mA
V_{GT}		-	-	1	V
V_{GD}	V_D=V_{DRM} T_j=150℃ R_L=3.3kΩ	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℃	800	-	-	V/μs
	V_D=436V Gate Open T_j=150℃	500	-	-	
t_{on}	I_G=20mA I_A=200mA I_R=20mA T_j=25℃	-	3	-	μs
t_{off}		-	50	-	

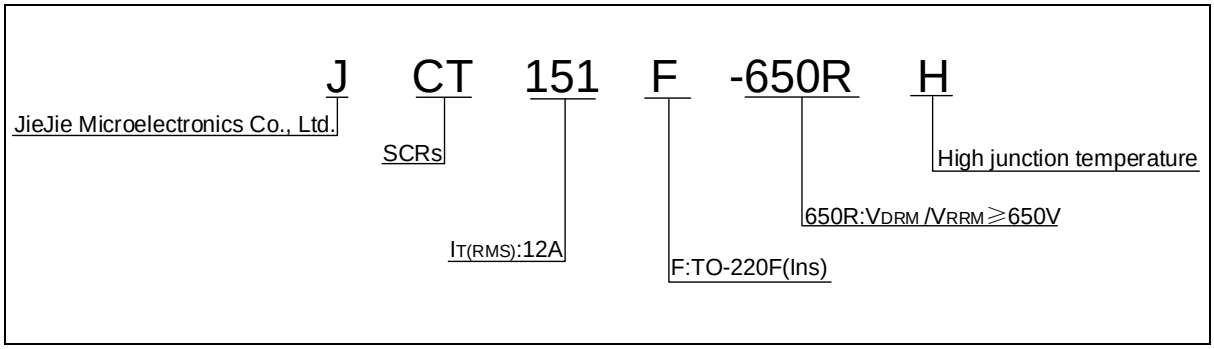
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	I_{TM}=23A t_p=380μs	T_j=25℃	1.6	V
V_{TO}	Threshold voltage	T_j=150℃	0.74	V
R_D	Dynamic resistance	T_j=150℃	33	mΩ
I_{DRM}	V_D=V_{DRM} V_R=V_{RRM}	T_j=25℃	5	μA
I_{RRM}		T_j=150℃	0.2	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case(DC)	2	℃/W
$R_{th(j-a)}$	junction to ambient (DC)	55	℃/W

ORDERING INFORMATION



MARKING

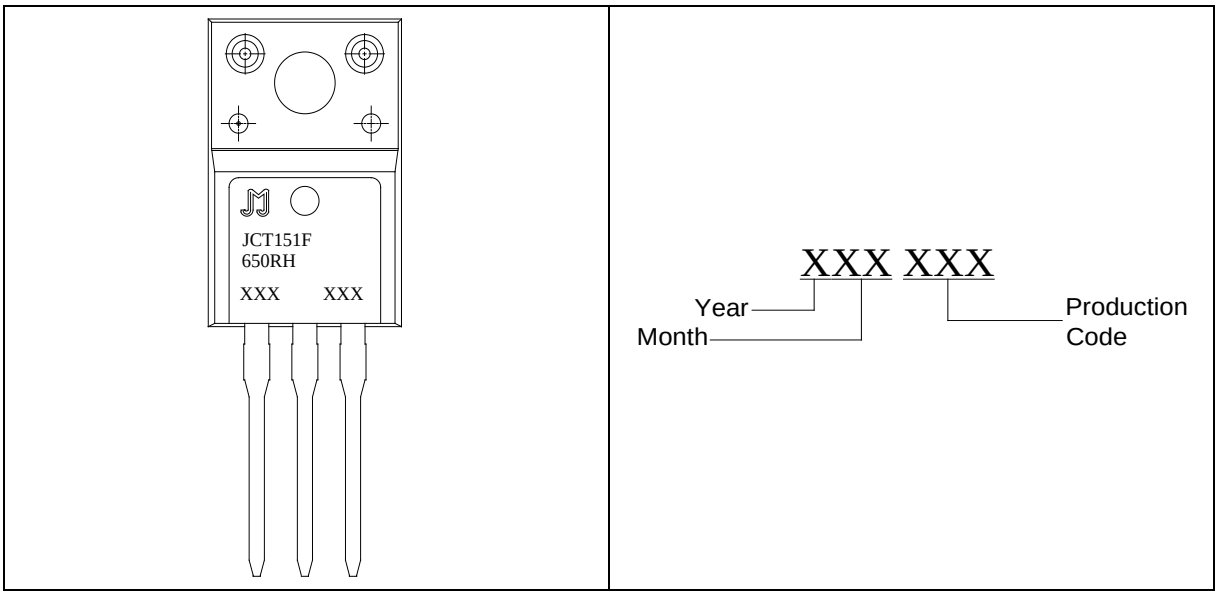


FIG.1: Maximum power dissipation versus RMS on-state current

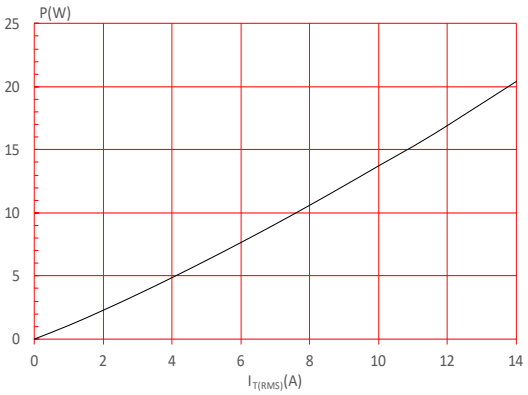


FIG.2: RMS on-state current versus case temperature

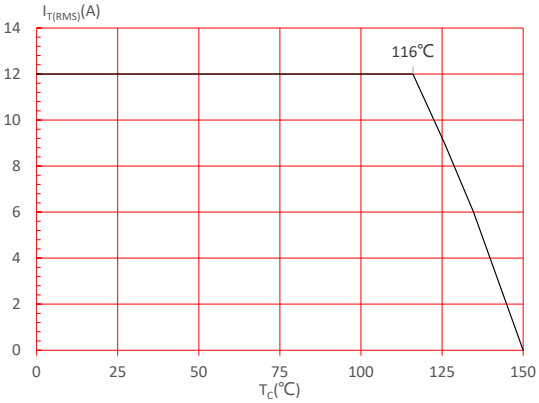


FIG.3: Surge peak on-state current versus number of cycles

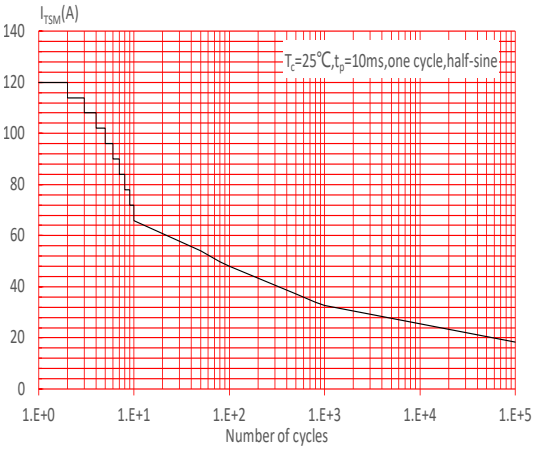


FIG.4: On-state characteristics

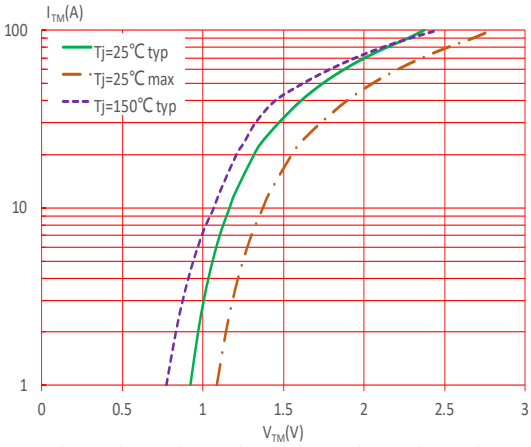


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width t_p<10ms, and corresponding value of I^2t (dI/dt<100A/μs)

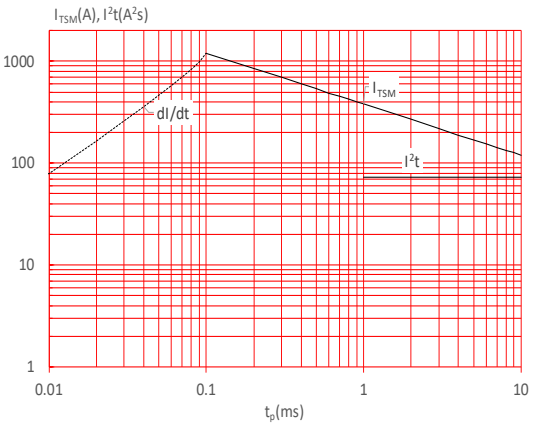


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

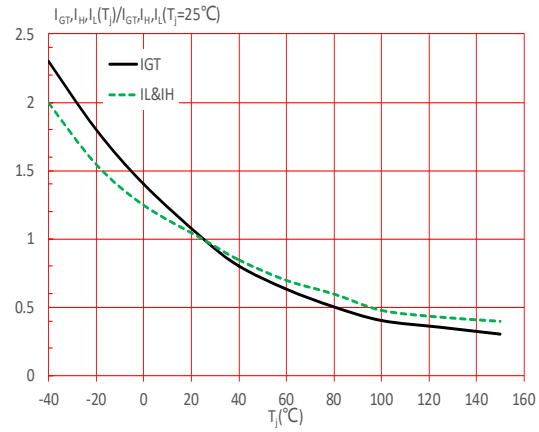
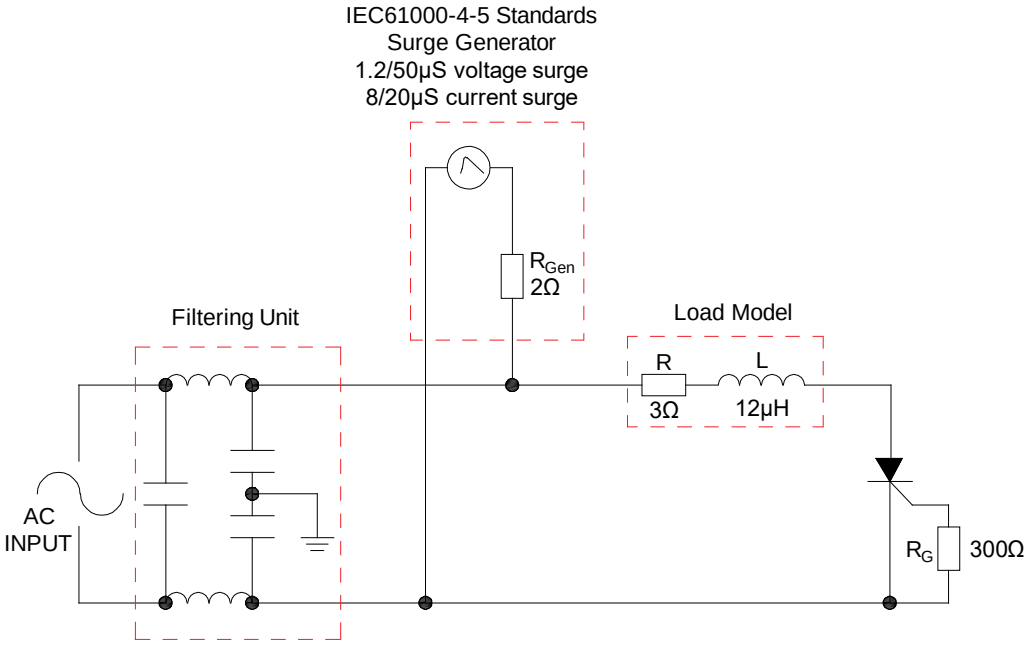


FIG.7：Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.



LEAD FORMING AND SOLDERING

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

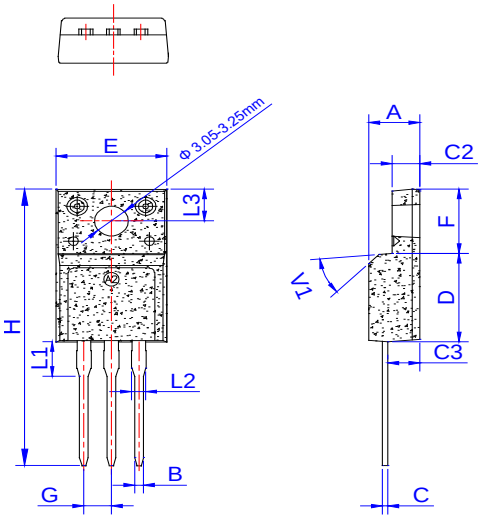
ORDERING INFORMATION

Order code	Voltage V_{DRM}/V_{RRM} (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
JCT151F-650RH	650	15	TO-220F(Ins)	50	Tube

Document Revision History

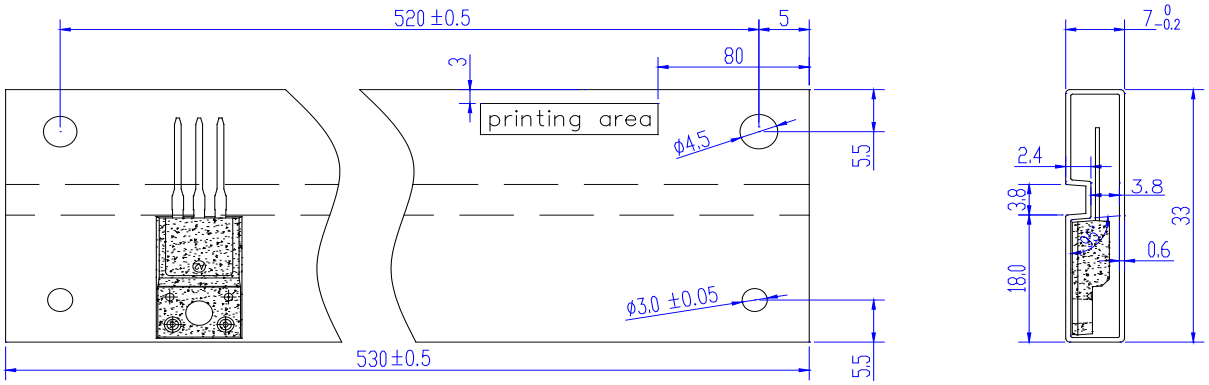
Date	Revision	Changes
Aug.22, 2025	A.1.0	Last update

PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G	2.40		2.70	0.094		0.106
H	28.0		29.8	1.102		1.173
L1	3.20		3.80	0.126		0.150
L2	1.14		1.70	0.045		0.067
L3	3.20		3.60	0.126		0.142
V1		45°			45°	

DELIVERY MODE



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

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