



JCT820A 20A SCR

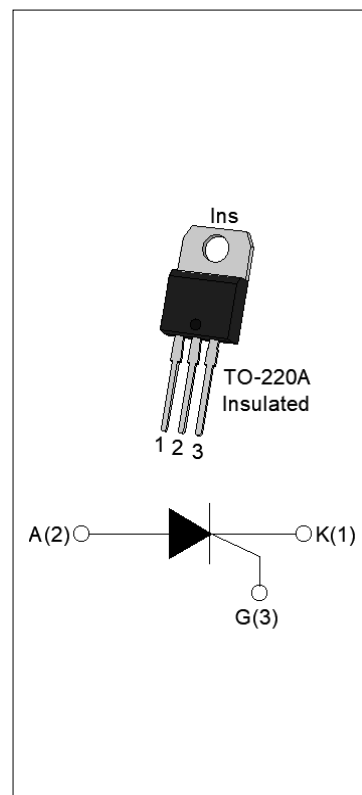
Rev.A.1.1

DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT820A SCR 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, JCT820A 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
$I_{T(RMS)}$	20	A
V_{DRM}/V_{RRM}	800	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	-40-125	$^{\circ}C$
Repetitive peak off-state voltage ($T_j=25^{\circ}C$)	V_{DRM}	800	V
Repetitive peak reverse voltage ($T_j=25^{\circ}C$)	V_{RRM}	800	V
Average on-state current ($T_c \leq 69^{\circ}C$)	$I_{T(AV)}$	13	A
RMS on-state current ($T_c \leq 69^{\circ}C$)	$I_{T(RMS)}$	20	A
Non repetitive surge peak on-state current ($t_p=10ms, T_j=25^{\circ}C$)	I_{TSM}	250	A
Non repetitive surge peak on-state current ($t_p=8.3ms, T_j=25^{\circ}C$)		275	
I^2t value for fusing ($t_p=10ms, T_j=25^{\circ}C$)	I^2t	312.5	A^2s
Critical rate of rise of on-state current ($I_G=2 \times I_{GT}, f=100Hz, T_j=125^{\circ}C$)	di/dt	150	$A/\mu s$

Peak gate current ($t_p=20\mu s$, $T_j=125^\circ C$)	I_{GM}	5	A
Average gate power dissipation ($T_j=125^\circ C$)	$P_{G(AV)}$	1	W
Peak gate power	P_{GM}	20	W
Peak pulse voltage ($T_j=25^\circ C$; non-repetitive, off-state; FIG.7)	V_{pp}	0.5	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}	$V_D=V_{DRM}$ $T_j=125^\circ C$ $R_L=3.3k\Omega$	0.2	-	-	V
I_L	$I_G=1.2I_{GT}$	-	-	60	mA
I_H	$I_T=500mA$	-	-	50	mA
dV/dt	$V_D=540V$ Gate Open $T_j=125^\circ C$	300	-	-	V/ μs
t_{on}	$I_G=40mA$ $I_A=400mA$ $I_R=40mA$ $T_j=25^\circ C$	-	5	-	μs
t_{off}		-	70	-	

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=40A$ $t_p=380\mu s$	$T_j=25^\circ C$	1.55	V
V_{TO}	Threshold voltage	$T_j=125^\circ C$	0.74	V
R_D	Dynamic resistance	$T_j=125^\circ C$	20	m Ω
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ C$	5	μA
I_{RRM}		$T_j=125^\circ C$	0.4	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (DC)	2.1	$^\circ C/W$
$R_{th(j-a)}$	junction to ambient (DC)	60	$^\circ C/W$

ORDERING INFORMATION

<u>J</u>	<u>CT</u>	<u>8</u>	<u>20</u>	<u>A</u>
JieJie Microelectronics Co., Ltd.	SCRs	$8: V_{\text{DRM}} / V_{\text{RRM}} \geq 800\text{V}$	$I_{\text{T(RMS)}}: 20\text{A}$	A: TO-220A(Ins)

MARKING

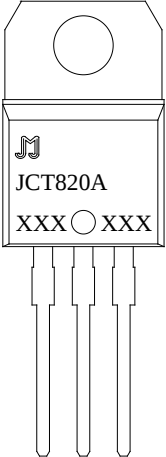
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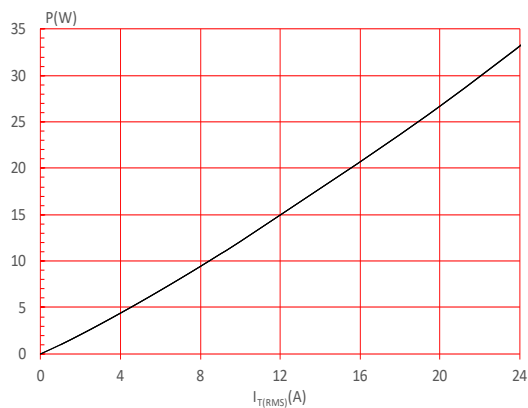
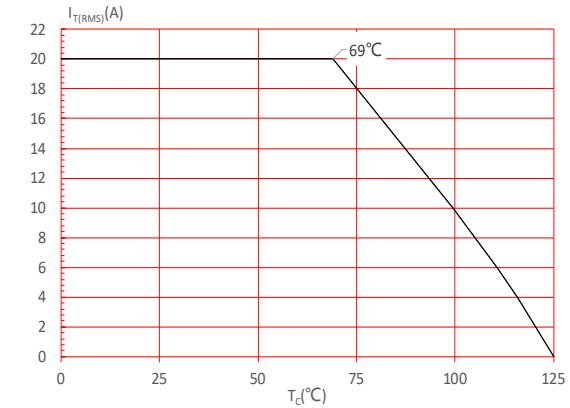
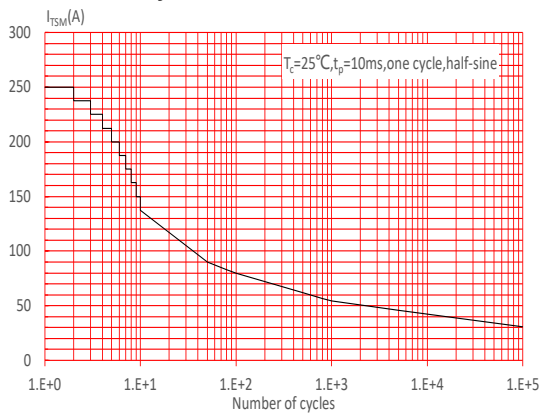
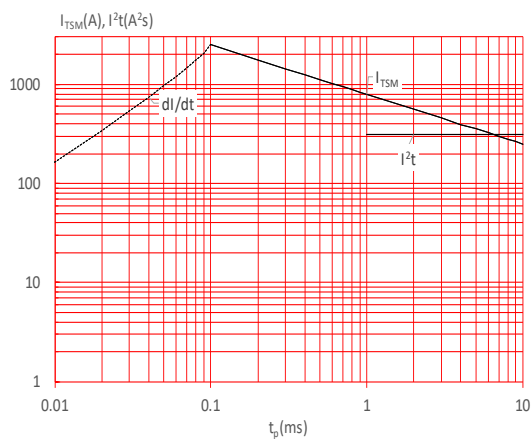
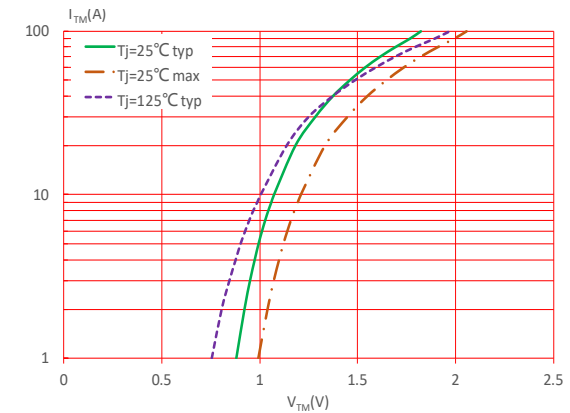
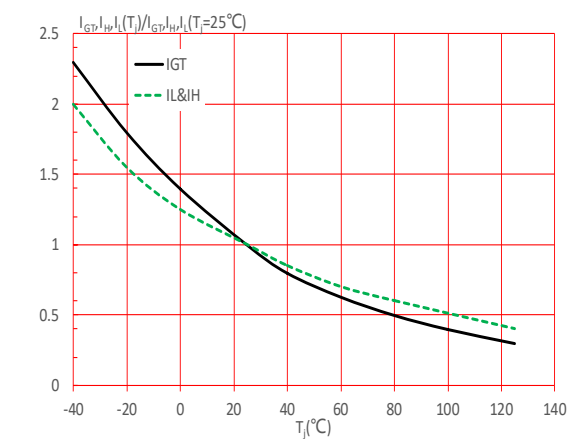
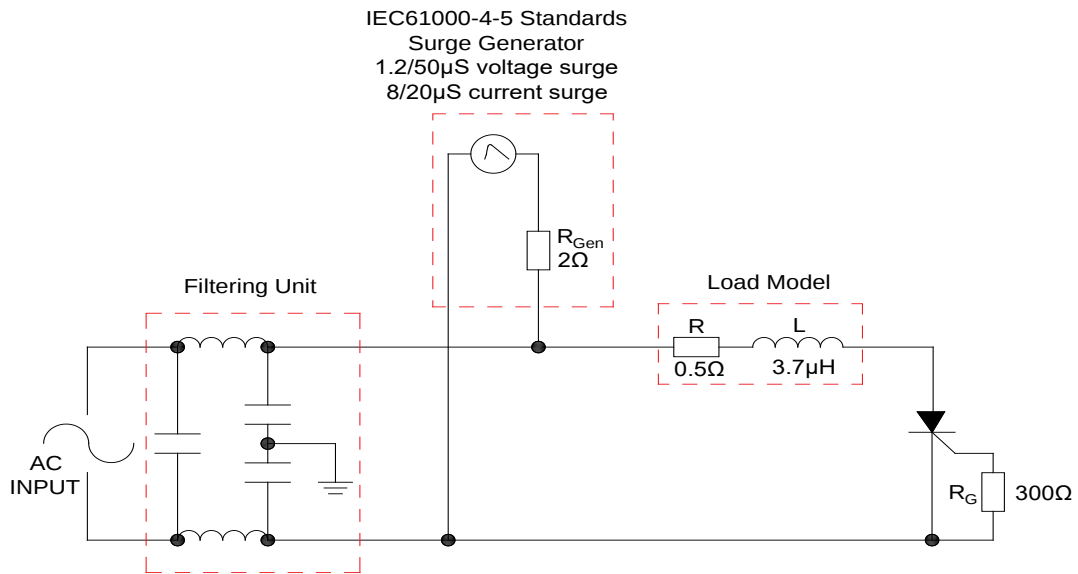
FIG.1: Maximum power dissipation versus RMS on-state current**FIG.2:** RMS on-state current versus case temperature**FIG.3:** Surge peak on-state current versus number of cycles**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10ms$, and corresponding value of I^2t ($di/dt < 150A/\mu s$)**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
JCT820A	800	15	TO-220A(Ins)	50	Tube

Document Revision History

Date	Revision	Changes
Apr.13, 2023	A.1.0	Last update
Oct.10, 2025	A.1.1	Revise PACKAGE MECHANICAL DATA

Technical drawing of a 4-pin connector. The drawing includes a top view, a front view, and a side view. The top view shows a rectangular connector with four pins. The front view shows the connector with dimensions E, I, L3, L2, J, K, B, G, H1, and E1. The side view shows the connector with dimensions A, C2, C3, C, D, F, and a hole diameter of $\Phi 3.7-3.9\text{mm}$. The drawing is labeled with dimensions in millimeters.

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
I	4.80		5.20	0.189		0.205
J	9.55		9.95	0.376		0.392
K	4.80		5.20	0.189		0.205
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°	

[illegible]

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

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