

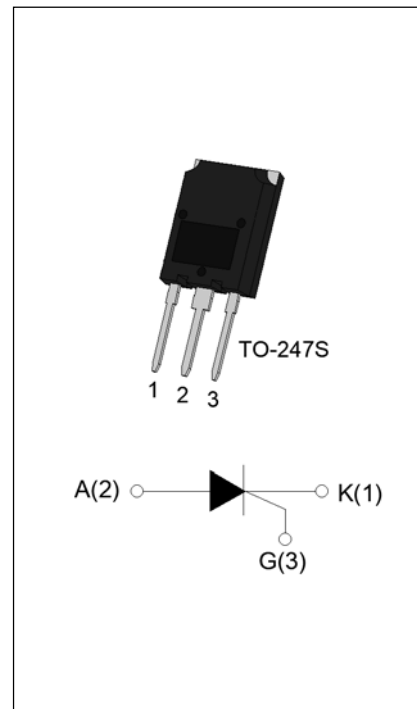


DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT1690CS SCR provides high dV/dt rate with strong resistance to electromagnetic interference. It is especially recommended for use on solid state relay, UPS, SVC, power charger, T-tools etc. Package TO-247S is RoHS compliant.

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	90	A
V_{DRM}/V_{RRM}	1600	V
I_{GT}	10-80	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}	1600	V
Repetitive peak reverse voltage ($T_j=25^{\circ}C$)	V_{RRM}	1600	V
Average on-state current ($T_c \leq 77^{\circ}C$)	$I_{T(AV)}$	57	A
RMS on-state current ($T_c \leq 77^{\circ}C$)	$I_{T(RMS)}$	90	A
Non repetitive surge peak on-state current ($t_p=10ms$, $T_j=25^{\circ}C$)	I_{TSM}	1000	A
Non repetitive surge peak on-state current ($t_p=8.3ms$, $T_j=25^{\circ}C$)		1100	
I^2t value for fusing ($t_p=10ms$, $T_j=25^{\circ}C$)	I^2t	5000	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	200	$A/\mu s$
Peak gate current ($t_p=20\mu s$, $T_j=125^{\circ}C$)	I_{GM}	12	A

Average gate power dissipation ($T_j=125^{\circ}\text{C}$)	$P_{G(AV)}$	1	W
Peak gate power	P_{GM}	22	W
Peak pulse voltage ($T_j=25^{\circ}\text{C}$; non-repetitive, off-state; FIG.7)	V_{pp}	1.1	kV

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

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	$V_D=12\text{V}$ $R_L=33\Omega$	10	-	80	mA
V_{GT}		-	-	1.3	V
V_{GD}	$V_D=V_{DRM}$ $T_j=125^{\circ}\text{C}$ $R_L=3.3\text{k}\Omega$	0.25	-	-	V
I_L	$I_G=1.2I_{GT}$	-	-	250	mA
I_H	$I_T=1\text{A}$	-	-	150	mA
dV/dt	$V_D=1070\text{V}$ Gate Open $T_j=125^{\circ}\text{C}$	2000	-	-	V/ μs
t_{on}	$I_G=100\text{mA}$ $I_A=1\text{A}$ $I_R=100\text{mA}$ $T_j=25^{\circ}\text{C}$	-	7	-	μs
t_{off}		-	200	-	

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=130\text{A}$ $t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	1.55	V
V_{TO}	Threshold voltage	$T_j=125^{\circ}\text{C}$	0.76	V
R_D	Dynamic resistance	$T_j=125^{\circ}\text{C}$	6.2	$\text{m}\Omega$
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	30	μA
I_{RRM}		$T_j=125^{\circ}\text{C}$	12	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (DC)	0.38	$^{\circ}\text{C/W}$
$R_{th(j-a)}$	junction to ambient (DC)	50	$^{\circ}\text{C/W}$

ORDERING INFORMATION

<u>J</u>	<u>CT</u>	<u>16</u>	<u>90</u>	<u>CS</u>
JieJie Microelectronics Co., Ltd.	SCRs			CS:TO-247S
		16: $V_{DRM}/V_{RRM} \geq 1600V$	$I_{T(RMS)}: 90A$	

MARKING

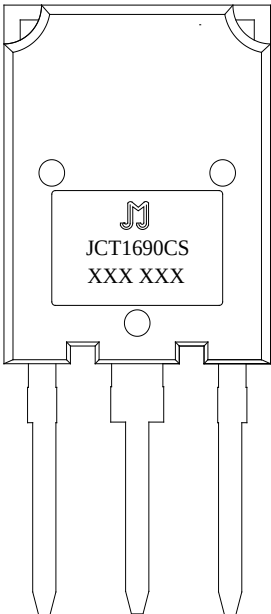
	<u>XXX</u> <u>XXX</u> Year _____ Production Code _____ Month _____
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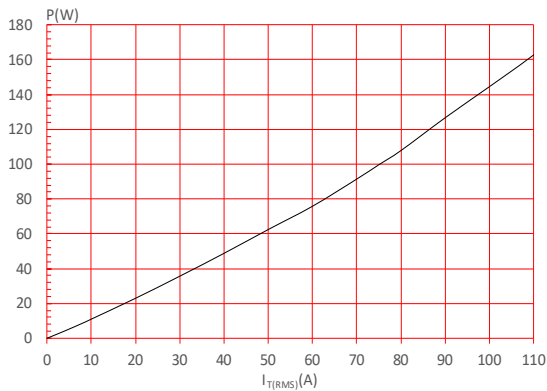
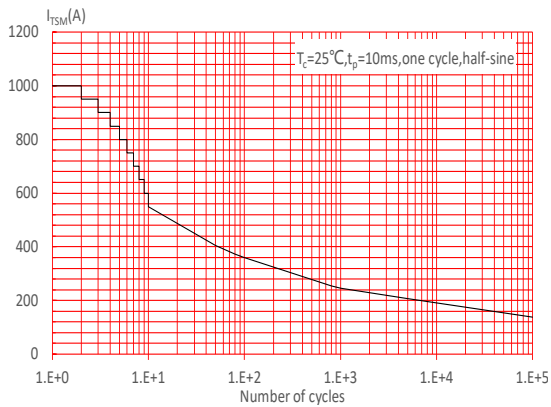
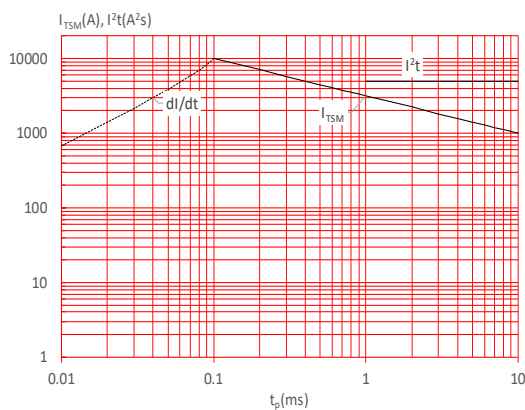
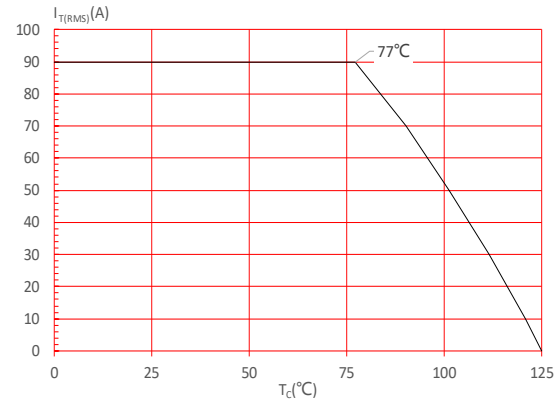
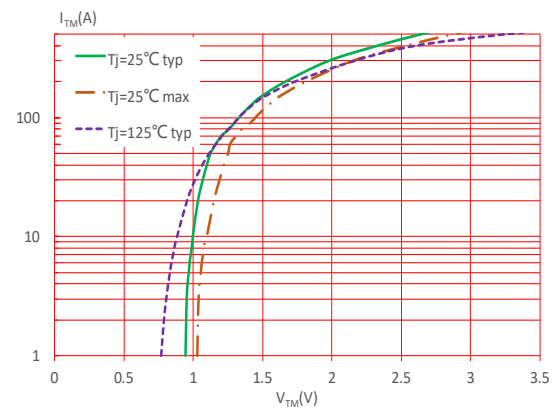
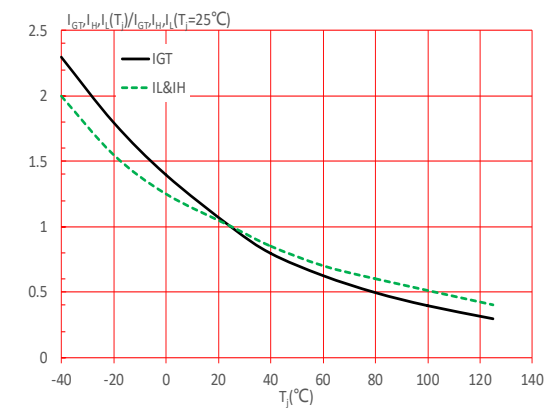
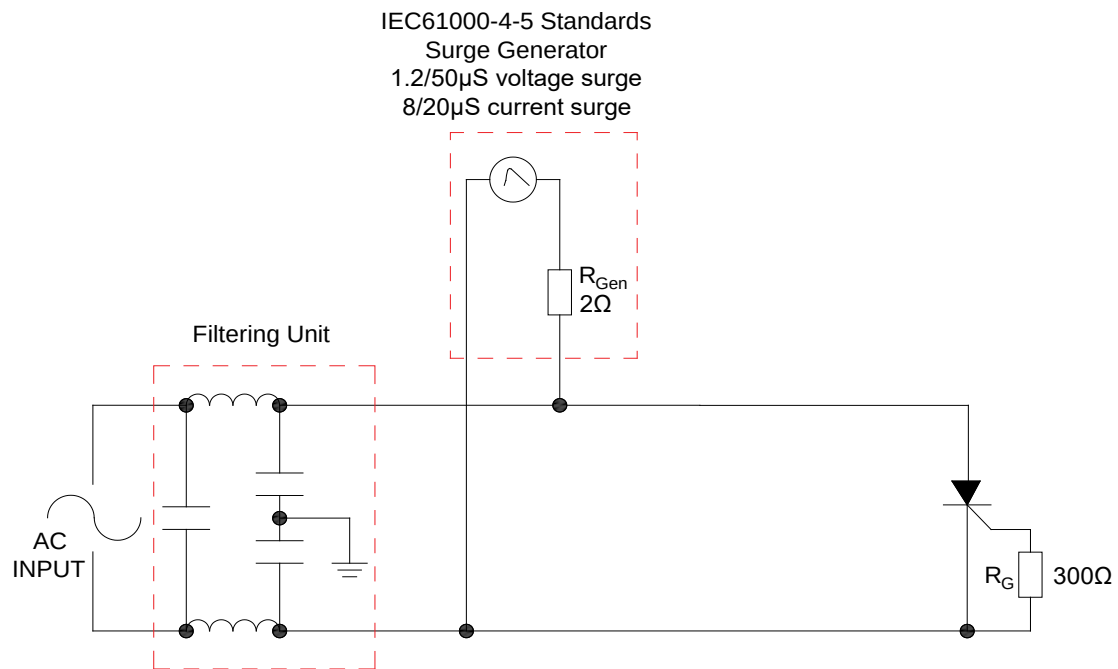
FIG.1: Maximum power dissipation versus RMS on-state current

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 $t_p < 10\text{ms}$, and corresponding value of I^2t ($di/dt < 200\text{A}/\mu\text{s}$)

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

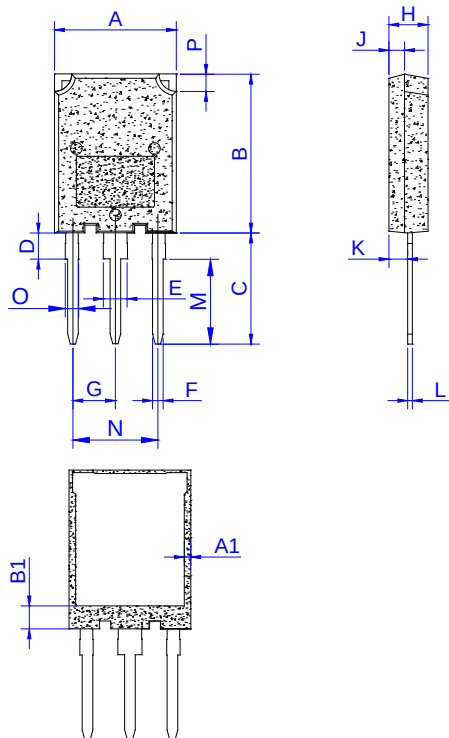
ORDERING INFORMATION

Order code	Voltage $V_{\text{DRM}}/V_{\text{RRM}}$ (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
JCT1690CS	1600	10-80	TO-247S	30	Tube

Document Revision History

Date	Revision	Changes
Apr.13, 2023	A.1.0	Last update
Oct.16, 2025	A.1.1	Revise PACKAGE MECHANICAL DATA

A diagram of a 3x3 grid. A red vertical line passes through the center of the grid, specifically through the middle cell of each row. The line is dashed in the top and bottom rows and solid in the middle row.



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.10		16.10	0.594		0.634
A1	0.80		1.20	0.031		0.047
B	19.80		20.80	0.780		0.819
B1	3.30		3.70	0.130		0.146
C	13.80		14.80	0.543		0.583
D	3.00		4.00	0.118		0.157
E	2.75		3.35	0.108		0.132
F	1.30		1.50	0.051		0.059
G	5.10		5.80	0.201		0.228
H	4.50		5.50	0.177		0.217
J	1.45		2.15	0.057		0.085
K	1.90		2.80	0.075		0.110
L	0.55		0.80	0.022		0.031
M	10.60		11.00	0.417		0.433
N	10.70		11.10	0.421		0.437
O	1.50		1.90	0.059		0.075
P	2.00		2.40	0.079		0.094

Technical drawing of a rectangular PCB (Printed Circuit Board) showing dimensions and labels. The drawing includes a top view and a side view.

Top View Dimensions:

- Overall width: 495.0 ± 0.5
- Overall height: 483.0 ± 0.2
- Distance from top edge to top of component: 11
- Distance from left edge to component: $\phi 5$
- Distance from component to right edge: 145
- Distance from component to right edge (inner): 70
- Distance from component to right edge (outer): $\phi 3.00 \pm 0.05$
- Distance from component to right edge (inner): 11

Labels:

- ANTISTATIC
- RoHS

Side View Dimensions:

- Overall height: 45.5 ± 0.2
- Distance from top edge to top of component: 7.4 ± 0.2
- Distance from top edge to bottom of component: 22.3
- Distance from top edge to bottom of component (inner): $0.7_0^{+0.1}$
- Distance from top edge to bottom of component (outer): 2.85
- Distance from top edge to bottom of component (inner): 16.4

PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-247S	TUBE	30	450	2,250

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