



JR0405S3 4A SCR

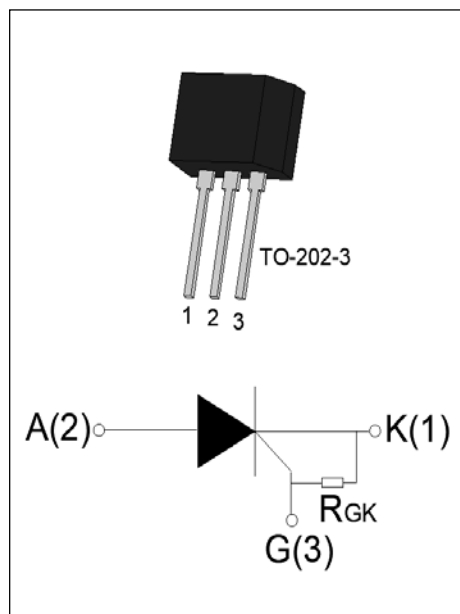
Rev.A.1.0

DESCRIPTION:

The JR0405S3 SCR with the parallel resistor between Gate and Cathode, $R_{GK}=10\sim80k\Omega$, is especially recommended for use on straight hair, igniter, anion generator, etc. Package TO-202-3 is RoHS compliant.

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	4	A
V_{DRM}/V_{RRM}	600	V
I_{GT}	≤ 200	μA



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 ^①	$^{\circ}C$
Repetitive peak off-state voltage ($T_j=25^{\circ}C$)	V_{DRM}	600	V
Repetitive peak reverse voltage ($T_j=25^{\circ}C$)	V_{RRM}	600	V
Average on-state current ($T_c \leq 83^{\circ}C$)	$I_{T(AV)}$	2.5	A
RMS on-state current ($T_c \leq 83^{\circ}C$)	$I_{T(RMS)}$	4	A
Non repetitive surge peak on-state current ($t_p=10ms$, $T_j=25^{\circ}C$)	I_{TSM}	40	A
Non repetitive surge peak on-state current ($t_p=8.3ms$, $T_j=25^{\circ}C$)		44	
I^2t value for fusing ($t_p=10ms$, $T_j=25^{\circ}C$)	I^2t	8	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	50	$A/\mu s$
Peak gate current ($t_p=20\mu s$, $T_j=125^{\circ}C$)	I_{GM}	2	A
Average gate power dissipation ($T_j=125^{\circ}C$)	$P_{G(AV)}$	0.5	W

Peak gate power	P_{GM}	5	W
Peak pulse voltage ($T_j=25^{\circ}\text{C}$; non-repetitive, off-state; FIG.7)	V_{pp}	0.5	kV

NOTE 1: Operating junction temperature T_j is up to 125°C when a resistor $\leq 1\text{k}\Omega$ is connected between Gate and Cathode. Without this resistor, the T_j is up to 110°C only.

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

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	$V_D=12\text{V}$ $R_L=33\Omega$	-	50	200	μA
V_{GT}		-	0.6	0.8	V
V_{GD}	$V_D=V_{DRM}$ $T_j=125^{\circ}\text{C}$	0.2	-	-	V
I_L	$I_G=1.2 I_{GT}$	-	-	6	mA
I_H	$I_T=0.1\text{A}$	-	-	5	mA
dV/dt	$V_D=400\text{V}$ $T_j=125^{\circ}\text{C}$ $R_{GK}=1\text{k}\Omega$	50	-	-	V/ μs
	$V_D=400\text{V}$ $T_j=125^{\circ}\text{C}$ $R_{GK}=220\Omega$	250	-	-	
t_{on}	$I_G=10\text{mA}$ $I_A=20\text{mA}$ $I_R=2\text{mA}$ $T_j=25^{\circ}\text{C}$	-	2	-	μs
t_{off}		-	50	-	

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=8\text{A}$ $t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	1.6	V
V_{TO}	Threshold voltage	$T_j=125^{\circ}\text{C}$	0.64	V
R_D	Dynamic resistance	$T_j=125^{\circ}\text{C}$	0.08	Ω
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	5	μA
I_{RRM}		$T_j=125^{\circ}\text{C}$	0.5	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (DC)	7.8	$^{\circ}\text{C/W}$
$R_{th(j-a)}$	junction to ambient (DC)	80	$^{\circ}\text{C/W}$

ORDERING INFORMATION

<u>J</u>	<u>R</u>	<u>04</u>	<u>05</u>	<u>S3</u>
JieJie Microelectronics Co., Ltd.	Sensitive gate SCRs	$I_{T(RMS)}:4A$		S3:TO-202-3
			05: $I_{GT} \leq 200\mu A$	

MARKING

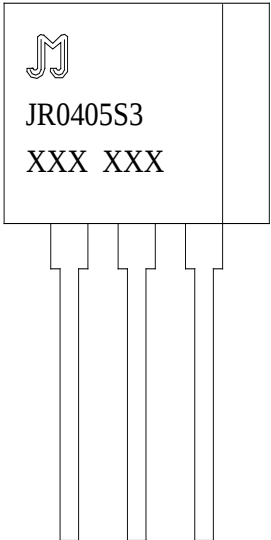
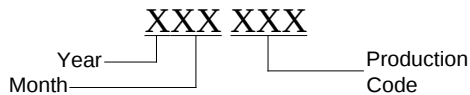
	
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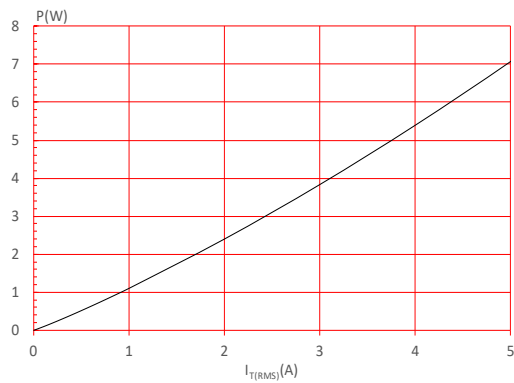
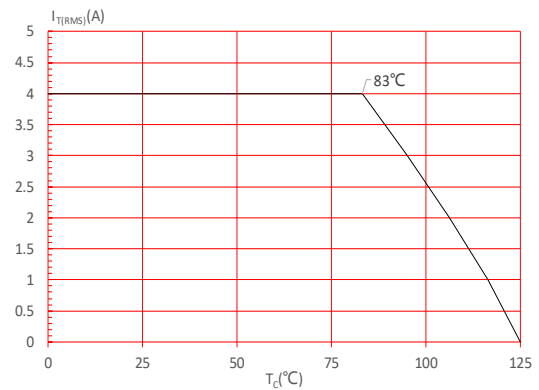
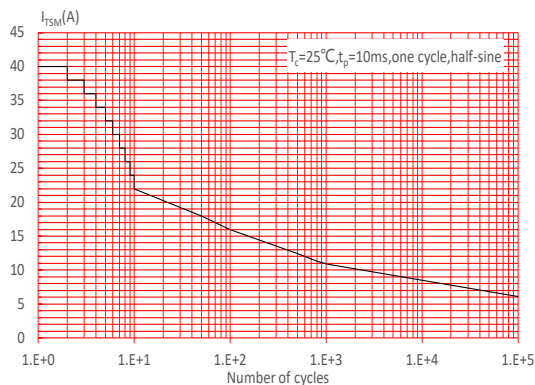
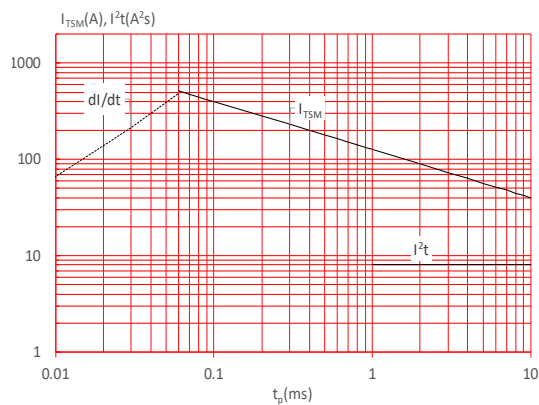
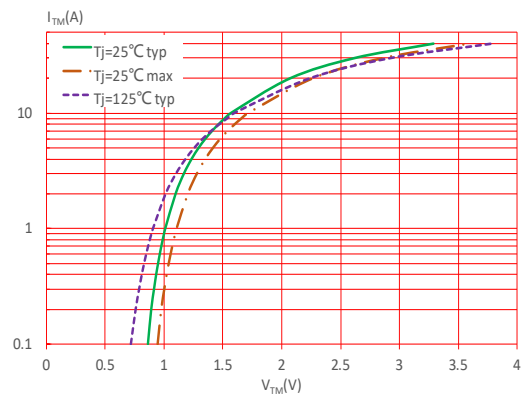
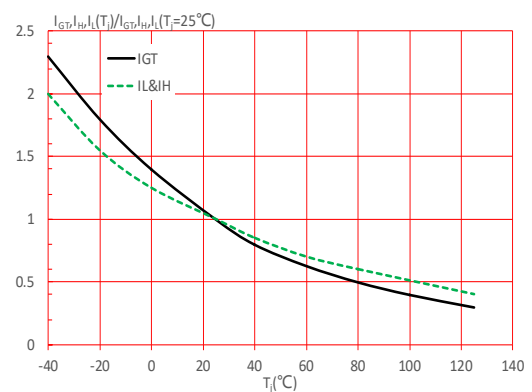
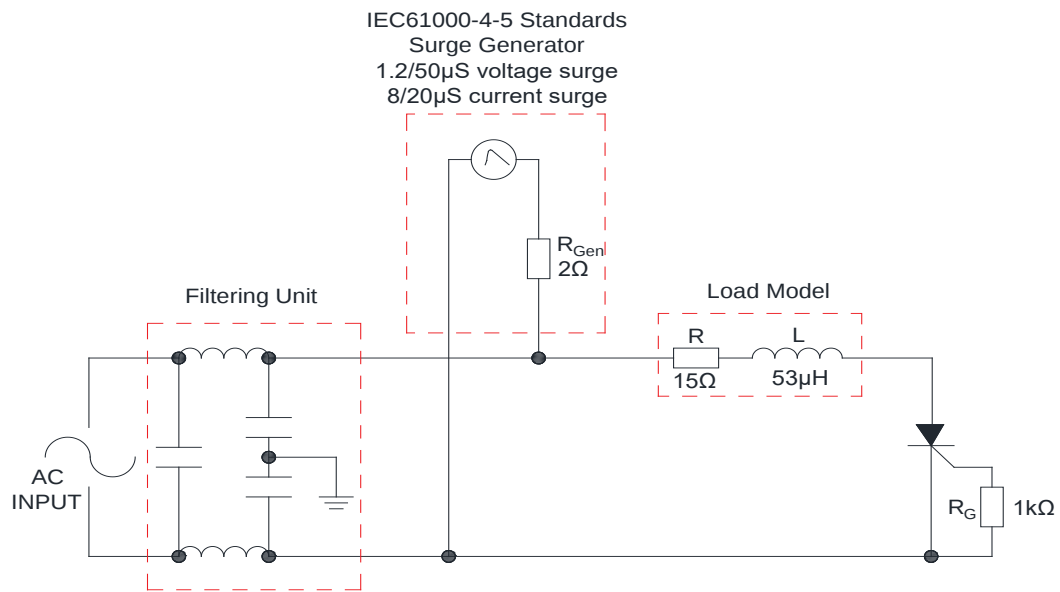
FIG.1: Maximum power dissipation versus RMS on-state current

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 ($di/dt < 50A/\mu s$)

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

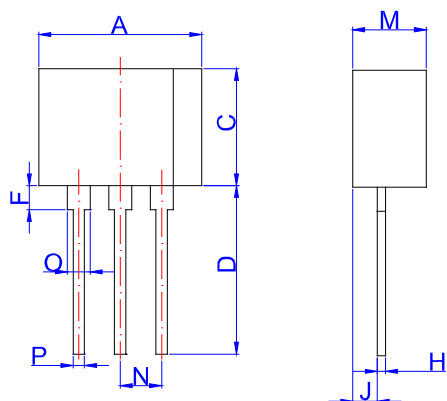
ORDERING INFORMATION

Order code	Voltage $V_{\text{DRM}}/V_{\text{RRM}}$ (V)	IGT(μA)	Package	Base qty. (pcs)	Delivery mode
JR0405S3	600	≤ 200	TO-202-3	250	Bulk Pack

Document Revision History

Date	Revision	Changes
Apr.10, 2023	A.1.0	Last update

PACKAGE MECHANICAL DATA



TO-202-3

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.50		10.0	0.374		0.394
C	7.0		7.6	0.276		0.299
D	10.0		11.0	0.394		0.433
F	1.00		1.50	0.039		0.059
H	0.45		0.55	0.018		0.022
J	1.50		1.90	0.059		0.075
M	4.40		4.70	0.173		0.185
N	2.40		2.70	0.094		0.106
O	1.15		1.45	0.045		0.057
P	0.60		0.80	0.024		0.031

DELIVERY MODE

PACKAGE	OUTLINE	BAG (PCS)	INNER BOX (PCS)	PER CARTON
TO-202-3	Bulk Pack	250	4,000	20,000

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