



## CR03AM-16 Sensitive gate SCRs

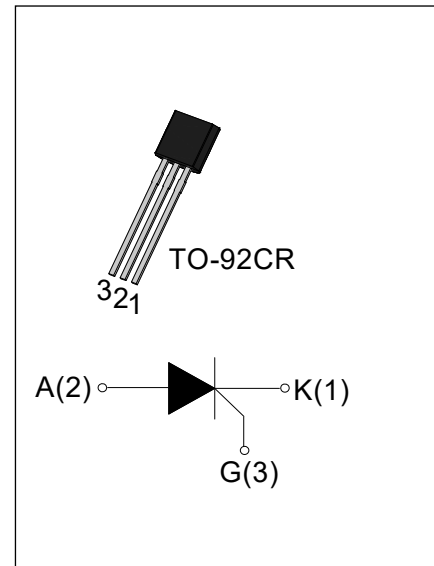
Rev.1

### DESCRIPTION:

The CR03AM-16 SCR provide high dv/dt rate with strong resistance to electromagnetic interface. They are especially recommended for use on residual current circuit breaker, straight hair, igniter etc. complying with UL standards (File ref: E252906). Package TO-92CR is RoHS compliant. (2011/65/EU)

### MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	1.25	A
$I_{GT}$	< 200	$\mu A$



### 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 <sup>①</sup>	$^{\circ}C$
Repetitive peak off-state voltage ( $T_j=25^{\circ}C$ )	$V_{DRM}$	1200	V
Repetitive peak reverse voltage ( $T_j=25^{\circ}C$ )	$V_{RRM}$	1200	V
Non repetitive peak off-state voltage	$V_{DSM}$	$V_{DRM}+100$	V
Non repetitive peak reverse voltage	$V_{RSM}$	$V_{RRM}+100$	V
RMS on-state current	TO-92CR ( $T_C=50^{\circ}C$ ) $I_{T(RMS)}$	1.25	A
Non repetitive surge peak on-state current (F=50Hz tp=10ms)	$I_{TSM}$	20	A
Non repetitive surge peak on-state current (F=60Hz tp=10ms)	$I_{TSM}$	22	A
$I^2t$ value for fusing (tp=10ms)	$I^2t$	2	$A^2s$
Critical rate of rise of on-state current	dI/dt	100	$A/\mu s$
Peak gate current (tp=20 $\mu s$ , $T_j=125^{\circ}C$ )	$I_{GM}$	0.2	A
Peak gate power (tp=20 $\mu s$ , $T_j=125^{\circ}C$ )	$P_{GM}$	0.5	W
Average gate power dissipation( $T_j=125^{\circ}C$ )	$P_{G(AV)}$	0.1	W

**NOTE 1:** When we parallel connect a  $\leq 1\text{K}\Omega$  resistor between Gate and Cathode, the  $T_j$  can reach  $125^\circ\text{C}$ ; if without this resistor, the  $T_j$  only can reach  $110^\circ\text{C}$ .

### 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	$\mu\text{A}$
$V_{GT}$		-	0.6	0.8	V
$V_{GD}$	$V_D=V_{DRM} T_j=125^\circ\text{C}$	0.2	-	-	V
$I_L$	$I_G=1.2 I_{GT}$	-	-	5	mA
$I_H$	$I_T=0.05\text{A}$	-	-	4	mA
dv/dt	$V_D=600\text{V } T_j=125^\circ\text{C } R_{GK}=1\text{K}\Omega$	70	-	-	V/ $\mu\text{s}$
	$V_D=600\text{V } T_j=125^\circ\text{C } R_{GK}=220\Omega$	800	-	-	

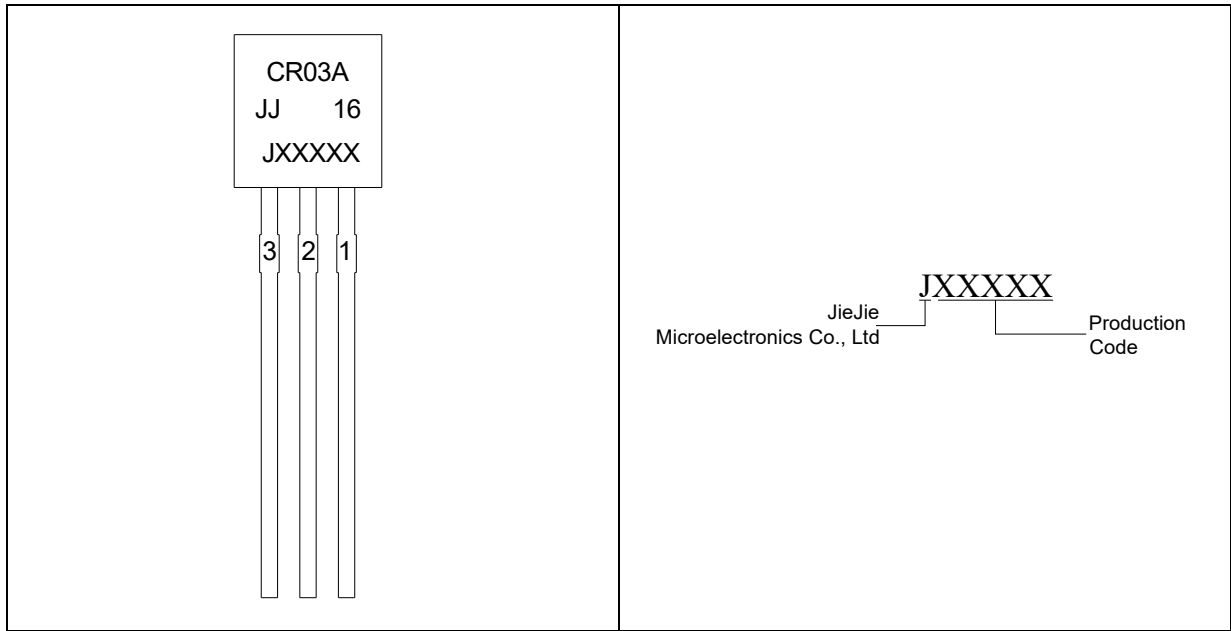
### STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
$V_{TM}$	$I_{TM}=4\text{A } t_p=380\mu\text{s}$	$T_j=25^\circ\text{C}$	1.6	V
$V_{TO}$	Threshold voltage	$T_j=125^\circ\text{C}$	0.9	V
$R_d$	Dynamic resistance	$T_j=125^\circ\text{C}$	250	$\text{m}\Omega$
$I_{DRM}$	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^\circ\text{C}$	5	$\mu\text{A}$
$I_{RRM}$		$T_j=125^\circ\text{C}$	1	mA

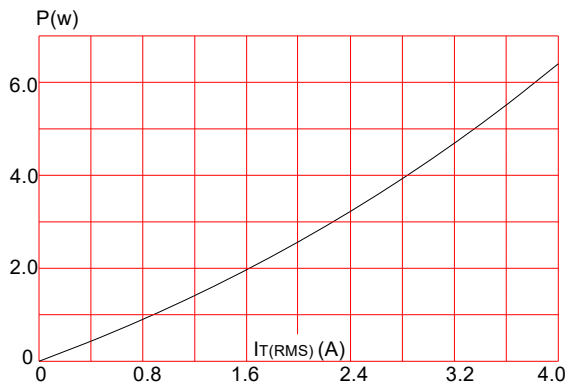
### THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case	TO-92CR	57	$^\circ\text{C}/\text{W}$

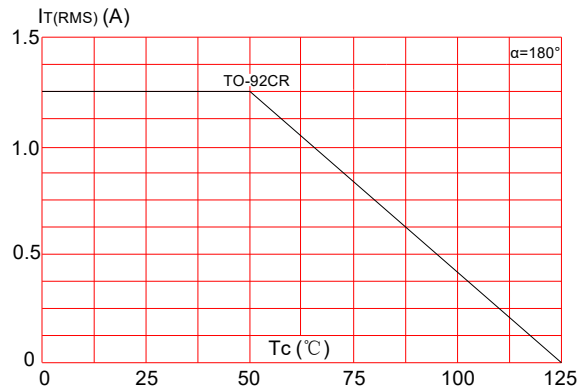
MARKING



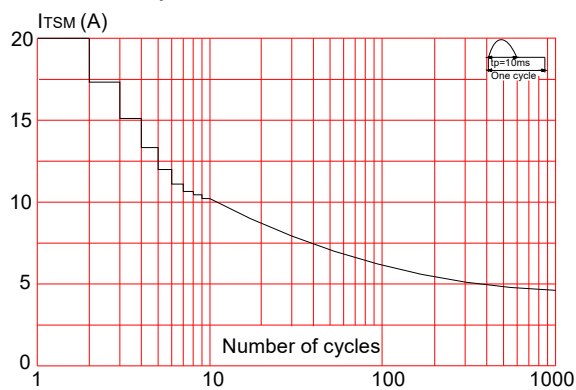
**FIG.1:** Maximum power dissipation versus RMS on-state current



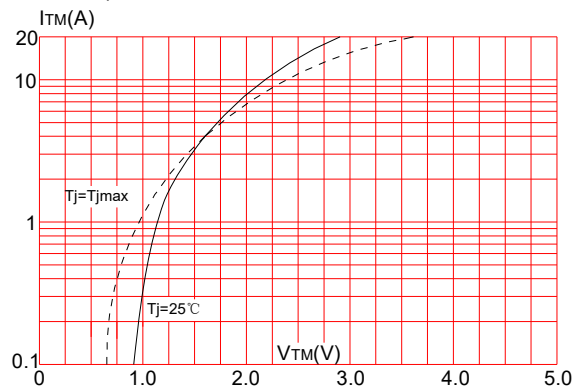
**FIG.2:** RMS on-state current versus case temperature



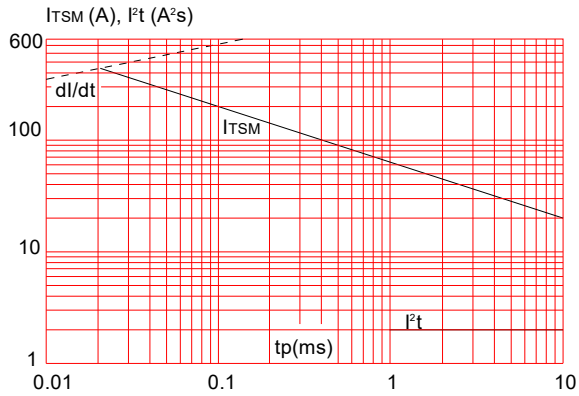
**FIG.3:** Surge peak on-state current versus number of cycles



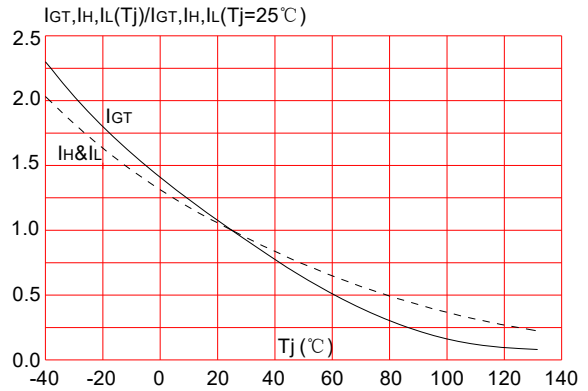
**FIG.4:** On-state characteristics (maximum values)



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



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



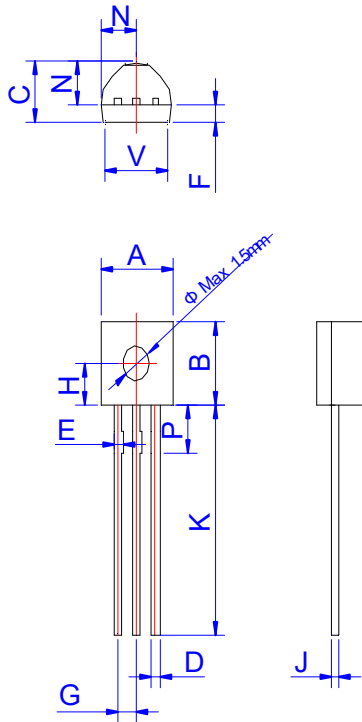
**ORDERING INFORMATION**

Order code	Voltage $V_{DRM}/V_{RRM}$ (V)	IGT ( $\mu\text{A}$ )	Package	Base qty. (pcs)	Delivery mode
CR03AM-16	1200	< 200	TO-92CR	1,000	Bulk Pack
				2,000	Tape & Reel

**Document Revision History**

Date	Revision	Changes
Mar 19, 2022	1	Last update

PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.45		5.20	0.175		0.205
B	4.32		5.33	0.170		0.210
C	3.18		4.19	0.125		0.165
D	0.407		0.533	0.016		0.021
E	0.50		0.70	0.020		0.028
F	-	1.1	-	-	0.043	-
G	-	1.27	-	-	0.050	-
H	-	2.30	-	-	0.091	-
J	0.36		0.50	0.014		0.020
K	12.70		15.0	0.500		0.591
N	2.04		2.66	0.080		0.105
P	1.86		2.06	0.073		0.081
V	4.2	4.3	4.4	0.165	0.169	0.173


DELIVERY MODE

PACKAGE	OUTLINE	BAG (PCS)	INNER BOX (PCS)	CARTON BOX (PCS)
TO-92CR	Bulk Pack	1,000	10,000	50,000

PACKAGE	OUTLINE	REEL (PCS)	INNER BOX (PCS)	CARTON BOX (PCS)
TO-92CR	Tape & Reel	/	2,000	20,000



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