

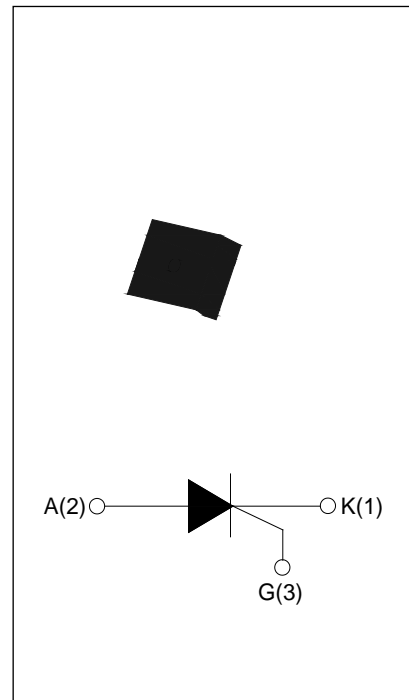


### DESCRIPTION:

JCT612TC silicon controlled rectifier is specifically designed for medium power switching and phase control applications. High current density due to mesa technology; SIPOS and Glass Passivation technology used has reliable operation up to 125 junction temperature. Low  $I_{GT}$  parts available. Package TO-220C is RoHS compliant.

### MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
$V_{DRM}/V_{RRM}$	600	V
$I_{GT}$	5	mA



### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	$T_{stg}$	-40-150	
Operating junction temperature range	$T_j$	-40-125	
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 ( $T_c = 105^\circ C$ )	$I_{T(AV)}$	7.6	A
RMS on-state current ( $T_c = 105^\circ C$ )	$I_{T(RMS)}$	12	A
Non repetitive surge peak on-state current ( $t_p=10ms, T_j=25^\circ C$ )	$I_{TSM}$	140	A
Non repetitive surge peak on-state current ( $t_p=8.3ms, T_j=25^\circ C$ )		154	
$I^2t$ value for fusing ( $t_p=10ms, T_j=25^\circ C$ )	$I^2t$	98	$A^2s$
Critical rate of rise of on-state current ( $I_G=2 I_{GT}, f=100Hz, T_j=125^\circ C$ )	$di/dt$	100	$A/\mu s$
Peak gate current ( $t_p=20\mu s, T_j=125^\circ C$ )	$I_{GM}$	4	A

Average gate power dissipation ( $T_j=125$ )	$P_{G(AV)}$	1	W
Peak gate power	$P_{GM}$	10	W
Peak pulse voltage ( $T_j=25$ ; non-repetitive,off-state;FIG.7)	$V_{pp}$	0.5	kV

**ELECTRICAL CHARACTERISTICS** ( $T_j=25$  unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
$I_{GT}$	$V_D=12V R_L=33$	-	-	5	mA
$V_{GT}$		-	-	1	V
$V_{GD}$	$V_D=V_{DRM} T_j=125 R_L=3.3K$	0.2	-	-	V
$I_L$	$I_G=1.2I_{GT}$	-	-	30	mA
$I_H$	$I_T=500mA$	-	-	15	mA
dV/dt	$V_D=400V$ Gate Open $T_j=125$	400	-	-	V/ $\mu s$
$t_{on}$	$I_G=20mA I_A=200mA I_R=20mA$ $T_j=25$	-	5	-	$\mu s$
$t_{off}$		-	80	-	

**STATIC CHARACTERISTICS**

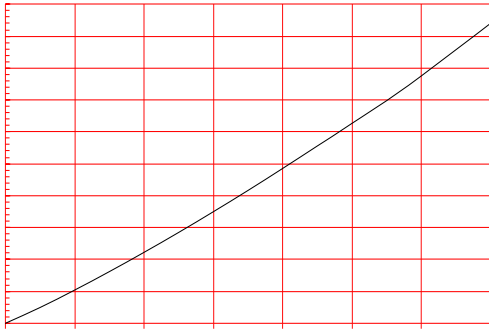
Symbol	Parameter		Value(MAX.)	Unit
$V_{TM}$	$I_{TM}=24A t_p=380\mu s$	$T_j=25$	1.5	V
$V_{TO}$	Threshold voltage	$T_j=125$	0.8	V
$R_D$	Dynamic resistance	$T_j=125$	27	m
$I_{DRM}$	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25$	5	$\mu A$
$I_{RRM}$		$T_j=125$	0.2	mA

**THERMAL RESISTANCES**

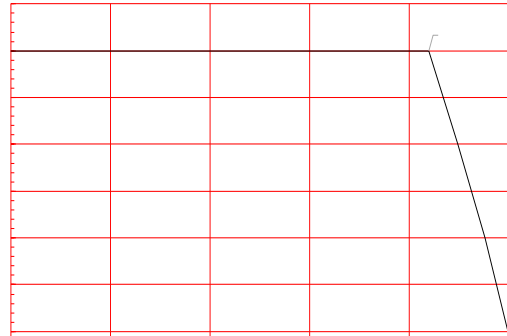
Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case(DC)	1.3	$^{\circ}W$
$R_{th(j-a)}$	junction to ambient (DC)	55	$^{\circ}W$

**JCT612T**

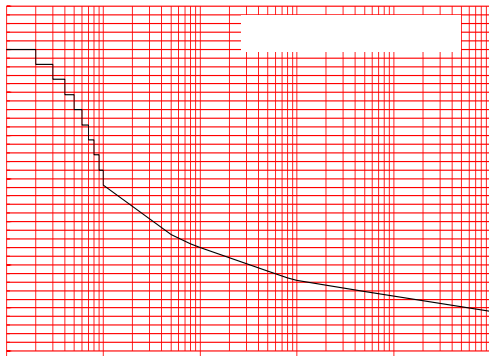
**FIG.1** Maximum power dissipation versus RMS on-state current



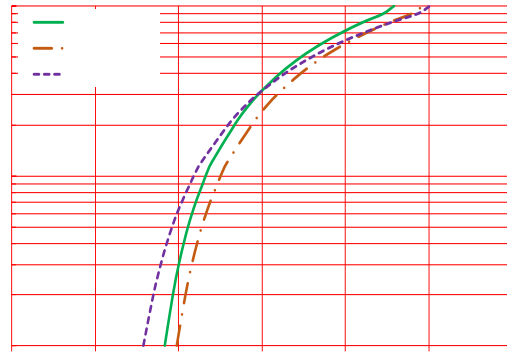
**FIG.2:** RMS on-state current versus case temperature



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



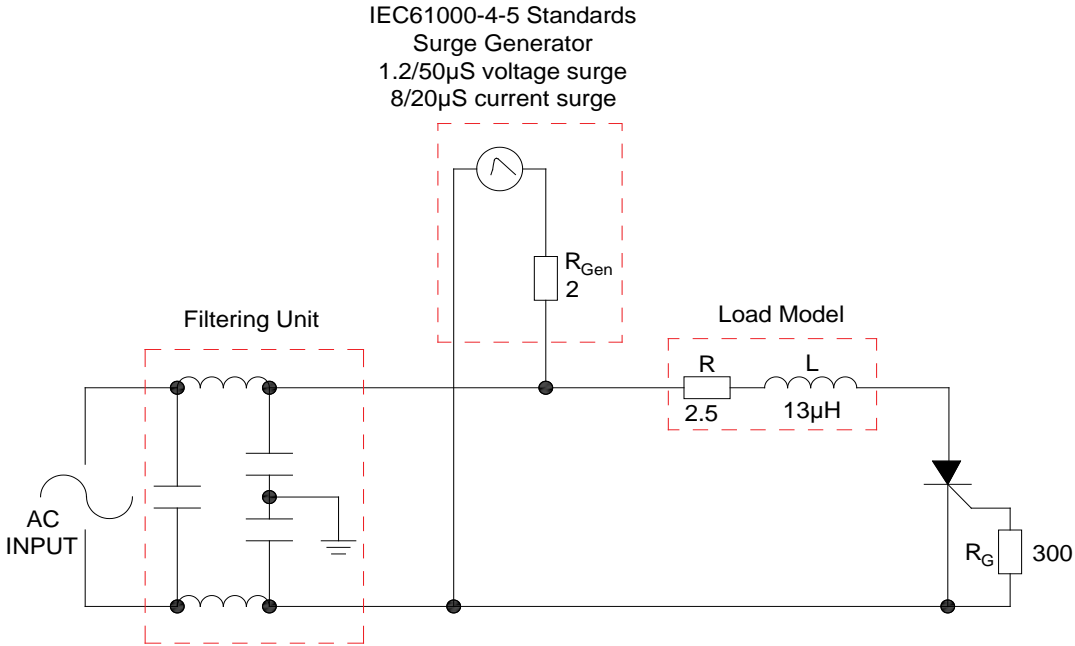
**FIG.4:** On-state characteristics



**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , 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

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



SHAPING AND SOLDERING PARAMETERS

Refer to Instructions for installation of plastic-sealed in-line power devices released by JieJie

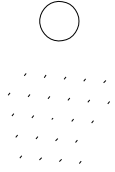
**ORDERING INFORMATION**

<b>Order code</b>	<b>Voltage <math>V_{DRM}/V_{RRM}</math> (V)</b>	<b>IGT(mA)</b>	<b>Package</b>	<b>Base qty. (pcs)</b>	<b>Delivery mode</b>
<b>JCT612TC</b>	<b>600</b>	<b>5</b>	<b>TO-220C</b>	<b>50</b>	<b>Tube</b>

**Document Revision History**

<b>Date</b>	<b>Revision</b>	<b>Changes</b>
Apr.13, 2023	A.1.0	Last update

**PACKAGE MECHANICAL DATA**



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However, Jiangsu JieJie Microelectronics Co., Ltd. assumes no responsibility for the