

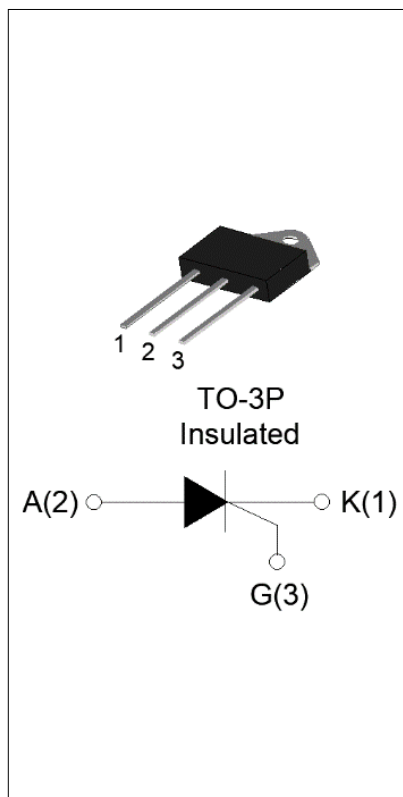


### DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT1640Z 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, JCT1640Z provides a rated insulation voltage of 2500 V<sub>RMS</sub>, complying with UL standards (File ref: E252906). Package TO-3P is RoHS compliant.

### MAIN FEATURES

Symbol	Value	Unit
I <sub>T(RMS)</sub>	40	A
V <sub>DRM</sub> /V <sub>RRM</sub>	1600	V
I <sub>GT</sub>	≤45	mA



### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	T <sub>stg</sub>	-40-150	°C
Operating junction temperature range	T <sub>j</sub>	-40-125	°C
Repetitive peak off-state voltage (T <sub>j</sub> =25°C)	V <sub>DRM</sub>	1600	V
Repetitive peak reverse voltage (T <sub>j</sub> =25°C)	V <sub>RRM</sub>	1600	V
Average on-state current (T <sub>c</sub> ≤70°C)	I <sub>T(AV)</sub>	25	A
RMS on-state current (T <sub>c</sub> ≤70°C)	I <sub>T(RMS)</sub>	40	A
Non repetitive surge peak on-state current (t <sub>p</sub> =10ms, T <sub>j</sub> =25°C)	I <sub>TSM</sub>	400	A
Non repetitive surge peak on-state current (t <sub>p</sub> =8.3ms, T <sub>j</sub> =25°C)		430	
I <sup>2</sup> t value for fusing (t <sub>p</sub> =10ms, T <sub>j</sub> =25°C)	I <sup>2</sup> t	800	A <sup>2</sup> s
Critical rate of rise of on-state current (I <sub>G</sub> =2×I <sub>GT</sub> , f=100Hz, T <sub>j</sub> =125°C)	di/dt	200	A/μs

Peak gate current ( $t_p=20\mu s$ , $T_j=125^\circ C$ )	$I_{GM}$	10	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)	$V_{pp}$	1.2	kV

**ELECTRICAL CHARACTERISTICS** ( $T_j=25^\circ C$  unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
$I_{GT}$	$V_D=12V$ $R_L=33\Omega$	-	-	45	mA
$V_{GT}$		-	-	1	V
$V_{GD}$	$V_D=V_{DRM}$ $T_j=125^\circ C$ $R_L=3.3K\Omega$	0.2	-	-	V
$I_L$	$I_G=1.2I_{GT}$	-	-	150	mA
$I_H$	$I_T=500mA$	-	-	130	mA
dV/dt	$V_D=1070V$ Gate Open $T_j=125^\circ C$	1500	-	-	V/ $\mu s$
$t_{on}$	$I_G=100mA$ $I_A=1A$ $I_R=100mA$ $T_j=25^\circ C$	-	7	-	$\mu s$
$t_{off}$		-	120	-	

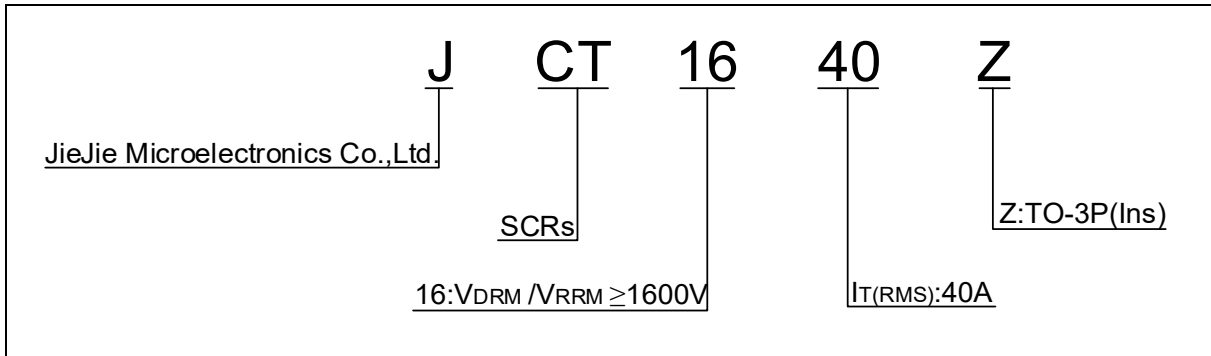
**STATIC CHARACTERISTICS**

Symbol	Parameter		Value(MAX.)	Unit
$V_{TM}$	$I_{TM}=80A$ $t_p=380\mu s$	$T_j=25^\circ C$	1.8	V
$V_{TO}$	Threshold voltage	$T_j=125^\circ C$	0.78	V
$R_D$	Dynamic resistance	$T_j=125^\circ C$	13	m $\Omega$
$I_{DRM}$	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ C$	10	$\mu A$
$I_{RRM}$		$T_j=125^\circ C$	5	mA

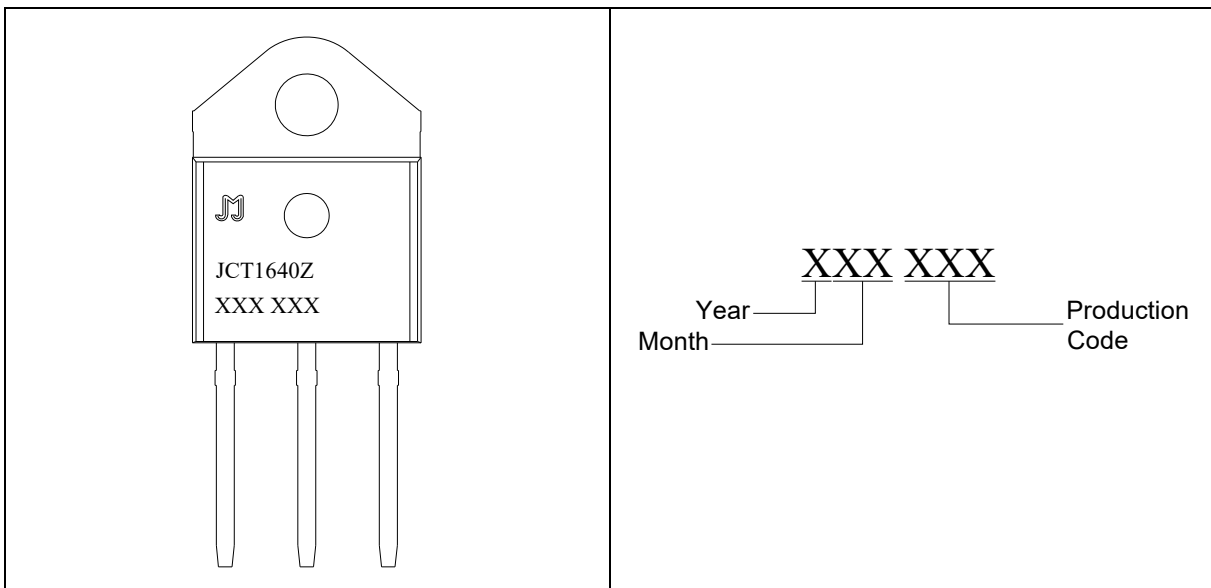
**THERMAL RESISTANCES**

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case(DC)	1.1	$^\circ C/W$
$R_{th(j-a)}$	junction to ambient (DC)	55	$^\circ C/W$

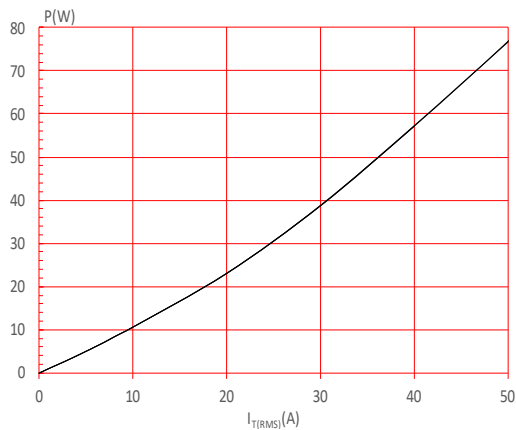
ORDERING INFORMATION



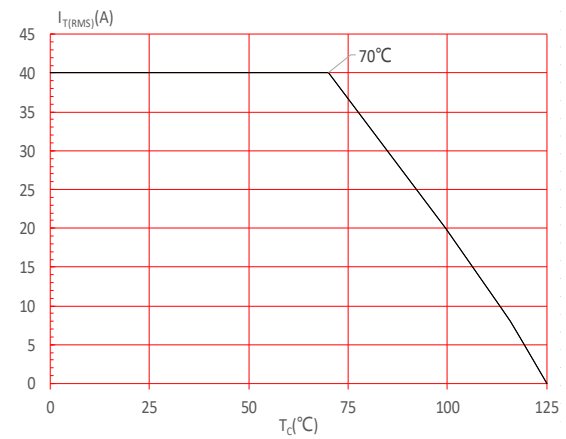
MARKING



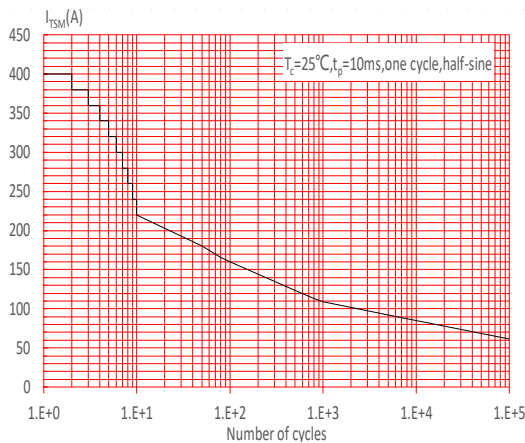
**FIG.1** Maximum power dissipation versus RMS on-state current



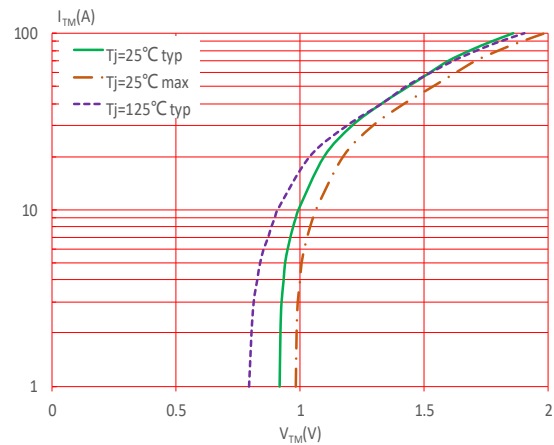
**FIG.2:** RMS on-state current versus case temperature



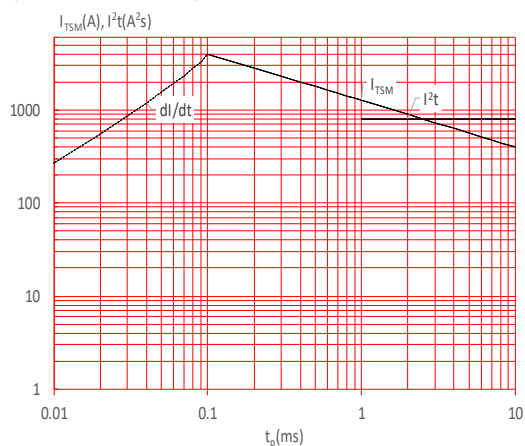
**FIG.3:** Surge peak on-state current versus number of cycles



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



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

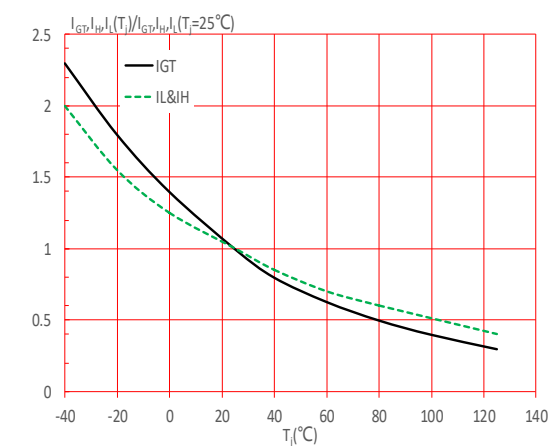
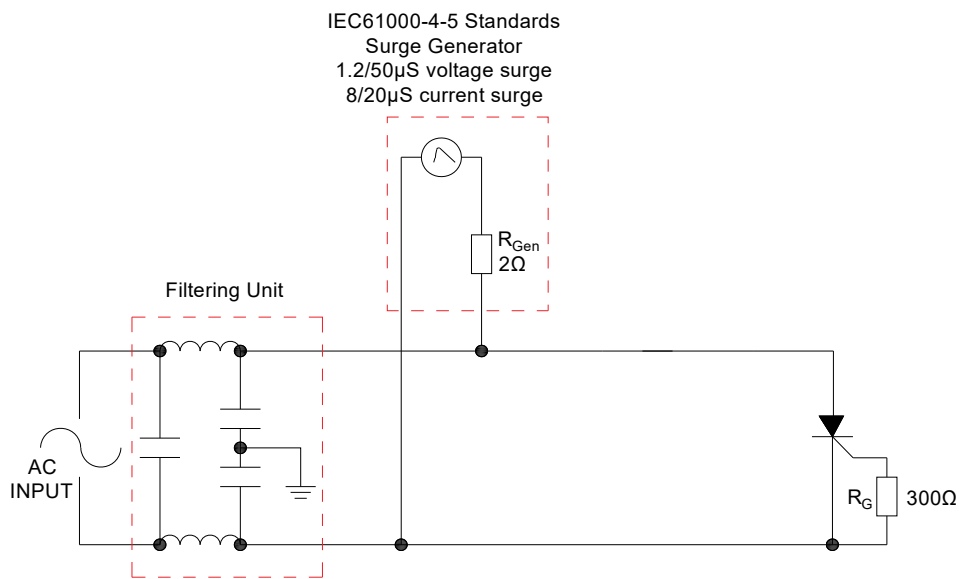


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.



## SHAPING AND SOLDERING PARAMETERS

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

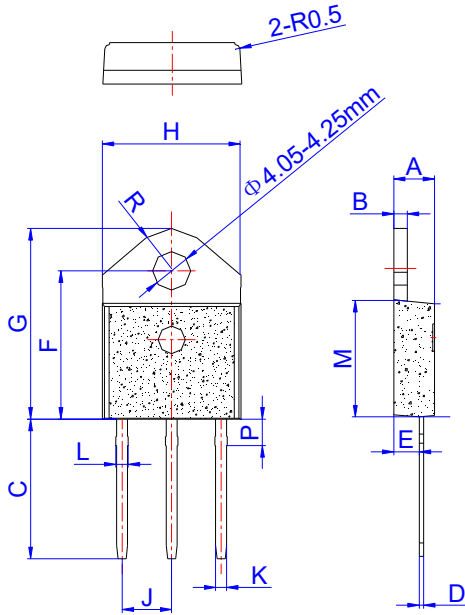
**ORDERING INFORMATION**

Order code	Voltage $V_{DRM}/V_{RRM}$ (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
JCT1640Z	1600	45	TO-3P(Ins)	30	Tube

**Document Revision History**

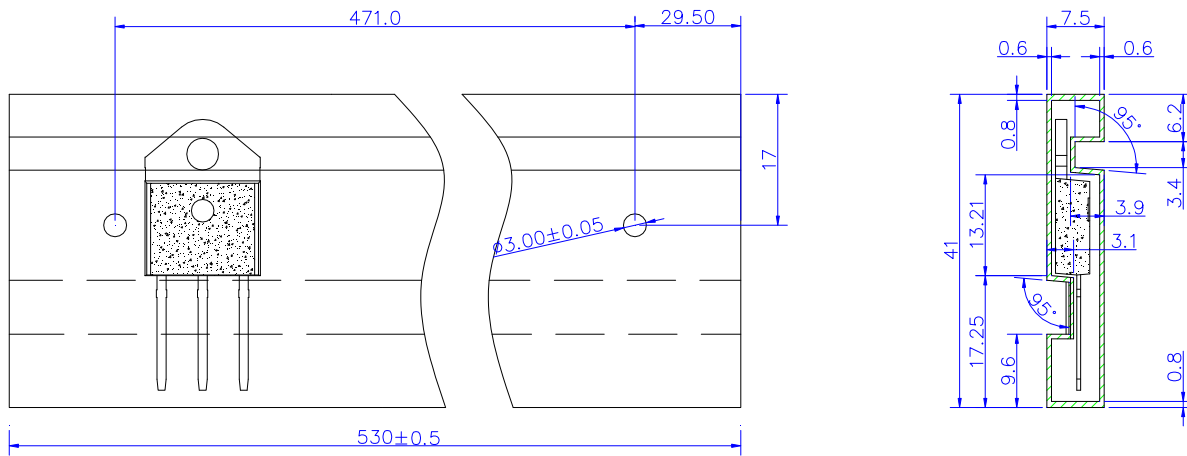
Date	Revision	Changes
Apr.13, 2023	A.1.0	Last update

PACKAGE MECHANICAL DATA




Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	1.45		1.55	0.057		0.061
C	14.35		15.60	0.565		0.614
D	0.50		0.70	0.020		0.028
E	2.70		2.90	0.106		0.114
F	15.80		16.50	0.622		0.650
G	20.40		21.10	0.803		0.831
H	15.10		15.50	0.594		0.610
J	5.40		5.65	0.213		0.222
K	1.10		1.40	0.043		0.055
L	1.25		1.45	0.049		0.057
M	12.37		12.77	0.487		0.503
P	2.80		3.00	0.110		0.118
R		4.35			0.171	

DELIVERY MODE



PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-3P	TUBE	30	450	2,250

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