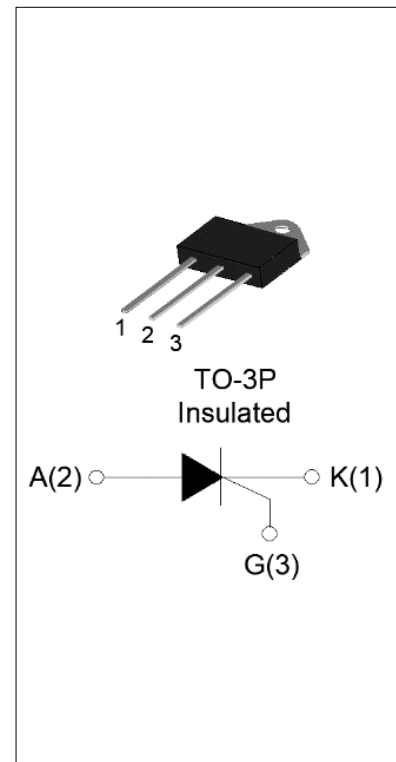


## DESCRIPTION:

With high ability to withstand the shock loading of large current, SCT1655Z SCR provides high  $dV/dt$  rate with strong resistance to electromagnetic interference. It is especially recommended for use on solid state relay, motorcycle, SVC, power charger, T-tools etc. From all three terminals to external heatsink, SCT1655Z provides a rated insulation voltage of 2500  $V_{RMS}$ , complying with UL standards (File ref: E252906). Package TO-3P is RoHS compliant.

## MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	55	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 ( $T_c \leq 70^{\circ}C$ )	$I_{T(AV)}$	35	A
RMS on-state current ( $T_c \leq 70^{\circ}C$ )	$I_{T(RMS)}$	55	A
Non repetitive surge peak on-state current ( $t_p=10ms, T_j=25^{\circ}C$ )	$I_{TSM}$	600	A
Non repetitive surge peak on-state current ( $t_p=8.3ms, T_j=25^{\circ}C$ )		640	
$I^2t$ value for fusing ( $t_p=10ms, T_j=25^{\circ}C$ )		1800	$A^2s$
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 ( $T_j=125^\circ C$ )	$P_{G(AV)}$	1	W
Peak gate power	$P_{GM}$	22	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.	
$I_{GT}$	$V_D=12V$ $R_L=33\Omega$	10	-	80	mA
$V_{GT}$		-	-	1.3	V
$V_{GD}$	$V_D=V_{DRM}$ $T_j=125^\circ C$ $R_L=3.3k\Omega$	0.25	-	-	V
$I_L$	$I_G=1.2I_{GT}$	-	-	250	mA
$I_H$	$I_T=500mA$	-	-	200	mA
dV/dt	$V_D=1070V$ Gate Open $T_j=125^\circ C$	2200	-	-	V/ $\mu s$
$t_{on}$	$I_G=100mA$ $I_A=1A$ $I_R=100mA$ $T_j=25^\circ C$	-	10	-	$\mu s$
$t_{off}$		-	150	-	

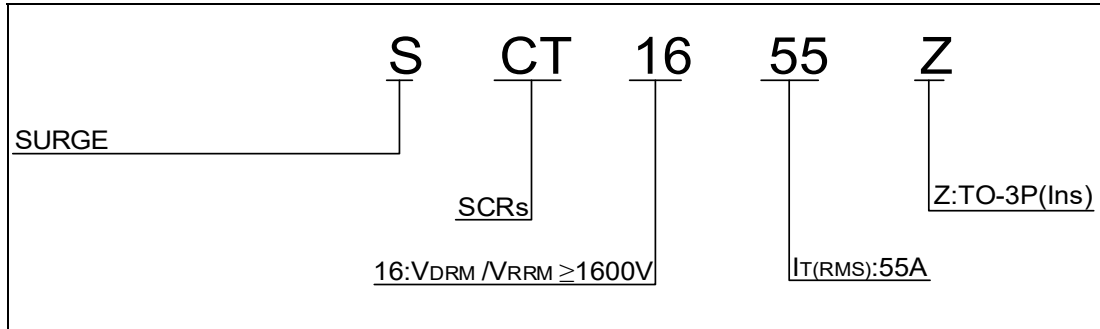
**STATIC CHARACTERISTICS**

Symbol	Parameter		Value(MAX.)	Unit
$V_{TM}$	$I_{TM}=80A$ $t_p=380\mu s$	$T_j=25^\circ C$	1.7	V
$V_{TO}$	Threshold voltage	$T_j=125^\circ C$	0.89	V
$R_D$	Dynamic resistance	$T_j=125^\circ C$	8.7	m $\Omega$
$I_{DRM}$	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ C$	20	$\mu A$
$I_{RRM}$		$T_j=125^\circ C$	8	mA

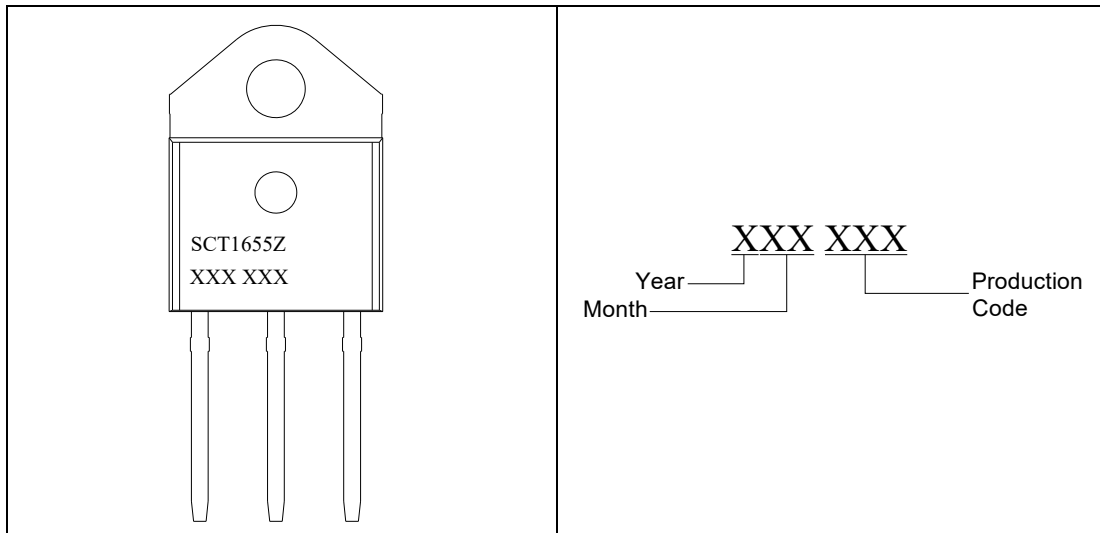
**THERMAL RESISTANCES**

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (DC)	0.65	$^\circ C/W$
$R_{th(j-a)}$	junction to ambient (DC)	50	$^\circ C/W$

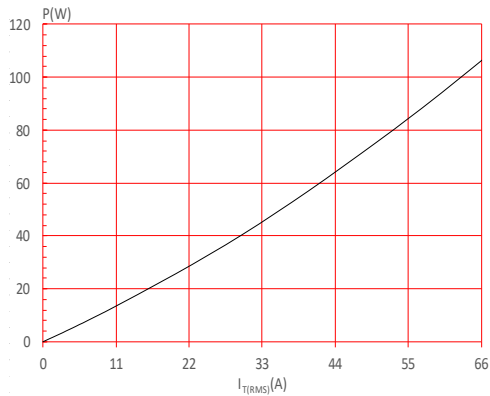
## ORDERING INFORMATION



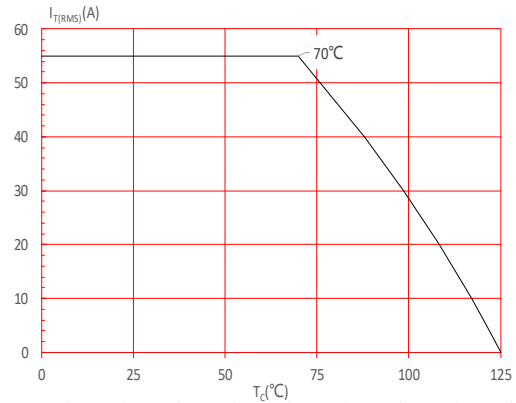
## MARKING



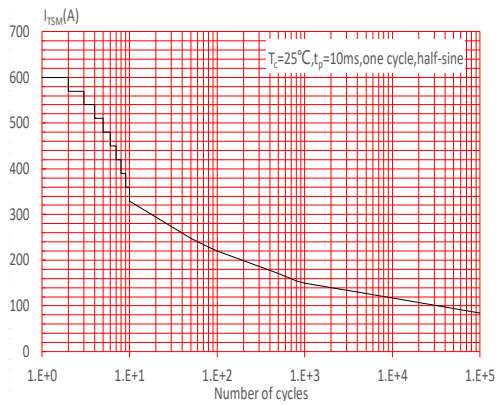
**FIG.1:** Maximum power dissipation versus RMS on-state current



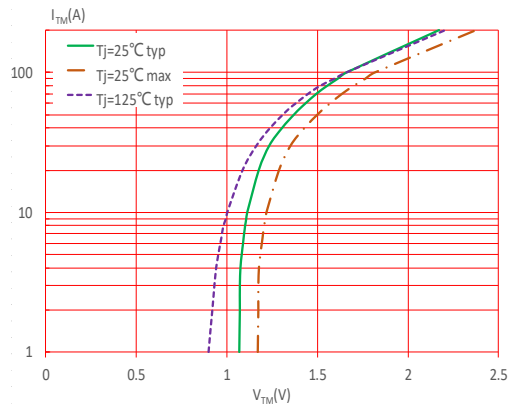
**FIG.2:** RMS on-state current versus case temperature



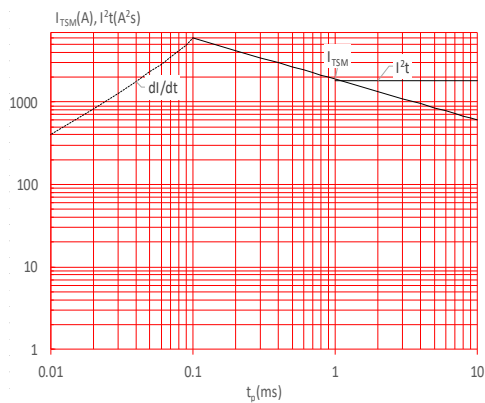
**FIG.3:** Surge peak on-state current versus number of cycles



**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

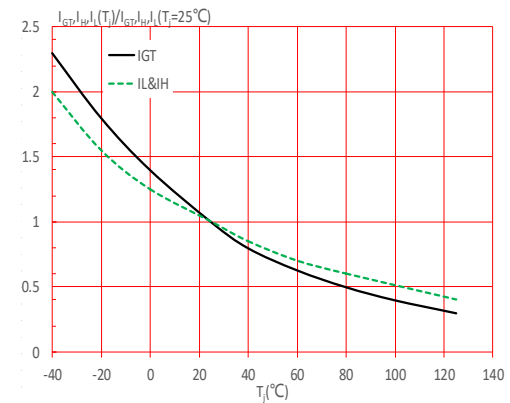
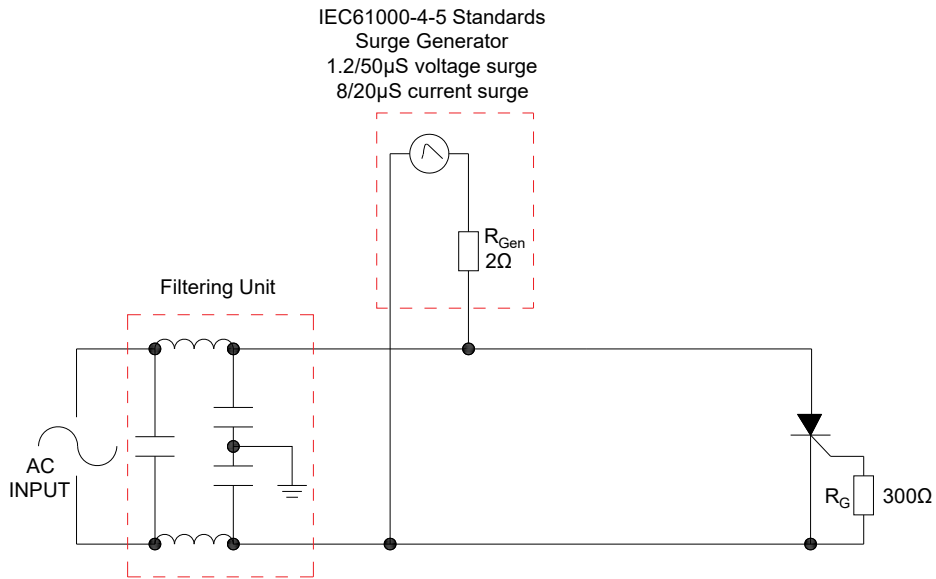


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.



## LEAD FORMING AND SOLDERING

Refer to the application note “Assembly Instructions for Thyristors in Through-hole Package”

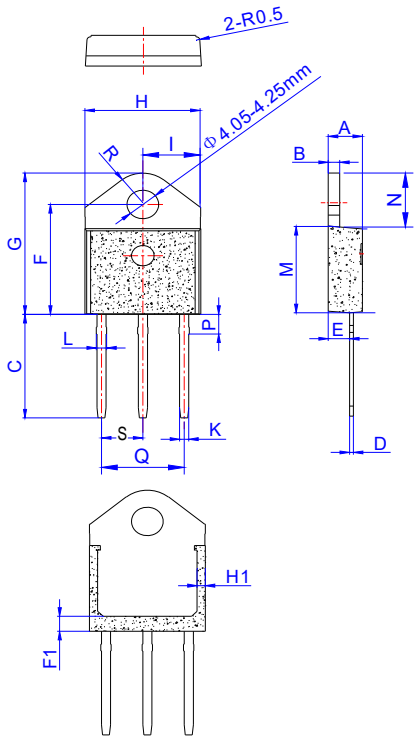
**ORDERING INFORMATION**

Order code	Voltage $V_{DRM}/V_{RRM}$ (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
SCT1655Z	1600	10-80	TO-3P(Ins)	30	Tube

**Document Revision History**

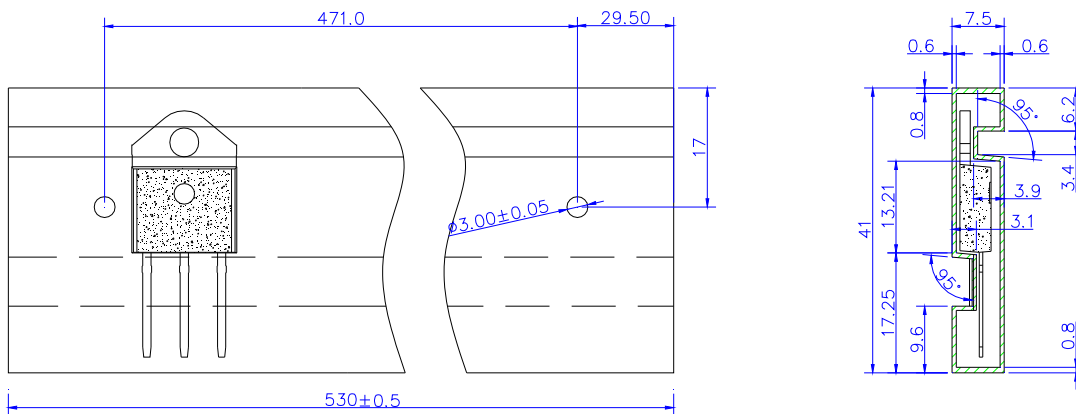
Date	Revision	Changes
Apr.13, 2023	A.1.0	Last update
Oct.16, 2025	A.1.1	Revise PACKAGE MECHANICAL DATA

## 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
F1	2.45		2.85	0.096		0.112
G	20.40		21.10	0.803		0.831
H	15.10		15.50	0.594		0.610
H1	1.10		1.50	0.043		0.059
I	7.25		7.65	0.285		0.301
S	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
N	7.80		8.20	0.307		0.323
P	2.80		3.00	0.110		0.118
Q	10.70		11.10	0.421		0.437
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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