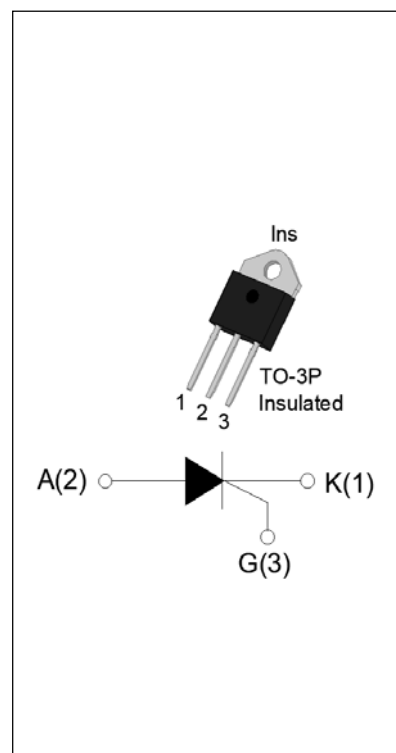


DESCRIPTION:

With high ability to withstand the shock loading of large current, TN6050-12PI SCR provides high dV/dt rate with strong resistance to electromagnetic interference. It is especially recommended for use on solid state relay, UPS, SVC, power charger, T-tools etc. TN6050-12PI provide 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
$I_{T(RMS)}$	75	A
V_{DRM}/V_{RRM}	1200	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}	1200	V
Repetitive peak reverse voltage ($T_j=25^{\circ}C$)	V_{RRM}	1200	V
Average on-state current ($T_c \leq 71^{\circ}C$)	$I_{T(AV)}$	49	A
RMS on-state current ($T_c \leq 71^{\circ}C$)	$I_{T(RMS)}$	75	A
Non repetitive surge peak on-state current ($t_p=10ms$, $T_j=25^{\circ}C$)	I_{TSM}	800	A
Non repetitive surge peak on-state current ($t_p=8.3ms$, $T_j=25^{\circ}C$)		880	
I^2t value for fusing ($t_p=10ms$, $T_j=25^{\circ}C$)	I^2t	3200	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 ($T_J=125^{\circ}\text{C}$)	$P_{G(AV)}$	1	W
Peak gate power	P_{GM}	22	W
Peak pulse voltage ($T_J=25^{\circ}\text{C}$; non-repetitive, off-state; FIG.7)	V_{pp}	1	kV

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

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	$V_D=12\text{V } R_L=33\Omega$	10	-	80	mA
V_{GT}		-	-	1.3	V
V_{GD}	$V_D=V_{DRM} T_J=125^{\circ}\text{C } R_L=3.3\text{k}\Omega$	0.2	-	-	V
I_L	$I_G=1.2I_{GT}$	-	-	200	mA
I_H	$I_T=500\text{mA}$	-	-	150	mA
dV/dt	$V_D=800\text{V}$ Gate Open $T_J=125^{\circ}\text{C}$	2000	-	-	V/ μs
t_{on}	$I_G=100\text{mA } I_A=1\text{A } I_R=100\text{mA}$ $T_J=25^{\circ}\text{C}$	-	5	-	μs
t_{off}		-	100	-	

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=100\text{A } t_p=380\mu\text{s}$	$T_J=25^{\circ}\text{C}$	1.4	V
V_{TO}	Threshold voltage	$T_J=125^{\circ}\text{C}$	0.72	V
R_D	Dynamic resistance	$T_J=125^{\circ}\text{C}$	7.3	m Ω
I_{DRM}	$V_D=V_{DRM} V_R=V_{RRM}$	$T_J=25^{\circ}\text{C}$	10	μA
I_{RRM}		$T_J=125^{\circ}\text{C}$	5	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (DC)	0.55	$^{\circ}\text{C/W}$
$R_{th(j-a)}$	junction to ambient (DC)	55	$^{\circ}\text{C/W}$

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

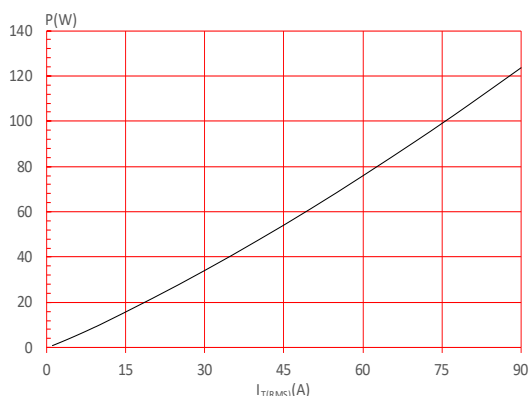


FIG.2: RMS on-state current versus case temperature

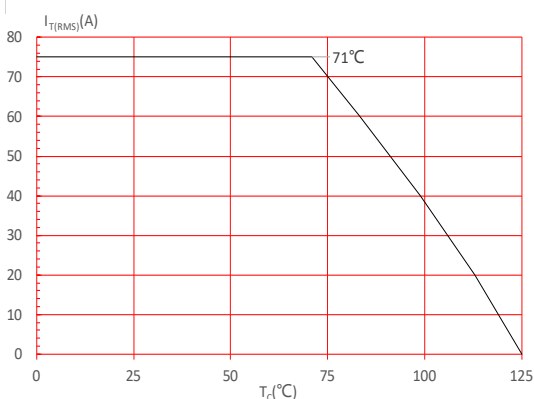


FIG.3: Surge peak on-state current versus number of cycles

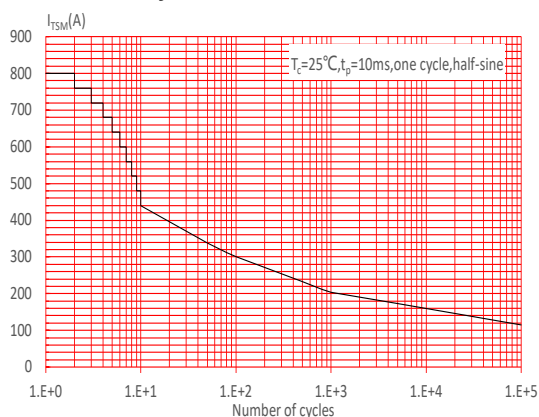


FIG.4: On-state characteristics

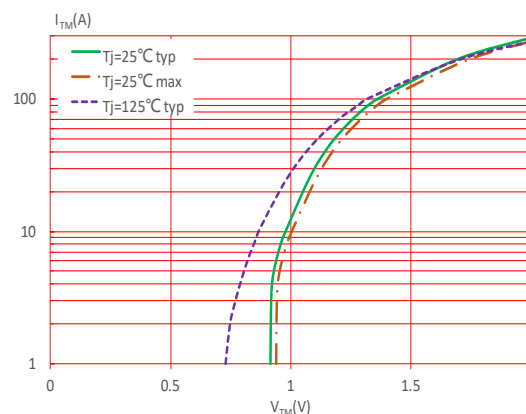


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10ms$, and corresponding value of I^2t ($di/dt < 200A/\mu s$)

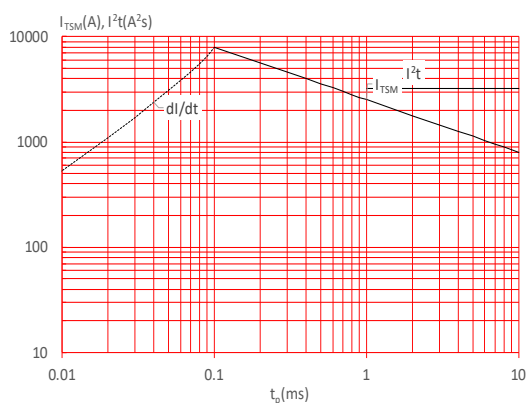


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

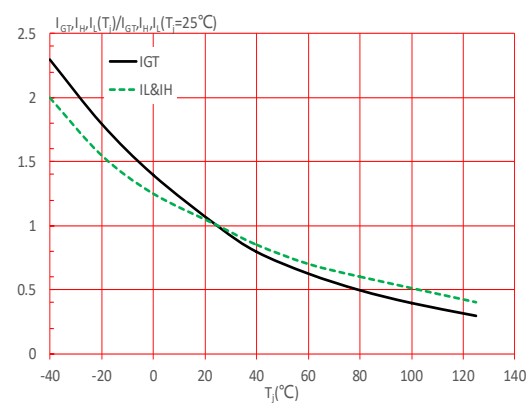
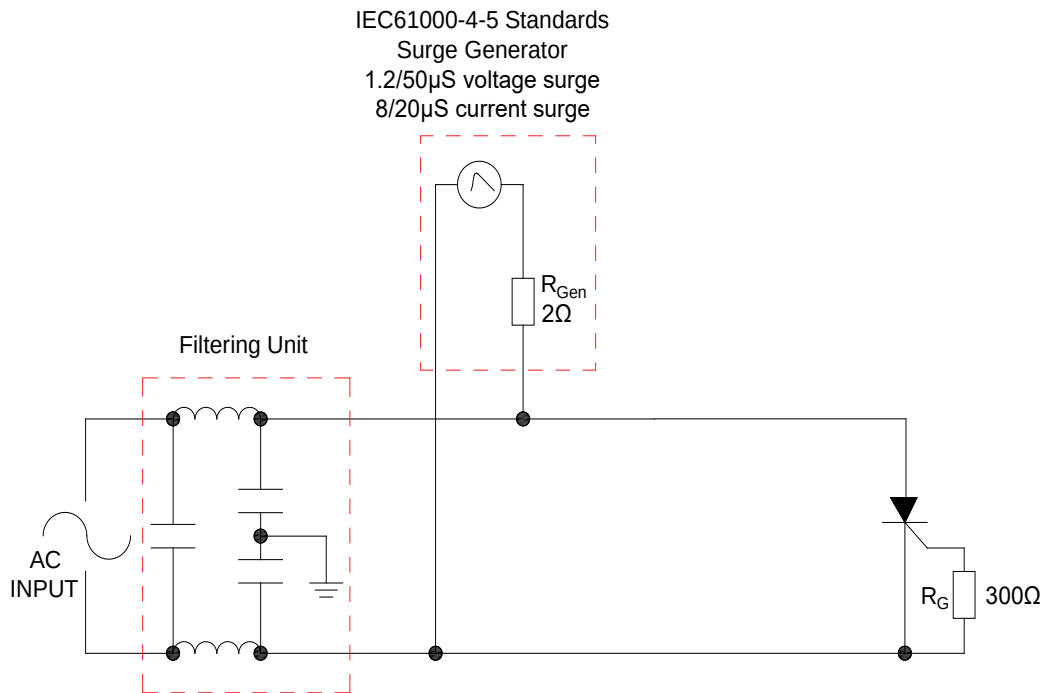
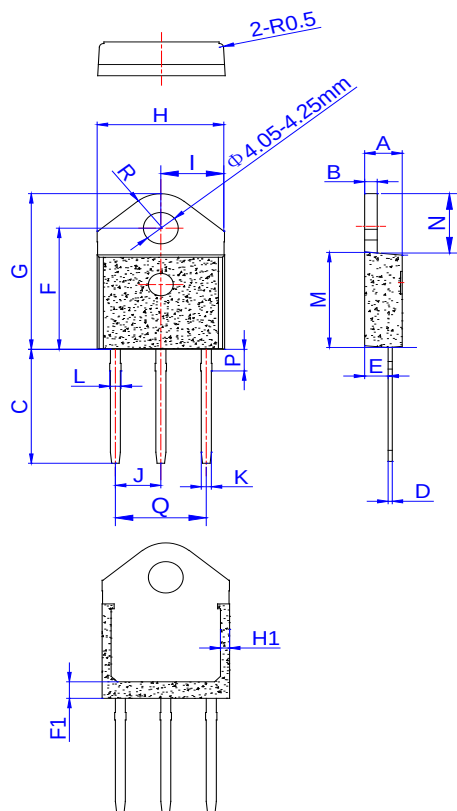


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.

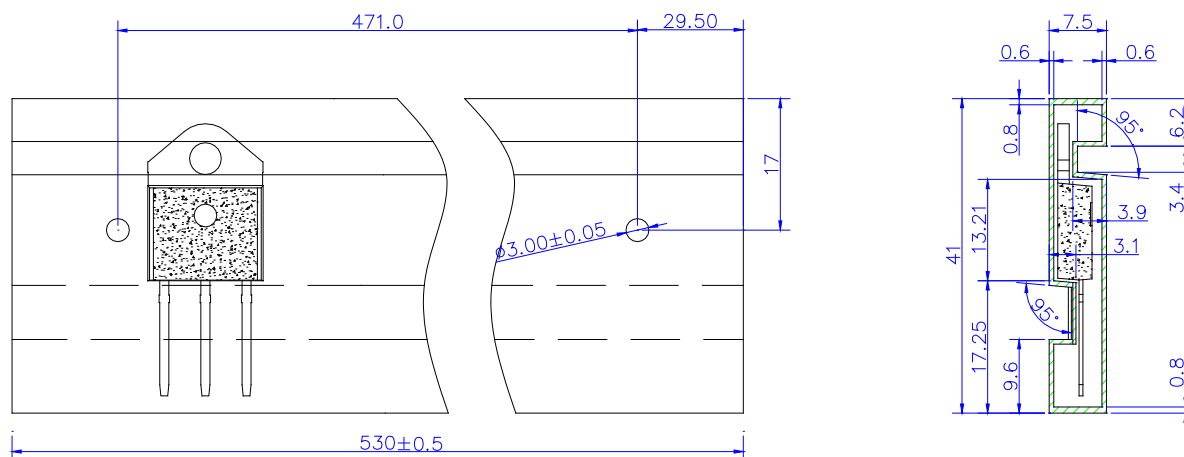


PACKAGE MECHANICAL DATA



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
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
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