



TYN90H-1600CS 90A SCR

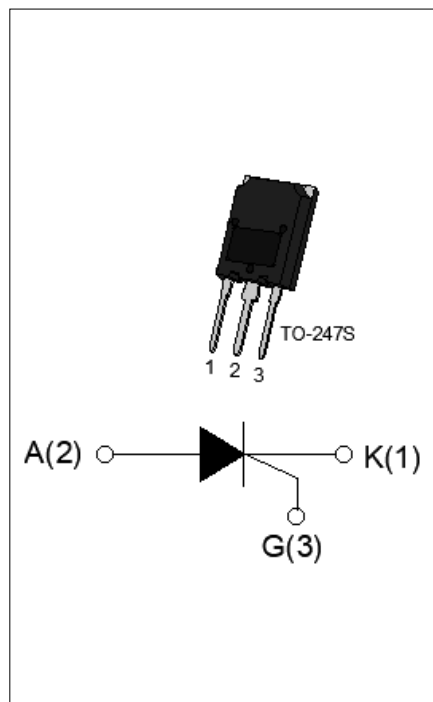
Rev.A.1.1

DESCRIPTION:

With high ability to withstand the shock loading of large current, TYN90H-1600CS 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. Package TO-247S is RoHS compliant.

MAIN FEATURES

Symbol	Value	Unit
$I_{T(AV)}$	90	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	°C
Operating junction temperature range	T_j	-40-150	°C
Operating temperature range	T_{op}	-40-125	°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 ($T_c \leq 80^{\circ}C$)	$I_{T(AV)}$	90	A
RMS on-state current ($T_c \leq 80^{\circ}C$)	$I_{T(RMS)}$	141	A
Non repetitive surge peak on-state current ($t_p=10ms, T_j=25^{\circ}C$)	I_{TSM}	1200	A
Non repetitive surge peak on-state current ($t_p=8.3ms, T_j=25^{\circ}C$)		1320	
I^2t value for fusing ($t_p=10ms, T_j=25^{\circ}C$)	I^2t	7200	A ² s
Critical rate of rise of on-state current ($I_G=2 \times I_{GT}, f=100Hz, T_j=150^{\circ}C$)	di/dt	200	A/ μ s

Peak gate current ($t_p=20\mu s$, $T_j=150^\circ C$)	I_{GM}	12	A
Average gate power dissipation ($T_j=150^\circ C$)	$P_{G(AV)}$	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}	1.5	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}	$V_D=V_{DRM}$ $T_j=150^\circ C$ $R_L=3.3k\Omega$	0.25	-	-	V
I_L	$I_G=1.2I_{GT}$	-	-	250	mA
I_H	$I_T=500mA$	-	-	150	mA
dV/dt	$V_D=1070V$ Gate Open $T_j=150^\circ C$	2000	-	-	V/ μs
t_{on}	$I_G=100mA$ $I_A=1A$ $I_R=100mA$ $T_j=25^\circ C$	-	7	-	μs
t_{off}		-	200	-	

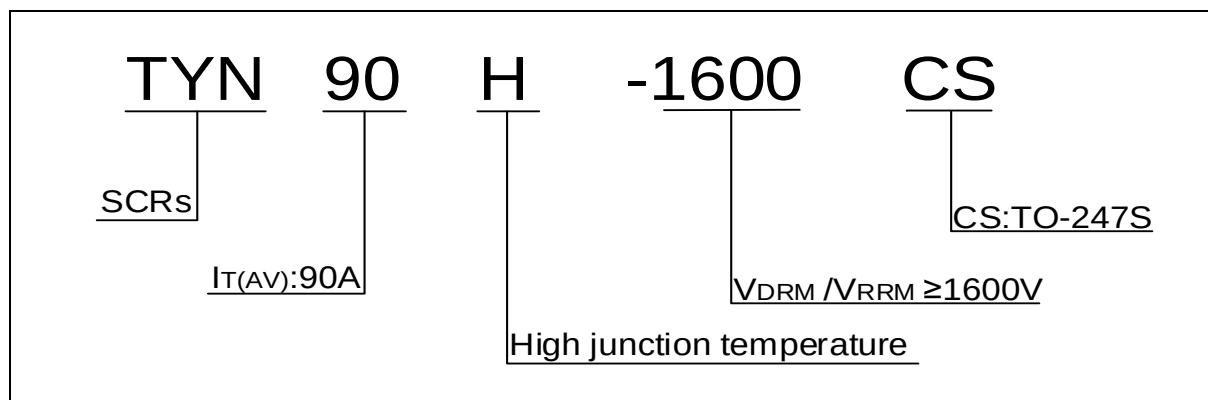
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=130A$ $t_p=380\mu s$	$T_j=25^\circ C$	1.55	V
V_{TO}	Threshold voltage	$T_j=150^\circ C$	0.72	V
R_D	Dynamic resistance	$T_j=150^\circ C$	5.5	m Ω
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ C$	30	μA
I_{RRM}		$T_j=150^\circ C$	15	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (DC)	0.31	$^\circ C/W$
$R_{th(j-a)}$	junction to ambient (DC)	50	$^\circ C/W$

ORDERING INFORMATION



MARKING

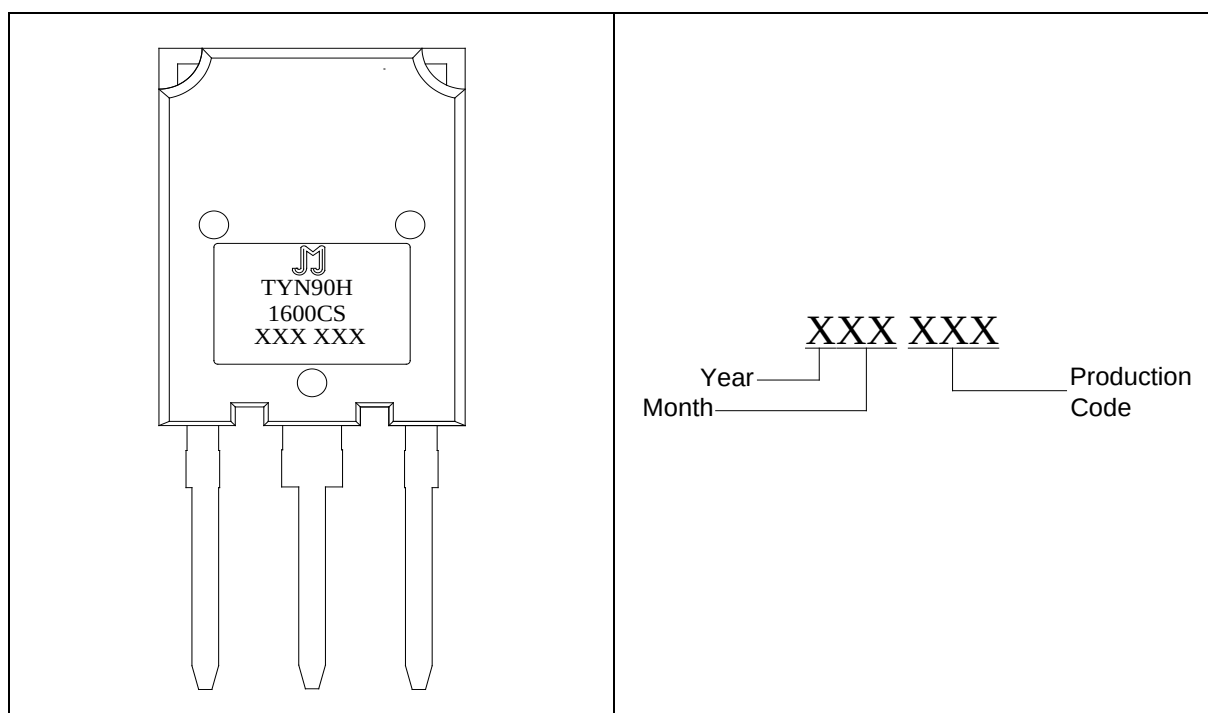


FIG.1: Maximum power dissipation versus RMS on-state current

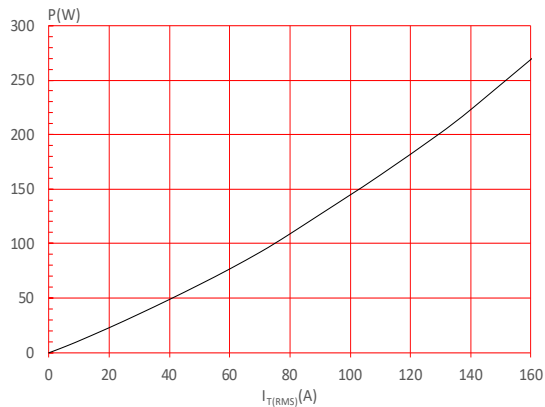


FIG.3: Surge peak on-state current versus number of cycles

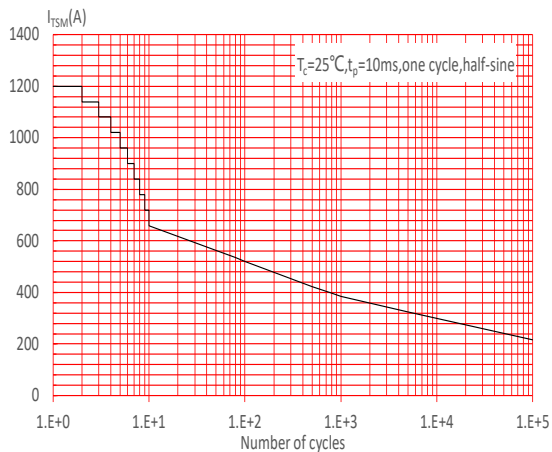


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t ($di/dt < 200\text{A}/\mu\text{s}$)

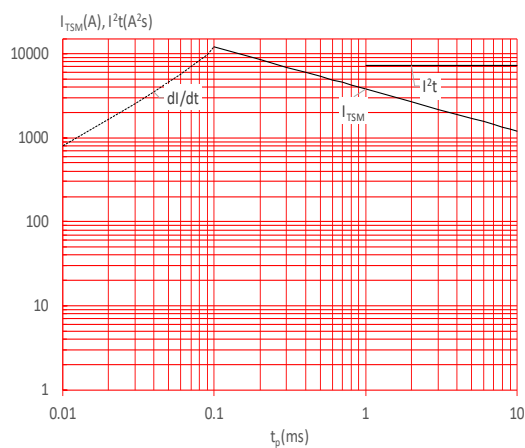


FIG.2: RMS on-state current versus case temperature

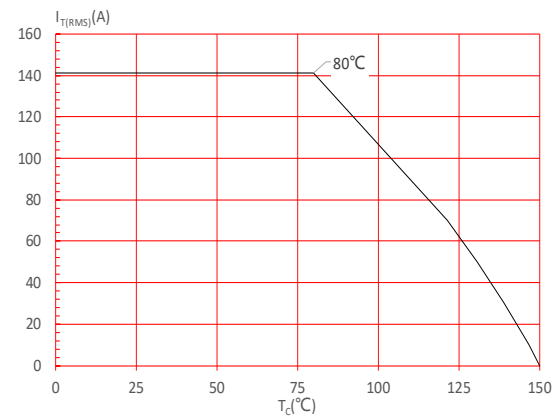


FIG.4: On-state characteristics

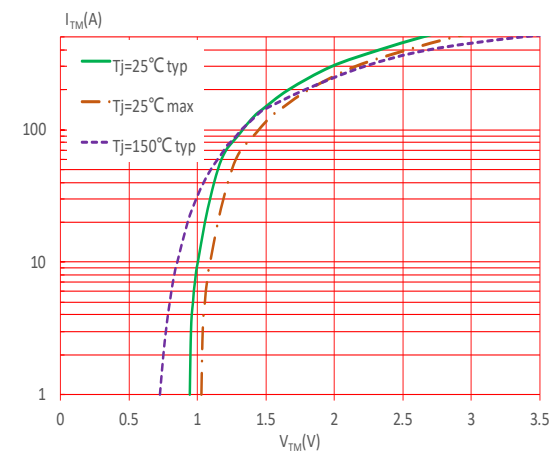


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

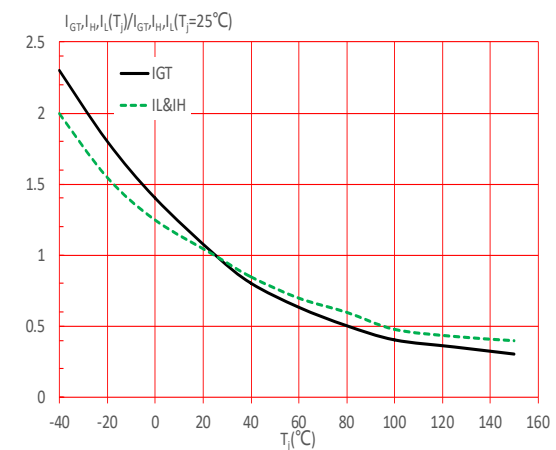
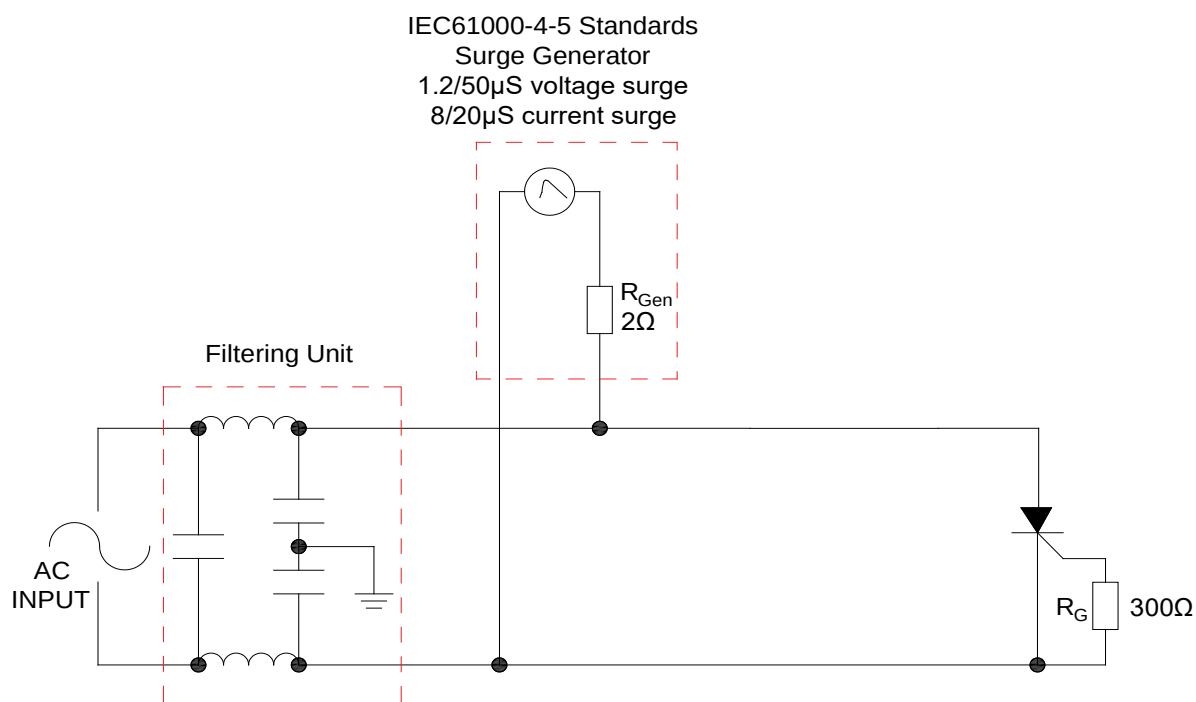


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.



LEAD FORMING AND SOLDERING

Refer to the application note "Assembly Instructions for Thyristors in Through-hole Package" released by JieJie Microelectronics

ORDERING INFORMATION

Order code	Voltage $V_{\text{DRM}}/V_{\text{RRM}}$ (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
TYN90H-1600CS	1600	10-80	TO-247S	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

Technical drawing of a 3-pin DIN connector. The drawing includes a top view, a side view, and a cross-sectional view. The top view shows the connector's footprint with dimensions A (width), B (height), C (total height including pins), D (pin height), E (pin diameter), F (pin spacing), G (pin pitch), H (pin length), I (pin diameter), J (pin length), K (pin diameter), L (pin length), M (pin diameter), N (pin pitch), O (pin diameter), and P (pin length). The side view shows the connector's profile with dimensions A1 (width), B1 (height), and C1 (total height including pins). The cross-sectional view shows the internal structure of the connector, including the pins and the housing.

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.10		16.10	0.594		0.634
A1	0.80		1.20	0.031		0.047
B	19.80		20.80	0.780		0.819
B1	3.30		3.70	0.130		0.146
C	13.80		14.80	0.543		0.583
D	3.00		4.00	0.118		0.157
E	2.75		3.35	0.108		0.132
F	1.30		1.50	0.051		0.059
G	5.10		5.80	0.201		0.228
H	4.50		5.50	0.177		0.217
J	1.45		2.15	0.057		0.085
K	1.90		2.80	0.075		0.110
L	0.55		0.80	0.022		0.031
M	10.60		11.00	0.417		0.433
N	10.70		11.10	0.421		0.437
O	1.50		1.90	0.059		0.075
P	2.00		2.40	0.079		0.094

Technical drawing of a rectangular PCB with dimensions and features:

- Overall width: 495.0 ± 0.5
- Overall height: 45.5 ± 0.2
- Top edge features:
 - Left side: 11 (height), $\phi 5$ (hole diameter)
 - Right side: 7.4 ± 0.2 (width), 22.3 (height), $0.7^{+0.1}$ (width), 2.85 (height), 16.4 (height)
- Internal features:
 - Left side: 11 (height), $\phi 5$ (hole diameter)
 - Right side: 145 (width), 70 (width), $\phi 3.00 \pm 0.05$ (hole diameter)
- Text labels: "ANTISTATIC", "RoHS"
- Bottom edge features:
 - Left side: 483.0 ± 0.2 (width)
 - Right side: 16.4 (height)

PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-247S	TUBE	30	450	2,250

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