

**YAREN STANDARD 12A SCRs**
**General Description**

Glass passivated thyristors in a plastic envelope ,Intended for use applications requiring high bidirectional blocking voltage capability and high thermal cycling performance. Typical applications include motor control ,industrial and domestic lighting, heating and static switching.

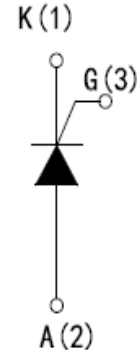
**Features**

- $I_T(AV)=12A$
- $I_{GT} \leq 15mA$
- $V_{TM} \leq 1.6V$



K A G

To-220 Top View



Schematic Diagram

$$V_{DRM} = 600 V$$

$$I_T(AV) = 12A$$

$$I_{GT} \leq 15mA$$

**Package Marking and Ordering Information**

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
TYN612	TYN612	T0-220CE	-	-	-

**Absolute Maximum Ratings (TA=25°C unless otherwise noted)**

Symbol	Parameter/ Condititns	Value	Unit
VDRM/VRRM	Repetitive peak off-state Voltages	600	V
$I_T(AV)$	Average on-state current (half sine wave; $T_{mb} \leq 109^\circ C$ )	12	A
$I_T(RMS)$	RMS on-state current (all conduction angles)	20	A
$I_{TSM}$	Non-repetitive peak on-state current(half sine wave; $T_j=25^\circ C$ $t=10ms$ )	200	A
	Non-repetitive peak on-state current(half sine wave; $T_j=25^\circ C$ $t=8.3ms$ )	220	A
$I^2T$	$I^2T$ for fusing ( $t=10ms$ )	200	$A^2S$
$D_{it}/dt$	Repetitive rate of rise of on-state current after triggering ( $I_{TM}=20A$ ; $I_G=50mA$ ; $D_{ig}/dt=50mA/us$ )	200	A/us
IGM	Peak gate current	5	A
VGM	Peak gate voltage	5	V
PGM	Peak gate power	20	W
$P_G(AV)$	Average gate power (over any 20 ms period)	0.5	W
$T_J$	Operating junction temperature	-55 To 150	$^\circ C$

**Thermal Resistances**

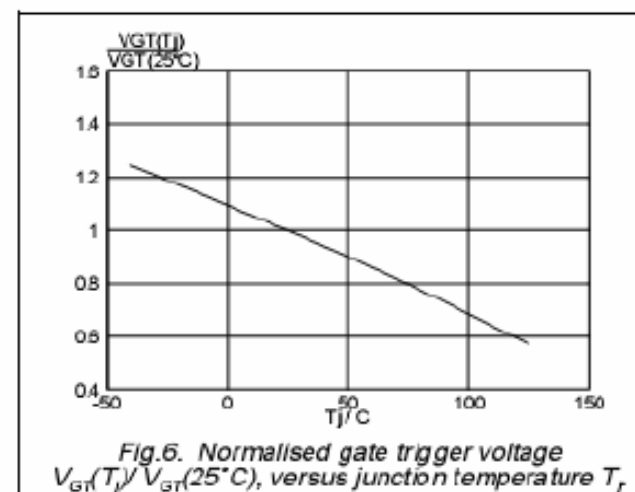
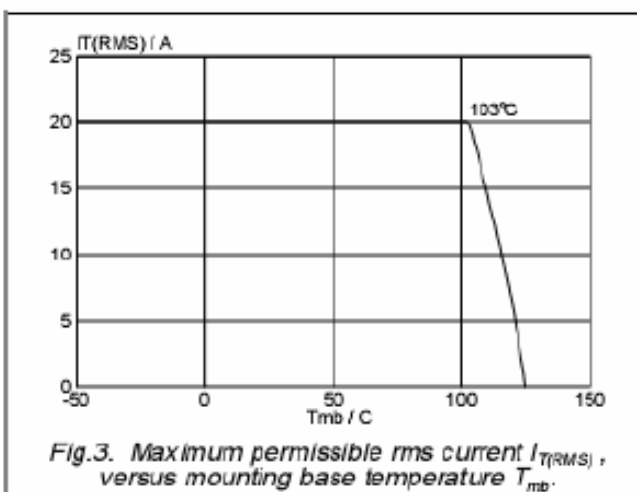
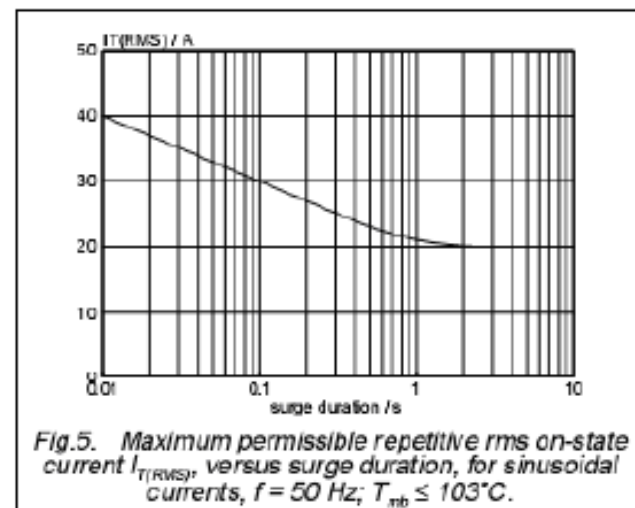
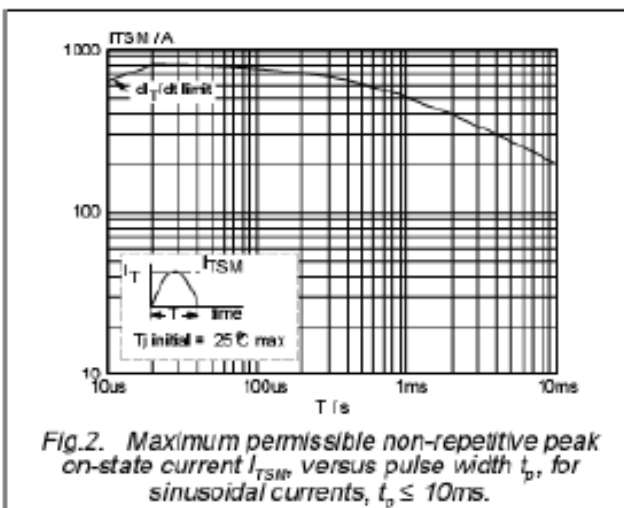
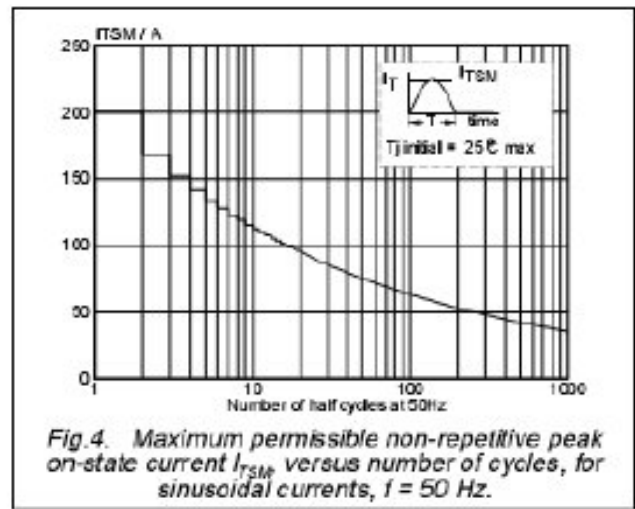
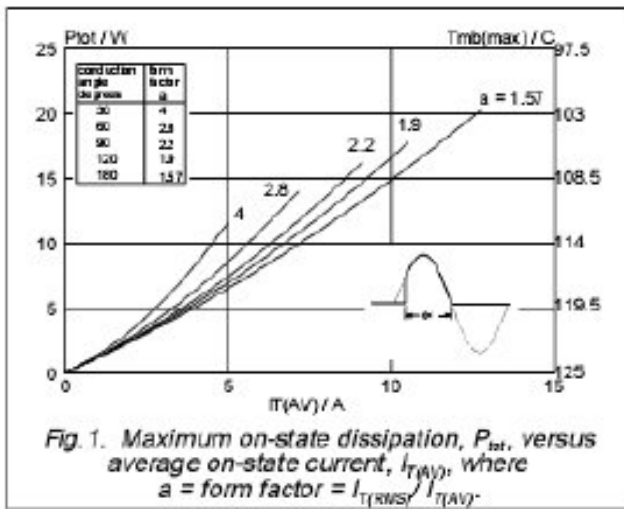
Symbol	Parameter	Value	Unit
Rth(j-c)	Junction to case(DC)	1.1	°C/W
Rth(j-a)	Junction-to-Ambient(DC)	60	°C/W

**Electrical Characteristics (TA=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
IGT	Gate trigger current	VD=12V IT=0.1V		4	15	mA
VGT	Gate trigger Voltage	VD=12V IT=0.1V		0.6	1.5	V
		VD=VDRM(MAX);IT=0.1A;TJ=125°C	0.25	0.4		V
VT	On-state voltage	VI=23A		1.4	1.75	V
IL	Latching current	VD=12V IT=0.1V		25	80	mA
IH	Holding current	VD=12V IT=0.1V		15	60	mA
ID/IR	Off-state leakage current	VD=VDRM(MAX);VR=VRRM(MAX);TJ=125°C		0.2	1.0	mA

**Dynamic Characteristics**

DVD/DT	Critical rate of rise or off-state voltage	VDM=67%VDRM(MAX) ; TJ=125 °C; (Gate open circuit)	200	300		V/us
		RGK=100Ω	200	1000		V/us
TGT	Gate controlled turn-on time	ITM=40A;VD=VDRM(MAX);IG=0.1 A, Dig/dt=5A/us		2		us
TG	Circuit commutated turn-off time	VD=67%VDRM(MAX);TJ=125 °C ITM=20A;VR=25V;Ditm/dt=30A/us dvd/dt=50V/us;Rgk=100 Ω		70		us

**Characteristics Curve:**


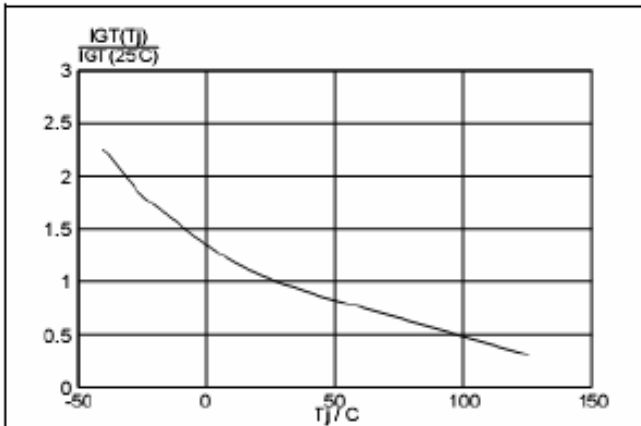


Fig. 7. Normalised gate trigger current  $I_{GT}(T_j) / I_{GT}(25^\circ\text{C})$ , versus junction temperature  $T_j$ .

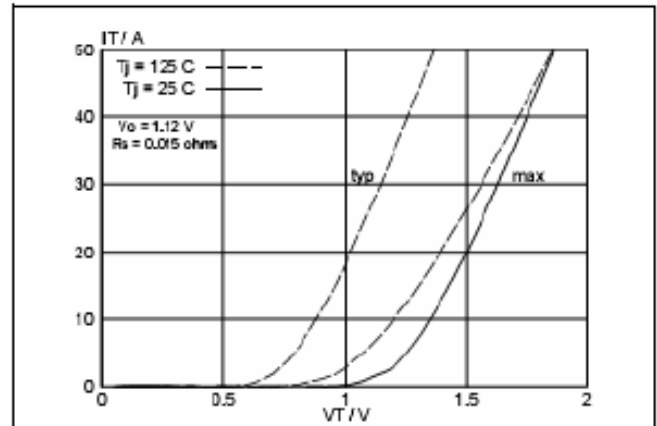


Fig. 10. Typical and maximum on-state characteristic.

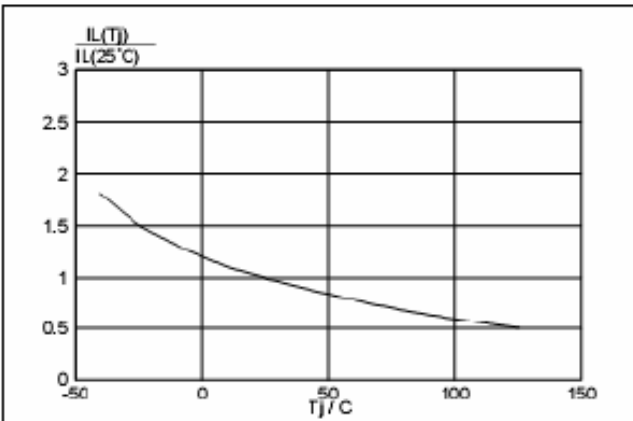


Fig. 8. Normalised latching current  $I_L(T_j) / I_L(25^\circ\text{C})$ , versus junction temperature  $T_j$ .

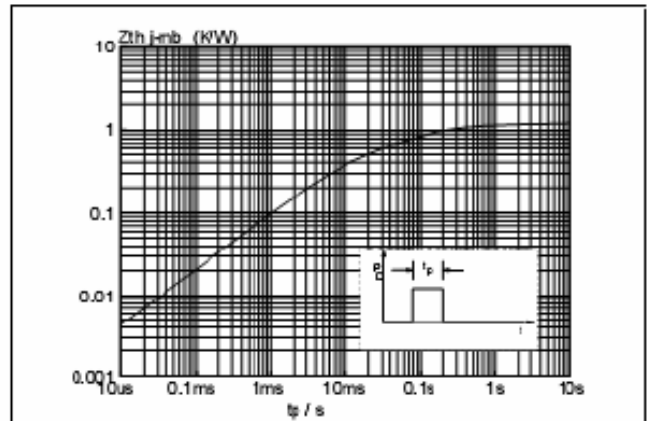


Fig. 11. Transient thermal impedance  $Z_{th(j-amb)}$  versus pulse width  $t_p$ .

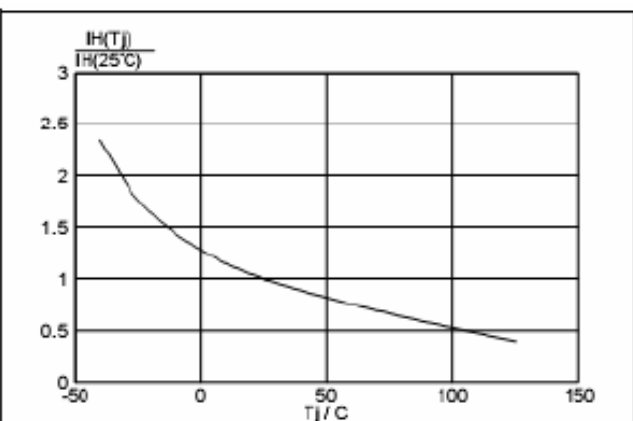


Fig. 9. Normalised holding current  $I_H(T_j) / I_H(25^\circ\text{C})$ , versus junction temperature  $T_j$ .

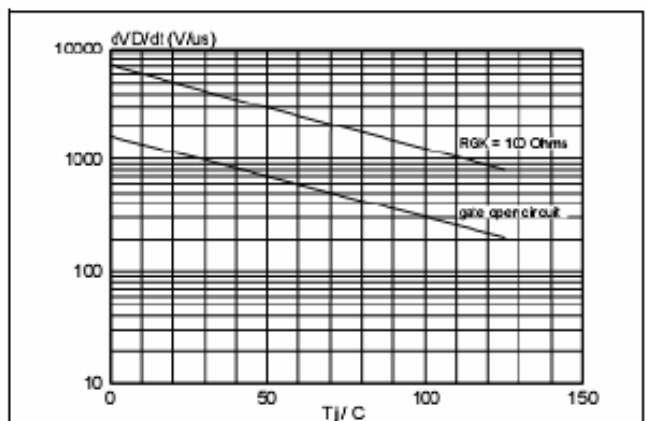


Fig. 12. Typical, critical rate of rise of off-state voltage,  $dV/dt$  versus junction temperature  $T_j$ .