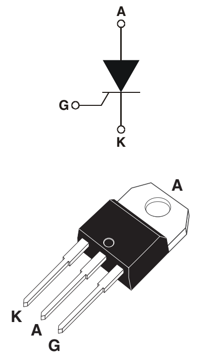
STANDARD

10A SCR

Table 1: Main Features

Symbol	Value	Unit
$I_{T(RMS)}$	10	A
V_{DRM}/V_{RRM}	400, 600 and 800	V
I_{GT}	15	mA



TO-220AB

DESCRIPTION

The **TYNx10** Silicon Controlled Rectifiers is a high performance glass passivated technology.

This general purpose Silicon Controlled Rectifiers is designed for power supply up to 400Hz on resistive or inductive load.

Table 2: Order Codes

Part Numbers	Marking
TYN410RG	TYN410
TYN610RG	TYN610
TYN810RG	TYN810

Table 3: Absolute Ratings (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)		T_c = 100°C	10	A
$IT_{(AV)}$	Average on-state current (180° conduction angle)		T_c = 100°C	6.4	A
I_{TSM}	Non repetitive surge peak on-state current	t_p = 8.3 ms	T_j = 25°C	105	A
		t_p = 10 ms		100	
I^2t	I^2t Value for fusing	t_p = 10 ms	T_j = 25°C	50	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 100 mA , dI_G/dt = 0.1 A/µs		T_j = 125°C	50	A/µs
I_{GM}	Peak gate current	t_p = 20 µs	T_j = 125°C	4	A
$P_{G(AV)}$	Average gate power dissipation		T_j = 125°C	1	W
P_{GM}	Maximum gate power	t_p = 20 µs	T_j = 125°C	10	W
V_{DRM} V_{RRM}	Repetitive peak off-state voltage	**TYN410**	T_j = 125°C	400	V
		TYN610		600	
		TYN810		800	
T_{stg} T_j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	°C
T_L	Maximum lead temperature for soldering during 10s at 2mm from case			260	°C

Tables 4: Electrical Characteristics (T_j = 25°C, unless otherwise specified)

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D = 12 V (D.C.) R_L = 33 Ω		MAX.	15	mA
V_{GT}	V_D = 12 V (D.C.) R_L = 33 Ω		MAX.	1.5	V
V_{GD}	$V_D = V_{DRM}$ R_L = 3.3 kΩ	T_j = 110°C	MIN.	0.2	V
t_{gt}	$V_D = V_{DRM}$ I_G = 40 mA dI_G/dt = 0.5 A/µs		TYP.	2	µs
I_H	I_T = 100 mA Gate open		MAX.	30	mA
I_L	I_G = 1.2 x I_{GT}		TYP.	50	mA
dV/dt	Linear slope up to: V_D = 67 % V_{DRM} Gate open	T_j = 110°C	MIN.	200	V/µs
V_{TM}	I_{TM} = 20 A tp = 380 µs		MAX.	1.6	V
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	T_j = 25°C	MAX.	10	µA
		T_j = 110°C		2	mA
t_q	V_D = 67 % V_{DRM} I_{TM} = 20 A V_R = 25 V dI_{TM}/dt = 30 A/µs dV_D/dt = 50 V/µs	T_j = 110°C	TYP.	70	µs

Table 5: Thermal Resistance

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case (D.C.)	2.5	°C/W
$R_{th(j-a)}$	Junction to ambient	60	°C/W

Figure 1: Maximum average power dissipation versus average on-state current

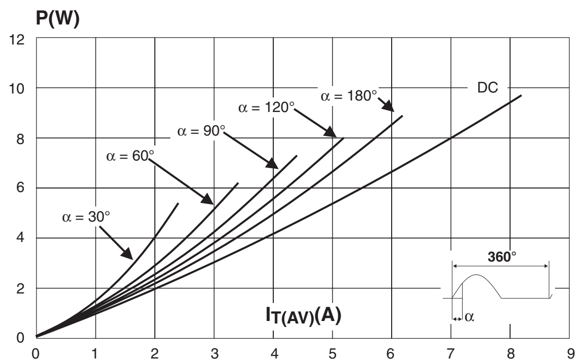


Figure 2: Correlation between maximum average power dissipation and maximum allowable temperature (T_{amb} and T_{lead})

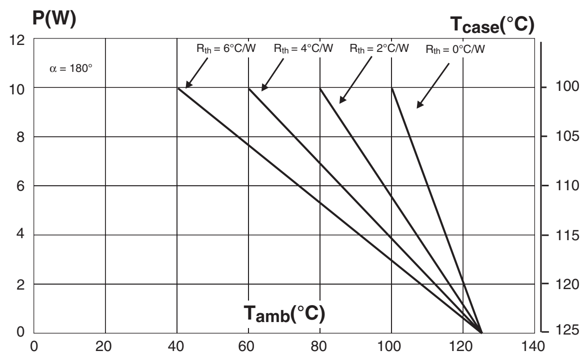


Figure 3: Average on-state current versus case temperature

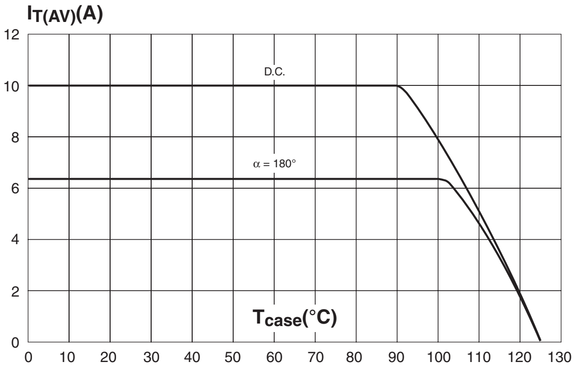


Figure 4: Relative variation of thermal impedance versus pulse duration

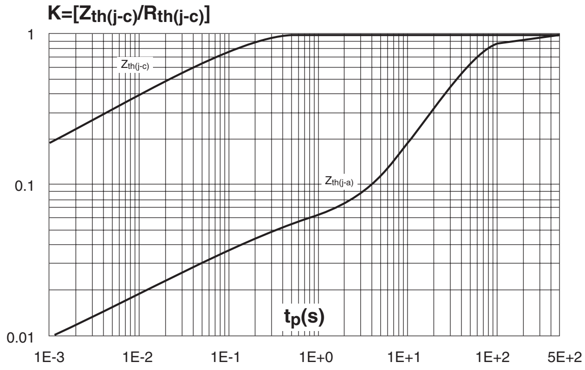


Figure 5: Relative variation of gate trigger current versus junction temperature

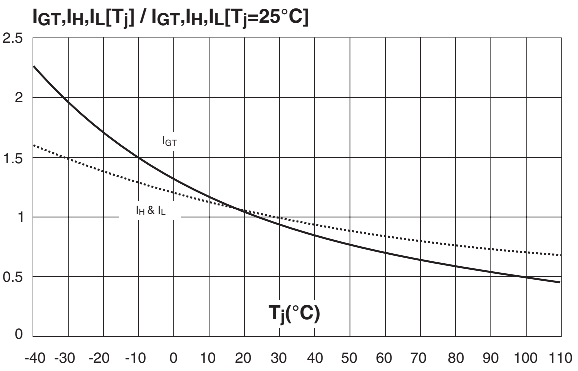


Figure 6: Surge peak on-state current versus number of cycles

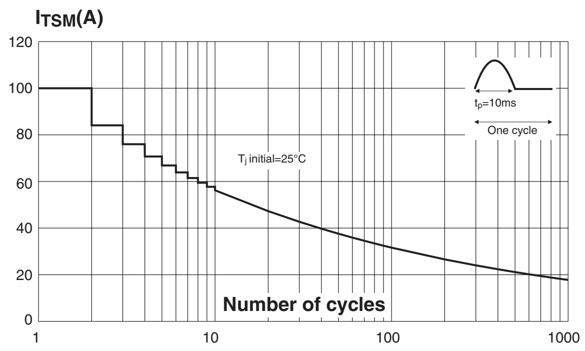


Figure 7: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10 ms, and corresponding values of I²t

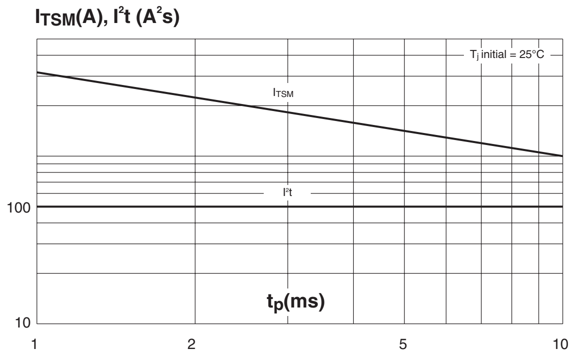


Figure 8: On-state characteristics (maximum values)

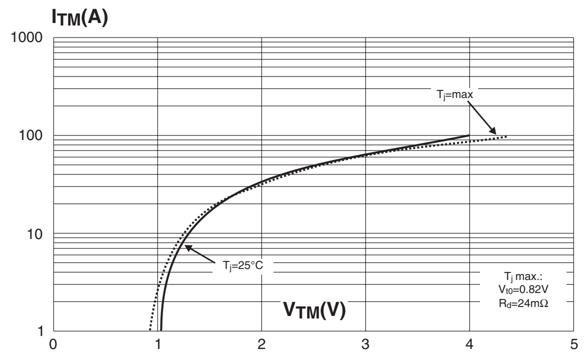


Figure 9: Ordering Information Scheme

TYN 4 10 RG

Standard SCR series

Voltage
4 = 400V

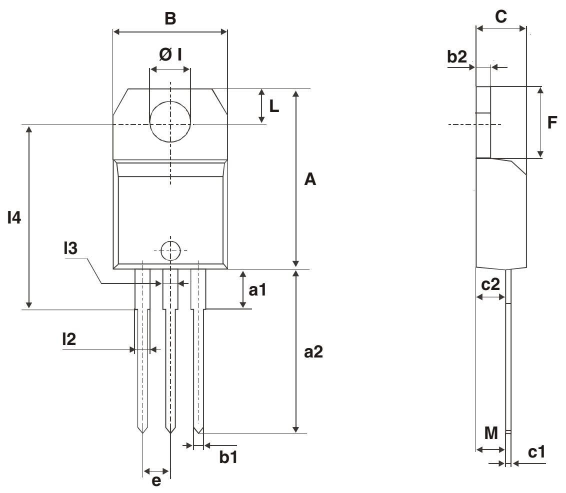
Current
10 = 10A

Packing mode
RG = Tube

Table 6: Product Selector

Part Numbers	Voltage (xxx)			Sensitivity	Package
	400 V	600 V	800V		
TYN410RG	X			15 mA	TO-220AB
TYN610RG		X			
TYN810RG			X		

Figure 10: TO-220AB Package Mechanical Data



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.20		15.90	0.598		0.625
a1		3.75			0.147	
a2	13.00		14.00	0.511		0.551
B	10.00		10.40	0.393		0.409
b1	0.61		0.88	0.024		0.034
b2	1.23		1.32	0.048		0.051
C	4.40		4.60	0.173		0.181
c1	0.49		0.70	0.019		0.027
c2	2.40		2.72	0.094		0.107
e	2.40		2.70	0.094		0.106
F	6.20		6.60	0.244		0.259
ØI	3.75		3.85	0.147		0.151
I4	15.80	16.40	16.80	0.622	0.646	0.661
L	2.65		2.95	0.104		0.116
l2	1.14		1.70	0.044		0.066
l3	1.14		1.70	0.044		0.066
M		2.60			0.102	

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

Table 7: Ordering Information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
TYN410RG	TYN410	TO-220AB	2.3 g	50	Tube
TYN610RG	TYN610				
TYN810RG	TYN810				

Table 8: Revision History

Date	Revision	Description of Changes
Sep-2001	1A	First issue.
13-Feb-2006	2	TO-220AB delivery mode changed from bulk to tube. ECOPACK statement added.

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