



TYN210 ---> TYN1010

SCR

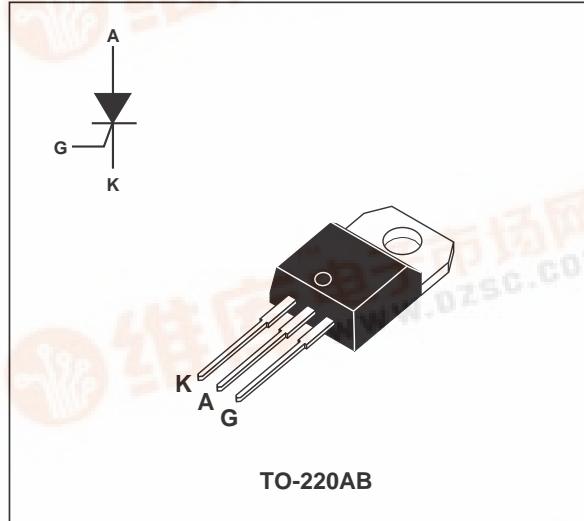
FEATURES

- High surge capability
- High on-state current
- High stability and reliability

DESCRIPTION

The TYN210 ---> TYN1010 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.

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

**ABSOLUTE RATINGS (limiting values)**

Symbol	Parameter	Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	10	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	6.4	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	105	A
		100	
I^2t	I^2t value	50	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply: $I_G = 100mA$ $dI_G/dt = 1A/\mu s$	50	$A/\mu s$
T_{stg} T_j	Storage and operating junction temperature range	-40 to +150 -40 to +125	°C
TI	Maximum lead soldering temperature during 10s at 4.5mm from case	260	°C

Symbol	Parameter	TYN					Unit
		210	410	610	810	1010	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^\circ C$	200	400	600	800	1000	V

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THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
R _{th} (j-a)	Junction to ambient	60	°C/W
R _{th} (j-c) DC	Junction to case for DC	2.5	°C/W

GATE CHARACTERISTICS (maximum values)

$$P_{G(AV)} = 1W \quad P_{GM} = 10W \quad (tp = 20\mu s) \quad I_{FGM} = 4A \quad (tp = 20\mu s) \quad V_{RGM} = 5V$$

ELECTRICAL CHARACTERISTICS

Symbol	Test conditions		Value	Unit
I _{GT}	V _D = 12V (DC) R _L = 33Ω	T _j = 25°C	MAX.	15 mA
V _{GT}	V _D = 12V (DC) R _L = 33Ω	T _j = 25°C	MAX.	1.5 V
V _{GD}	V _D = V _{DRM} R _L = 3.3kΩ	T _j = 110°C	MIN.	0.2 V
t _{GT}	V _D = V _{DRM} I _G = 40mA dI _G /dt = 0.5A/μs	T _j = 25°C	TYP.	2 μs
I _L	I _G = 1.2I _{GT}	T _j = 25°C	TYP.	50 mA
I _H	I _T = 100mA Gate open	T _j = 25°C	MAX.	30 mA
V _{TM}	I _{TM} = 20A tp = 380μs	T _j = 25°C	MAX.	1.6 V
I _{DRM} I _{RRM}	V _{DRM} rated V _{RRM} rated	T _j = 25°C	MAX.	0.01 mA
		T _j = 110°C	MAX.	2 mA
dV/dt	Linear slope up to V _D = 67% V _{DRM} gate open	T _j = 110°C	MIN.	200 V/μs
t _q	V _D =67%V _{DRM} I _{TM} =20A V _R =25V dI _{TM} /dt=30 A/μs dV _D /dt= 50V/μs	T _j = 110°C	TYP.	70 μs

Fig. 1: Maximum average power dissipation versus average on-state current.

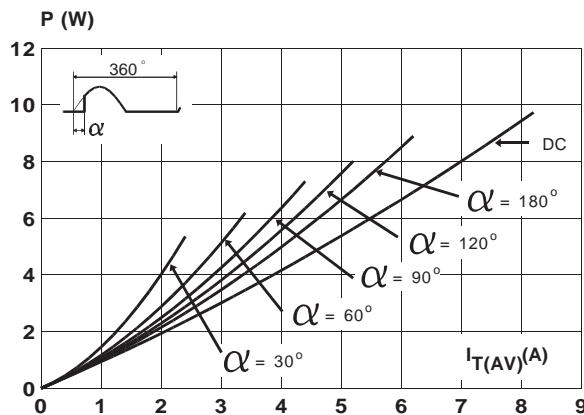


Fig. 2: Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

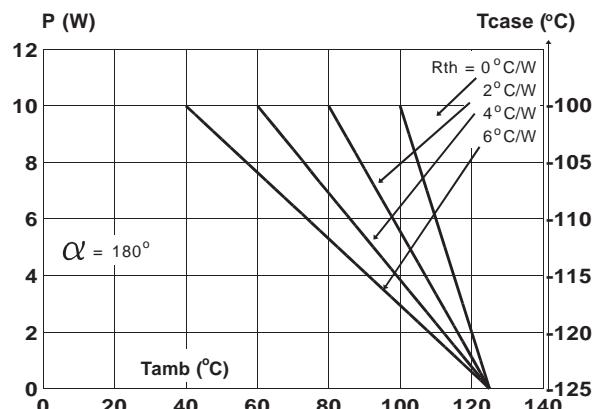


Fig. 3: Average on-state current versus case temperature.

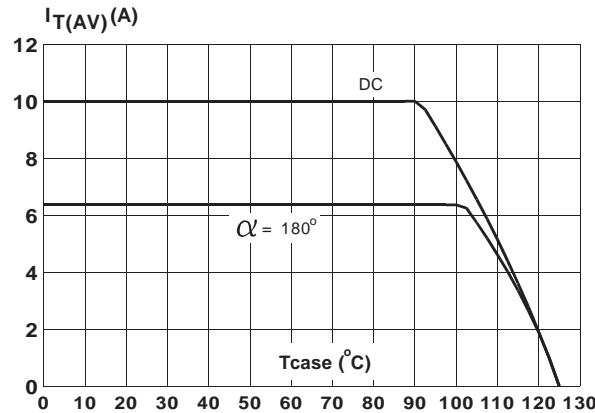


Fig. 5: Relative variation of gate trigger current versus junction temperature.

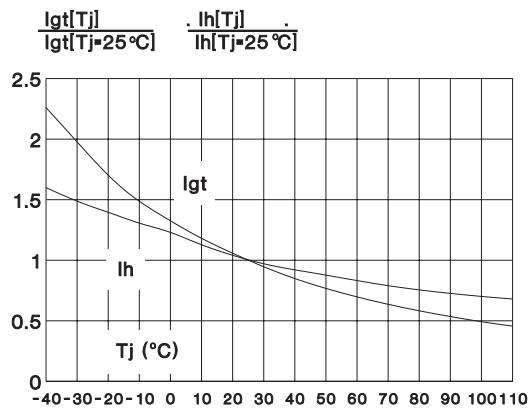


Fig. 7: Non repetitive surge peak on-state current for a sinusoidal pulse with width: $t \leq 10\text{ms}$, and corresponding value of I^2t .

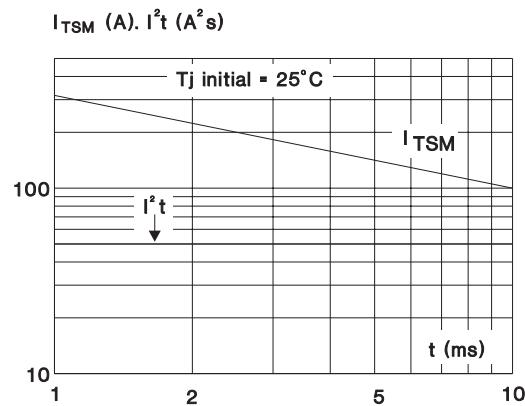


Fig. 4: Relative variation of thermal impedance versus pulse duration.

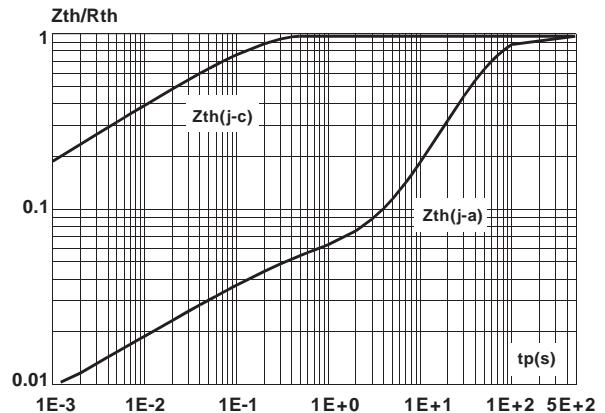


Fig. 6: Non repetitive surge peak on-state current versus number of cycles.

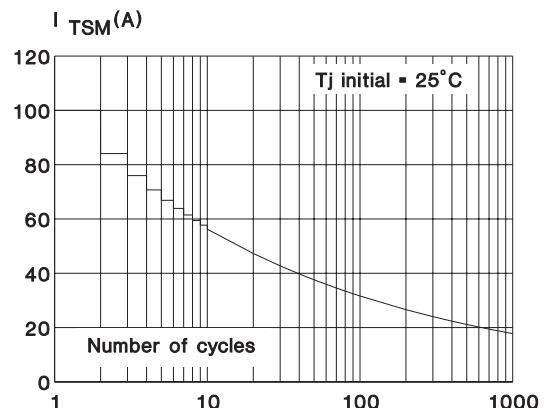
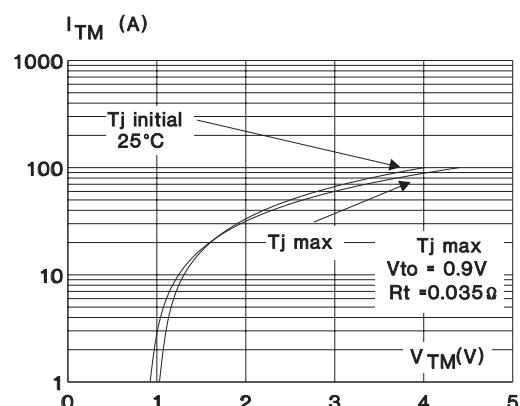


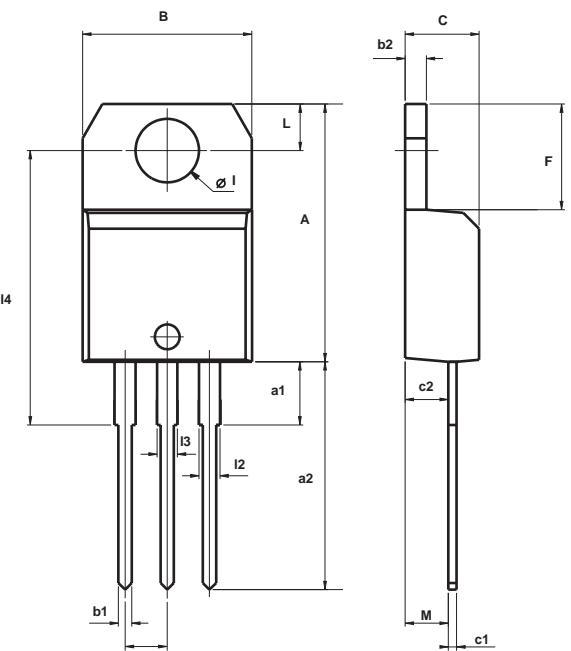
Fig. 8: On-state characteristics (maximum values).



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PACKAGE MECHANICAL DATA TO-220AB (Plastic)

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
I	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
I2	1.14		1.70	0.044		0.066
I3	1.14		1.70	0.044		0.066
M		2.60			0.102	



OTHER INFORMATION

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
TYNxx10	TYNxx10	TO-220AB	2.3 g	250	Bulk

- Epoxy meets UL94,V0
- Cooling method: C
- Recommended torque value: 0.8 m.N.
- Maximum torque value: 1 m.N.

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