



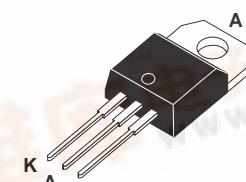
## TYNx40 Series

### STANDARD

40A SCRs

#### MAIN FEATURES:

Symbol	Value	Unit
I <sub>T(RMS)</sub>	40	A
V <sub>DRM/V<sub>RRM</sub></sub>	600 to 1000	V
I <sub>GT</sub>	35	mA



TO-220AB  
(TYNx40)

#### DESCRIPTION

The TYNx40 series is suitable for applications where in-rush current conditions are critical, such as overvoltage crowbar protection circuits in power supplies, in-rush current limiting circuits, solid state relays (in back to back configuration), welding equipment, high power motor control circuits.

Using clip assembly technology, they provide a superior performance in high surge current capabilities.

#### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I <sub>T(RMS)</sub>	RMS on-state current (180° conduction angle)	T <sub>c</sub> = 95°C	40	A
I <sub>T(AV)</sub>	Average on-state current (180° conduction angle)	T <sub>c</sub> = 95°C	25	A
I <sub>TSM</sub>	Non repetitive surge peak on-state current	tp = 8.3 ms	480	A
		tp = 10 ms	460	
I <sup>2</sup> t	I <sup>2</sup> t Value for fusing	T <sub>j</sub> = 25°C	1060	A <sup>2</sup> s
dl/dt	Critical rate of rise of on-state current I <sub>G</sub> = 2 x I <sub>GT</sub> , tr ≤ 100 ns	F = 60 Hz	50	A/μs
I <sub>GM</sub>	Peak gate current	tp = 20 μs	4	A
P <sub>G(AV)</sub>	Average gate power dissipation	T <sub>j</sub> = 125°C	1	W
T <sub>stg</sub> T <sub>j</sub>	Storage junction temperature range Operating junction temperature range		- 40 to + 150 - 40 to + 125	°C
V <sub>RGM</sub>	Maximum peak reverse gate voltage		5	V

## TYNx40 Series

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

Symbol	Test Conditions			Value	Unit	
$I_{GT}$	$V_D = 12 \text{ V}$ $R_L = 33 \Omega$		MIN.	3.5	mA	
			MAX.	35		
$V_{GT}$			MAX.	1.3	V	
$V_{GD}$	$V_D = V_{DRM}$	$R_L = 3.3 \text{ k}\Omega$	$T_j = 125^\circ\text{C}$	MIN.	0.2	V
$I_H$	$I_T = 500 \text{ mA}$	Gate open	MAX.	75	mA	
$I_L$	$I_G = 1.2 I_{GT}$		MAX.	150	mA	
$dV/dt$	$V_D = 67 \% V_{DRM}$	Gate open	$T_j = 125^\circ\text{C}$	MIN.	1000	$\text{V}/\mu\text{s}$
$V_{TM}$	$I_{TM} = 80 \text{ A}$	$t_p = 380 \mu\text{s}$	$T_j = 25^\circ\text{C}$	MAX.	1.6	V
$V_{t0}$	Threshold voltage		$T_j = 125^\circ\text{C}$	MAX.	0.85	V
$R_d$	Dynamic resistance		$T_j = 125^\circ\text{C}$	MAX.	10	$\text{m}\Omega$
$I_{DRM}$ $I_{RRM}$	$V_{DRM} = V_{RRM}$		$T_j = 25^\circ\text{C}$	MAX.	5	$\mu\text{A}$
			$T_j = 125^\circ\text{C}$	MAX.	4	mA

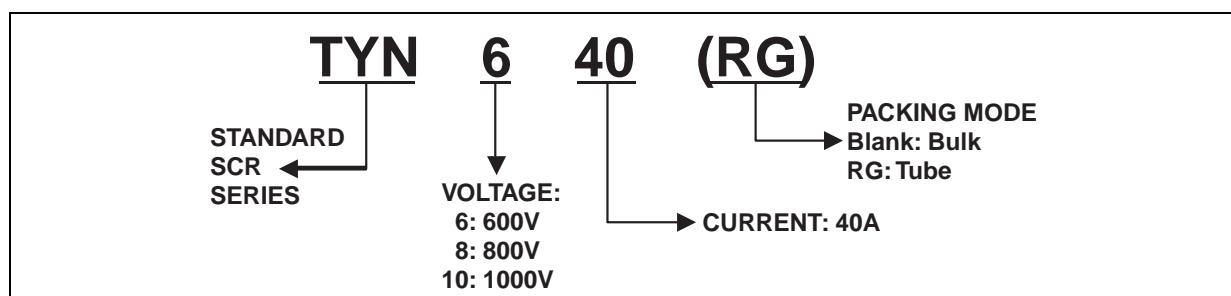
### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case (DC)	0.8	$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Junction to ambient (DC)	60	$^\circ\text{C}/\text{W}$

### PRODUCT SELECTOR

Part Number	Voltage			Sensitivity	Package
	600 V	800 V	1000 V		
TYNx40	X	X	X	35 mA	TO-220AB

### ORDERING INFORMATION

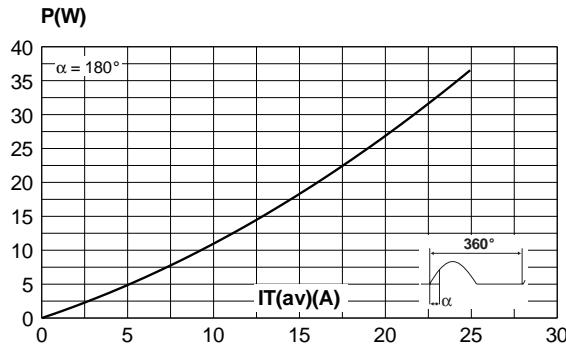


### OTHER INFORMATION

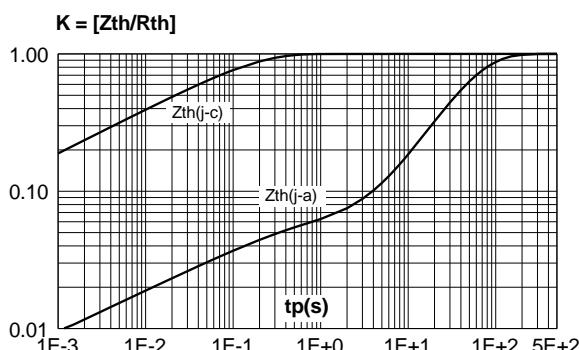
Part Number	Marking	Weight	Base Quantity	Packing mode
TYNx40	TYNx40	2.3 g	250	Bulk
TYNx40RG	TYNx40	2.3 g	50	Tube

Note: x = voltage

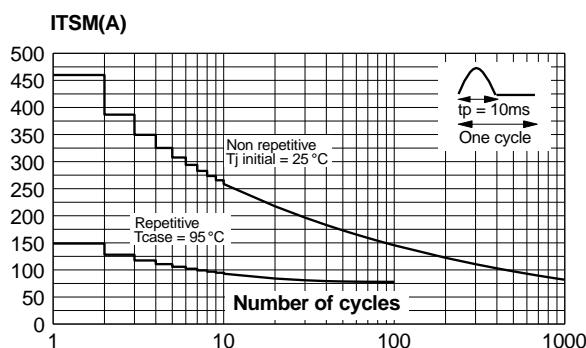
**Fig. 1:** Maximum average power dissipation versus average on-state current.



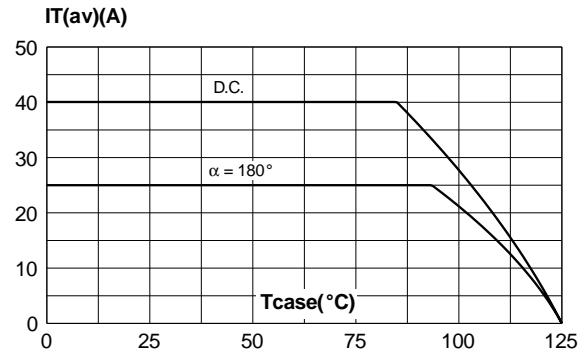
**Fig. 3:** Relative variation of thermal impedance versus pulse duration.



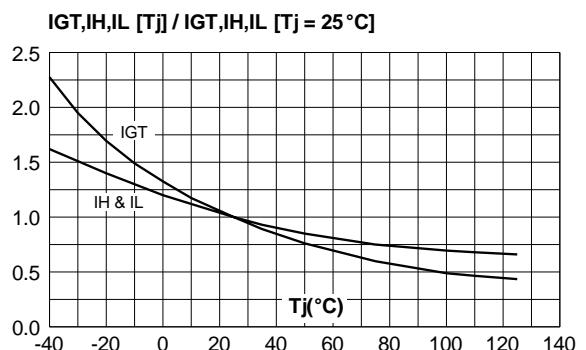
**Fig. 5:** Surge peak on-state current versus number of cycles.



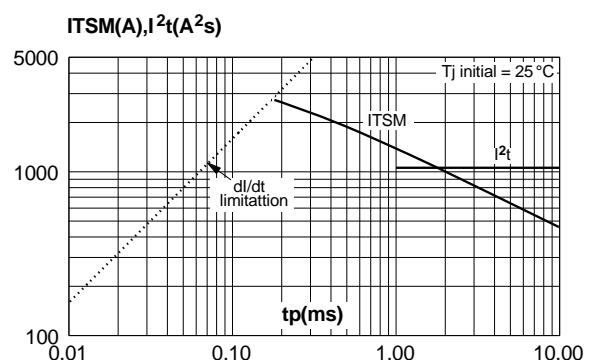
**Fig. 2:** Average and DC on-state current versus case temperature.



**Fig. 4:** Relative variation of gate trigger current, holding current and latching current versus junction temperature.

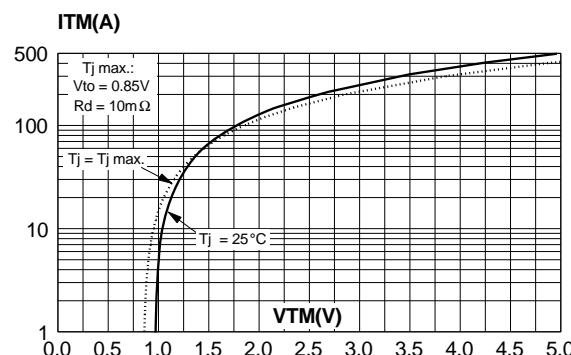


**Fig. 6:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $tp < 10$  ms, and corresponding value of  $I^2t$ .



## TYNx40 Series

**Fig. 7:** On-state characteristics (maximum values).



## 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	

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