



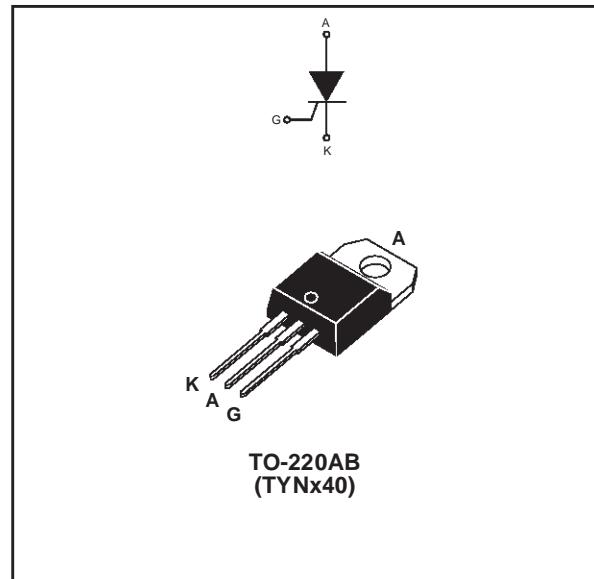
TYNx40 Series

STANDARD

40A SCRs

MAIN FEATURES:

Symbol	Value	Unit
$I_{T(RMS)}$	40	A
V_{DRM}/V_{RRM}	600 to 1000	V
I_{GT}	35	mA



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
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	$T_c = 95^\circ C$	40	A
$I_{T(AV)}$	Average on-state current (180° conduction angle)	$T_c = 95^\circ C$	25	A
I_{TSM}	Non repetitive surge peak on-state current	$t_p = 8.3 \text{ ms}$	480	A
		$t_p = 10 \text{ ms}$		
I_t	I_t Value for fusing	$T_j = 25^\circ C$	1060	A^2s
dl/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}, t_r \leq 100 \text{ ns}$	$F = 60 \text{ Hz}$	$T_j = 125^\circ C$	$\text{A}/\mu\text{s}$
I_{GM}	Peak gate current	$t_p = 20 \mu\text{s}$	$T_j = 125^\circ C$	A
$P_{G(AV)}$	Average gate power dissipation	$T_j = 125^\circ C$	1	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range		- 40 to + 150 - 40 to + 125	$^\circ C$
V_{RGM}	Maximum peak reverse gate voltage		5	V

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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		
			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	μA
			$T_j = 125^\circ\text{C}$		4	mA

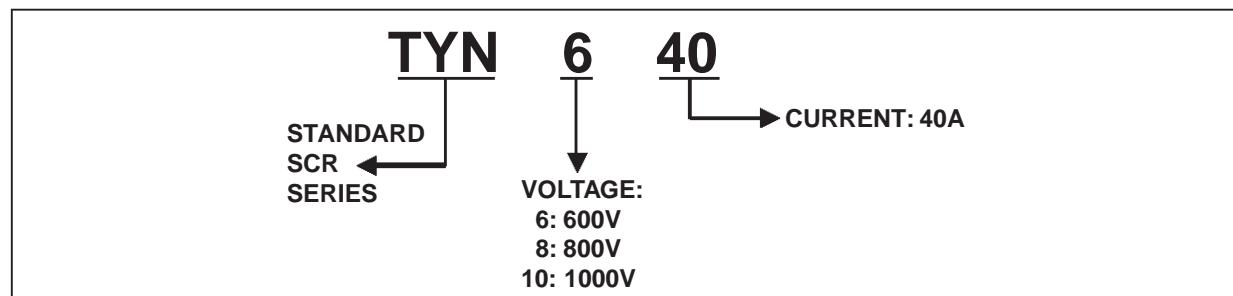
THERMAL RESISTANCES

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

Note: x = voltage

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

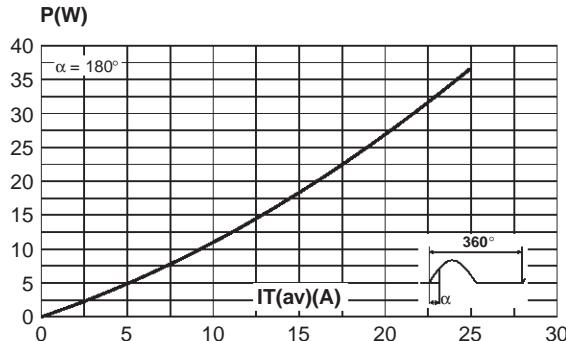


Fig. 3: Relative variation of thermal impedance versus pulse duration.

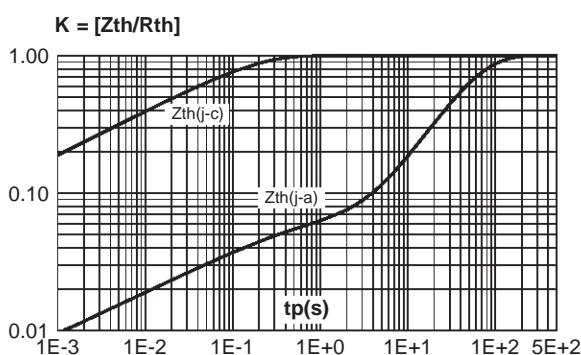


Fig. 5: Surge peak on-state current versus number of cycles.

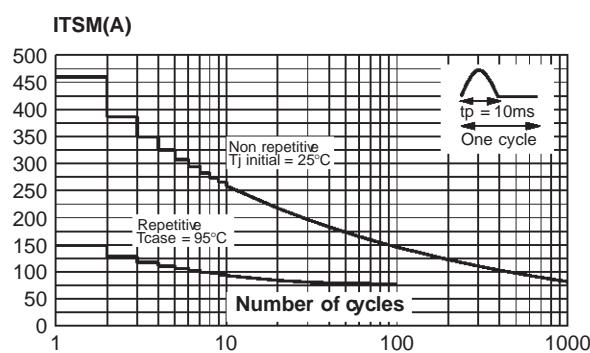


Fig. 2: Average and DC on-state current versus case temperature.

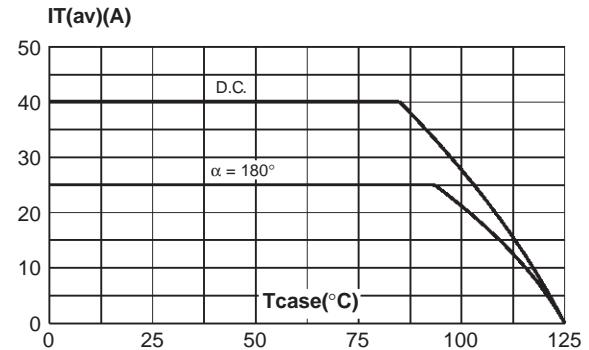


Fig. 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature.

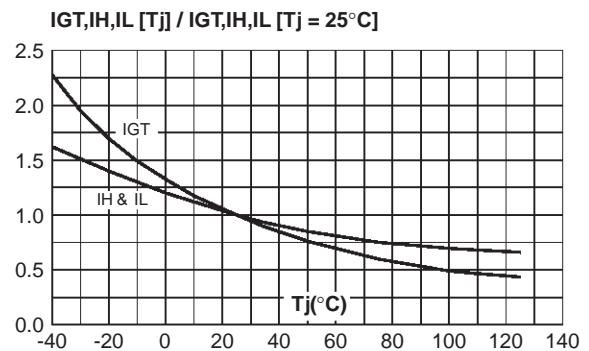
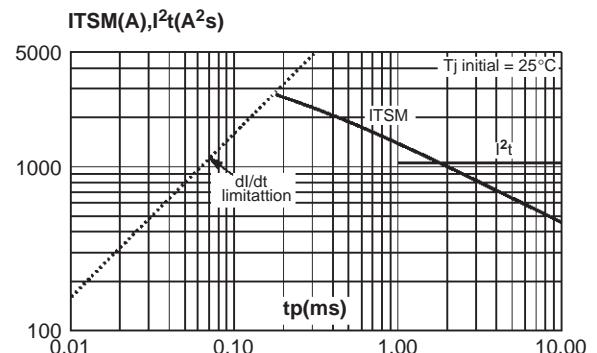
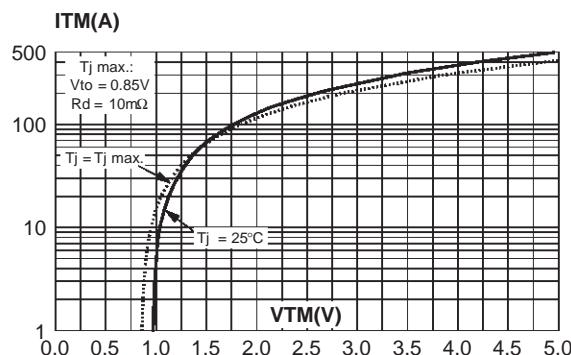


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $tp < 10$ ms, and corresponding value of I^2t .



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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