



TYNx40 Series

STANDARD

40A SCRs

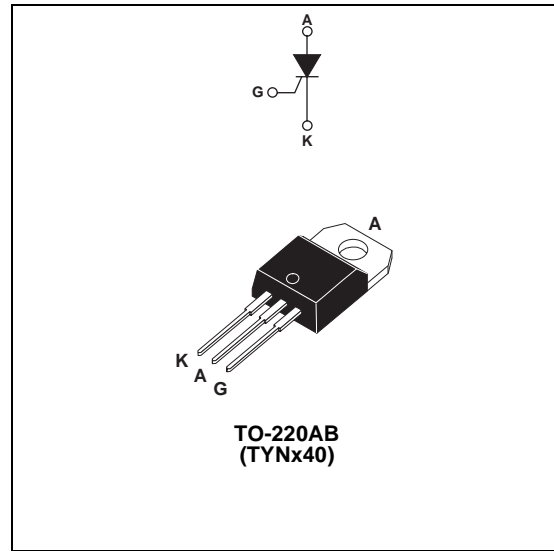
MAIN FEATURES:

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)		$T_c = 95^\circ\text{C}$ 40	A
$I_{T(AV)}$	Average on-state current (180° conduction angle)		$T_c = 95^\circ\text{C}$ 25	A
I_{TSM}	Non repetitive surge peak on-state current	$t_p = 8.3 \text{ ms}$	$T_j = 25^\circ\text{C}$ 480	A
		$t_p = 10 \text{ ms}$		
I^2t	I^2t Value for fusing		$T_j = 25^\circ\text{C}$ 1060	A^2s
di/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100 \text{ ns}$	$F = 60 \text{ Hz}$	$T_j = 125^\circ\text{C}$ 50	$\text{A}/\mu\text{s}$
I_{GM}	Peak gate current	$t_p = 20 \mu\text{s}$	$T_j = 125^\circ\text{C}$ 4	A
$P_{G(AV)}$	Average gate power dissipation		$T_j = 125^\circ\text{C}$ 1	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range		- 40 to + 150 - 40 to + 125	$^\circ\text{C}$
V_{RGM}	Maximum peak reverse gate voltage		5	V

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ELECTRICAL CHARACTERISTICS (T_j = 25°C, unless otherwise specified)

Symbol	Test Conditions		Value	Unit	
I _{GT}	V _D = 12 V R _L = 33 Ω	MIN.	3.5	mA	
		MAX.	35		
V _{GT}		MAX.	1.3	V	
V _{GD}	V _D = V _{DRM} R _L = 3.3 kΩ	T _j = 125°C	MIN.	0.2	V
I _H	I _T = 500 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°C	MIN.	1000	V/μs
V _{TM}	I _{TM} = 80 A t _p = 380 μs	T _j = 25°C	MAX.	1.6	V
V _{T0}	Threshold voltage	T _j = 125°C	MAX.	0.85	V
R _d	Dynamic resistance	T _j = 125°C	MAX.	10	mΩ
I _{DRM} I _{RRM}	V _{DRM} = V _{RRM}	T _j = 25°C	MAX.	5	μA
		T _j = 125°C		4	mA

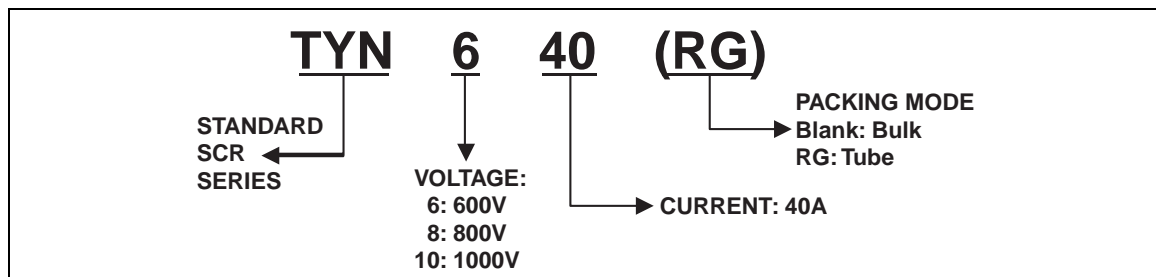
THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R _{th(j-c)}	Junction to case (DC)	0.8	°C/W
R _{th(j-a)}	Junction to ambient (DC)	60	°C/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.

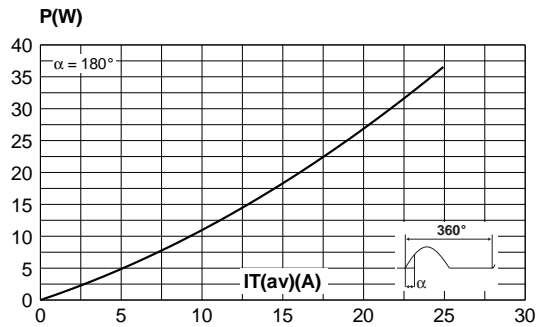


Fig. 2: Average and DC on-state current versus case temperature.

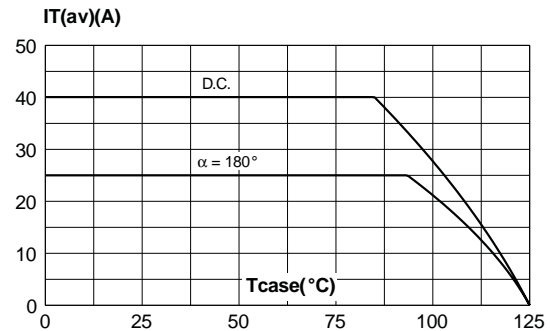


Fig. 3: Relative variation of thermal impedance versus pulse duration.

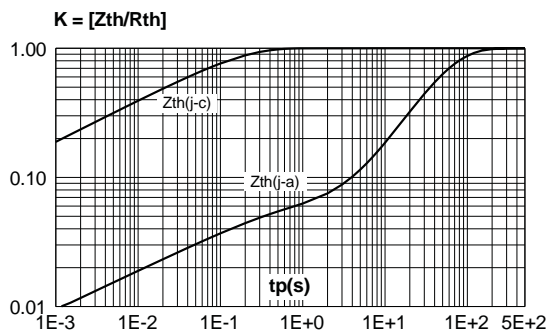


Fig. 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature.

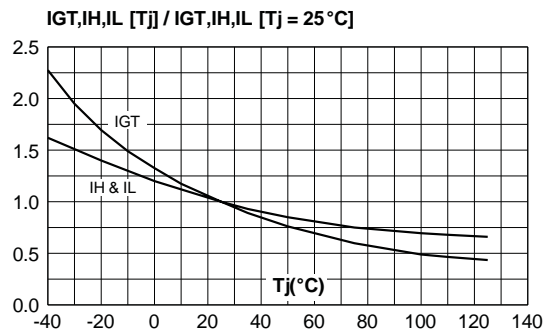


Fig. 5: Surge peak on-state current versus number of cycles.

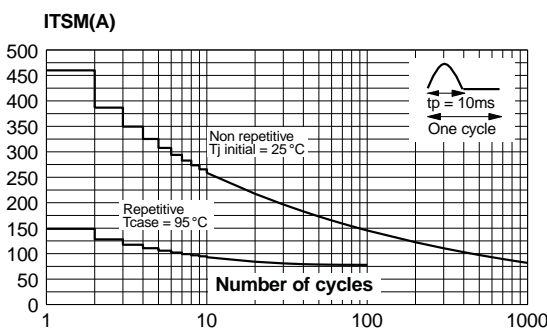
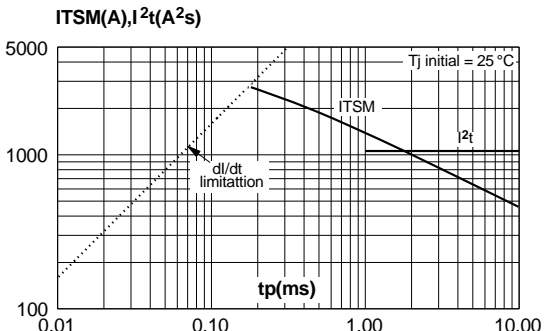
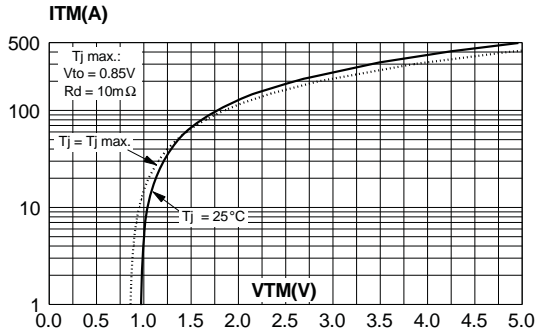


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10$ ms, and corresponding value of I^2t .



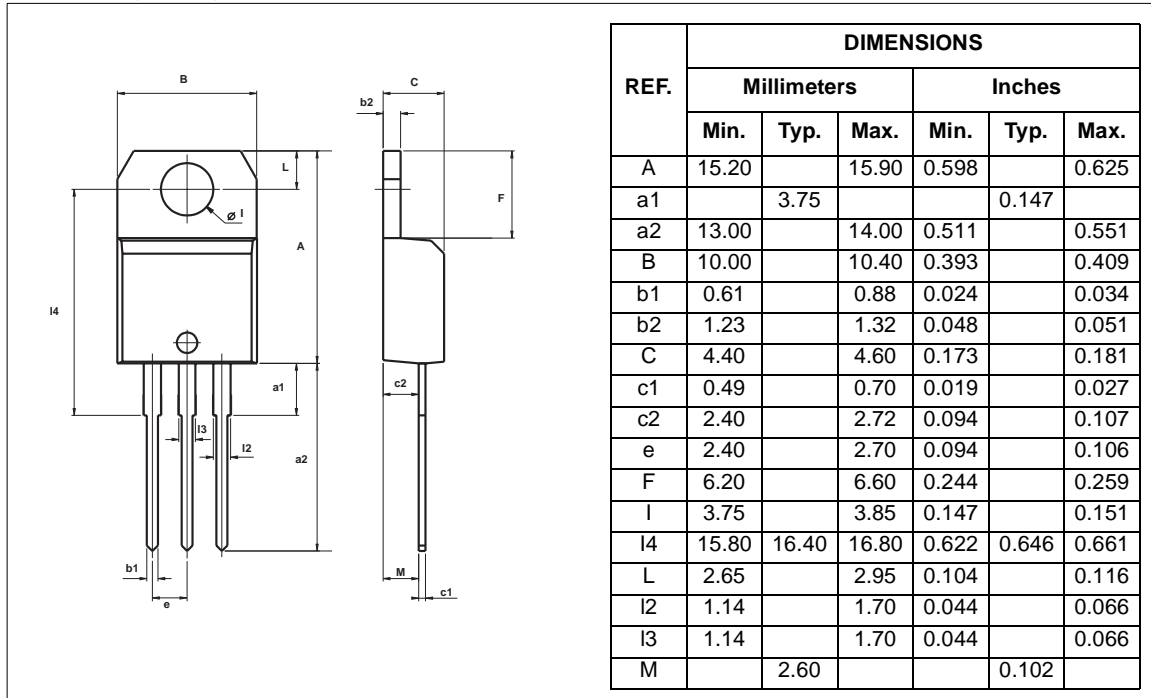
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Fig. 7: On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TO-220AB (Plastic)



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