



# TN25 and TYNx25 Series

STANDARD

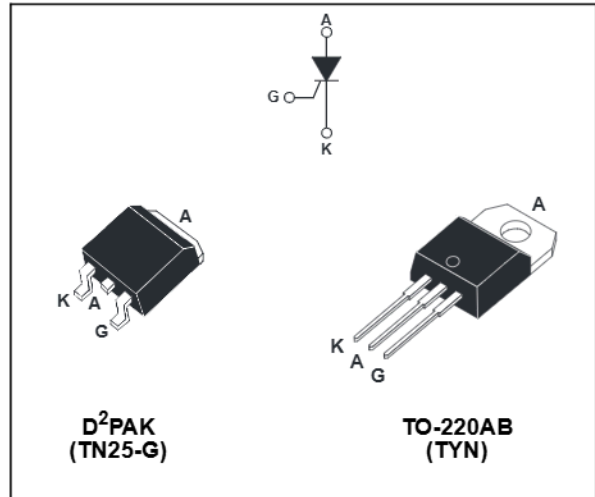
25A SCRs

## MAIN FEATURES:

Symbol	Value	Unit
$I_{T(RMS)}$	25	A
$V_{DRM}/V_{RRM}$	600 to 1000	V
$I_{GT}$	40	mA

## DESCRIPTION

The TYN / TN25 SCR Series is suitable for general purpose applications. Using clip assembly technology, they provide a superior performance in surge current capabilities.



## ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)		$T_c = 100^\circ\text{C}$ 25	A
$T_{(AV)}$	Average on-state current (180° conduction angle)		$T_c = 100^\circ\text{C}$ 16	A
$I_{TSM}$	Non repetitive surge peak on-state current	$t_p = 8.3 \text{ ms}$	$T_j = 25^\circ\text{C}$ 314	A
		$t_p = 10 \text{ ms}$		
$I^2t$	$I^2t$ Value for fusing	$t_p = 10 \text{ ms}$	$T_j = 25^\circ\text{C}$ 450	$\text{A}^2\text{S}$
$di/dt$	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

## TN25 and TYNx25 Series

### ELECTRICAL CHARACTERISTICS (T<sub>j</sub> = 25°C, unless otherwise specified)

Symbol	Test Conditions			Value	Unit		
I <sub>GT</sub>	V <sub>D</sub> = 12 V	R <sub>L</sub> = 33 Ω	MIN.	4	mA		
			MAX.	40			
V <sub>GT</sub>			MAX.	1.3	V		
V <sub>GD</sub>	V <sub>D</sub> = V <sub>DRM</sub>	R <sub>L</sub> = 3.3 kΩ	T <sub>j</sub> = 125°C	MIN.	0.2	V	
I <sub>H</sub>	I <sub>T</sub> = 500 mA		Gate open	MAX.	50	mA	
I <sub>L</sub>	I <sub>G</sub> = 1.2 I <sub>GT</sub>			MAX.	90	mA	
dV/dt	V <sub>D</sub> = 67 % V <sub>DRM</sub>	Gate open	T <sub>j</sub> = 125°C	MIN.	1000	V/μs	
V <sub>TM</sub>	I <sub>TM</sub> = 50 A		tp = 380 μs	T <sub>j</sub> = 25°C	MAX.	1.6	V
V <sub>t0</sub>	Threshold voltage		T <sub>j</sub> = 125°C	MAX.	0.77	V	
R <sub>d</sub>	Dynamic resistance		T <sub>j</sub> = 125°C	MAX.	14	mΩ	
I <sub>DRM</sub> I <sub>RRM</sub>	V <sub>DRM</sub> = V <sub>RRM</sub>		T <sub>j</sub> = 25°C	MAX.	5	μA	
			T <sub>j</sub> = 125°C		4	mA	

### THERMAL RESISTANCES

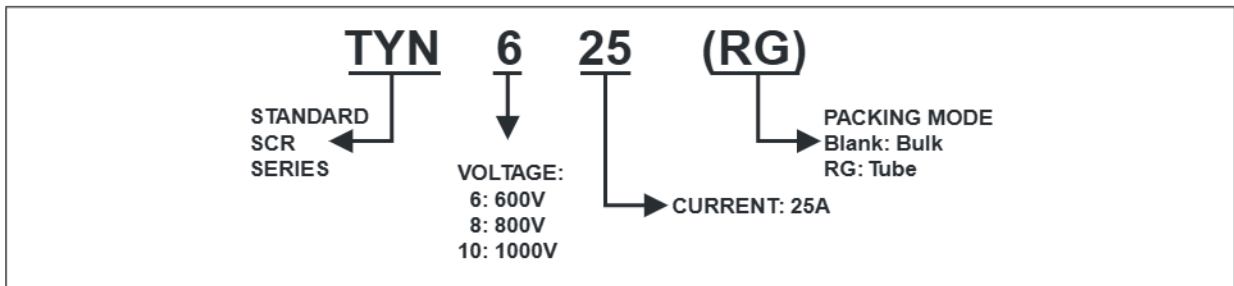
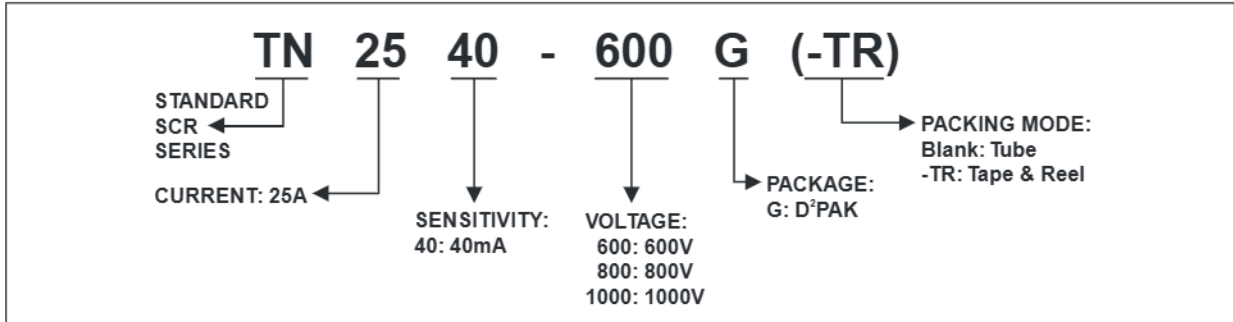
Symbol	Parameter		Value	Unit
R <sub>th(j-c)</sub>	Junction to case (DC)		1.0	°C/W
R <sub>th(j-a)</sub>	Junction to ambient (DC)		TO-220AB	°C/W
	S = 1 cm <sup>2</sup>		D <sup>2</sup> PAK	

S = Copper surface under tab

### PRODUCT SELECTOR

Part Number	Voltage (xxx)			Sensitivity	Package
	600 V	800 V	1000 V		
TN2540-xxxG	X	X	X	40 mA	D <sup>2</sup> PAK
TYNx25	X	X	X	40 mA	TO-220AB

**ORDERING INFORMATION**

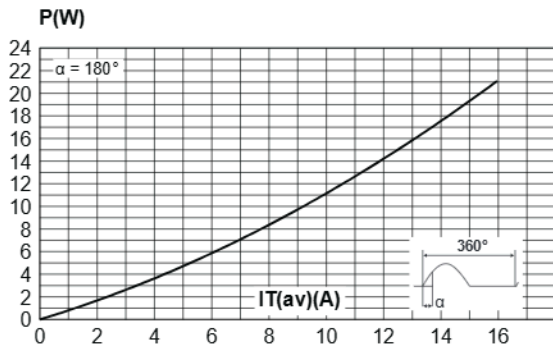


**OTHER INFORMATION**

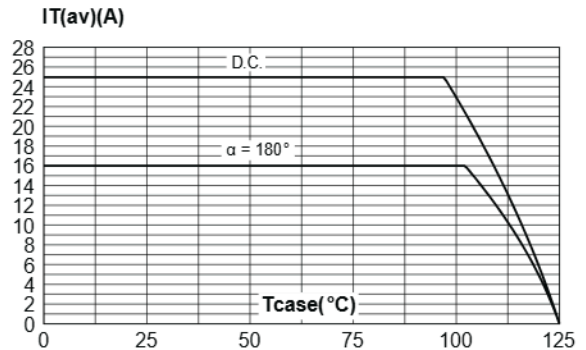
Part Number	Marking	Weight	Base Quantity	Packing mode
TN2540-x00G	TN2540x00G	1.5 g	50	Tube
TN2540-x00G-TR	TN2540x00G	1.5 g	1000	Tape & reel
TYNx25	TYNx25	2.3 g	250	Bulk
TYNx25RG	TYNx25	2.3 g	50	Tube

**Note:** x = voltage

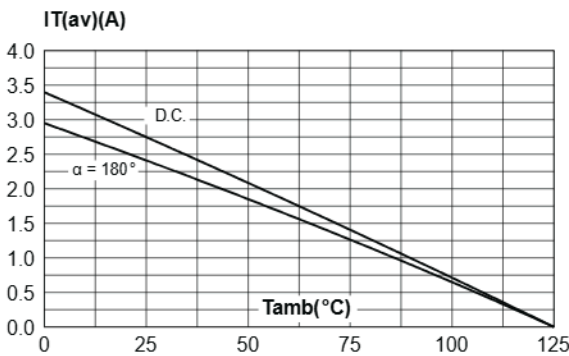
**Fig. 1:** Maximum average power dissipation versus average on-state current.



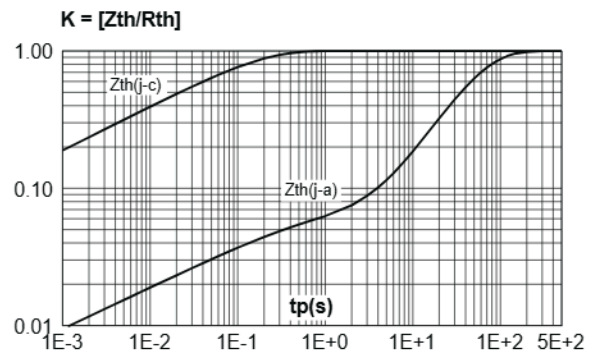
**Fig. 2-1:** Average and D.C. on-state current versus case temperature.



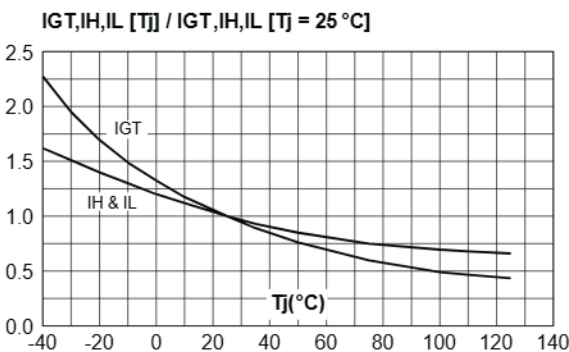
**Fig. 2-2:** Average and D.C. on-state current versus ambient temperature (copper surface under tab: S = 1 cm<sup>2</sup> for D<sup>2</sup>PAK).



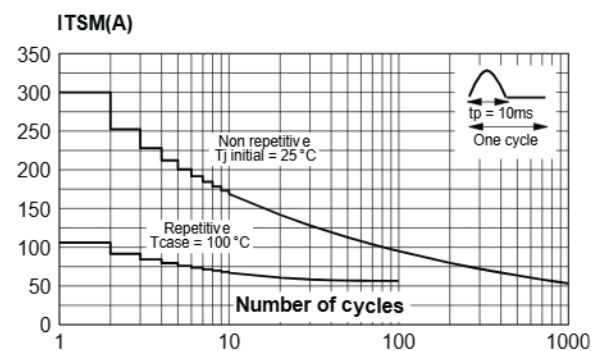
**Fig. 3:** Relative variation of thermal impedance versus pulse duration.



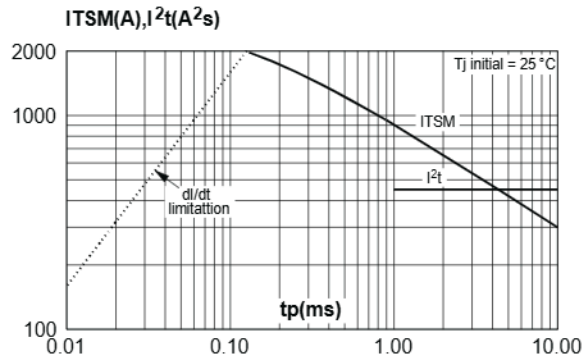
**Fig. 4:** Relative variation of gate trigger current, holding current and latching current versus junction temperature.



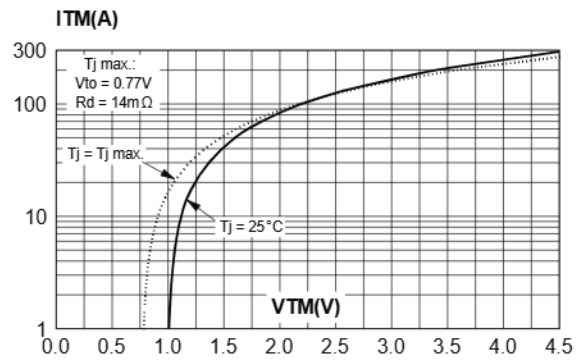
**Fig. 5:** Surge peak on-state current versus number of cycles.



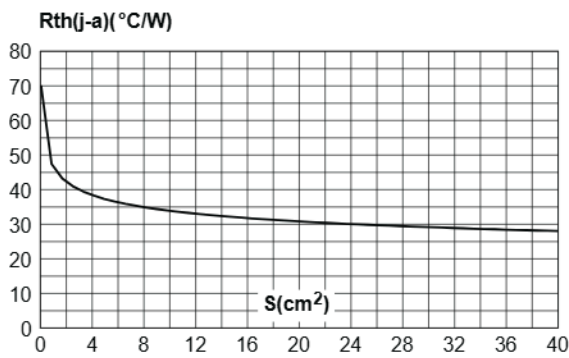
**Fig. 6:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10$  ms, and corresponding values of  $I^2t$ .



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



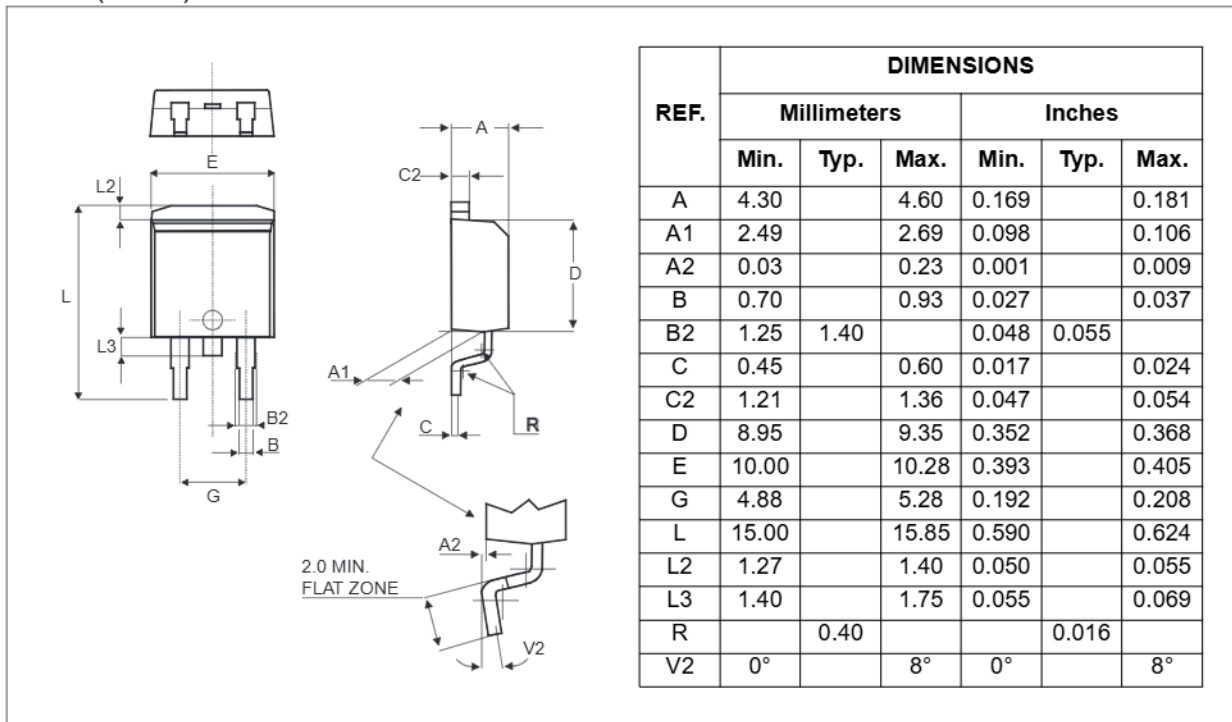
**Fig. 8:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35  $\mu$ m) (D<sup>2</sup>PAK).



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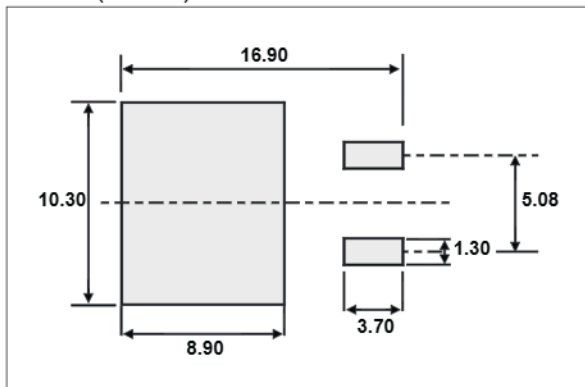
### PACKAGE MECHANICAL DATA

D<sup>2</sup>PAK (Plastic)



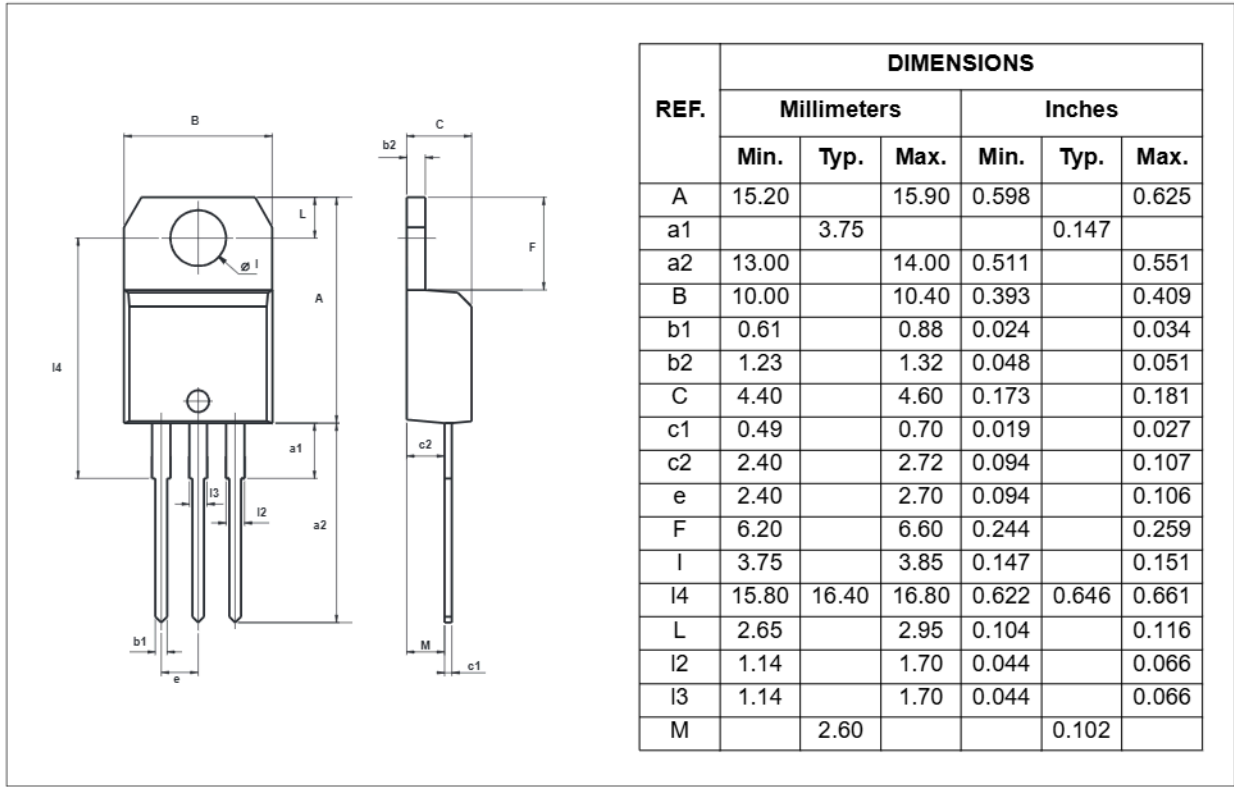
### FOOTPRINT DIMENSIONS (in millimeters)

D<sup>2</sup>PAK (Plastic)



**PACKAGE MECHANICAL DATA**

TO-220AB (Plastic)



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