



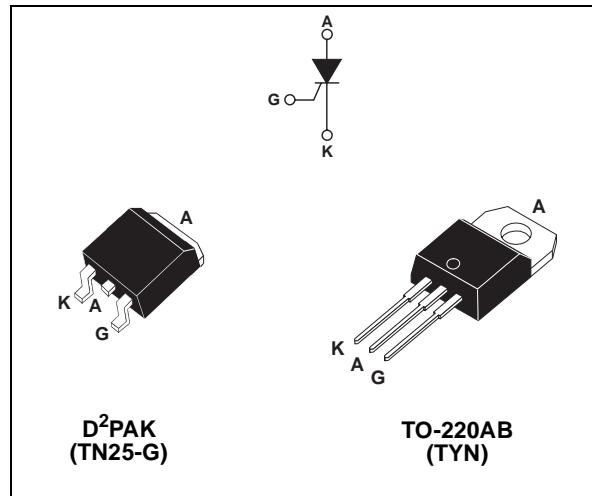
# TN25 and TYNx25 Series

STANDARD

25A SCRs

## MAIN FEATURES:

Symbol	Value	Unit
$I_T(\text{RMS})$	25	A
$V_{\text{DRM}}/V_{\text{RRM}}$	600 to 1000	V
$I_{\text{GT}}$	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
$I_T(\text{RMS})$	RMS on-state current (180° conduction angle)	$T_c = 100^\circ\text{C}$	25	A
$T_{(\text{AV})}$	Average on-state current (180° conduction angle)	$T_c = 100^\circ\text{C}$	16	A
$I_{\text{TSM}}$	Non repetitive surge peak on-state current	$t_p = 8.3 \text{ ms}$	314	A
		$t_p = 10 \text{ ms}$		
$I^2t$	$I^2t$ Value for fusing	$t_p = 10 \text{ ms}$	$T_j = 25^\circ\text{C}$	$\text{A}^2\text{s}$
$dl/dt$	Critical rate of rise of on-state current $I_G = 2 \times I_{\text{GT}}, t_r \leq 100 \text{ ns}$	$F = 60 \text{ Hz}$	$T_j = 125^\circ\text{C}$	$\text{A}/\mu\text{s}$
$I_{\text{GM}}$	Peak gate current	$t_p = 20 \mu\text{s}$	$T_j = 125^\circ\text{C}$	A
$P_{\text{G(AV)}}$	Average gate power dissipation		$T_j = 125^\circ\text{C}$	W
$T_{\text{stg}}$ $T_j$	Storage junction temperature range Operating junction temperature range		- 40 to + 150 - 40 to + 125	$^\circ\text{C}$
$V_{\text{RGM}}$	Maximum peak reverse gate voltage		5	V

## TN25 and TYNx25 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.	4
				MAX.	40
				MAX.	1.3
$V_{GT}$					V
$V_{GD}$	$V_D = V_{DRM}$ $R_L = 3.3 \text{ k}\Omega$		$T_j = 125^\circ\text{C}$	MIN.	0.2
$I_H$	$I_T = 500 \text{ mA}$ Gate open			MAX.	50
$I_L$	$I_G = 1.2 I_{GT}$			MAX.	90
$dV/dt$	$V_D = 67\% V_{DRM}$ Gate open		$T_j = 125^\circ\text{C}$	MIN.	$1000 \text{ V}/\mu\text{s}$
$V_{TM}$	$I_{TM} = 50 \text{ A}$ $t_p = 380 \mu\text{s}$		$T_j = 25^\circ\text{C}$	MAX.	1.6
$V_{t0}$	Threshold voltage		$T_j = 125^\circ\text{C}$	MAX.	0.77
$R_d$	Dynamic resistance		$T_j = 125^\circ\text{C}$	MAX.	14
$I_{DRM}$ $I_{RRM}$	$V_{DRM} = V_{RRM}$	$T_j = 25^\circ\text{C}$		MAX.	5
		$T_j = 125^\circ\text{C}$			4
					mA

### THERMAL RESISTANCES

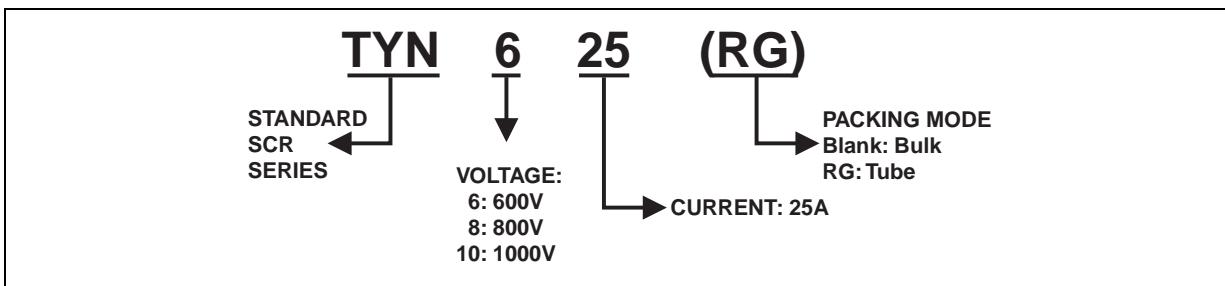
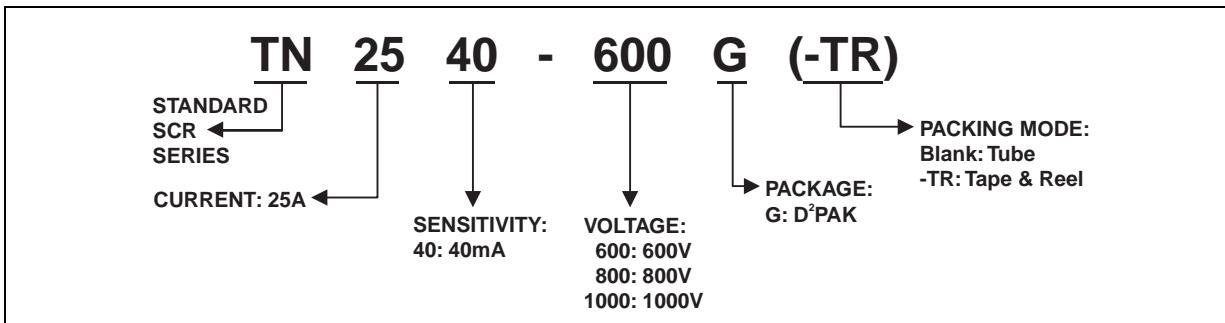
Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case (DC)	1.0	$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Junction to ambient (DC)  $S = 1 \text{ cm}^2$	TO-220AB	60
		D <sup>2</sup> PAK	45

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

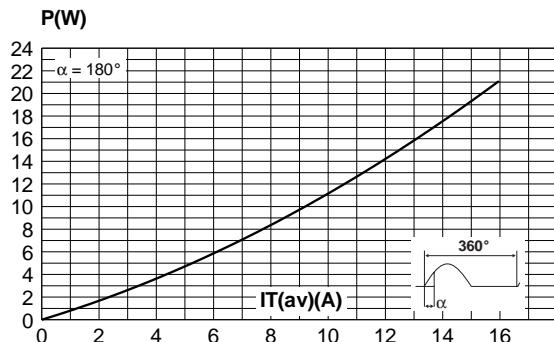
Part Number	Marking	Weight	Base Quantity	Packing mode
TN2540-x00G	TN2540x00G	1.5 g	50	Tube
TN2540-x00G-TR	TN2540x00G	1.5 g	1000	Tape & reel
TYNx25	TYNx25	2.3 g	250	Bulk
TYNx25RG	TYNx25	2.3 g	50	Tube

Note: x = voltage

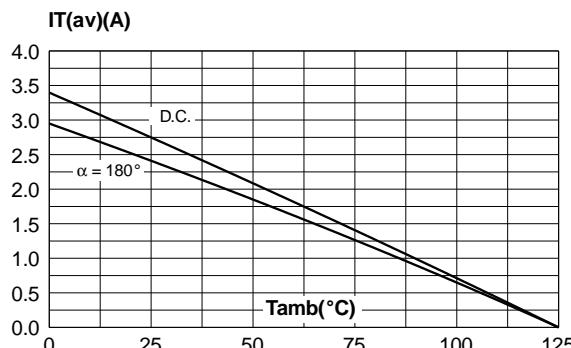
## TN25 and TYNx25 Series

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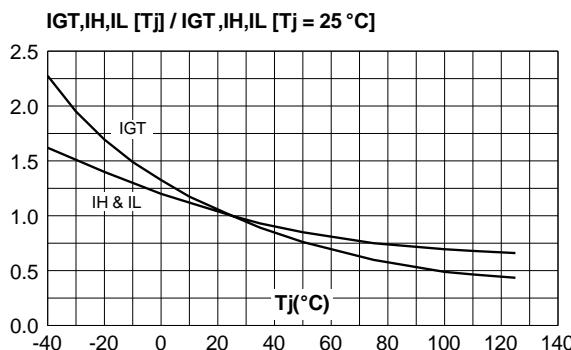
**Fig. 1:** Maximum average power dissipation versus average on-state current.



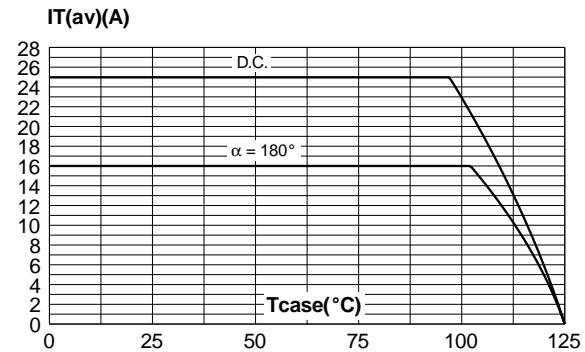
**Fig. 2-2:** Average and D.C. on-state current versus ambient temperature (copper surface under tab:  $S = 1 \text{ cm}^2$  (for D<sup>2</sup>PAK).



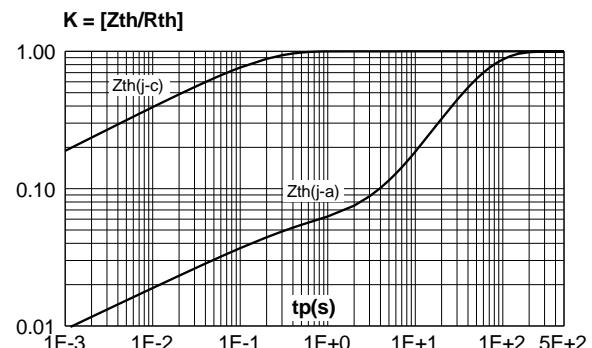
**Fig. 4:** Relative variation of gate trigger current, holding current and latching current versus junction temperature.



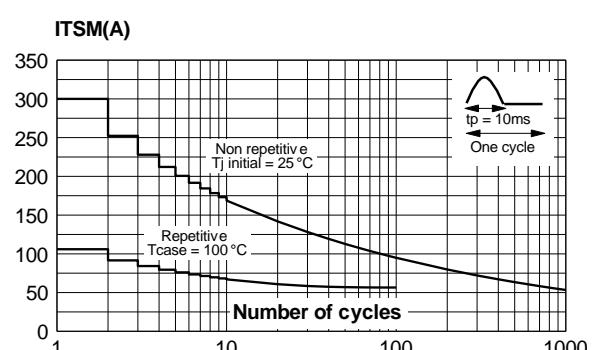
**Fig. 2-1:** Average and D.C. on-state current versus case temperature.



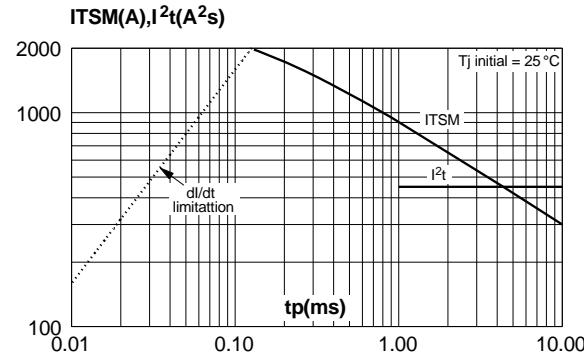
**Fig. 3:** Relative variation of thermal impedance versus pulse duration.



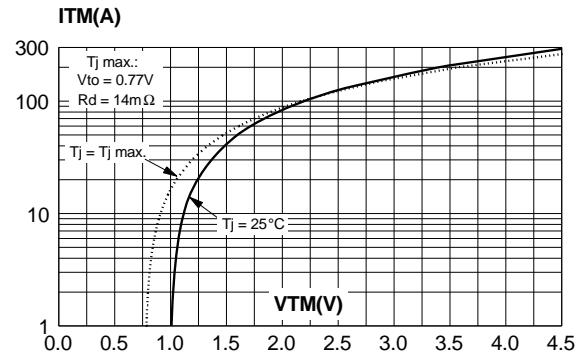
**Fig. 5:** Surge peak on-state current versus number of cycles.



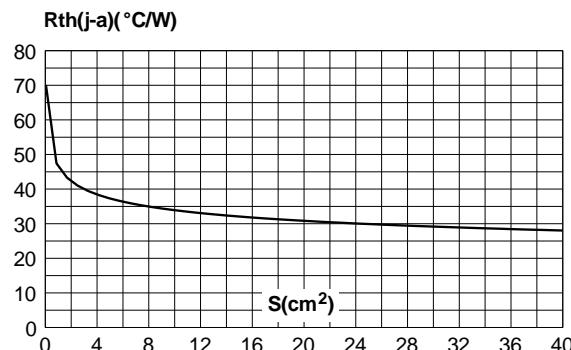
**Fig. 6:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10$  ms, and corresponding values of  $I^2t$ .



**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).



## TN25 and TYNx25 Series

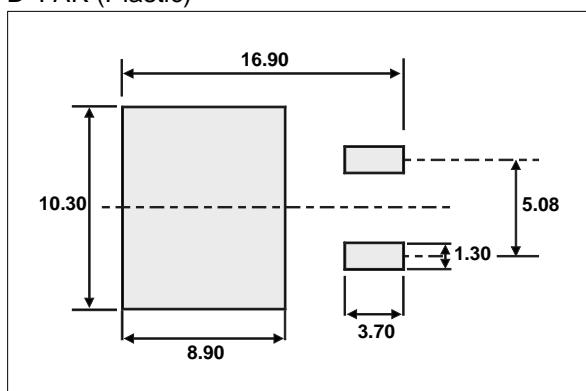
### PACKAGE MECHANICAL DATA

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

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.60	0.169		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.70		0.93	0.027		0.037
B2	1.25	1.40		0.048	0.055	
C	0.45		0.60	0.017		0.024
C2	1.21		1.36	0.047		0.054
D	8.95		9.35	0.352		0.368
E	10.00		10.28	0.393		0.405
G	4.88		5.28	0.192		0.208
L	15.00		15.85	0.590		0.624
L2	1.27		1.40	0.050		0.055
L3	1.40		1.75	0.055		0.069
R		0.40			0.016	
V2	0°		8°	0°		8°

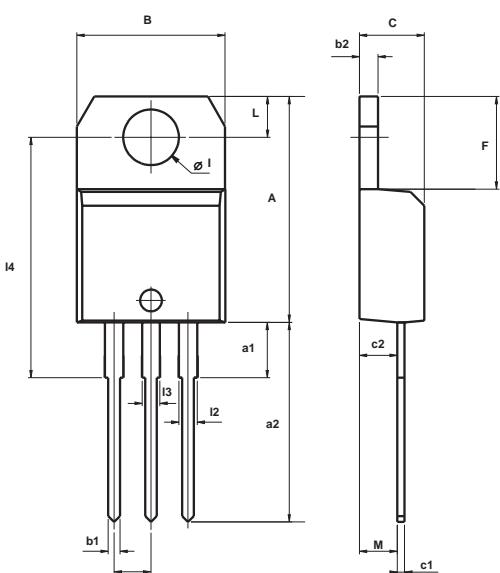
### FOOTPRINT DIMENSIONS (in millimeters)

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



## 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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