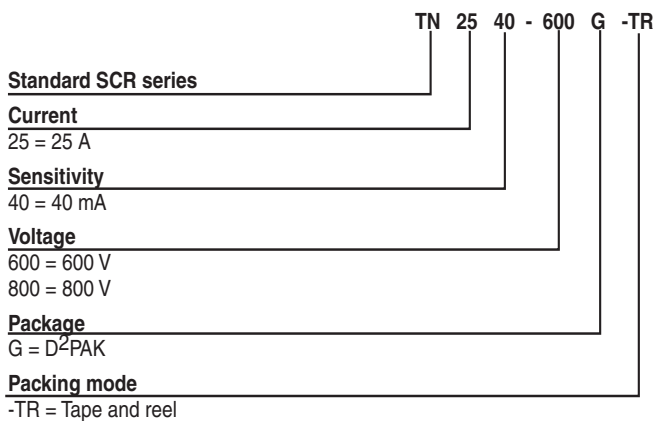


1 Ordering information schemes

Figure 1. TN2540-x00G ordering information scheme



Features

- On-state rms current, $I_{T(RMS)}$ 25 A
- Repetitive peak off-state voltage, V_{DRM}/V_{RRM} 600 to 1200 V
- Triggering gate current, I_{GT} 40 mA
- Insulated package TO-220AB ins
 - Insulating voltage 2500 V rms

Description

These standard 25 A SCRs are suitable for general purpose applications.

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

TXN625RG is packaged in TO-220AB ins.

Figure 2. TXN625RG ordering information scheme

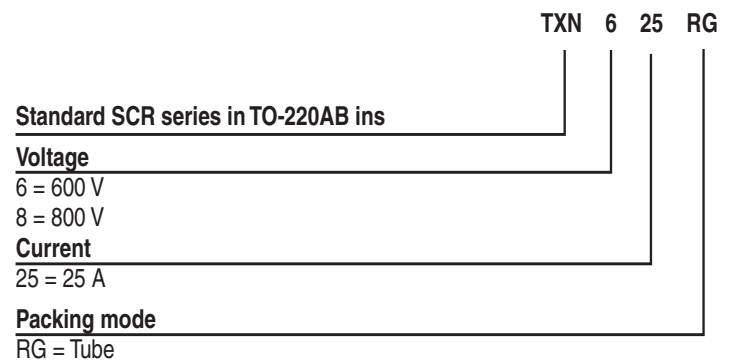
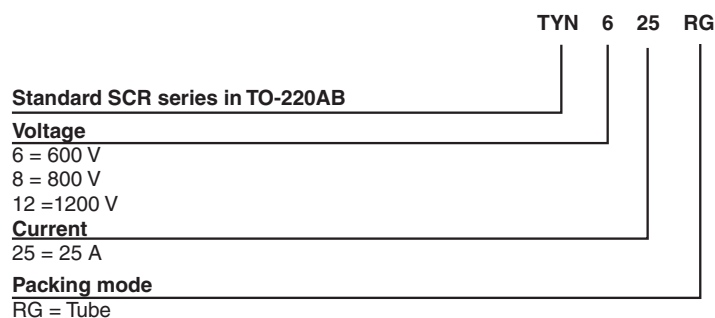


Figure 3. TYNx25RG ordering information scheme



2 Characteristics

Table 1. Absolute ratings (limiting values)

Symbol	Parameter		Value	Unit	
$I_{T(RMS)}$	On-state rms current (180 °Conduction angle)	TO-220AB, D ² PAK	$T_c = 100\text{ °C}$	25	A
		TO-220AB ins	$T_c = 83\text{ °C}$		
$I_{T(AV)}$	Average on-state current (180 °Conduction angle)		$T_c = 100\text{ °C}$	16	A
I_{TSM}	Non repetitive surge peak on-state current	$t_p = 8.3\text{ ms}$	$T_j = 25\text{ °C}$	314	A
		$t_p = 10\text{ ms}$		300	
I^2t	I^2t Value for fusing	$t_p = 10\text{ ms}$	$T_j = 25\text{ °C}$	450	A ² 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 Hz	$T_j = 125\text{ °C}$	50	A/ μ s
I_{GM}	Peak gate current	$t_p = 20\text{ }\mu$ s	$T_j = 125\text{ °C}$	4	A
$P_{G(AV)}$	Average gate power dissipation		$T_j = 125\text{ °C}$	1	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	°C
V_{RGM}	Maximum peak reverse gate voltage			5	V

Table 2. Electrical Characteristics ($T_j = 25\text{ °C}$, unless otherwise specified)

Symbol	Test conditions		Value	Unit	
I_{GT}	$V_D = 12\text{ V}$ $R_L = 33\text{ }\Omega$	MIN.	4	mA	
		MAX.	40		
V_{GT}		MAX.	1.3	V	
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3\text{ k}\Omega$	$T_j = 125\text{ °C}$	MIN.	0.2	V
I_H	$I_T = 500\text{ mA}$ Gate open		MAX.	50	mA
I_L	$I_G = 1.2 \times I_{GT}$		MAX.	90	mA
dV/dt	$V_D = 67\% V_{DRM}$ Gate open	$T_j = 125\text{ °C}$	MIN.	1500	V/ μ s
V_{TM}	$I_{TM} = 50\text{ A}$ $t_p = 380\text{ }\mu$ s	$T_j = 25\text{ °C}$	MAX.	1.6	V
V_{t0}	Threshold voltage	$T_j = 125\text{ °C}$	MAX.	0.77	V
R_d	Dynamic resistance	$T_j = 125\text{ °C}$	MAX.	14	m Ω
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	$T_j = 25\text{ °C}$	MAX.	5	μ A
		$T_j = 125\text{ °C}$		4	mA

Table 3. Thermal resistances

Symbol	Parameter		Value	Unit	
$R_{th(j-c)}$	Junction to case (DC)	D ² PAK, TO-220AB	1.0	°C/W	
		TO-220AB ins	2.0		
$R_{th(j-a)}$	Junction to ambient (DC)	$S^{(1)} = 1 \text{ cm}^2$	D ² PAK	45	°C/W
			TO-220AB, TO-220AB ins	60	

1. S = Copper surface under tab.

Figure 4. Maximum average power dissipation versus average on-state current

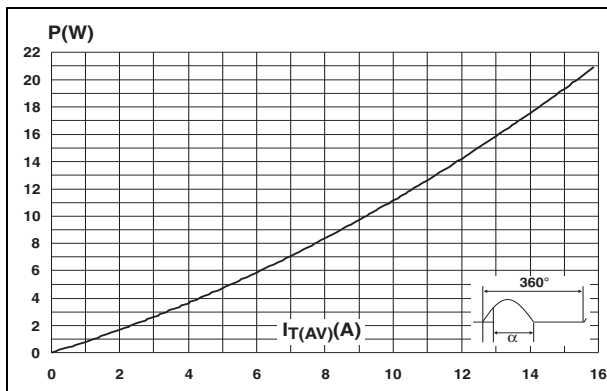


Figure 5. Average and DC on-state current versus case temperature

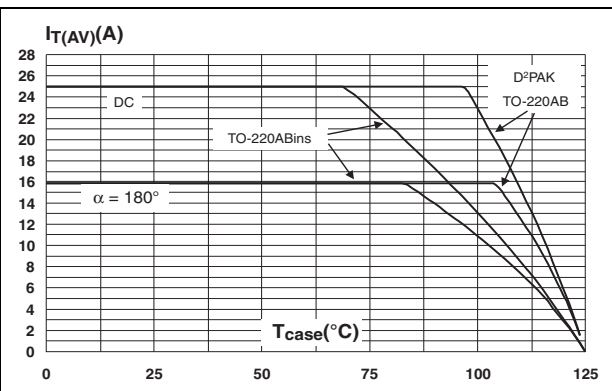


Figure 6. Average and DC on-state current versus ambient temperature

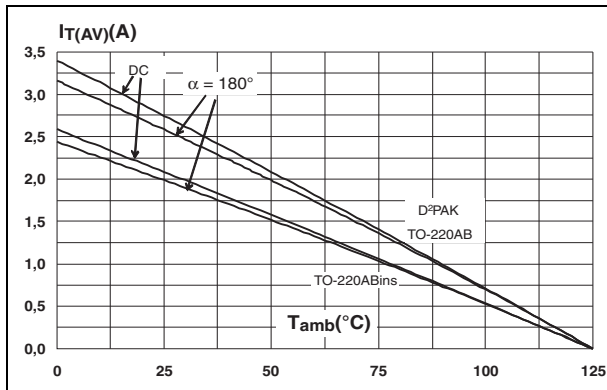


Figure 7. Relative variation of thermal impedance versus pulse duration (D²PAK, and TO-220AB)

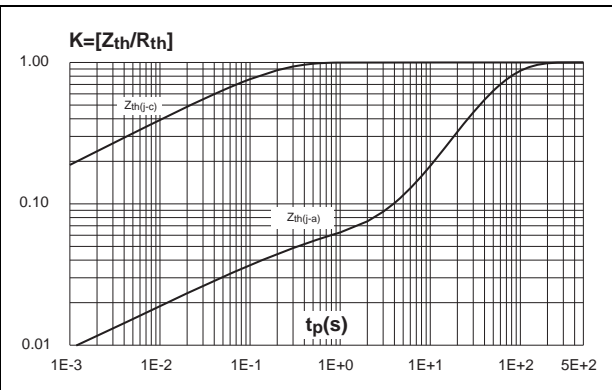


Figure 8. Relative variation of thermal impedance versus pulse duration (TO-220AB ins)

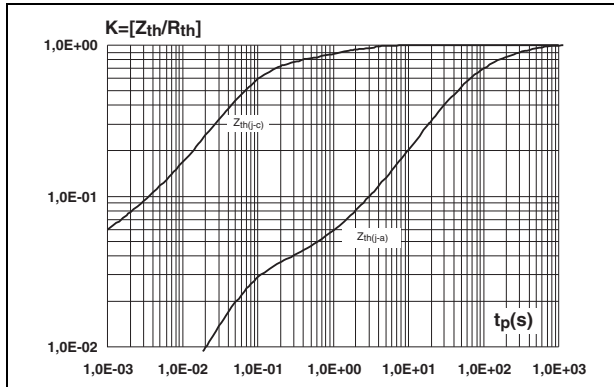


Figure 9. Relative variation of gate trigger, holding, and latching currents versus junction temperature

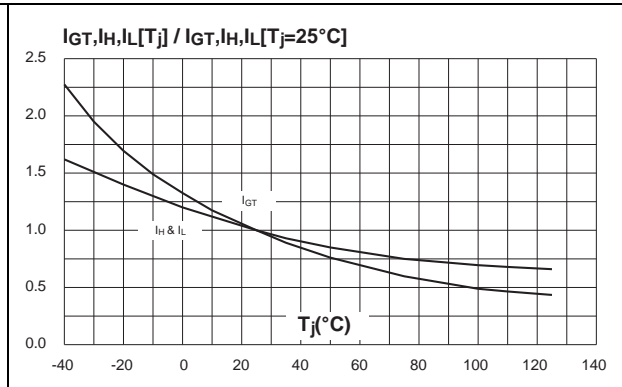


Figure 10. Surge peak on-state current versus number of cycles

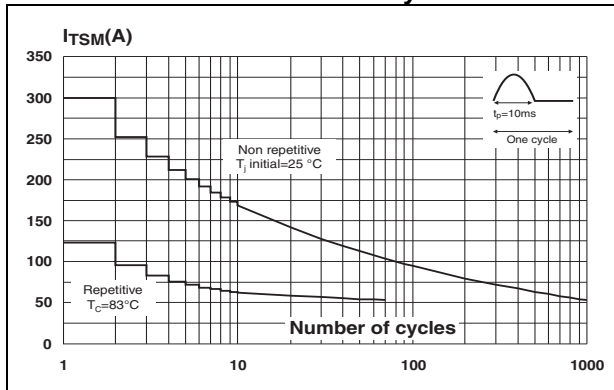


Figure 11. Non-repetitive surge peak on-state current, and corresponding values of I²t

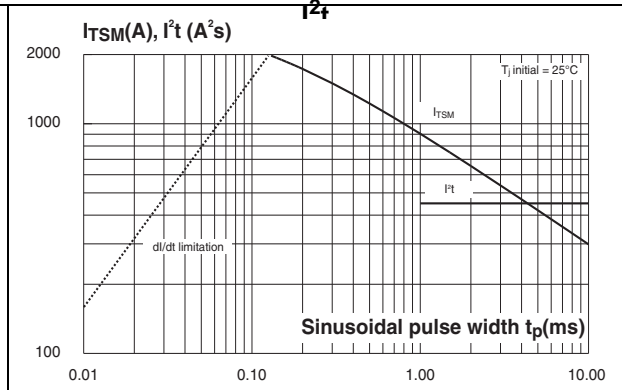


Figure 12. On-state characteristics (maximum values)

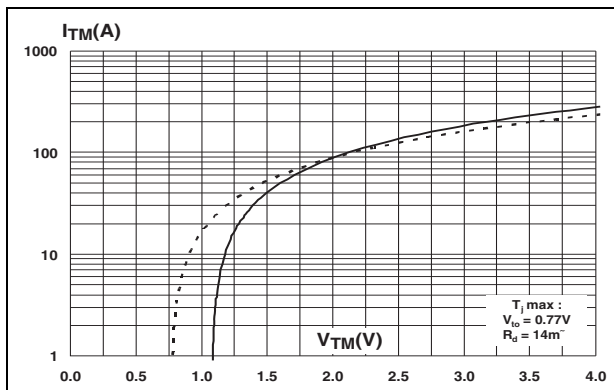
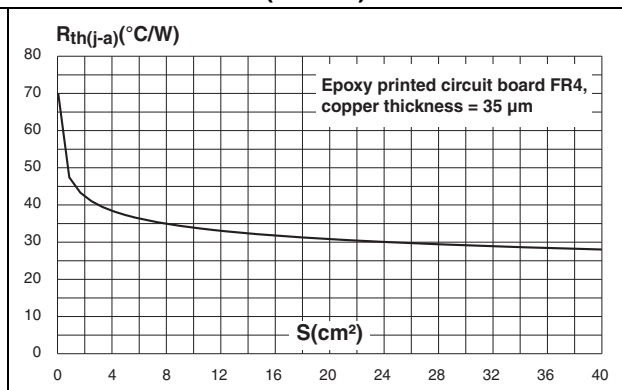


Figure 13. Thermal resistance junction to ambient versus copper surface under tab (D²PAK)



3 Package information

- Lead-free package
- Recommended torque values (TO-220AB, and TO220AB ins): 0.4 to 0.6 N·m

Figure 14. TO-220AB (NIns. & Ins. 20-up) dimension definitions

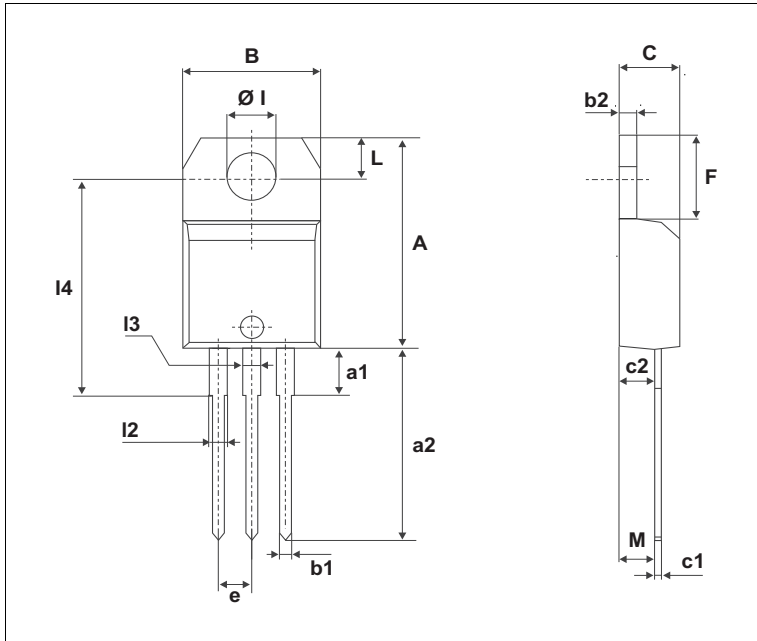


Table 4. TO-220AB (NIns. & Ins. 20-up) dimension values

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		2.70	0.094		0.107
e	2.40		2.70	0.094		0.106
F	6.20		6.60	0.244		0.259
Ø1	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	

Figure 15. D²PAK dimensions definitions

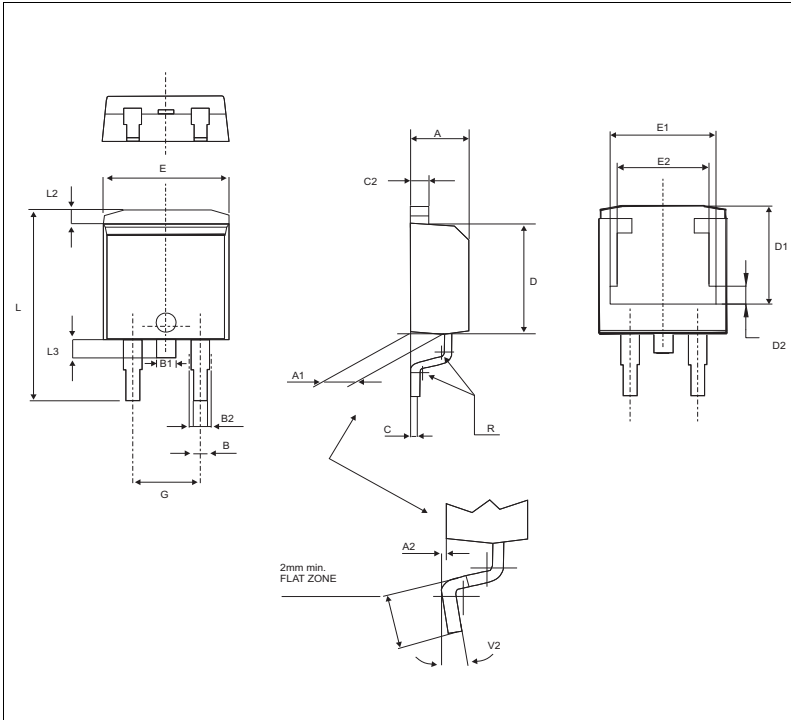
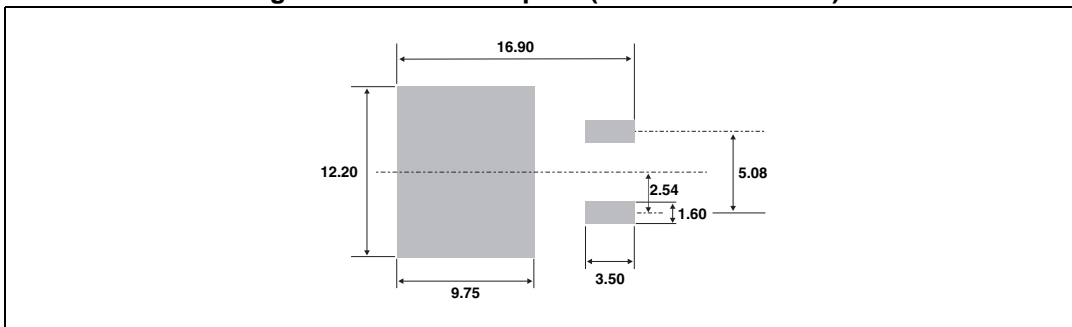


Table 5. D²PAK dimensions values

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
B1	1.20		1.38	0.047		0.054
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
D1	7.5		8.0	0.295		0.314
D2	1.3		1.7	0.051		0.067
E	10.00		10.28	0.393		0.405
E1	8.3		8.7	0.326		0.342
E2	6.85		7.25	0.269		0.285
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
R	0.40			0.016		
V2	0°		8°	0°		8°

Figure 16. D²PAK footprint (dimensions in mm)



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