

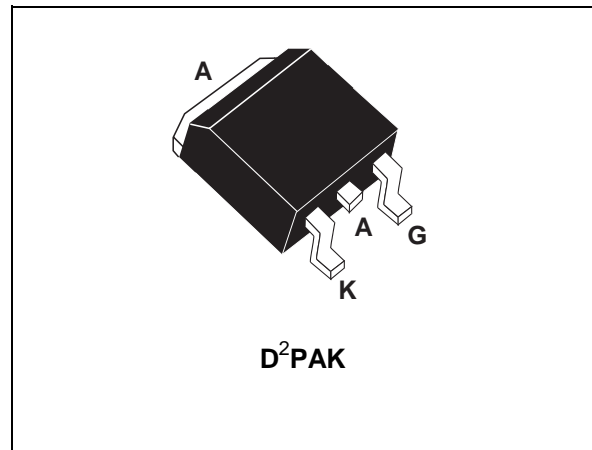
**FEATURES**

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY

**DESCRIPTION**

The TN2540 series of Silicon Controlled Rectifiers uses a high performance glass passivated technology.

This SCR is designed for power supplies up to 400Hz on resistive or inductive load.


**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	$T_c = 100^\circ\text{C}$	25	A
$I_{T(AV)}$	Average on-state current (180° conduction angle)	$T_c = 100^\circ\text{C}$	16	A
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = 25°C)	$t_p = 8.3$ ms	314	A
		$t_p = 10$ ms	300	
$I^2t$	$I^2t$ Value for fusing	$t_p = 10$ ms	450	A <sup>2</sup> s
$di/dt$	Critical rate of rise of on-state current $I_G = 100$ mA $di_G/dt = 1$ A/ $\mu$ s.		100	A/ $\mu$ s
$T_{stg}$ $T_j$	Storage junction temperature range Operating junction temperature range		- 40 to + 150 - 40 to + 125	°C
TI	Maximum temperature for soldering during 10s		260	°C

Symbol	Parameter	TN2540-		Unit
		600G	800G	
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltage $T_j = 125^\circ\text{C}$	600	800	V

## TN2540-G

### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-a)	Junction to ambient (S=1cm <sup>2</sup> )	45	°C/W
Rth(j-c)	Junction to case for D.C	1.0	°C/W

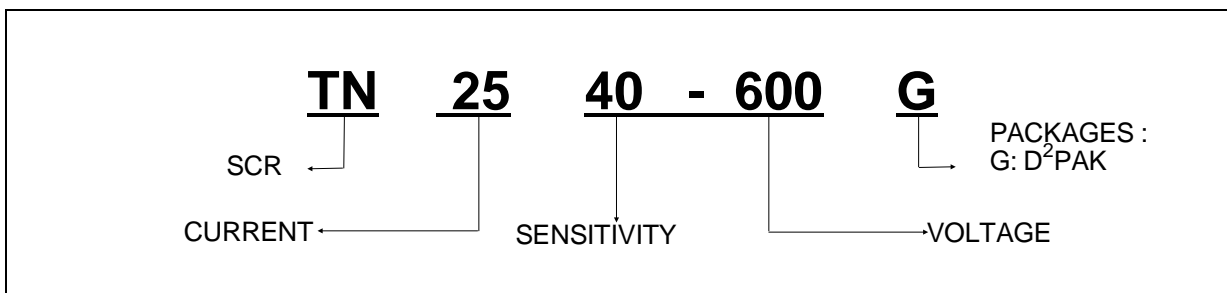
### GATE CHARACTERISTICS

$P_{G(AV)} = 1W$   $P_{GM} = 10W$  ( $t_p = 20 \mu s$ )  $I_{GM} = 4A$  ( $t_p = 20 \mu s$ )  $V_{RGM} = 5V$

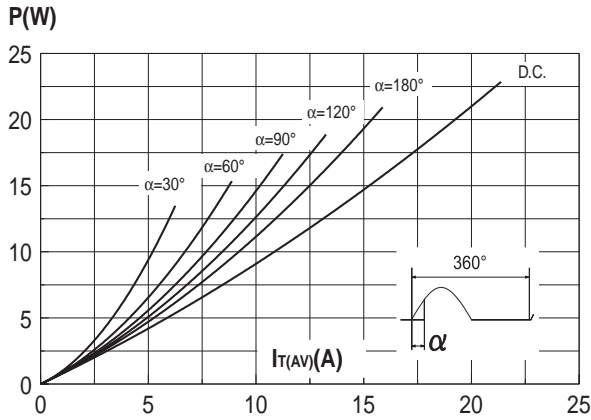
### ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Type	Value	Unit
$I_{GT}$	$V_D = 12V$ (DC) $R_L = 33\Omega$	$T_j = 25^\circ C$	MIN	3	mA
			MAX	40	
$V_{GT}$	$V_D = 12V$ (DC) $R_L = 33\Omega$	$T_j = 25^\circ C$	MAX	1.3	V
$V_{GD}$	$V_D = V_{DRM}$ $R_L = 3.3k\Omega$	$T_j = 125^\circ C$	MIN	0.2	V
$I_H$	$I_T = 200mA$ Gate open	$T_j = 25^\circ C$	MAX	50	mA
$I_L$	$I_G = 1.2 I_{GT}$	$T_j = 25^\circ C$	MAX	90	mA
$V_{TM}$	$I_{TM} = 50A$ $t_p = 380\mu s$	$T_j = 25^\circ C$	MAX	1.5	V
$I_{DRM}$	$V_D = V_{DRM}$	$T_j = 25^\circ C$	MAX	5	$\mu A$
$I_{RRM}$	$V_R = V_{RRM}$	$T_j = 125^\circ C$	MAX	4	mA
dV/dt	$V_D = 67\% V_{DRM}$ Gate open	$T_j = 125^\circ C$	MIN	500	V/ $\mu s$

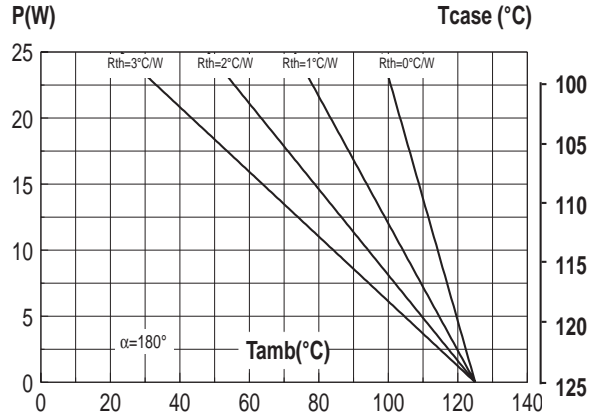
### ORDERING INFORMATION

 Add "-TR" suffix for Tape & Reel shipment

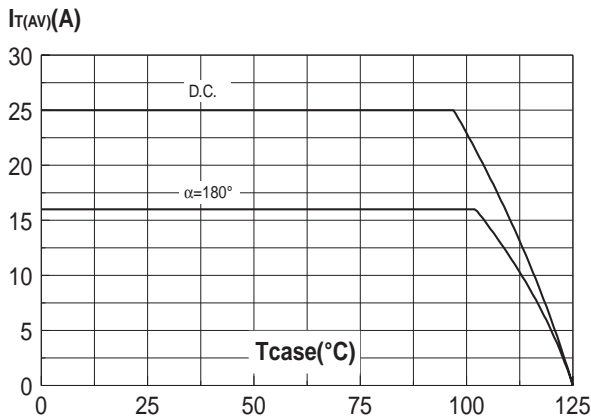
**Fig. 1:** Maximum average power dissipation versus average on-state current .



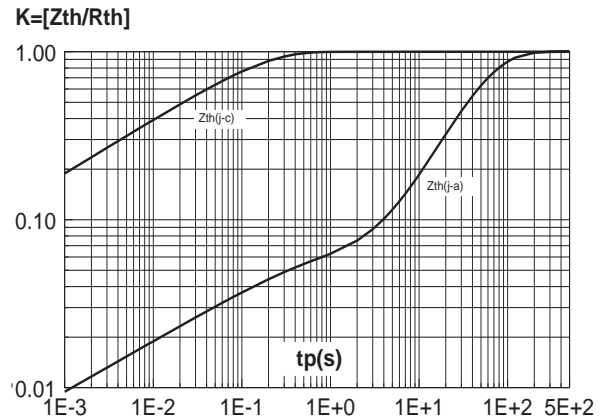
**Fig. 2 :** Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink+contact.



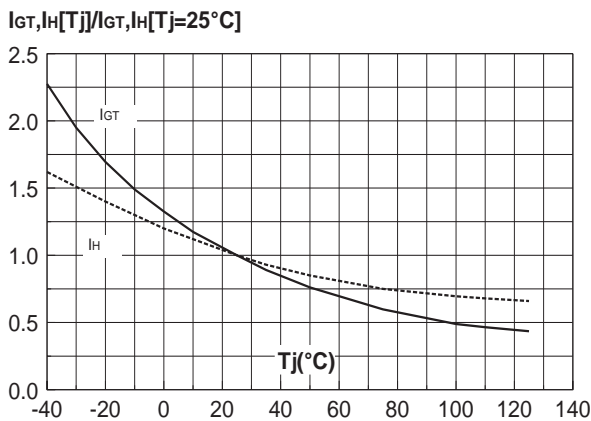
**Fig. 3:** Average and D.C. on-state current versus case temperature.



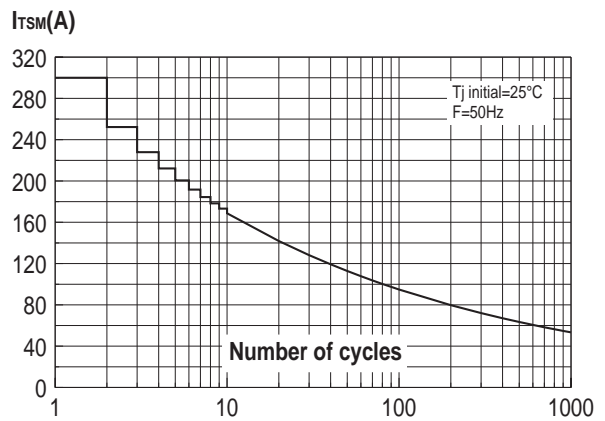
**Fig. 4:** Relative variation of thermal impedance versus pulse duration.



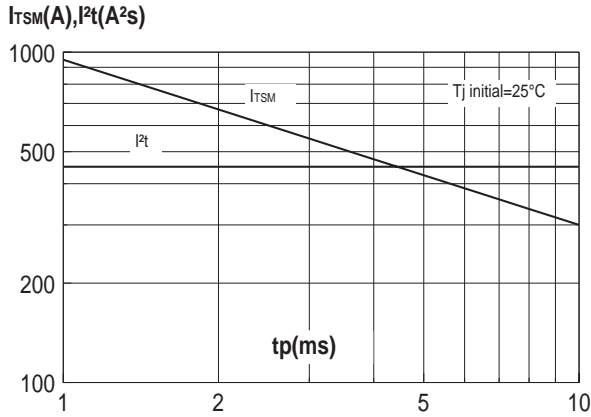
**Fig. 5:** Relative variation of gate trigger current and holding current versus junction temperature.



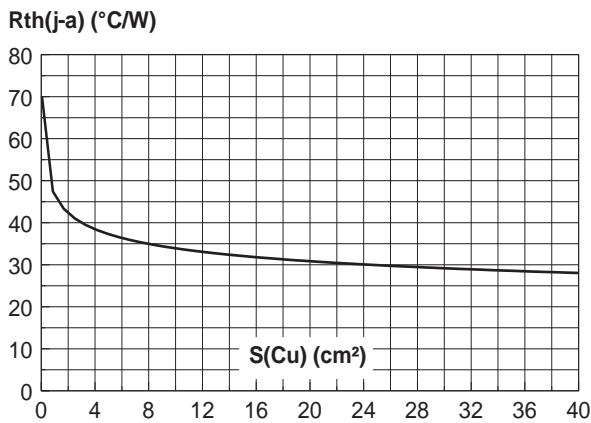
**Fig. 6:** Non repetitive surge peak on-state current versus number of cycles.



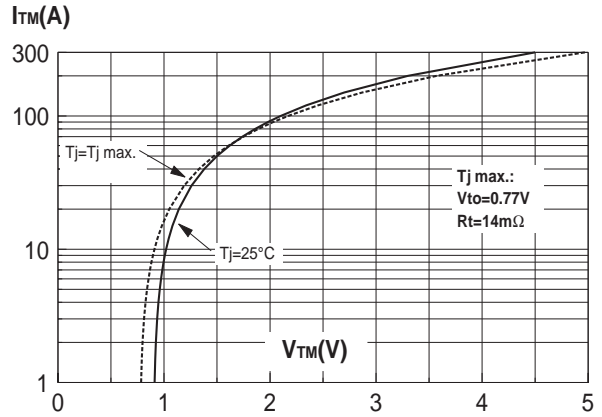
**Fig. 7:** Non repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$ .



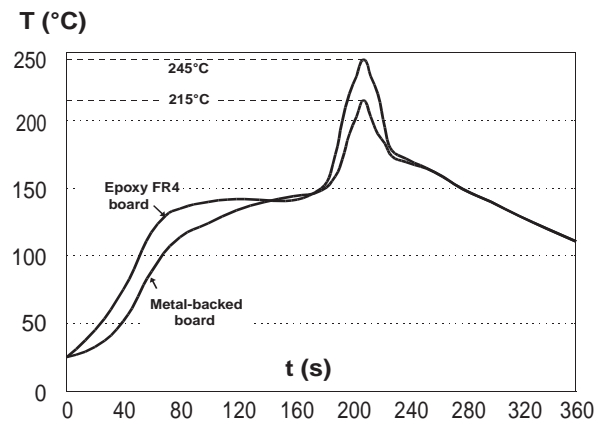
**Fig. 9:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness:  $35\mu\text{m}$ ).



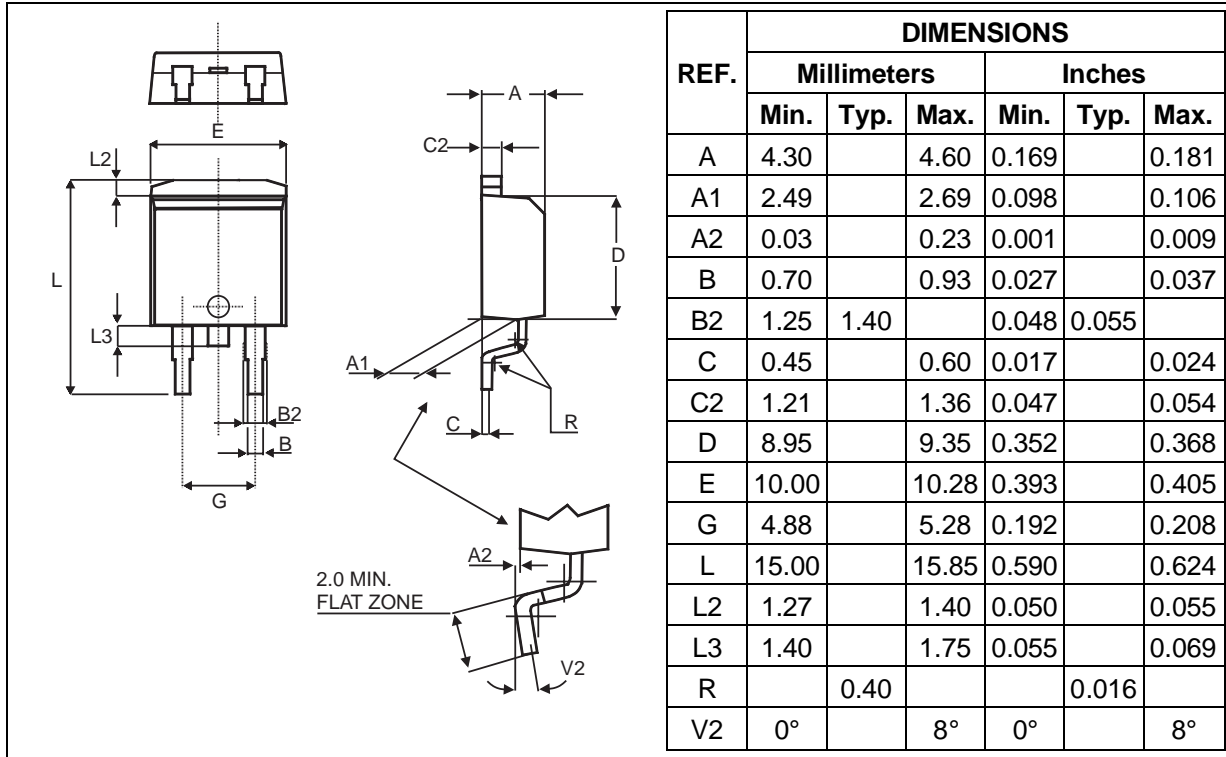
**Fig. 8:** On-state characteristics (maximum values).



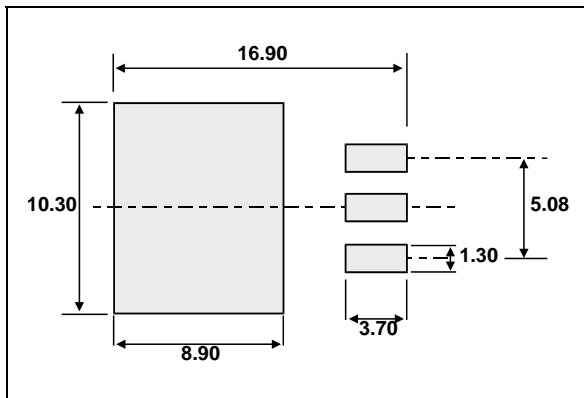
**Fig. 10:** Typical reflow soldering heat profile, either for mounting on FR4 or metal-backed boards.



**PACKAGE MECHANICAL DATA**  
D<sup>2</sup>PAK



**FOOT PRINT DIMENSIONS (in millimeters)**



**MARKING:** TN2540  
x00G

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