

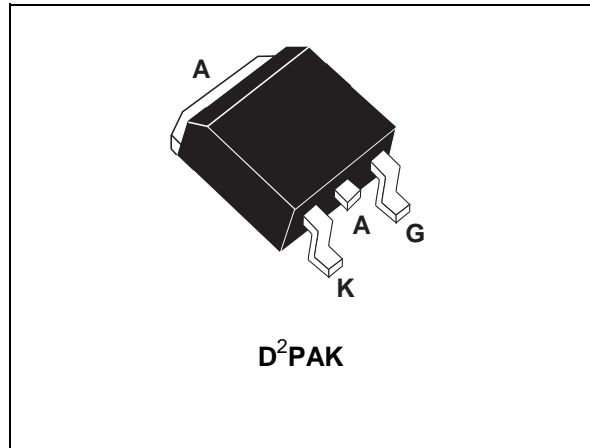
### FEATURES

- 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/μs.		100	A/μs
$T_{stg}$ $T_j$	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

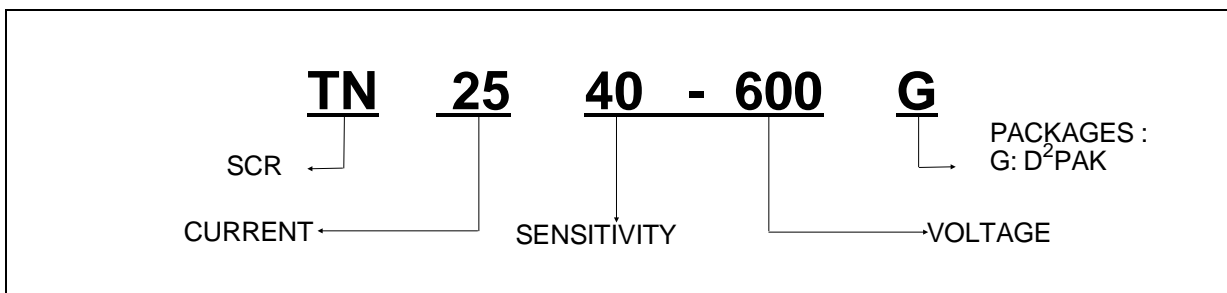
### GATE CHARACTERISTICS

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

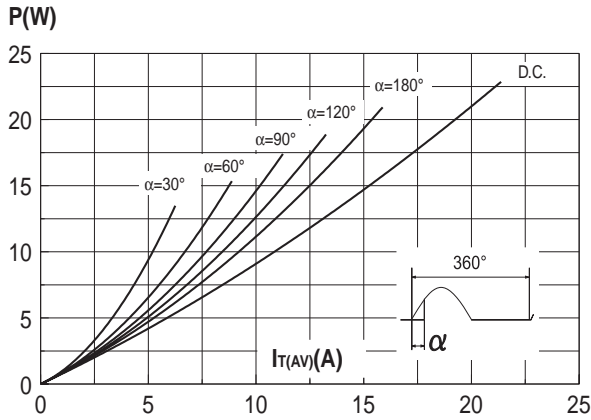
### ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Type	Value	Unit
I <sub>GT</sub>	V <sub>D</sub> = 12V (DC) R <sub>L</sub> = 33Ω	T <sub>j</sub> = 25°C	MIN	3	mA
			MAX	40	
V <sub>GT</sub>	V <sub>D</sub> = 12V (DC) R <sub>L</sub> = 33Ω	T <sub>j</sub> = 25°C	MAX	1.3	V
V <sub>GD</sub>	V <sub>D</sub> = V <sub>DRM</sub> R <sub>L</sub> = 3.3kΩ	T <sub>j</sub> = 125°C	MIN	0.2	V
I <sub>H</sub>	I <sub>T</sub> = 200mA Gate open	T <sub>j</sub> = 25°C	MAX	50	mA
I <sub>L</sub>	I <sub>G</sub> = 1.2 I <sub>GT</sub>	T <sub>j</sub> = 25°C	MAX	90	mA
V <sub>TM</sub>	I <sub>TM</sub> = 50A t <sub>p</sub> = 380μs	T <sub>j</sub> = 25°C	MAX	1.5	V
I <sub>DRM</sub>	V <sub>D</sub> = V <sub>DRM</sub>	T <sub>j</sub> = 25°C	MAX	5	μA
I <sub>RRM</sub>	V <sub>R</sub> = V <sub>RRM</sub>	T <sub>j</sub> = 125°C	MAX	4	mA
dV/dt	V <sub>D</sub> = 67%V <sub>DRM</sub> Gate open	T <sub>j</sub> = 125°C	MIN	500	V/μs

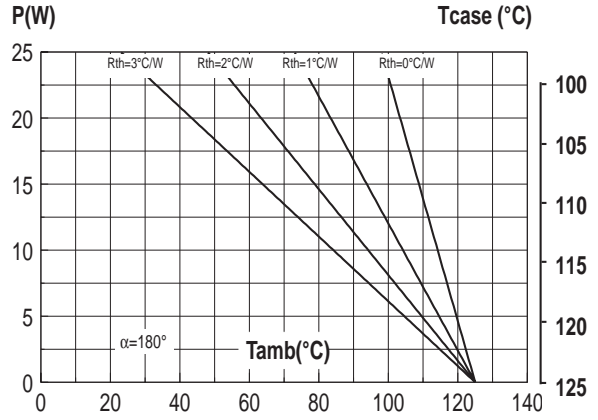
### ORDERING INFORMATION Add "-TR" suffix for Tape & Reel shipment



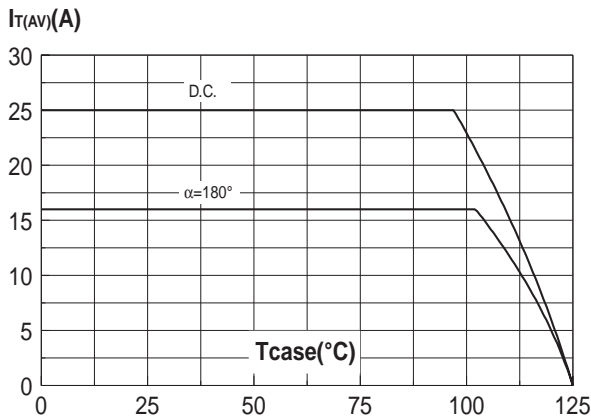
**Fig. 1:** Maximum average power dissipation versus average on-state current .



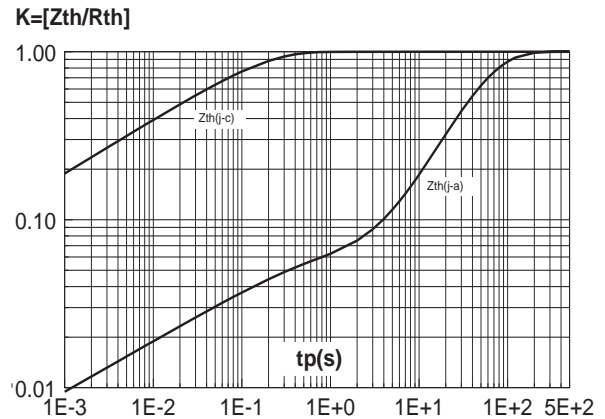
**Fig. 2 :** Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink+contact.



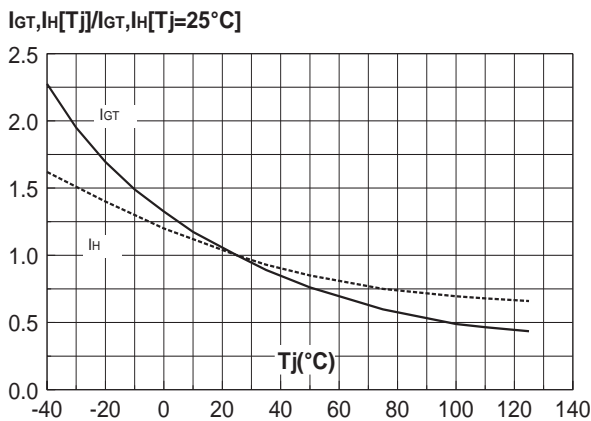
**Fig. 3:** Average and D.C. on-state current versus case temperature.



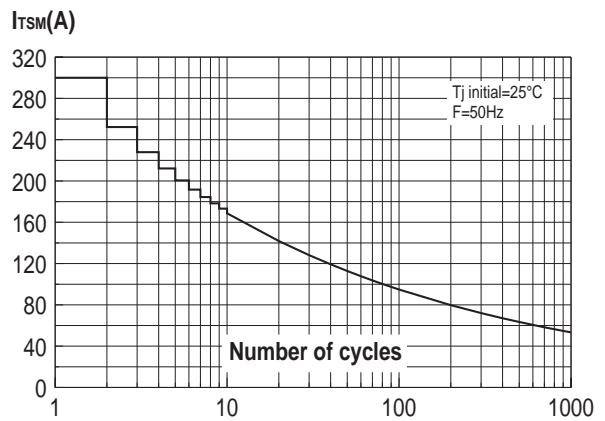
**Fig. 4:** Relative variation of thermal impedance versus pulse duration.



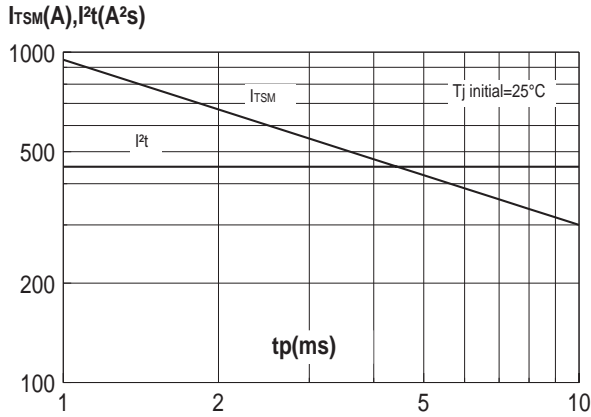
**Fig. 5:** Relative variation of gate trigger current and holding current versus junction temperature.



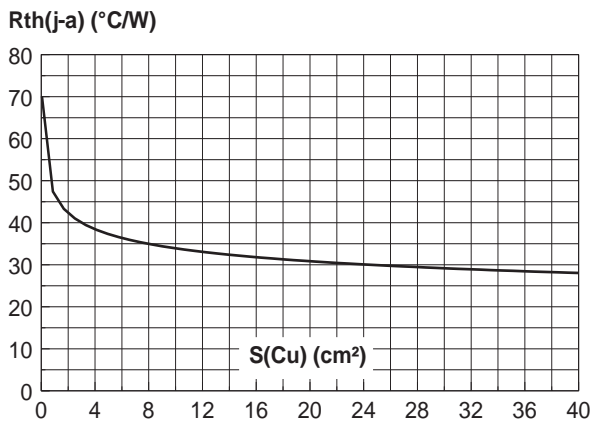
**Fig. 6:** Non repetitive surge peak on-state current versus number of cycles.



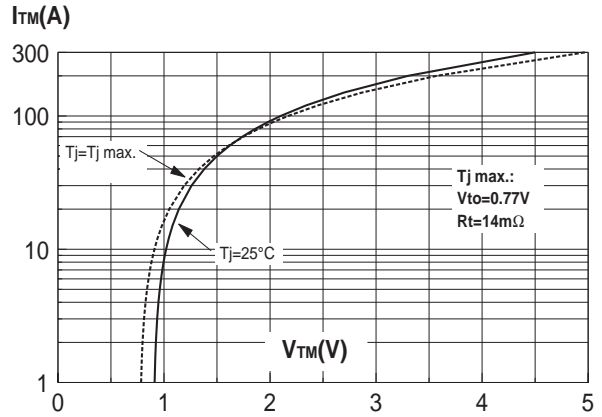
**Fig. 7:** Non repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$ .



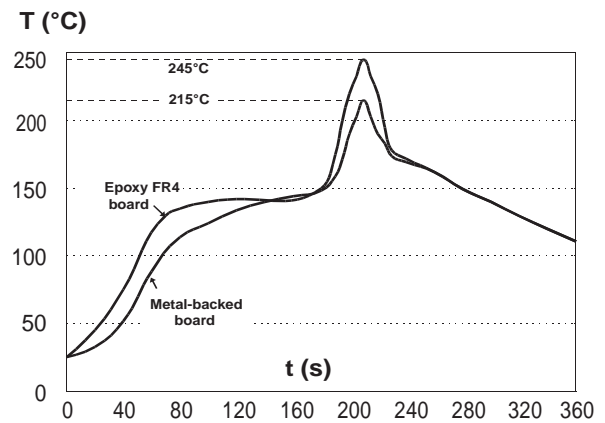
**Fig. 9:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness:  $35\mu m$ ).



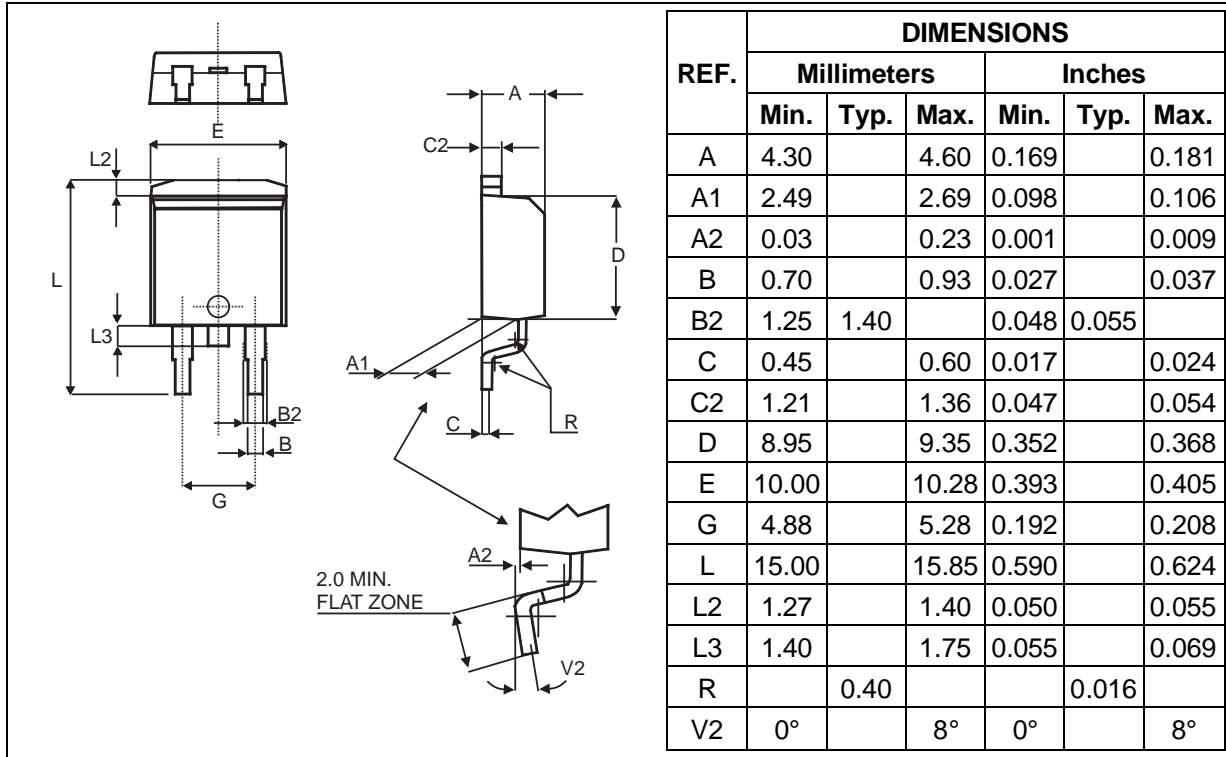
**Fig. 8:** On-state characteristics (maximum values).



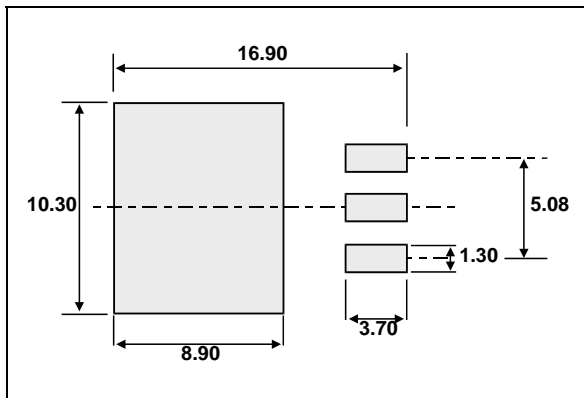
**Fig. 10:** Typical reflow soldering heat profile, either for mounting on FR4 or metal-backed boards.



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



**FOOT PRINT DIMENSIONS (in millimeters)**



**MARKING:** TN2540  
x00G

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