



# T405Q-600B-TR & T405Q-600H

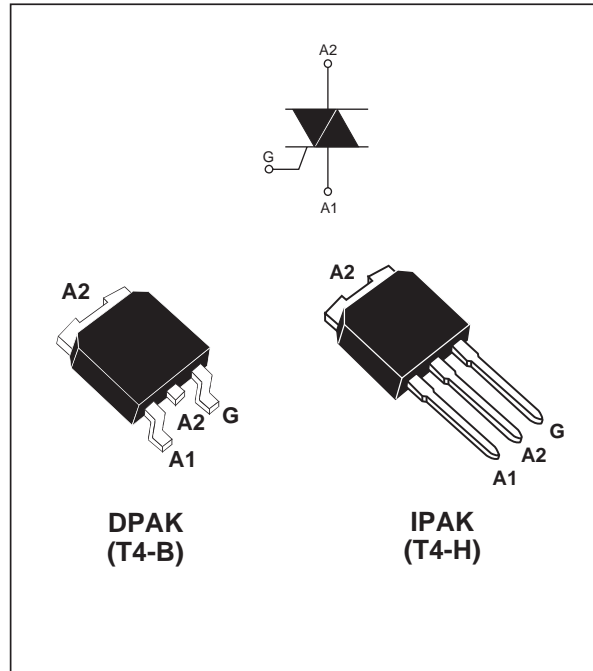
## Sensitive 4Q 4A TRIAC

### MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	4	A
$V_{DRM}/V_{RRM}$	600	V
$I_{GT}$	5	mA

### DESCRIPTION

The T405Q-600B-TR and the T405Q-600H 4 quadrants sensitive TRIACs are intended in general purpose applications where high surge current capability is required, such as irrigation systems. These TRIACs feature a gate current capability sensitivities of 5mA.



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (Full sine wave)	DPAK / IPAK $T_c = 110^\circ\text{C}$	4	A
$I_{TSM}$	Non repetitive surge peak on-state current (Full cycle, $T_j$ initial = $25^\circ\text{C}$ )	$F = 50\text{Hz}$ $t = 20\text{ms}$	35	A
		$F = 60\text{Hz}$ $t = 16.7\text{ms}$	38	
$I^2t$	$I^2t$ Value for fusing	$t_p = 10\text{ms}$	6	$\text{A}^2\text{s}$
$di/dt$	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$ , $t_r \leq 100\text{ns}$	Repetitive $F = 100\text{Hz}$	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	$T_j = 125^\circ\text{C}$	0.5	W
$T_{stg}$ $T_j$	Storage junction temperature range Operating junction temperature range		- 40 to + 150 - 40 to + 125	$^\circ\text{C}$

## T405Q-600B-TR & T405Q-600H

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

Symbol	Test Conditions	Quadrant		T405Q	Unit
I <sub>GT</sub> <sup>(1)</sup>	V <sub>D</sub> =12V R <sub>L</sub> =30Ω	I-II-III IV	MAX.	5 10	mA
V <sub>GT</sub>		ALL	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	ALL	MIN.	0.2	V
I <sub>H</sub> <sup>(2)</sup>	I <sub>T</sub> = 100mA		MAX.	10	mA
I <sub>L</sub>	I <sub>G</sub> = 1.2I <sub>GT</sub>	I - III - IV II	MAX.	10 15	mA
dV/dt <sup>(2)</sup>	V <sub>D</sub> =67% V <sub>DRM</sub> Gate open T <sub>j</sub> = 125°C		MIN.	10	V/μs
(dV/dt) <sub>c</sub> <sup>(2)</sup>	(dI/dt) <sub>c</sub> = 1.8 A/ms T <sub>j</sub> = 125°C		MIN.	2	V/μs

### STATIC CHARACTERISTICS

Symbol	Test Conditions		Value	Unit
V <sub>TM</sub> <sup>(2)</sup>	I <sub>TM</sub> = 5 A tp = 380μs	T <sub>j</sub> = 25°C	MAX.	1.5 V
V <sub>TO</sub> <sup>(2)</sup>	Threshold voltage	T <sub>j</sub> = 125°C	MAX.	0.85 V
R <sub>d</sub> <sup>(2)</sup>	Dynamic resistance	T <sub>j</sub> = 125°C	MAX.	100 mΩ
I <sub>DRM</sub> I <sub>RRM</sub>	V <sub>DRM</sub> = V <sub>RRM</sub>	T <sub>j</sub> = 25°C T <sub>j</sub> = 125°C	MAX	5 1 μA mA

**Note 1:** Minimum IGT is guaranteed at 5% of IGT max.

**Note 2:** For both polarities of A2 referenced to A1.

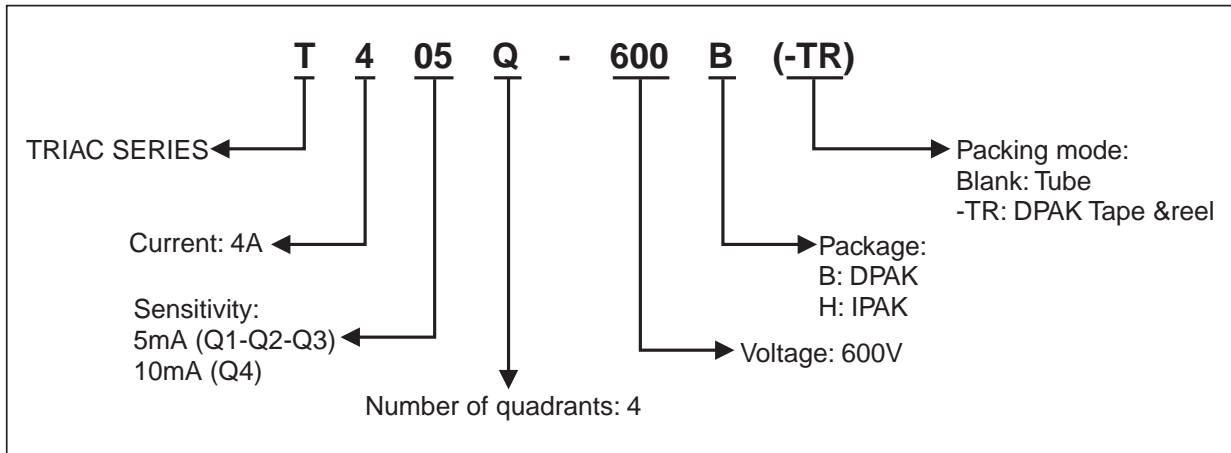
### THERMAL RESISTANCES

Symbol	Parameter		Value	Unit	
R <sub>th(j-c)</sub>	Junction to case (AC)		3	°C/W	
R <sub>th(j-a)</sub>	Junction to ambient	S = 0.5 cm <sup>2</sup>	DPAK	70	°C/W
			IPAK	100	

### PRODUCT SELECTOR

Part Number	Voltage	Sensitivity	Type	Package
T405Q-600B-TR	600V	5 mA	Sensitive	DPAK
T405Q-600H	600V	5 mA	Sensitive	IPAK

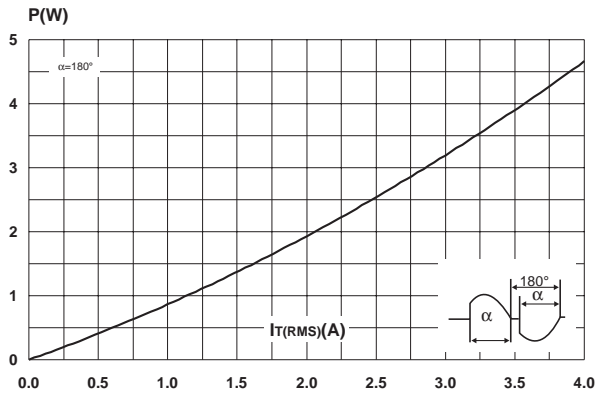
**ORDERING INFORMATION**



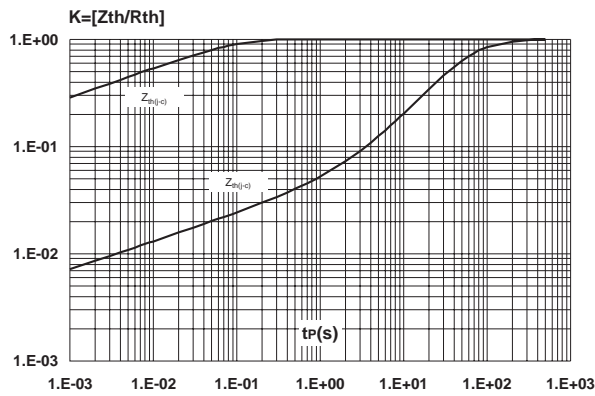
**OTHER INFORMATION**

Part Number	Marking	Weight	Base quantity	Packing mode
T405Q-600B-TR	T405Q600	0.3 g	2500	Tape & reel
T405Q-600H	T405Q600	0.4 g	75	Tube

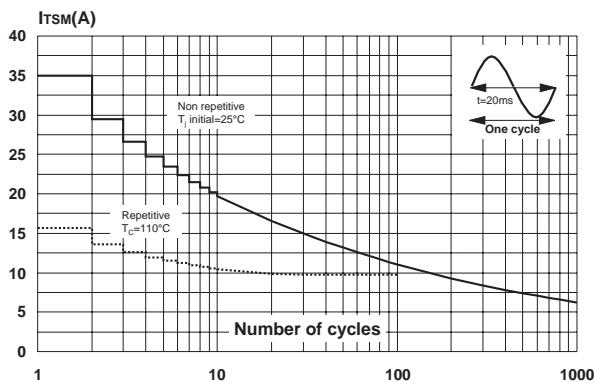
**Fig. 1:** Maximum power dissipation versus RMS on-state current.



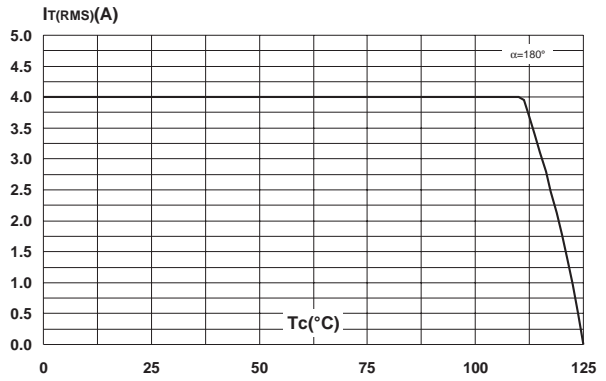
**Fig. 3:** Relative variation of thermal impedance versus pulse duration.



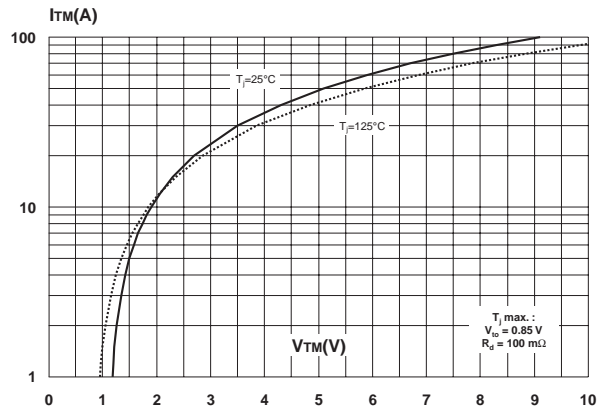
**Fig. 5:** Surge peak on-state current versus number of cycles.



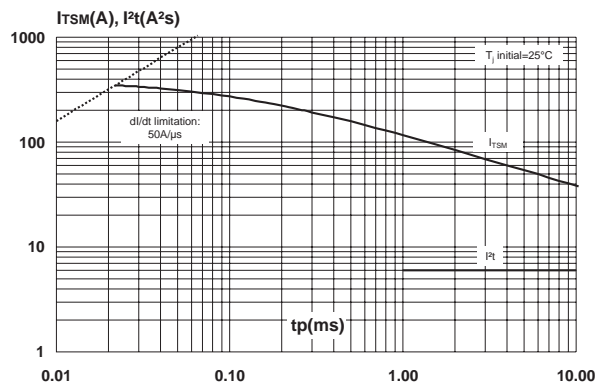
**Fig. 2:** RMS on-state current versus case temperature.



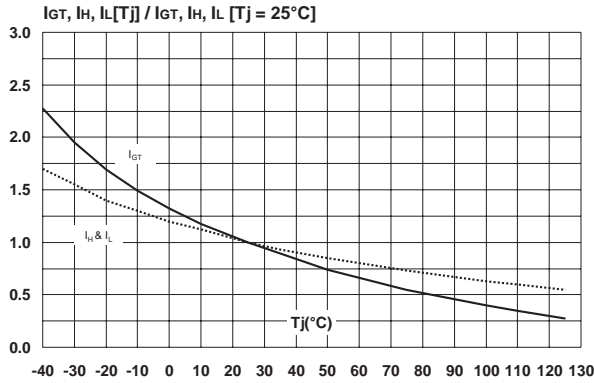
**Fig. 4:** On-state characteristics (maximum values).



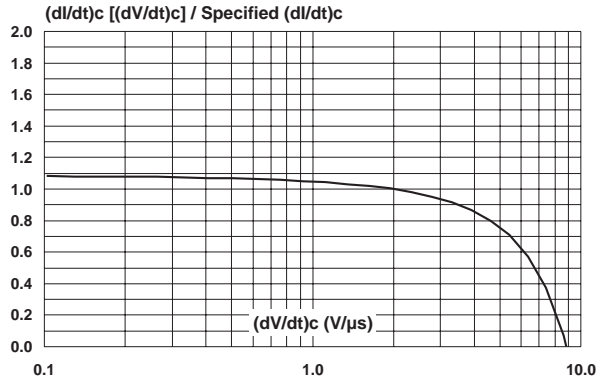
**Fig. 6:** Non repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$ .



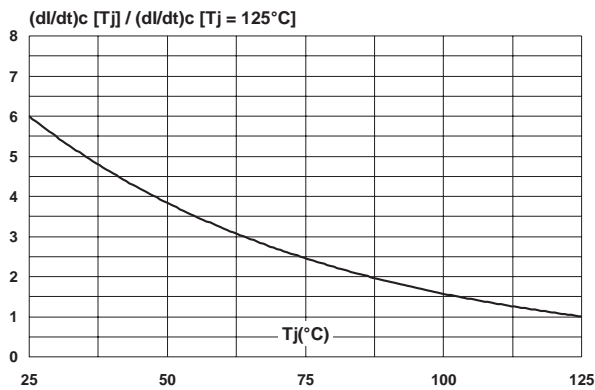
**Fig. 7:** Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).



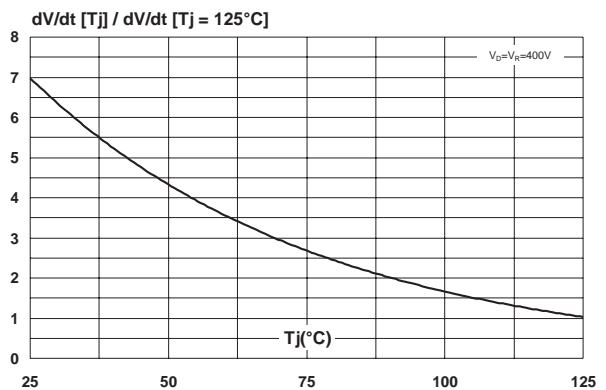
**Fig. 8:** Relative variation of critical rate of decrease of main current versus reapplied dV/dt (typical values).



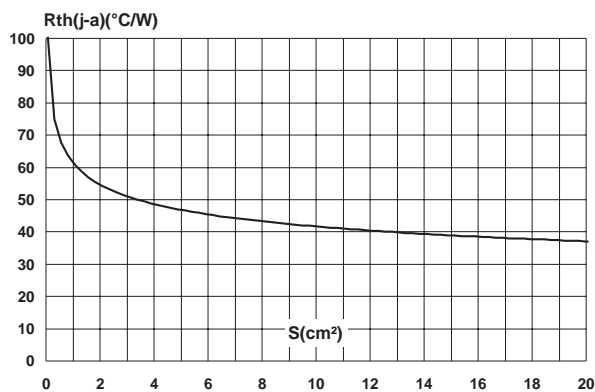
**Fig. 9:** Relative variation of critical rate of decrease of main current versus junction temperature.



**Fig. 10:** Relative variation of static dV/dt immunity versus junction temperature.

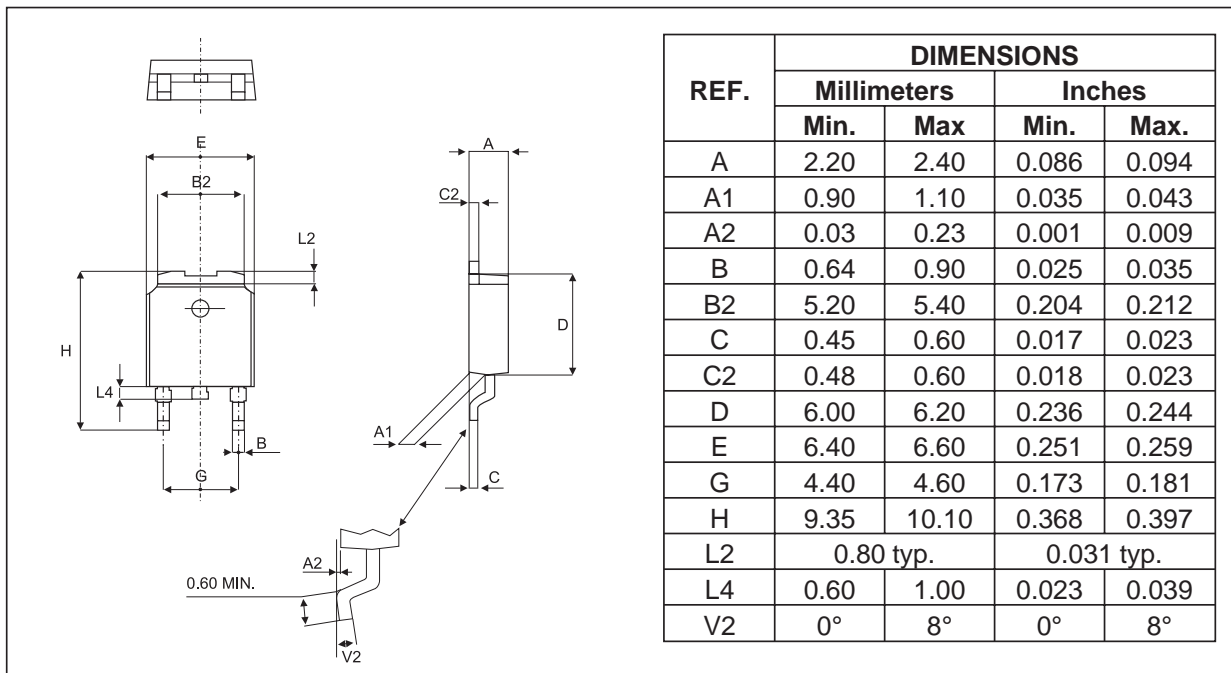


**Fig. 11:** Thermal resistance junction to ambient versus copper surface under tab (epoxy printed circuit board FR4, Cu = 35μm).

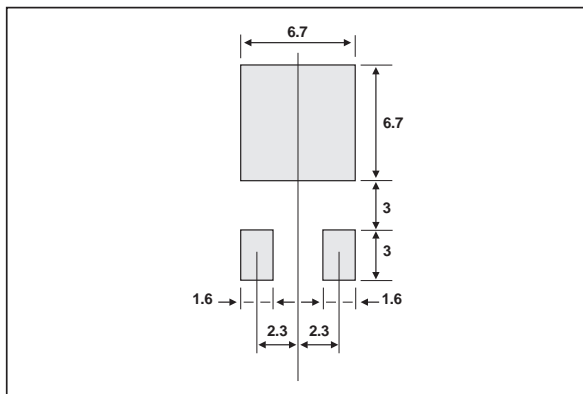


# T405Q-600B-TR & T405Q-600H

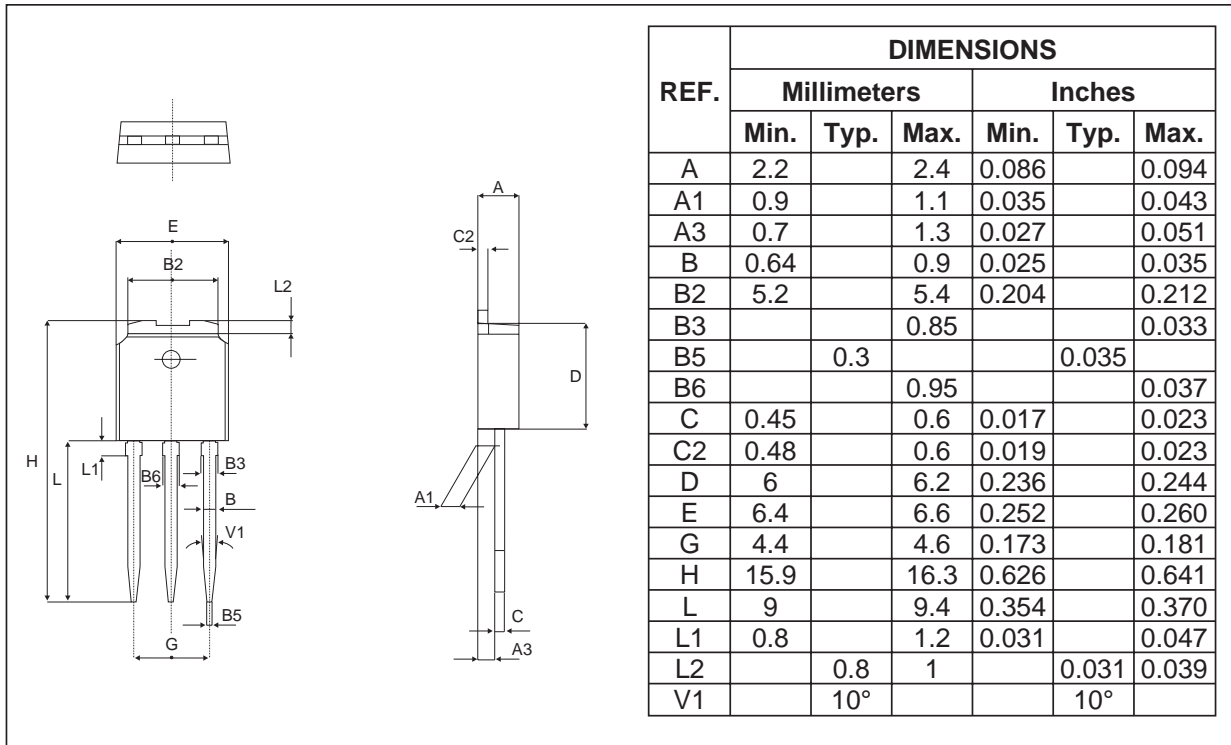
## PACKAGE MECHANICAL DATA DPAK



## FOOTPRINT



**PACKAGE MECHANICAL DATA**  
IPAK



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