

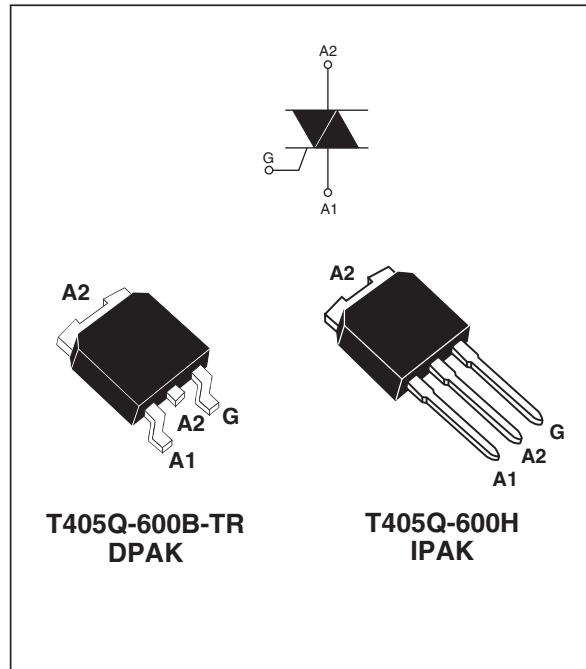
Sensitive 4Q 4A TRIAC

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	$T_c = 110^\circ\text{C}$
I_{TSM}	Non repetitive surge peak on-state current (Full cycle, T_j initial = 25°C)	$F = 50\text{Hz}$	$t = 20\text{ms}$
		$F = 60\text{Hz}$	$t = 16.7\text{ms}$
I^2t	I^2t Value for fusing	$t_p = 10\text{ ms}$	A^2s
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	$t_p = 20\mu\text{s}$	$T_j = 125^\circ\text{C}$
$P_{G(AV)}$	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-600

ELECTRICAL CHARACTERISTICS ($T_j = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Test Conditions	Quadrant		T405Q	Unit
$I_{GT}^{(1)}$	$V_D=12\text{V}$ $R_L=30\Omega$	I-II-III IV	MAX.	5 10	mA
V_{GT}		ALL	MAX.	1.3	V
V_{GD}	$V_D=V_{DRM}$ $R_L=3.3\text{k}\Omega$ $T_j = 125^\circ\text{C}$	ALL	MIN.	0.2	V
$I_H^{(2)}$	$I_T= 100\text{mA}$		MAX.	10	mA
I_L	$I_G = 1.2I_{GT}$	I - III - IV II	MAX.	10 15	mA
$dV/dt^{(2)}$	$V_D=67\%$ V_{DRM} Gate open $T_j = 125^\circ\text{C}$		MIN.	10	V/ μs
$(dV/dt)c^{(2)}$	$(dI/dt)c = 1.8 \text{ A/ms}$ $T_j = 125^\circ\text{C}$		MIN.	2	V/ μs

STATIC CHARACTERISTICS

Symbol	Test Conditions		Value	Unit	
$V_{TM}^{(2)}$	$I_{TM} = 5 \text{ A}$ $t_p = 380\mu\text{s}$	$T_j = 25^\circ\text{C}$	MAX.	1.5	V
$V_{TO}^{(2)}$	Threshold voltage	$T_j = 125^\circ\text{C}$	MAX.	0.85	V
$R_d^{(2)}$	Dynamic resistance	$T_j = 125^\circ\text{C}$	MAX.	100	$\text{m}\Omega$
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	$T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	MAX	5 1	μA mA

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

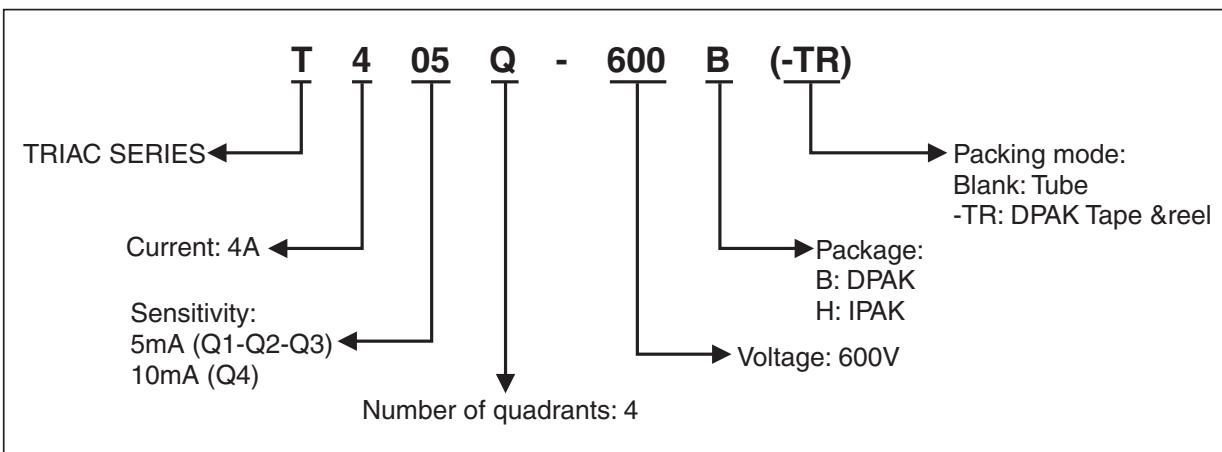
Note 2: For both polarities of A2 referenced to A1.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case (AC)	3	$^\circ\text{C/W}$
$R_{th(j-a)}$	Junction to ambient	70	$^\circ\text{C/W}$
		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

T405Q-600

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

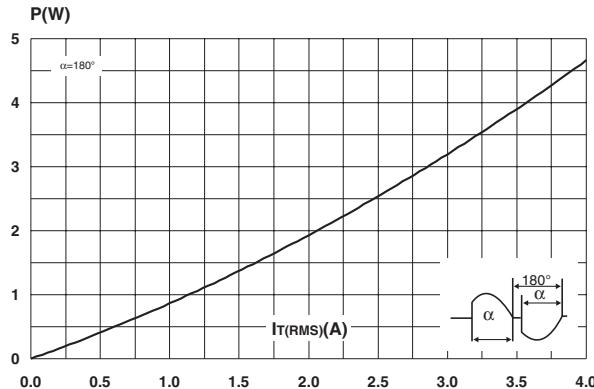


Fig. 3: Relative variation of thermal impedance versus pulse duration.

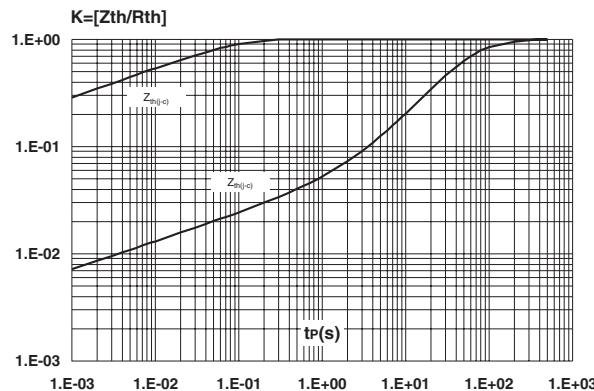


Fig. 5: Surge peak on-state current versus number of cycles.

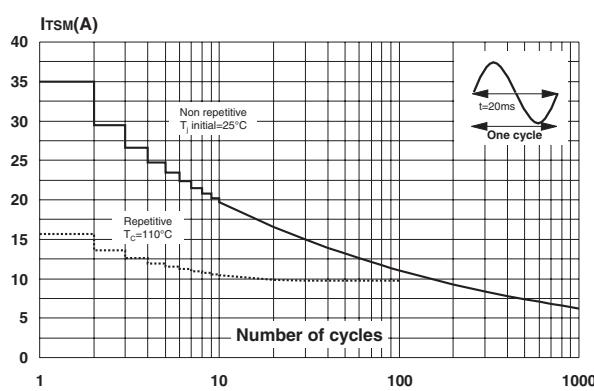


Fig. 2: RMS on-state current versus case temperature.

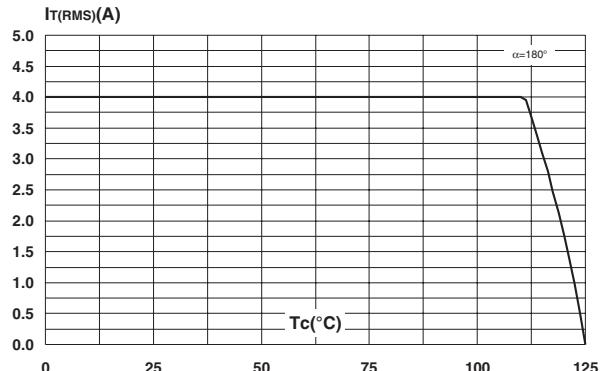


Fig. 4: On-state characteristics (maximum values).

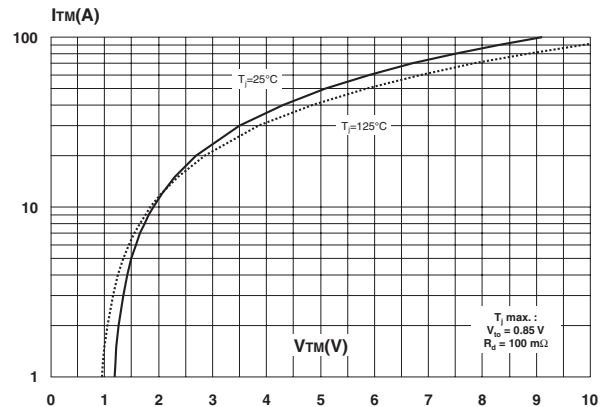


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t .

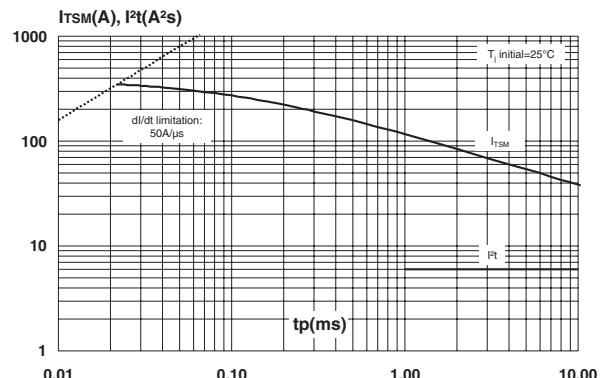


Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

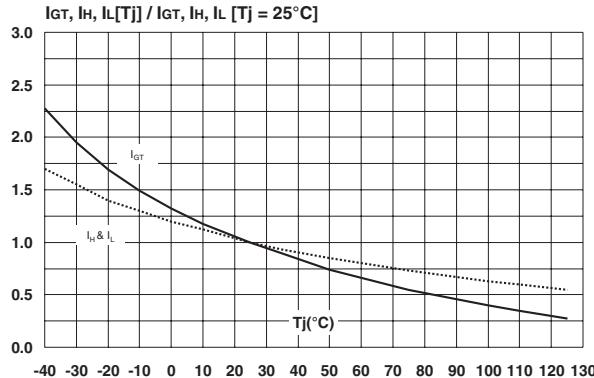


Fig. 8: Relative variation of critical rate of decrease of main current versus reapplied dV/dt (typical values).

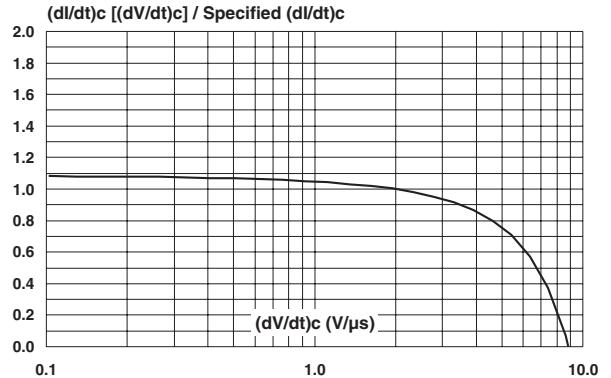


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

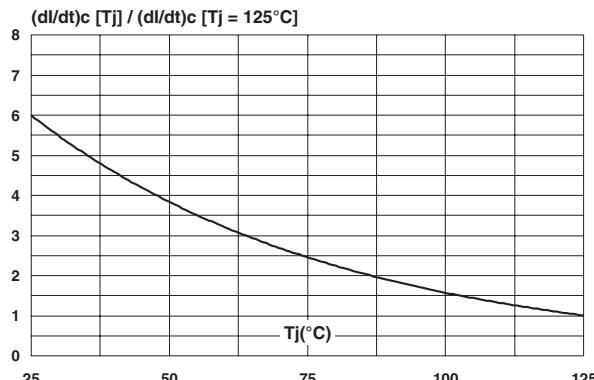


Fig. 10: Relative variation of static dV/dt immunity versus junction temperature.

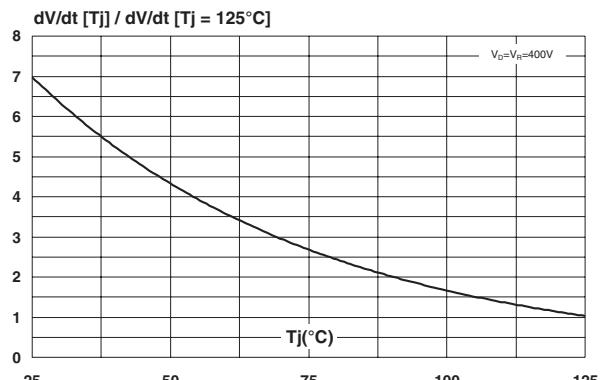
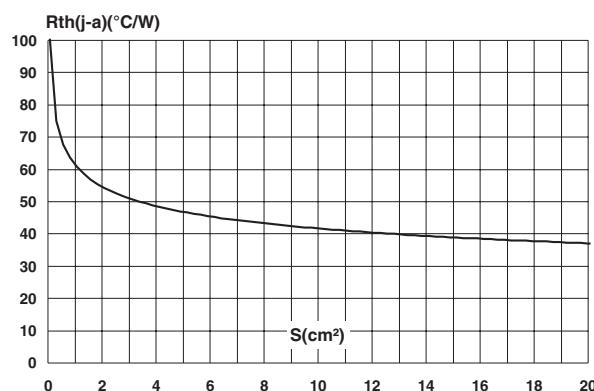
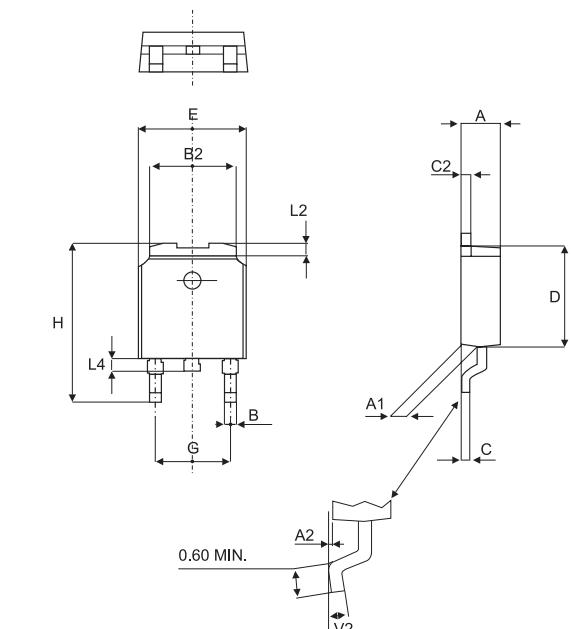


Fig. 11: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed circuit board FR4, Cu = 35μm).



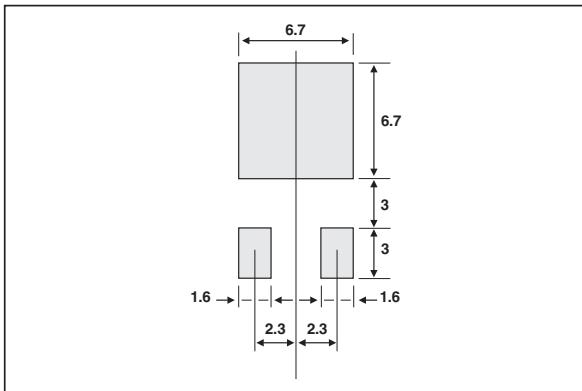
T405Q-600

PACKAGE MECHANICAL DATA DPAK



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max	Min.	Max.
A	2.20	2.40	0.086	0.094
A1	0.90	1.10	0.035	0.043
A2	0.03	0.23	0.001	0.009
B	0.64	0.90	0.025	0.035
B2	5.20	5.40	0.204	0.212
C	0.45	0.60	0.017	0.023
C2	0.48	0.60	0.018	0.023
D	6.00	6.20	0.236	0.244
E	6.40	6.60	0.251	0.259
G	4.40	4.60	0.173	0.181
H	9.35	10.10	0.368	0.397
L2	0.80 typ.		0.031 typ.	
L4	0.60	1.00	0.023	0.039
V2	0°	8°	0°	8°

FOOTPRINT



PACKAGE MECHANICAL DATA
IPAK

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A3	0.7		1.3	0.027		0.051
B	0.64		0.9	0.025		0.035
B2	5.2		5.4	0.204		0.212
B3			0.85			0.033
B5		0.3			0.035	
B6			0.95			0.037
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
E	6.4		6.6	0.252		0.260
G	4.4		4.6	0.173		0.181
H	15.9		16.3	0.626		0.641
L	9		9.4	0.354		0.370
L1	0.8		1.2	0.031		0.047
L2		0.8	1		0.031	0.039
V1		10°			10°	

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