



T405Q-600

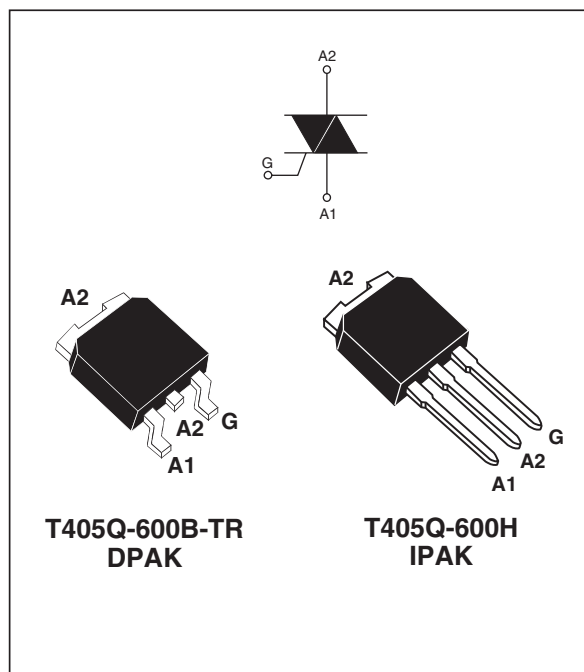
Sensitive 4Q 4A TRIAC

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°C)	F = 50Hz	t = 20ms	35	A
		F = 60Hz	t = 16.7ms	38	
I^2t	I^2t Value for fusing	tp = 10 ms		6	A^2s
di/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, tr ≤ 100ns	Repetitive F = 100 Hz		50	A/μs
I_{GM}	Peak gate current	tp = 20μs	$T_j = 125^\circ\text{C}$	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-600

ELECTRICAL CHARACTERISTICS (T_j = 25°C, unless otherwise specified)

Symbol	Test Conditions	Quadrant		T405Q	Unit
I _{GT} ⁽¹⁾	V _D =12V R _L =30Ω	I-II-III IV	MAX.	5 10	mA
V _{GT}		ALL	MAX.	1.3	V
V _{GD}	V _D =V _{DRM} R _L =3.3kΩ T _j = 125°C	ALL	MIN.	0.2	V
I _H ⁽²⁾	I _T = 100mA		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°C		MIN.	10	V/μs
(dV/dt) _c ⁽²⁾	(dI/dt) _c = 1.8 A/ms T _j = 125°C		MIN.	2	V/μs

STATIC CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
V _{TM} ⁽²⁾	I _{TM} = 5 A	tp = 380μs	T _j = 25°C	MAX.	1.5 V
V _{TO} ⁽²⁾	Threshold voltage		T _j = 125°C	MAX.	0.85 V
R _d ⁽²⁾	Dynamic resistance		T _j = 125°C	MAX.	100 mΩ
I _{DRM} I _{RRM}	V _{DRM} = V _{RRM}		T _j = 25°C T _j = 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.

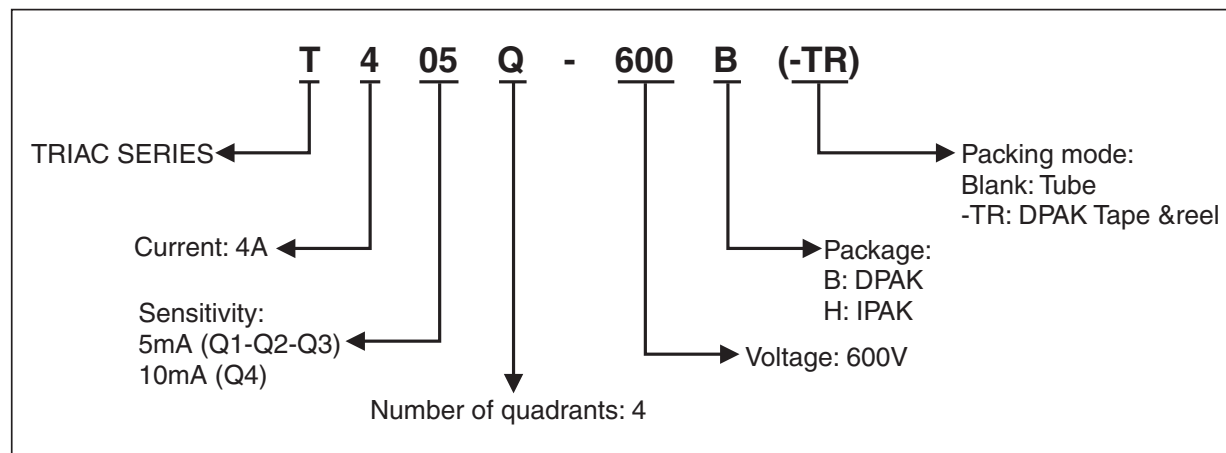
THERMAL RESISTANCES

Symbol	Parameter			Value	Unit
R _{th(j-c)}	Junction to case (AC)			3	°C/W
R _{th(j-a)}	Junction to ambient	S = 0.5 cm ²	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.

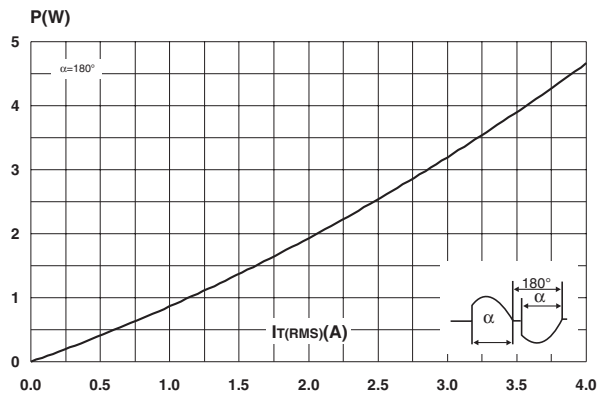


Fig. 2: RMS on-state current versus case temperature.

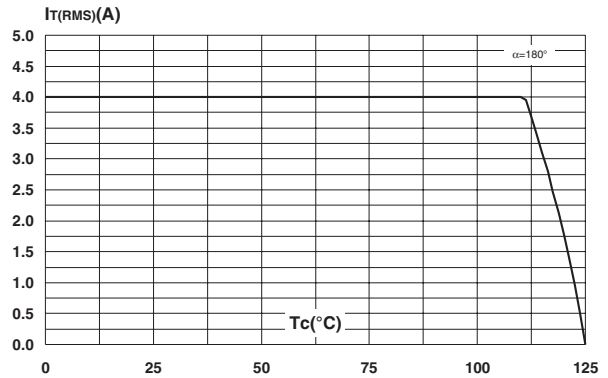


Fig. 3: Relative variation of thermal impedance versus pulse duration.

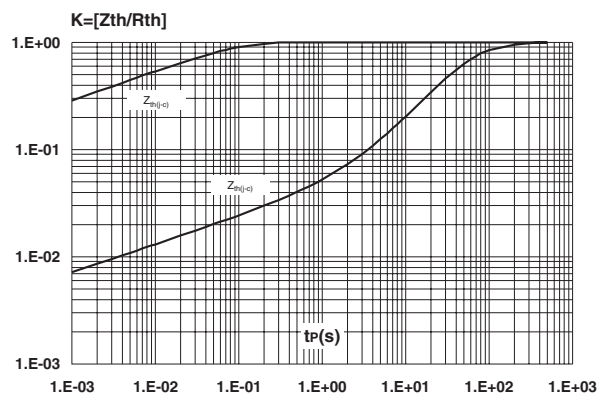


Fig. 4: On-state characteristics (maximum values).

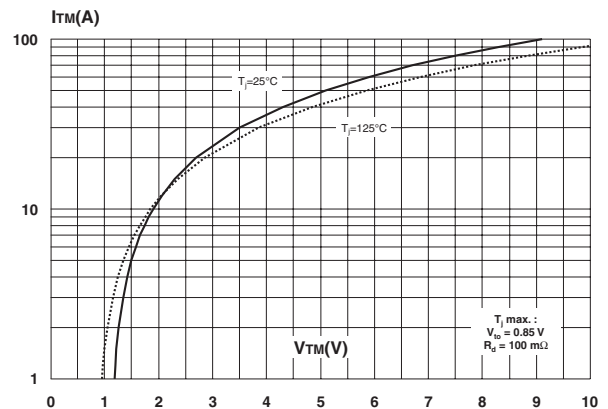


Fig. 5: Surge peak on-state current versus number of cycles.

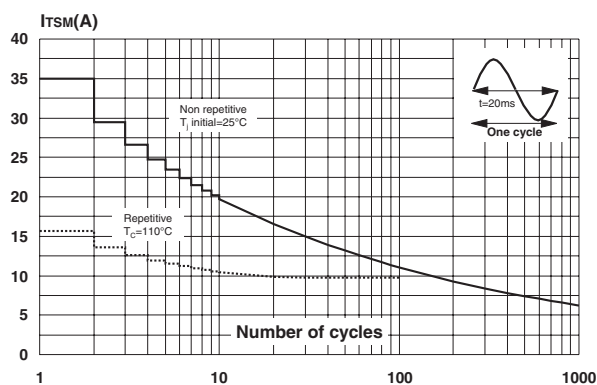


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10ms$, and corresponding value of $I^2 t$.

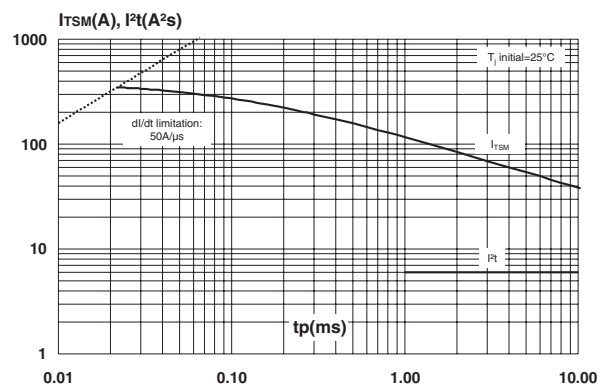


Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

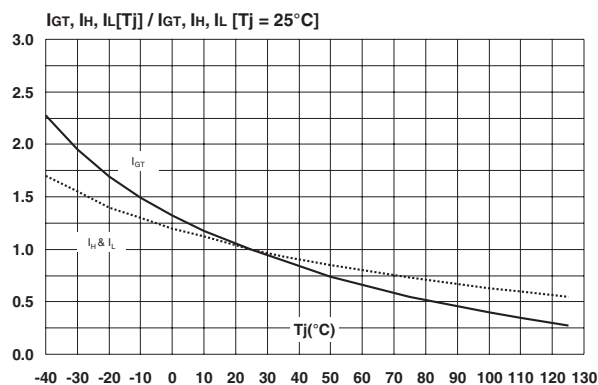


Fig. 8: Relative variation of critical rate of decrease of main current versus reapplied dV/dt (typical values).

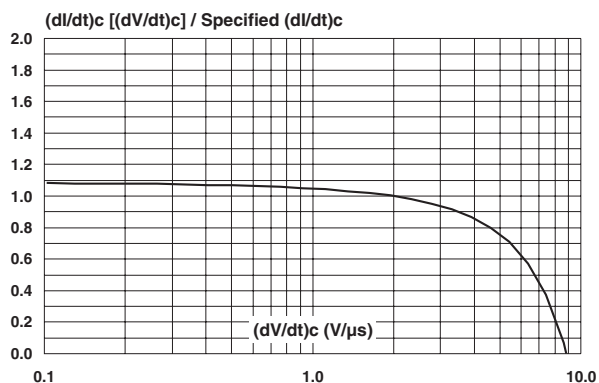


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

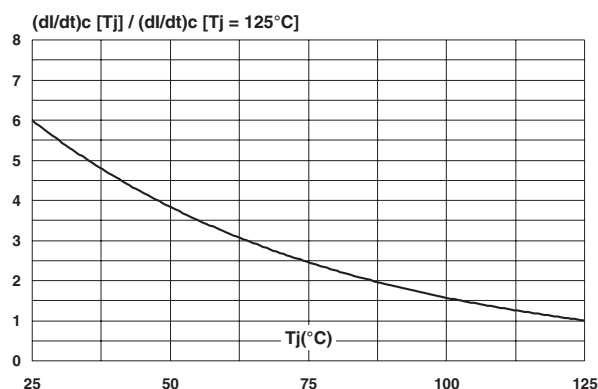


Fig. 10: Relative variation of static dV/dt immunity versus junction temperature.

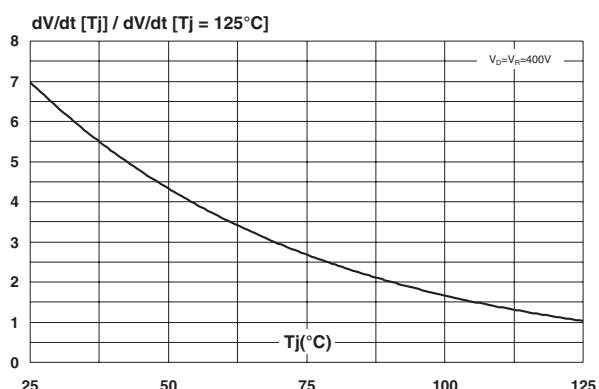
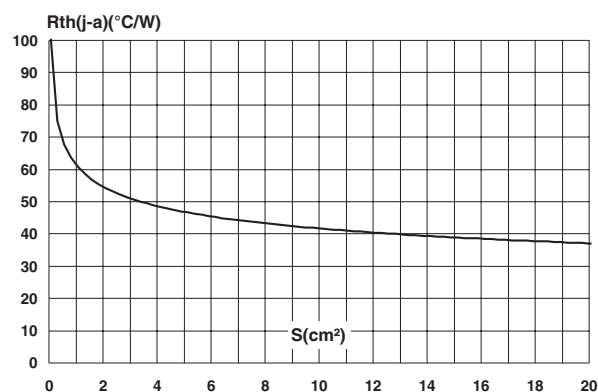
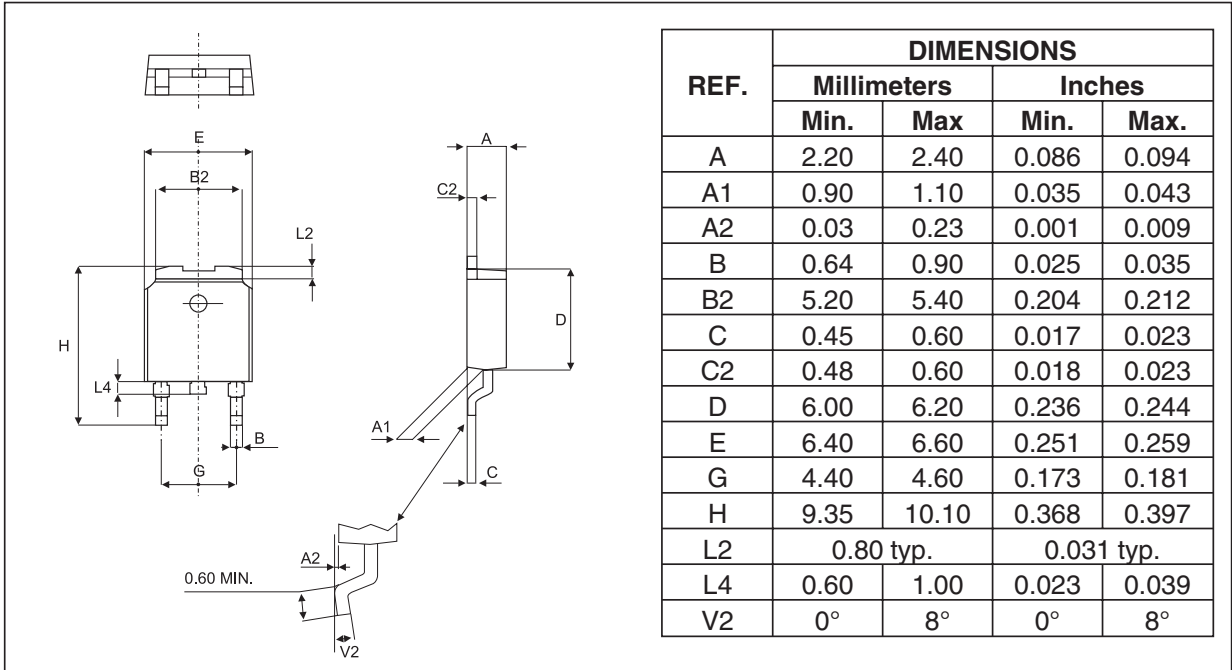


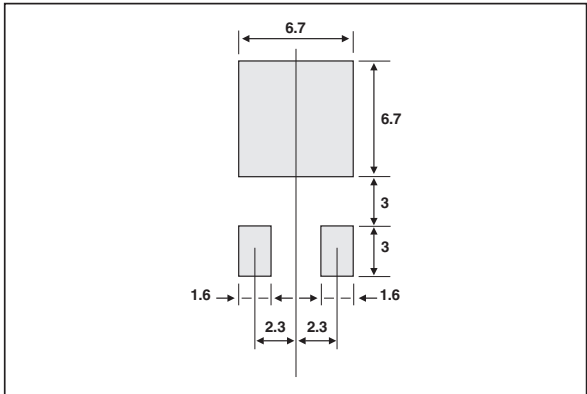
Fig. 11: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed circuit board FR4, $\text{Cu} = 35\mu\text{m}$).



PACKAGE MECHANICAL DATA
DPAK



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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