



T410/T435-B

HIGH PERFORMANCE TRIACS

FEATURES

$I_{T(RMS)} = 4\text{ A}$

$V_{DRM} = 400\text{ V to }600\text{ V}$

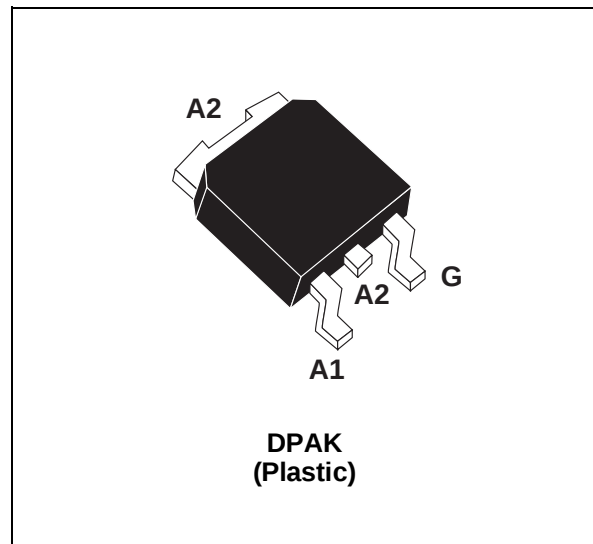
$I_{GT} \leq 10\text{mA and }35\text{mA}$

HIGH SNUBBERLESS TECHNOLOGY

HIGH NOISE IMMUNITY

DESCRIPTION

The T410/T435-B series of triac are using a high performance PNP technology. These devices are intended for AC control applications using surface mount technology. The high commutation performances combined with high sensitivity make them perfect in all applications like solid state relays, home appliances, power tools, small motor drives etc...



ABSOLUT MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	$T_c = 110\text{ °C}$	4	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	$t_p = 8.3\text{ ms}$	35	A
		$t_p = 10\text{ ms}$	30	
I^2t	I^2t value for fusing	$t_p = 10\text{ ms}$	4.5	A ² s
di/dt	Critical rate of rise of on-state current $I_G = 500\text{mA}$ $di_G/dt = 0.1\text{A}/\mu\text{s}$	Repetitive $F = 50\text{ Hz}$	10	A/ μs
		Non Repetitive	50	
T_{stg} T_j	Storage temperature range Operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
T_l	Maximum lead temperature for soldering during 10 s		260	°C

Symbol	Parameter	T410 or T435				Unit
		400B	600B	700B	800B	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125\text{ °C}$	400	600	700	800	V

T410 / T435-B**THERMAL RESISTANCES**

Symbol	Parameter	Value	Unit
R _{th} (j-c)	Junction to case for DC	3.5	°C/W
R _{th} (j-c)	Junction to case for AC 360° conduction angle (F = 50 Hz)	2.6	°C/W

GATE CHARACTERISTICS (maximum values)

P_{G(AV)} = 1 W P_{GM} = 10 W (tp = 20 μs) I_{GM} = 4 A (tp = 20 μs) V_{GM} = 16 V (tp = 20 μs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value		Unit
					T410	T435	
I _{GT}	V _D =12V (DC) R _L =33Ω	T _j =25°C	I-II-III	MAX	10	35	mA
V _{GT}	V _D =12V (DC) R _L =33Ω	T _j =25°C	I-II-III	MAX	1.5		V
V _{GD}	V _D =V _{DRM} R _L =3.3kΩ	T _j =125°C	I-II-III	MIN	0.2		V
t _{gt}	V _D =V _{DRM} I _G = 500mA dI _G /dt = 3A/μs I _{TM} = 5.5A	T _j =25°C	I-II-III	TYP	2		μs
I _L	I _G =1.2 I _{GT}	T _j =25°C	I-II-III	MAX	30	60	mA
I _H *	I _T = 100mA gate open	T _j =25°C		MAX	15	35	mA
V _{TM} *	I _{TM} = 5.5A tp= 380μs	T _j =25°C		MAX	1.75		V
I _{DRM} I _{RRM}	V _{DRM} Rated	T _j =25°C		MAX	10		μA
	V _{RRM} Rated	T _j =125°C		MAX	2		mA
dV/dt *	Linear slope up to V _D =67%V _{DRM} gate open	T _j =125°C		MIN	30	250	V/μs
(dI/dt) _c *	(dV/dt) _c = 0.1V/μs	T _j =125°C		MIN	2.7	4.4	A/ms
	(dV/dt) _c = 20V/μs				1.8	2.7	

* For either polarity of electrode A₂ voltage with reference enceenceto electrode A₁.

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

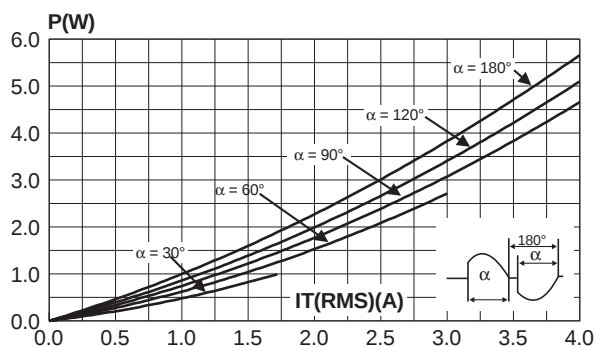


Fig. 2: Correlation between maximum power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink+contact.

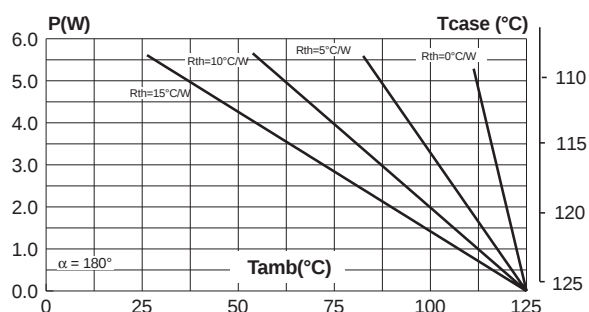


Fig. 3: RMS on-state current versus ambient temperature.

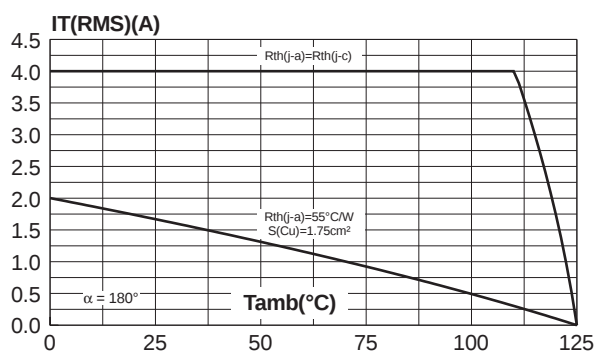


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration.

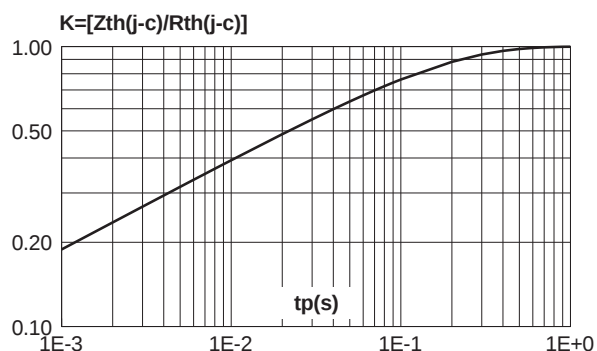


Fig. 5: Relative variation of gate trigger current and holding current versus junction temperature (typical values).

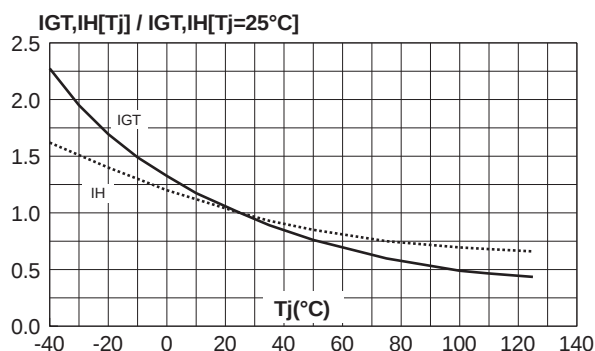
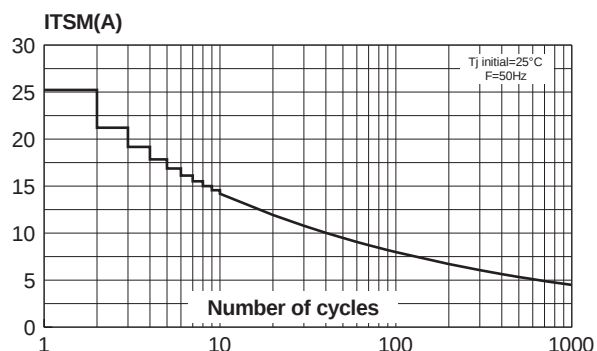


Fig. 6: Non repetitive surge peak on-state current versus number of cycles.



T410 / T435-B

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 .

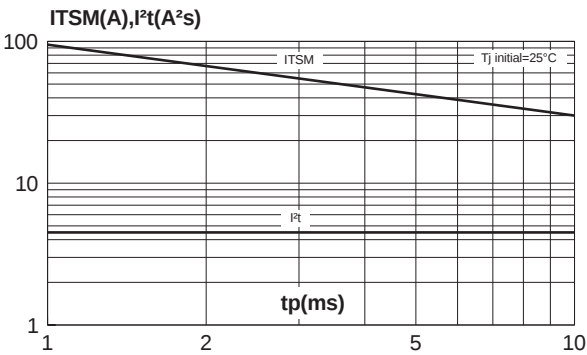


Fig. 8: On-state characteristics (maximum values).

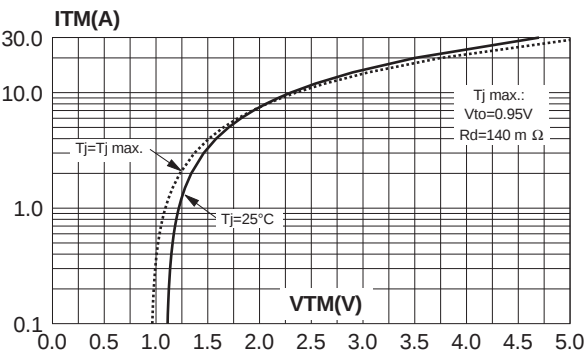
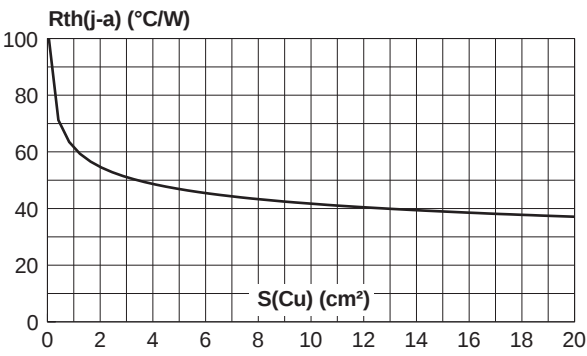
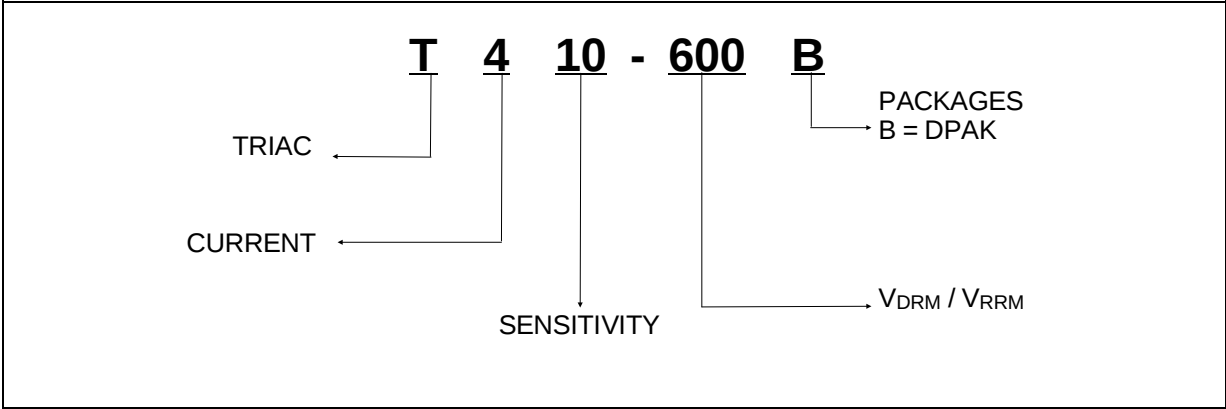
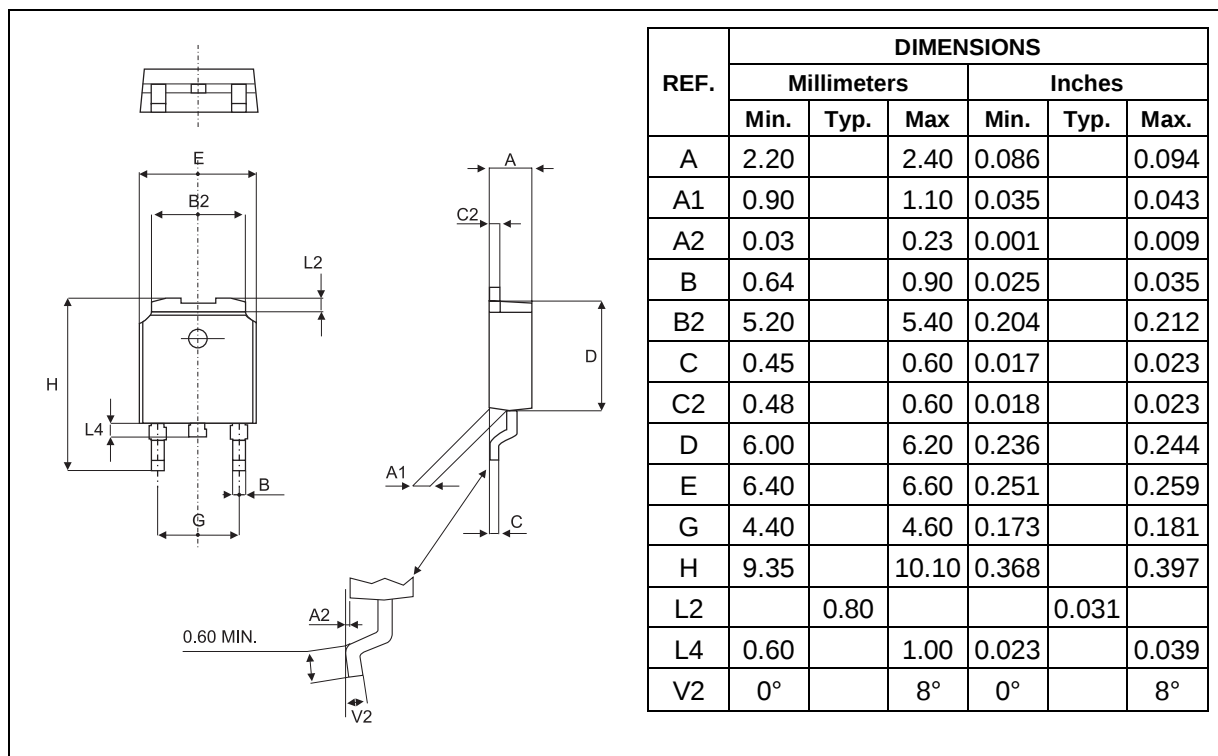
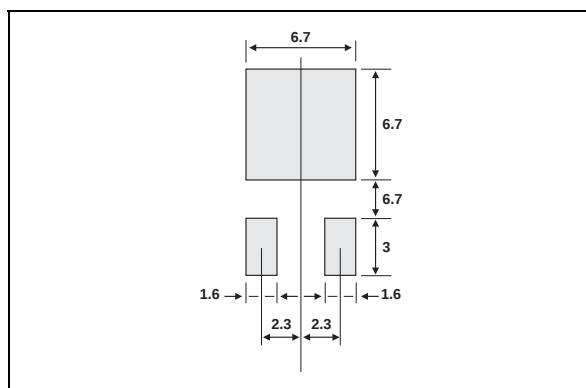


Fig. 9: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 μm).



ORDERING INFORMATION



PACKAGE MECHANICAL DATA
 DPAK Plastic

FOOT PRINT DIMENSIONS (in millimeters)

MARKING

TYPE	MARKING
T410-x00B	T4 10x0
T435-x00B	T4 35x0

WEIGHT : 0.30g

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 1999 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Mexico - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.

<http://www.st.com>