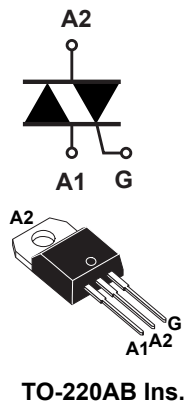


16 A triac for LED light dimmer



Features

- Three quadrants with logic level gate
- Benefits:
 - Super low holding current $I_H = 5 \text{ mA}$
 - Optimized thermal performance with low power dissipation
 - Optimized turn-off commutation for lighting loads

Application

- Lighting:
 - Universal light dimmers
 - LED light dimmers
- Heating
- Overvoltage crowbar protection

Description

The T1605G-6I Triac in TO-220AB insulated can be used for the on/off or phase angle control function in general purpose AC switching where high commutation capability is required.

Its super low holding current I_H enables deep dimming for LED light dimmers without flickering nor jittering.

Package environmentally friendly [ECOPACK2](#), RoHS (2011/65/EU) and halogen free compliant.

TO-220AB insulated package is UL-94, V0 flammability resin compliance.

UL1557 certified (file ref: 81734).

Product status link

[T1605G-6I](#)

Product summary

Order code	T1605G-6I
Package	TO-220AB Ins.
V_{DRM}/V_{RRM}	600 V
I_{GT}	5 mA
I_H	5 mA

1 Characteristics

Table 1. Absolute maximum ratings (limiting values)

Symbol	Parameters			Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)		$T_c = 85\text{ °C}$	16	A
I_{TSM}	Non repetitive surge peak on-state current, (full cycle, T_j initial = 25 °C)	$t_p = 16.7\text{ ms}$	$T_j = 25\text{ °C}$	140	A
		$t_p = 20\text{ ms}$	$T_j = 25\text{ °C}$	132	
I^2t	I^2t value for fusing	$t_p = 10\text{ ms}$	$T_j = 25\text{ °C}$	116	A ² s
dI/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ ns}$	$f = 50\text{ Hz}$	$T_j = 25\text{ °C}$	50	A/ μ s
V_{DRM}/V_{RRM}	Repetitive peak off-state voltage		$T_j = 125\text{ °C}$	600	V
V_{DSM}/V_{RSM}	Non repetitive surge peak off-state voltage	$t_p = 20\text{ ms}$	$T_j = 25\text{ °C}$	700	V
I_{GM}	Peak gate current	$t_p = 20\text{ }\mu$ s	$T_j = 125\text{ °C}$	4	A
$P_{G(AV)}$	Average gate power dissipation		$T_j = 125\text{ °C}$	1	W
T_{stg}	Storage junction temperature range			-40 to +150	°C
T_j	Operating junction temperature range			-40 to +125	°C

Table 2. Electrical characteristics ($T_j = 25\text{ °C}$, unless otherwise specified)

Symbol	Parameters	Quadrant		Value	Unit
$I_{GT}^{(1)}$	$V_D = 12\text{ V}$, $R_L = 33\text{ }\Omega$	I - II - III	Min.	0.25	mA
			Max.	5	
V_{GT}			Max.	1.3	V
V_{GD}	$V_D = V_{DRM}$, $R_L = 3.3\text{ k}\Omega$, $T_j = 125\text{ °C}$	I - II - III	Min.	0.2	V
$I_H^{(2)}$	$I_T = 500\text{ mA}$, gate open		Max.	5	mA
I_L	$I_G = 1.2 I_{GT}$	I - III	Max.	10	mA
		II		15	
$dV/dt^{(2)}$	$V_D = 67\% V_{DRM}$, gate open	$T_j = 125\text{ °C}$	Min.	30	V/ μ s
$(dI/dt)^c^{(2)}$	$(dV/dt)^c = 0.1\text{ V}/\mu$ s	$T_j = 125\text{ °C}$	Min.	3.5	A/ms
$(dI/dt)^c^{(2)}$	$(dV/dt)^c = 1\text{ V}/\mu$ s	$T_j = 125\text{ °C}$	Min.	2.5	A/ms

1. Minimum I_{GT} is guaranteed at 5 % of I_{GT} max.
2. For both polarities of A2 referenced to A1

Table 3. Static electrical characteristics

Symbol	Test conditions	T_j		Value	Unit
$V_{TM}^{(1)}$	$I_{TM} = 22.5 \text{ A}$, $t_p = 380 \text{ } \mu\text{s}$	25 °C	Max.	1.55	V
$V_{TO}^{(1)}$	threshold on-state voltage	125 °C	Max.	0.83	V
$R_D^{(1)}$	Dynamic resistance	125 °C	Max.	28	m Ω
I_{DRM}/I_{RRM}	$V_{DRM} = V_{RRM} = 600 \text{ V}$	25 °C	Max.	5	μA
		125 °C		1	mA

1. For both polarities of A2 referenced to A1

Table 4. Thermal resistance

Symbol	Parameters		Value	Unit
$R_{th(j-c)}$	Max. junction to case (AC)	Max.	2.1	°C/W
$R_{th(j-a)}$	Junction to ambient	Typ.	60	

2 Ordering information

Figure 1. Ordering information scheme

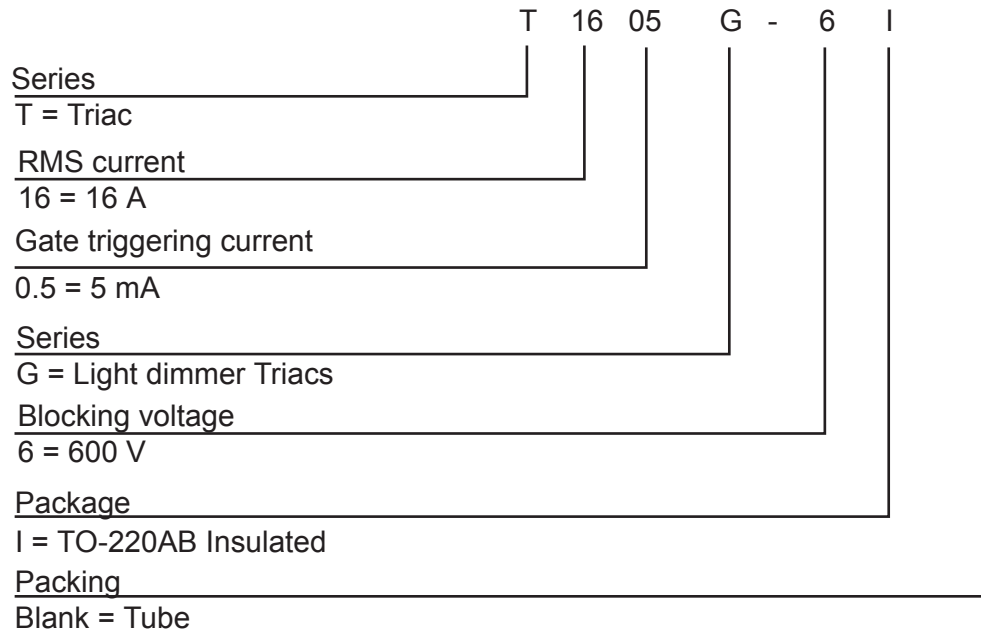


Table 5. Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
T1605G-6I	T1605G-6I	TO-220AB-Ins.	2.0 g	50	Tube

Revision history

Table 6. Document revision history

Date	Version	Changes
10-Sep-2020	1	Initial release.

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