

8961726 TEXAS INSTR (OPTO)

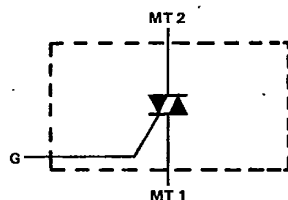
62C 36704 D

TIC201A, TIC201B, TIC201C, TIC201D,
TIC201E, TIC201M, TIC201S, TIC201N
SILICON TRIACS
REVISED OCTOBER 1984

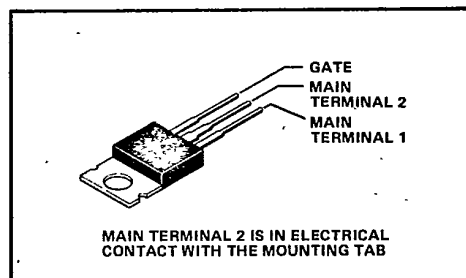
- Sensitive-Gate Triacs
- 100 V to 800 V
- 2.5 A RMS
- MAX I_{GT} of 5 mA (Quadrant 1)

T-25-15

device schematic



TO-220AB PACKAGE



absolute maximum ratings at 25°C case temperature (unless otherwise noted)

	TIC201A	TIC201B	TIC201C	TIC201D
Repetitive peak off-state voltage, V_{DRM} (see Note 1)	100 V	200 V	300 V	400 V
Full-cycle RMS on-state current at (or below) 85°C case temperature, $I_T(RMS)$ (see Note 2)	2.5 A			
Peak on-state surge current, full-sine-wave, I_{TSM} (see Note 3)	12 A			
Peak on-state surge current half-sine-wave, I_{TSM} (see Note 4)	14 A			
Peak gate current, I_{GM}	± 0.2 A			
Peak gate power dissipation, P_{GM} , at (or below) 85°C case temperature (pulse duration $\leq 200 \mu s$)	1.3 W			
Average gate power dissipation, $P_{G(av)}$, at (or below) 85°C case temperature (see Note 5)	0.3 W			
Operating case temperature range	-40°C to 110°C			
Storage temperature range	-40°C to 125°C			
Lead temperature 3,2 mm (1/8 inch) from case for 10 seconds	230°C			

- NOTES: 1. These values apply bidirectionally for any value of resistance between the gate and Main Terminal 1.
2. This value applies for 50-Hz full-sine-wave operation with resistive load. Above 85°C derate linearly to 110°C case temperature at the rate of 100 mA/°C.
3. This value applies for one 50-Hz full-sine-wave when the device is operating at (or below) the rated value of on-state current. Surge may be repeated after the device has returned to original thermal equilibrium. During the surge, gate control may be lost.
4. This value applies for one 50-Hz half-sine-wave when the device is operating at (or below) the rated value of on-state current. Surge may be repeated after the device has returned to original thermal equilibrium. During the surge, gate control may be lost.
5. This value applies for a maximum averaging time of 20 ms.

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TIC Devices

8961726 TEXAS INSTR (OPT0)

62C 36705 D

T-25-15

TIC201A, TIC201B, TIC201C, TIC201D,
TIC201E, TIC201M, TIC201S, TIC201N
SILICON TRIACS

absolute maximum ratings at 25°C case temperature (unless otherwise noted)

	TIC201E	TIC201M	TIC201S	TIC201N
Repetitive peak off-state voltage, V_{DRM} (see Note 1)	500 V	600 V	700 V	800 V
Full-cycle RMS on-state current at (or below) 85°C case temperature, $I_T(RMS)$ (see Note 2)	2.5 A			
Peak on-state surge current, full-sine-wave, I_{TSM} (see Note 3)	12 A			
Peak on-state surge current half-sine-wave, I_{TSM} (see Note 4)	14 A			
Peak gate current, I_{GM}	± 0.2 A			
Peak gate power dissipation, P_{GM} , at (or below) 85°C case temperature (pulse duration $\leq 200 \mu s$)	1.3 W			
Average gate power dissipation, $P_{G(av.)}$, at (or below) 85°C case temperature (see Note 5)	0.3 W			
Operating case temperature range	-40°C to 110°C			
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Lead temperature 3,2 mm (1/8 inch) from case for 10 seconds	230°C			

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 4. This value applies for one 50-Hz half-sine-wave when the device is operating at (or below) the rated value of on-state current. Surge may be repeated after the device has returned to original thermal equilibrium. During the surge, gate control may be lost.
 5. This value applies for a maximum averaging time of 20 ms.

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TIC Devices

8961726 TEXAS INSTR (OPTO)

62C 36706 D

TIC201A, TIC201B, TIC201C, TIC201D,
TIC201E, TIC201M, TIC201S, TIC201N
SILICON TRIACS

electrical characteristics at 25°C case temperature (unless otherwise noted)

T-25-15

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
I_{DRM} Repetitive Peak Off-State Current	$V_{DRM} = \text{Rated } V_{DRM}, I_G = 0, T_C = 100^\circ\text{C}$			± 1	mA
I_{GTM} Peak Gate Trigger Current	$V_{supply} = +12\text{ V}^\dagger, R_L = 10\ \Omega, t_{W(g)} > 20\ \mu\text{s}$			5	mA
	$V_{supply} = +12\text{ V}^\dagger, R_L = 10\ \Omega, t_{W(g)} > 20\ \mu\text{s}$			-8	
	$V_{supply} = -12\text{ V}^\dagger, R_L = 10\ \Omega, t_{W(g)} > 20\ \mu\text{s}$			-10	
	$V_{supply} = -12\text{ V}^\dagger, R_L = 10\ \Omega, t_{W(g)} > 20\ \mu\text{s}$			25	
V_{GTM} Peak Gate Trigger Voltage	$V_{supply} = +12\text{ V}^\dagger, R_L = 10\ \Omega, t_{W(g)} > 20\ \mu\text{s}$			0.9	V
	$V_{supply} = +12\text{ V}^\dagger, R_L = 10\ \Omega, t_{W(g)} > 20\ \mu\text{s}$			-1.2	
	$V_{supply} = -12\text{ V}^\dagger, R_L = 10\ \Omega, t_{W(g)} > 20\ \mu\text{s}$			-1.2	
	$V_{supply} = -12\text{ V}^\dagger, R_L = 10\ \Omega, t_{W(g)} > 20\ \mu\text{s}$			1.2	
V_{GTM} Peak On-State Voltage	$I_{TM} = +3.5\text{ A}, I_G = 50\text{ mA}, \text{ See Note 6}$			+1.9	V
	$I_{TM} = -3.5\text{ A}, I_G = 50\text{ mA}, \text{ See Note 6}$			-1.9	
I_H Holding Current	$V_{supply} = +12\text{ V}^\dagger, I_G = 0, \text{ Initiating } I_{TM} = 100\text{ mA}$			+30	mA
	$V_{supply} = -12\text{ V}^\dagger, I_G = 0, \text{ Initiating } I_{TM} = 100\text{ mA}$			-30	
I_L Latching Current	$V_{supply} = +12\text{ V}^\dagger, \text{ See Note 7}$			+40	mA
	$V_{supply} = -12\text{ V}^\dagger, \text{ See Note 7}$			-40	
dv/dt Critical Rate of Rise of Off-State Voltage	$V_{DRM} = \text{Rated } V_{DRM}, I_G = 0, T_C = 110^\circ\text{C}$			50	V/ μs
$dv/dt(c)$ Critical Rise of Commutation Voltage	$V_{DRM} = \text{Rated } V_{DRM}, I_{TRM} = \pm 3.5\text{ A}, T_C = 85^\circ\text{C}$	2			V/ μs

[†] All voltages are with respect to Main Terminal 1.NOTES: 6. This parameter must be measured using pulse techniques, $t_W \leq 1\text{ ms}$, duty cycle $\leq 2\%$. Voltage-sensing contacts, separate from the current-carrying contacts, are located within 3.2 mm (1/8 inch) from the device body.7. The triacs are triggered by a 15-V (open-circuit amplitude) pulse supplied by a generator with the following characteristics: $R_G = 100\ \Omega, t_W = 20\ \mu\text{s}, t_r \leq 15\text{ ns}, t_f \leq 15\text{ ns}, f = 1\text{ kHz}$.

thermal characteristics

PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JC}$			10	$^\circ\text{C/W}$
$R_{\theta JA}$			62.5	

TIC Devices