

8961726 TEXAS INSTR (OPTO)

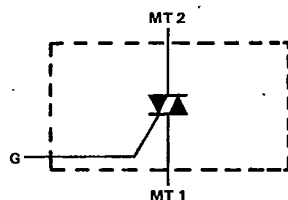
62C 36704 D

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

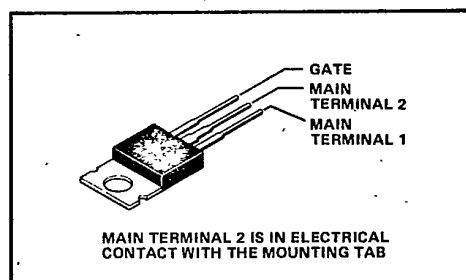
T-25-15

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

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, $I_{GM}$	$\pm 0.2$ 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, $I_{GM}$	$\pm 0.2$ 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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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	$V_{DRM} = \text{Rated } V_{DRM}$ , $I_G = 0$ , $T_C = 100^\circ\text{C}$			$\pm 1$	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 2.5	V
	$V_{supply} = +12\text{ V}^\dagger$ , $R_L = 10\ \Omega$ , $t_{W(g)} > 20\ \mu\text{s}$			-1.2 -2.5	
	$V_{supply} = -12\text{ V}^\dagger$ , $R_L = 10\ \Omega$ , $t_{W(g)} > 20\ \mu\text{s}$			-1.2 -2.5	
	$V_{supply} = -12\text{ V}^\dagger$ , $R_L = 10\ \Omega$ , $t_{W(g)} > 20\ \mu\text{s}$			1.2	
$V_{GTM}$ Peak On-State Voltage	$I_{TM} = +3.5\text{ A}$ , $I_G = 50\text{ mA}$ , See Note 6			+1.9	V
	$I_{TM} = -3.5\text{ A}$ , $I_G = 50\text{ mA}$ , See Note 6			-1.9	
$I_H$ Holding Current	$V_{supply} = +12\text{ V}^\dagger$ , $I_G = 0$ , Initiating $I_{TM} = 100\text{ mA}$			+30	mA
	$V_{supply} = -12\text{ V}^\dagger$ , $I_G = 0$ , Initiating $I_{TM} = 100\text{ mA}$			-30	
$I_L$ Latching Current	$V_{supply} = +12\text{ V}^\dagger$ , See Note 7			+40	mA
	$V_{supply} = -12\text{ V}^\dagger$ , 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/ $\mu\text{s}$
$dv/dt(c)$ 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/ $\mu\text{s}$

<sup>†</sup> 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