

8961726 TEXAS INSTR (OPTO)

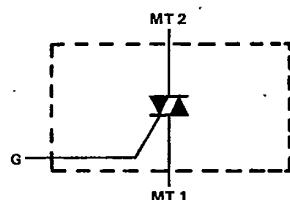
62C 36704 D

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

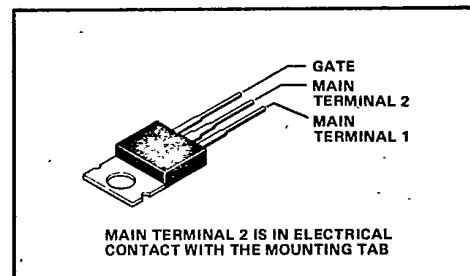
- Sensitive-Gate Triacs
- 100 V to 800 V
- 2.5 A RMS
- MAX I_{GT} of 5 mA (Quadrant 1)

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_{TRMS} (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, PGM , at (or below) 85°C case temperature (pulse duration ≤ 200 μ s)			1.3 W	
Average gate power dissipation, $PG(av)$, 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

b3

8961726 TEXAS INSTR (OPTO)

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 < 200 μs)		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 60-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 (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} = Rated V_{DRM} , $I_G = 0$, $T_C = 100^\circ\text{C}$		± 1		mA
I_{GTM} Peak Gate Trigger Current	$V_{\text{supply}} = +12V^\dagger$, $R_L = 10\Omega$, $t_{w(g)} > 20\mu\text{s}$		5		mA
	$V_{\text{supply}} = +12V^\dagger$, $R_L = 10\Omega$, $t_{w(g)} > 20\mu\text{s}$		-8		
	$V_{\text{supply}} = -12V^\dagger$, $R_L = 10\Omega$, $t_{w(g)} > 20\mu\text{s}$		-10		
	$V_{\text{supply}} = -12V^\dagger$, $R_L = 10\Omega$, $t_{w(g)} > 20\mu\text{s}$		25		
V_{GTM} Peak Gate Trigger Voltage	$V_{\text{supply}} = +12V^\dagger$, $R_L = 10\Omega$, $t_{w(g)} > 20\mu\text{s}$	0.9	2.5		V
	$V_{\text{supply}} = +12V^\dagger$, $R_L = 10\Omega$, $t_{w(g)} > 20\mu\text{s}$	-1.2	-2.5		
	$V_{\text{supply}} = -12V^\dagger$, $R_L = 10\Omega$, $t_{w(g)} > 20\mu\text{s}$	-1.2	-2.5		
	$V_{\text{supply}} = -12V^\dagger$, $R_L = 10\Omega$, $t_{w(g)} > 20\mu\text{s}$	1.2			
V_{GTM} Peak On-State Voltage	$I_{TM} = +3.5A$, $I_G = 50\text{mA}$, See Note 6		+1.9		V
	$I_{TM} = -3.5A$, $I_G = 50\text{mA}$, See Note 6		-1.9		
I_H Holding Current	$V_{\text{supply}} = +12V^\dagger$, $I_G = 0$, Initiating $I_{TM} = 100\text{mA}$		+30		mA
	$V_{\text{supply}} = -12V^\dagger$, $I_G = 0$, Initiating $I_{TM} = 100\text{mA}$		-30		
I_L Latching Current	$V_{\text{supply}} = +12V^\dagger$ See Note 7		+40		mA
	$V_{\text{supply}} = -12V^\dagger$, See Note 7		-40		
dv/dt	Critical Rate of Rise of Off-State Voltage	V_{DRM} = 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} = Rated V_{DRM} , $I_{TRM} = \pm 3.5A$, $T_C = 85^\circ\text{C}$	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		°C/W
$R_{\theta,JA}$		62.5		

TIC Devices