

**T4700 Series**

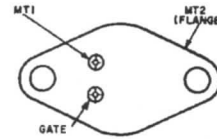
**15-Ampere Silicon Triacs**

For Phase-Control and Load-Switching Applications

**Features:**

- 800V, 125 Deg. C  $T_J$  Operating
- High  $dv/dt$  and  $di/dt$  Capability
- Low Switching Losses
- High Pulse Current Capability
- Low Forward and Reverse Leakage
- Sipos Oxide Glass Multilayer Passivation System
- Advanced Unisurface Construction
- Precise Ion Implanted Diffusion Source

**TERMINAL DESIGNATIONS**



JEDEC TO-213AA

**MAXIMUM RATINGS, Absolute-Maximum Values:**

		T4700B	T4700D	T4700M	T4700N	
REPETITIVE PEAK OFF-STATE VOLTAGE:■						
Gate Open	$V_{DROM}$	200	400	600	800	V
RMS ON-STATE CURRENT:						
$T_C = 95^\circ\text{C}$ , conduction angle = $360^\circ$	$I_{T(RMS)}$			15		A
PEAK SURGE (NON-REPETITIVE) ON-STATE CURRENT:	$I_{TSM}$					
For one full cycle of applied principal voltage						
60 Hz (sinusoidal)			100			A
For one full cycle of applied principal voltage						
(50-Hz, sinusoidal)			85			A
For more than one full cycle of applied voltage				See Fig. 3		
PEAK GATE-TRIGGER CURRENT:						
For 1 $\mu\text{s}$ max.	$I_{GTM}$		4			A
FUSING CURRENT (for triac protection):						
$T_J = -40$ to $100^\circ\text{C}$ , $t = 1.25$ to 10 ms	$I_{ft}$			50		A <sup>2</sup> s
GATE POWER DISSIPATION:						
Peak* (for 1 $\mu\text{s}$ max. and $I_{GTM} \leq 4$ A)	$P_{GM}$		16			W
Average (averaging time = 10 ms max.)	$P_{G(AV)}$		0.45			W
TEMPERATURE RANGE:Δ						
Storage	$T_{stg}$		-40 to 150			$^\circ\text{C}$
Operating (Case)	$T_C$		-40 to 125			$^\circ\text{C}$
PIN TEMPERATURE (During soldering):						
At distances $\geq 1/32$ in. (0.8 mm) from seating plane for 10 s max.	$T_p$			225		$^\circ\text{C}$

■ For either polarity of main terminal 2 voltage ( $V_{MT2}$ ) with reference to main terminal 1.  
\* For either polarity of gate voltage ( $V_G$ ) with reference to main terminal 1.  
Δ For temperature measurement reference point, see Dimensional Outline.



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## T4700 Series

### ELECTRICAL CHARACTERISTICS

At Maximum Ratings and at Indicated Case Temperature ( $T_C$ ) Unless Otherwise Specified

CHARACTERISTIC	SYMBOL	LIMITS			UNITS
		For All Types Unless Otherwise Specified			
		Min.	Typ.	Max.	
Peak Off-State Current <sup>♣</sup> Gate open, $T_J = 125^\circ\text{C}$ , $V_{\text{DROM}} = \text{Max. rated value}$	$I_{\text{DROM}}$	—	0.2	4	mA
Instantaneous On-State Voltage <sup>♣</sup> For $I_T = 30\text{A}$ (peak), $T_C = 25^\circ\text{C}$ .....	$V_T$	—	1.6	2.0	V
DC Holding Current <sup>♣</sup> Gate open, Initial principal current = 150 mA (DC), $v_D = 12\text{V}$ : $T_C = 25^\circ\text{C}$ .....	$I_{\text{HO}}$	—	15	60	mA
For other case temperatures ..... See Fig. 5					
Critical Rate of Applied Commutating Voltage <sup>♣</sup> For $v_D = V_{\text{DROM}}$ , $I_{\text{T(RMS)}} = 15\text{A}$ , commutating $di/dt = 8\text{A/ms}$ , and gate unenergized At $T_C = +95^\circ\text{C}$ .....	$dv/dt$	2	10	—	V/ $\mu\text{s}$
Critical Rate of Rise of Off-State Voltage <sup>♣</sup> For $v_D = V_{\text{DROM}}$ , exponential voltage rise, and gate open At $T_C = 125^\circ\text{C}$					
T4700B .....	$dv/dt$	30	150	—	V/ $\mu\text{s}$
T4700D .....		20	100	—	
T4700M .....		15	75	—	
T4700N .....		10	50	—	
DC Gate-Trigger Current <sup>♣</sup> ■ For $v_D = 6\text{ volts (dc)}$ , $R_L = 12\text{ ohms}$ , $T_C = +25^\circ$ , and Specified Triggering Mode:					
I <sup>+</sup> Mode: $V_{T2}$ is positive, $V_G$ is positive .....	$I_{\text{GT}}$	—	15	30	mA
I <sup>-</sup> Mode: $V_{T2}$ is positive, $V_G$ is negative .....		—	35	80	
III <sup>+</sup> Mode: $V_{T2}$ is negative, $V_G$ is positive .....		—	35	80	
III <sup>-</sup> Mode: $V_{T2}$ is negative, $V_G$ is negative .....		—	15	30	
For other case temperatures .....		See Figs. 7 & 9			
DC Gate-Trigger Voltage <sup>♣</sup> ■ For $v_D = 6\text{ volts (dc)}$ and $R_L = 12\text{ ohms}$ At $T_C = +25^\circ$ .....	$V_{\text{GT}}$	—	1	2.5	V
For other case temperatures .....		0.2	See Fig. 11		
For $v_D = V_{\text{DROM}}$ , $R_L = 125\ \Omega$ , $T_C = 125^\circ\text{C}$					
Gate-Controlled Turn-On Time (Delay Time + Rise Time) For $v_D = V_{\text{DROM}}$ , $I_G = 160\text{ mA}$ , $t_r = 0.1\ \mu\text{s}$ , $I_T = 25\text{ A}$ (peak), $T_C = 25^\circ\text{C}$ .....	$t_{\text{gt}}$	—	1.6	2.5	$\mu\text{s}$
Thermal Resistance: Junction-to-Case .....	$R_{\text{J/C}}$	—	—	1.3	$^\circ\text{C/W}$

<sup>♣</sup>For either polarity of main terminal 2 voltage ( $V_{T2}$ ) with reference to main terminal 1.

■For either polarity of gate voltage ( $V_G$ ) with reference to main terminal 1.