

T4700 Series

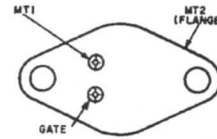
15-Ampere Silicon Triacs

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°	$I_{T(RMS)}$			15		A
PEAK SURGE (NON-REPETITIVE) ON-STATE CURRENT:						
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 μs max.	I_{GTM}		4			A
FUSING CURRENT (for triac protection):						
$T_J = -40$ to 100°C , $t = 1.25$ to 10 ms	I_{ft}			50		A ² s
GATE POWER DISSIPATION:						
Peak* (for 1 μs 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: [▲]						
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.
[▲]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 [♣] Gate open, $T_J = 125^\circ\text{C}$, $V_{DROM} = \text{Max. rated value}$	I_{DROM}	—	0.2	4	mA
Instantaneous On-State Voltage [♣] For $I_T = 30\text{A}$ (peak), $T_C = 25^\circ\text{C}$	V_T	—	1.6	2.0	V
DC Holding Current [♣] Gate open, Initial principal current = 150 mA (DC), $v_D = 12\text{V}$: $T_C = 25^\circ\text{C}$	I_{HO}	—	15	60	mA
For other case temperatures See Fig. 5					
Critical Rate of Applied Commutating Voltage [♣] For $v_D = V_{DROM}$, $I_{T(RMS)} = 15\text{A}$, commutating $di/dt = 8\text{A/ms}$, and gate unenergized At $T_C = +95^\circ\text{C}$	dv/dt	2	10	—	V/ μs
Critical Rate of Rise of Off-State Voltage [♣] For $v_D = V_{DROM}$, exponential voltage rise, and gate open At $T_C = 125^\circ\text{C}$	dv/dt				V/ μs
T4700B		30	150	—	
T4700D		20	100	—	
T4700M		15	75	—	
T4700N		10	50	—	
DC Gate-Trigger Current [♣] ■ For $v_D = 6\text{ volts (dc)}$, $R_L = 12\text{ ohms}$, $T_C = +25^\circ$, and Specified Triggering Mode:	I_{GT}				mA
I ⁺ Mode: V_{T2} is positive, V_G is positive		—	15	30	
I ⁻ Mode: V_{T2} is positive, V_G is negative		—	35	80	
III ⁺ Mode: V_{T2} is negative, V_G is positive		—	35	80	
III ⁻ Mode: V_{T2} is negative, V_G is negative		—	15	30	
For other case temperatures See Figs. 7 & 9					
DC Gate-Trigger Voltage [♣] ■ For $v_D = 6\text{ volts (dc)}$ and $R_L = 12\text{ ohms}$ At $T_C = +25^\circ$	V_{GT}	—	1	2.5	V
For other case temperatures		0.2	See Fig. 11	—	
For $v_D = V_{DROM}$, $R_L = 125\ \Omega$, $T_C = 125^\circ\text{C}$					
Gate-Controlled Turn-On Time (Delay Time + Rise Time) For $v_D = V_{DROM}$, $I_G = 160\text{ mA}$, $t_r = 0.1\ \mu\text{s}$, $I_T = 25\text{ A}$ (peak), $T_C = 25^\circ\text{C}$	t_{gt}	—	1.6	2.5	μs
Thermal Resistance: Junction-to-Case	$R_{\theta JC}$	—	—	1.3	$^\circ\text{C/W}$

[♣]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.