

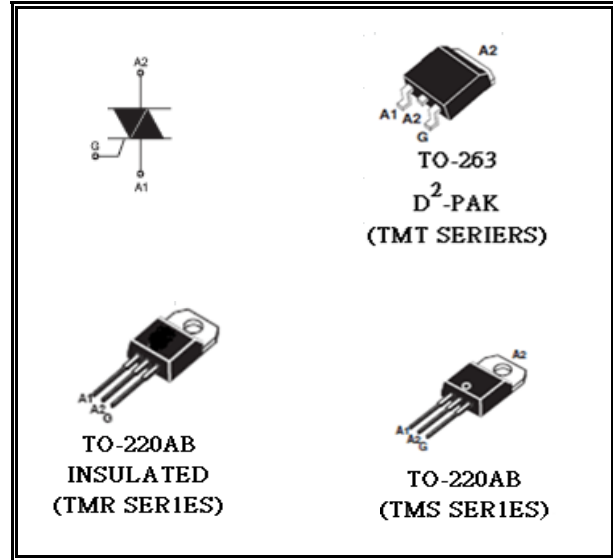


# TRIAC 12 AMPERES SERIES

## Features

- ◆ Voltage Capability Up to 800 Volts
- ◆ Surge Capability 126A
- ◆ Electrically - Isolated Packages
- ◆ Hi-Reliability and Parameter Stability.
- ◆ Low Level Triggering and Characteristics.
- ◆ Apply for Phase Control in Light Dimmers 、 ON/OFF Function in Static Relays or Motor Speed Controllers ◦
- ◆ Case Material : Molded Plastic 【UL Flammability Classification Rating 94V-0 】

## PACKAGE OUTLINE



Absolute Maximum Ratings 【TA=25°C】						
Parameter	Symbol	TMR40012	TMR60012	TMR80012	Unit	
Peak Repetitive Off-State Voltage	$V_{Dm}$	400	600	800	V	
On-State RMS Current	$I_T (RMS)$	12.0			A	
Peak Non-Repetitive Surge Current ( one full cycle 60Hz $T_j=25^\circ C$ )	$I_{TSM}$	126			A	
Circuit Fusing Consideration ( $t=8.3mS$ )	$I^2T$	78			A <sup>2</sup> S	
Peak Gate Power ( pulse width $\leq 10\mu S$ , $TC=75^\circ C$ )	$P_{GM}$	2			Watt	
Average Gate Power ( pulse width $\leq 8.3mS$ , $TC=125^\circ C$ )	$P_G (AV)$	1			Watt	
Peak Gate Current	$I_{GM}$	4			A	
Operating Junction Temperature Range	$T_J$	- 40 to + 125			°C	
Storage Temperature Range	$T_S$	- 40 to + 150			°C	
Thermal Characteristics						
Parameter		Symbol	Min	Typ.	Max	Units
Thermal Resistance	junction to ambient	TMS	-	55	-	°C /W
		TMR	-	60	-	
		TMT	-	45	-	
	junction to case	TMS	-	2.2	-	°C /W
		TMR	-	2.3	-	
		TMT	-	1.4	-	
Maximum Lead Temperature for Soldering ( 1/8" from case for 10seconds )		$T_L$	-	-	260	°C



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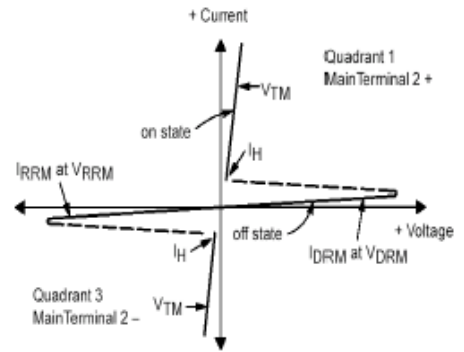
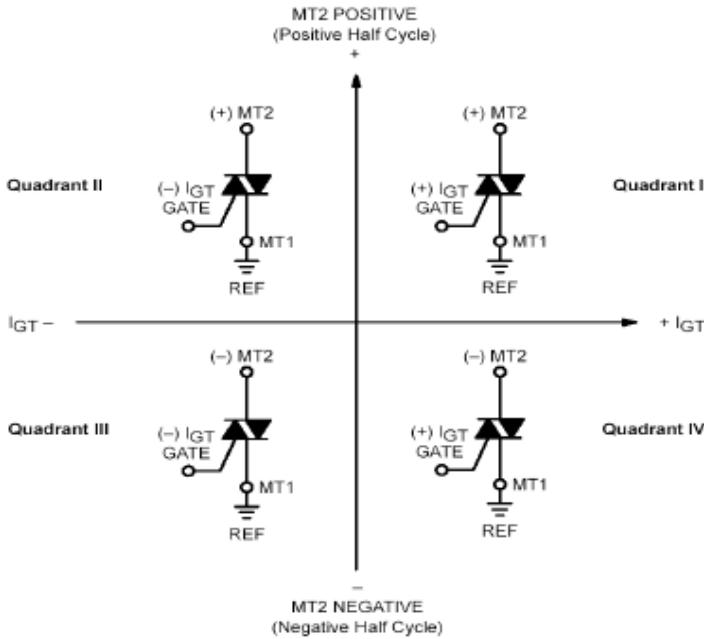
## Electrical Characteristics

On Characteristics							
Parameter	Teat Conditions	Symbol	T	S	C	B	Units
Peak Forward On-State Voltage	$V_D = V_{DRM}, R_L = 3.3K\Omega, T_J = 125^\circ C$	$V_{GD}$	0.2				V
Peak Forward On-State Voltage	$I_{TM} = \pm 4A @ T_p \leq 2mS, \text{Duty Cycle} \leq 2\%$	$V_{TM}$	1.55				V
Gate Trigger Current MT(+) G(+) MT(+) G(-) MT(-) G(-) MT(-) G(+)	$V_D = 12V, R_L = 100\Omega$	$I_{GT1}$	5	10	35	50	mA
		$I_{GT2}$	5	10	35	50	
		$I_{GT3}$	5	10	35	50	
		$I_{GT4}$	-	-	-	-	
Critical rate-of-rise of off-state voltage at rated $V_{DRM}$ gate open	$V_D = 67\% V_{DRM}$ gate open	$dv/dt (2)$	20	40	500	1000	Volts / us
Gate Trigger Voltage	$V_D = 12V, R_L = 100\Omega$	$V_{GT}$	1.3				V
Critical rate-of-rise of on-state Current	$I_G = 2 * I_{GT}, t_T \leq 100nS$	$di/dt (2)$	50				A / uS
Holding Current	$I_T = 100mA$	$I_H$	10	15	35	50	mA
Latching Current MT(+) G(+) MT(+) G(-) MT(-) G(-) MT(-) G(+)	$I_G = 1.2 I_{GT}$	$I_L$	10	25	50	70	mA
			15	30	60	80	
			10	25	50	70	
			-	-	-	-	

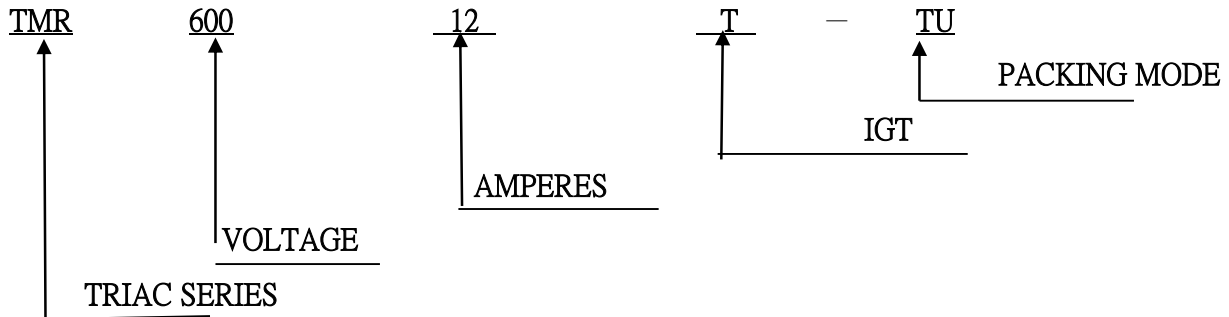
Off Characteristics						
Parameter	Symbol	Min	Typ.	Max	Units	
Peak Repetitive Forward or Reverse Blocking Current	$T_J = 25^\circ C$	$I_{DRM}$		-	5	uA
	$T_J = 125^\circ C$	$I_{RRM}$		-	1	mA



# TRIAC 12 AMPERES SERIES



## TYPE NUMBER CODING SYSTEM :



## OTHER INFORMATION:

Parts Number	Marking	Weight	Base Quantity	Packing Mode	
TMR40012T-TU	TMR40012T	2.5	50	TUBE	TU
TMR60012T-TU	TMR60012T	2.5	50	TUBE	TU
TMR80012T-TU	TMR80012T	2.5	50	TUBE	TU
TMS40012T-TU	TMS40012T	2.5	50	TUBE	TU
TMS60012T-TU	TMS60012T	2.5	50	TUBE	TU
TMS80012T-TU	TMS80012T	2.5	50	TUBE	TU
TMT40012T-TR	TMT40012T	1.6	1000	TAPING REEL	TR
TMT60012T-TR	TMT60012T	1.6	1000	TAPING REEL	TR
TMT80012T-TR	TMT80012T	1.6	1000	TAPING REEL	TR



# TRIAC 12 AMPERES SERIES

## ELECTRONICS CHARACTERISTICS CURVE

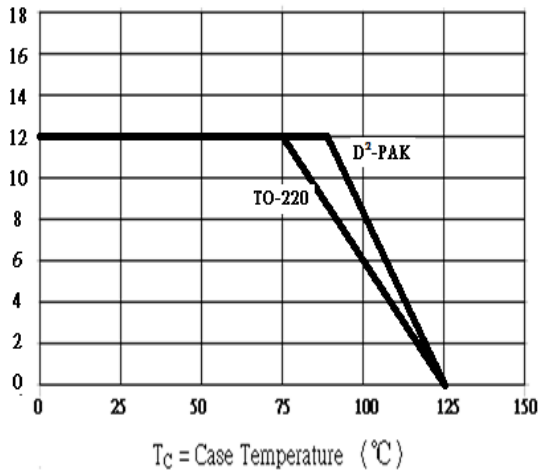


Fig. 1-1 RMS on-state current versus case temperature (full cycle)

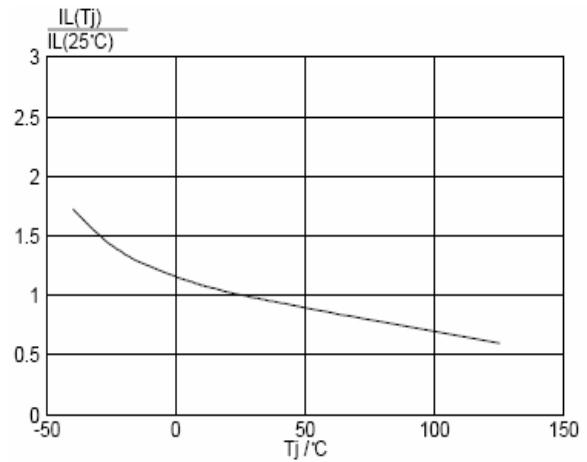


FIG. 2 Normalize latching current versus junction temperature

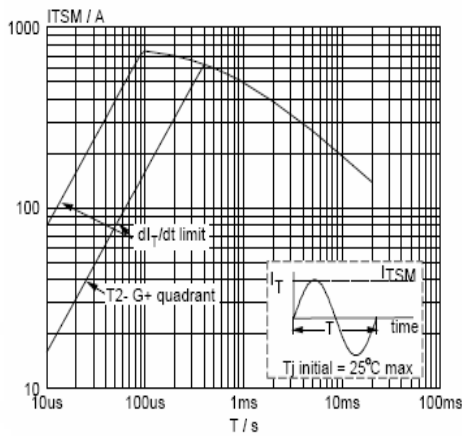


FIG. 3 Maximum permissible non-repetitive peak on-state current versus pulse width for sine-wave current

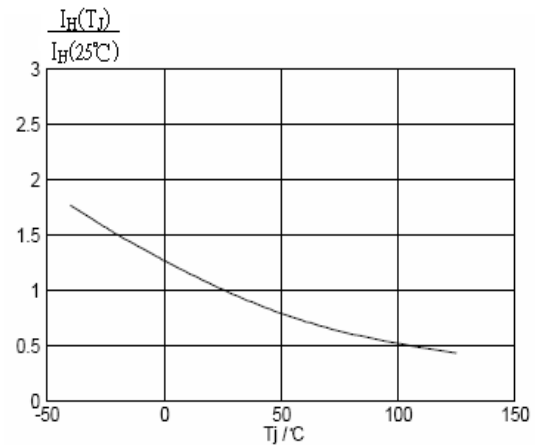


FIG. 4 Normalize holding current versus junction temperature

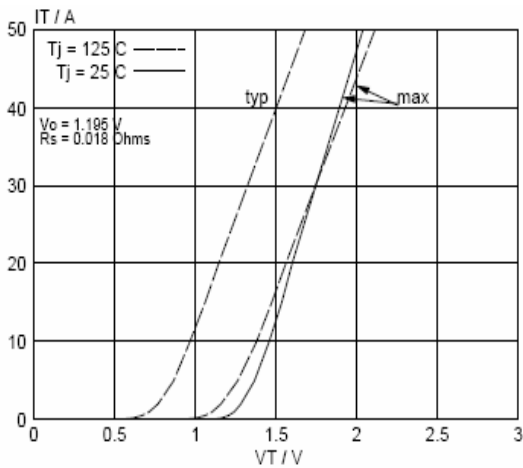


FIG. 5 Typical and maximum on-state characteristic

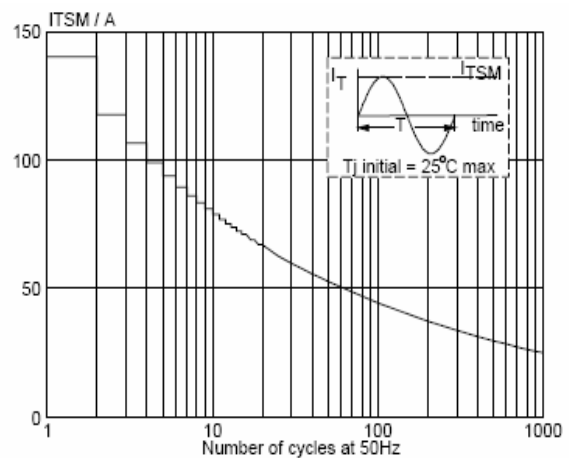


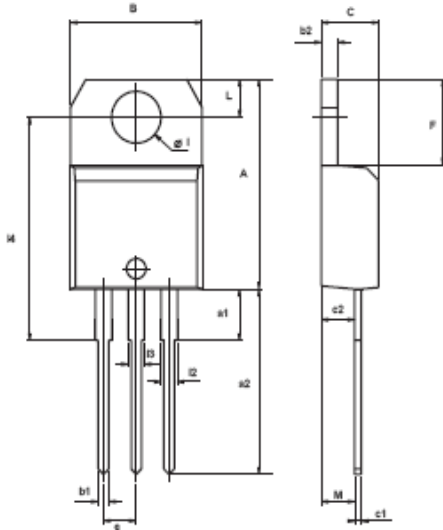
FIG. 6 Maximum permissible non-repetitive peak on-state current versus number of cycle for sine-wave current



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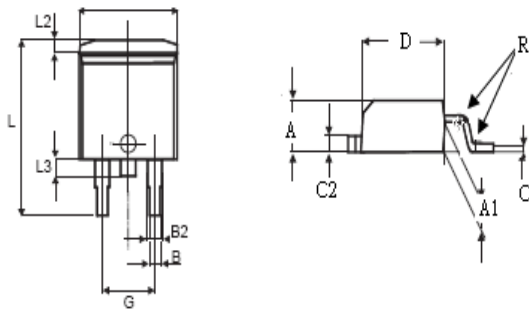
## Outline Drawings

TO-220AB 【INSULATED】



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.20		15.90	0.598		0.625
a1		3.75			0.147	
a2	13.00		14.00	0.511		0.551
B	10.00		10.40	0.393		0.409
b1	0.61		0.88	0.024		0.034
b2	1.23		1.32	0.048		0.051
C	4.40		4.60	0.173		0.181
c1	0.49		0.70	0.019		0.027
c2	2.40		2.72	0.094		0.107
e	2.40		2.70	0.094		0.106
F	6.20		6.60	0.244		0.259
I	3.75		3.85	0.147		0.151
I4	15.80	16.40	16.80	0.622	0.646	0.661
L	2.65		2.95	0.104		0.116
I2	1.14		1.70	0.044		0.066
I3	1.14		1.70	0.044		0.066
M		2.60			0.102	

D<sup>2</sup>-PAK



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.60	0.169		0.181
A1	2.49		2.69	0.098		0.106
B	0.70		0.93	0.027		0.037
B2	1.25	1.40		0.048	0.055	
C	0.45		0.60	0.017		0.024
C2	1.21		1.36	0.047		0.054
D	8.95		9.35	0.352		0.368
E	10.00		10.28	0.393		0.405
G	4.88		5.28	0.192		0.208
L	15.00		15.85	0.590		0.624
L2	1.27		1.40	0.050		0.055
L3	1.40		1.75	0.055		0.069
R		0.40			0.016	