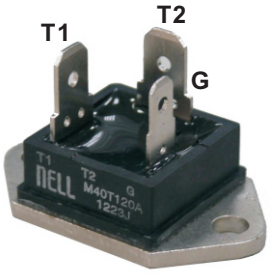
TRIACs, 40A
Sunbberless

FEATURES

- High current triac
- Low thermal resistance with clip bonding
- Low thermal resistance insulation ceramic for insulated TO-3 package
- High commutation capability
- Packages are RoHS compliant



APPLICATIONS

Due to their clip assembly techinque, they provide a superior performance in surge current handling capabilities.

By using an internal ceramic pad, the M40T series provides voltage insulated tab (rated at 2500VRMS) complying with UL standards.

The snubberless concept offer suppression of RC network and it is suitable for applications such as :

- Static relays
- Solid state switches
- Motor controls
- Light dimmers
- Copy machines
- Microwave ovens
- Heater controls

MAIN FEATURES

SYMBOL	VALUE	UNIT
$I_{T(RMS)}$	40	A
V_{DRM}/V_{RRM}	600 to 1200	V
$I_{GT(Q1)}$	10 to 50	mA

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUE	UNIT
RMS on-state current (full sine wave)	$I_{T(RMS)}$		T_c = 90ºC	40	A
Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C)	I_{TSM}	F =50 Hz	t = 20 ms	400	A
		F =60 Hz	t = 16.7 ms	420	
I^2t Value for fusing	I^2t	t_p = 10 ms		800	A^2s
Critical rate of rise of on-state current $I_G = 2xI_{GT}$, $t_r \leq 100ns$	dI/dt	F =100 Hz	T_j =125ºC	50	A/µs
Peak gate current	I_{GM}	T_p =20 µs	T_j =125ºC	4	A
Peak gate power dissipation (tp = 20µs)	P_{GM}	T_j =125ºC		10	W
Average gate power dissipation	$P_{G(AV)}$	T_j =125ºC		1	
Storage temperature range	T_{stg}			- 40 to + 150	ºC
Operating junction temperature range	T_j			- 40 to + 125	

◎ ELECTRICAL CHARACTERISTICS (T_J= 25 ºC unless otherwise specified)

SNUBBERLESS and Logic level (3 quadrants)

SYMBOL	TEST CONDITIONS	QUADRANT		Limits	Unit
				BW	
I_{GT}(1)	V_D = 12 V, R_L = 33Ω	I - II - III	MAX.	50	mA
V_{GT}		I - II - III		1.3	V
V_{GD}	V_D = V_{DRM}, R_L = 3.3KΩ T_j = 125°C	I - II - III	MIN.	0.2	V
I_H(2)	I_T = 500 mA		MAX.	60	mA
I_L	I_G = 1.2 I_{GT}	I - III	MAX.	80	mA
		II		150	
dV/dt(2)	V_D = 67% V_{DRM}, gate open ,T_j = 125°C		MIN.	1000	V/µs
(dI/dt)c(2)	Without snubber, T_j = 125°C			20	A/ms

STATIC CHARACTERISTICS

SYMBOL	TEST CONDITIONS			VALUE	UNIT
V_{TM}(2)	I_{TM} = 60 A, t_P = 380 µs	T_j = 25°C	MAX.	1.55	V
V_{t0}(2)	Threshold voltage	T_j = 125°C	MAX.	0.85	V
R_d(2)	Dynamic resistance	T_j = 125°C	MAX.	10	mΩ
I_{DRM} I_{RRM}	V_D = V_{DRM} V_R = V_{RRM}	T_j = 25°C	MAX.	10	µA
		T_j = 125°C		5	mA

Note 1: Minimum I_{GT} is guaranted at 5% of I_{GT} max.
Note 2: For both polarities of A2 referenced to A1.

THERMAL RESISTANCE

SYMBOL		VALUE	UNIT
$R_{th(j-c)}$	Junction to case (AC)	0.8	°C/W
$R_{th(j-a)}$	Junction to ambient	50	

S = Copper surface under tab.

PRODUCT SELECTOR

PART NUMBER	VOLTAGE (xx)				SENSITIVITY	TYPE	PACKAGE
	600 V	800 V	1000 V	1200 V			
M40TxxA	V	V	V	V	50 mA	Snubberless	TO-3

ORDERING INFORMATION

ORDERING TYPE	MARKING	PACKAGE	WEIGHT	BASE Q'TY	DELIVERY MODE
M40TxxA	M40TxxA	TO-3	23g	50	BOX

Note : xx = voltage

ORDERING INFORMATION SCHEME

M 40 T 60 A

Module type

M = TO-3 Fast-on package

Current

40 = 40A

Triac series

Voltage

60 = 600V
80 = 800V
100 = 1000V
120 = 1200V

Assembly type

A = Soldering Assembly

Fig.1 Maximum power dissipation versus on-state RMS current (full cycle)

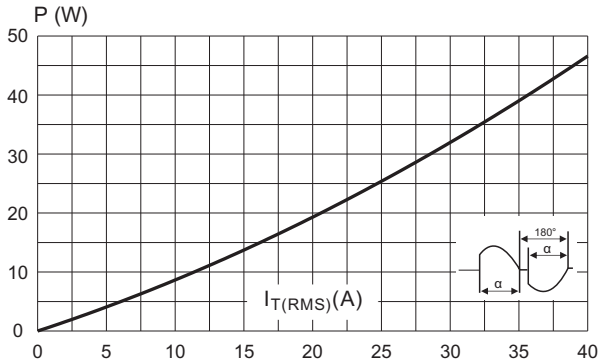


Fig.2 On-state RMS current versus case temperature (full cycle)

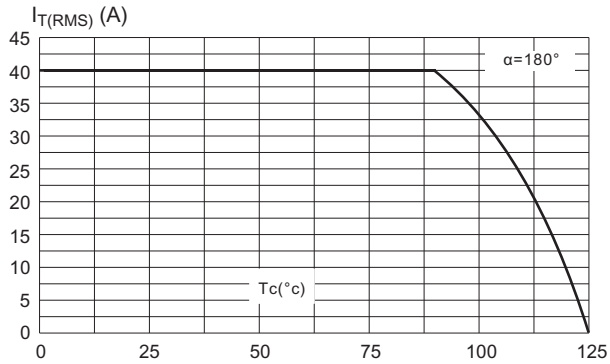


Fig.3 Relative variation of thermal impedance versus pulse duration.

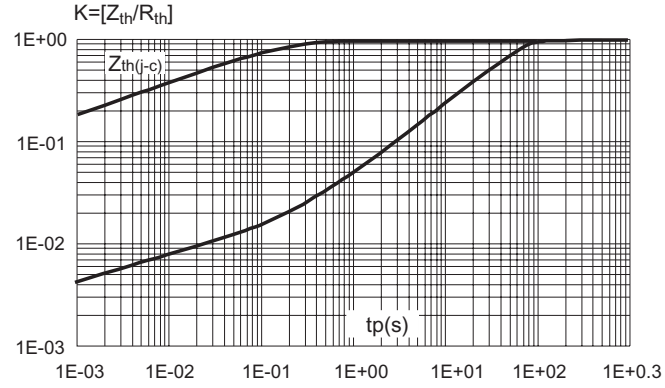


Fig.4 On-state characteristics (maximum values).

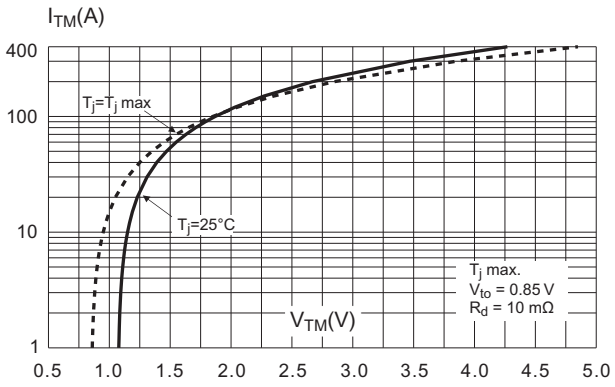


Fig.5 Surge peak on-state current versus number of cycles.

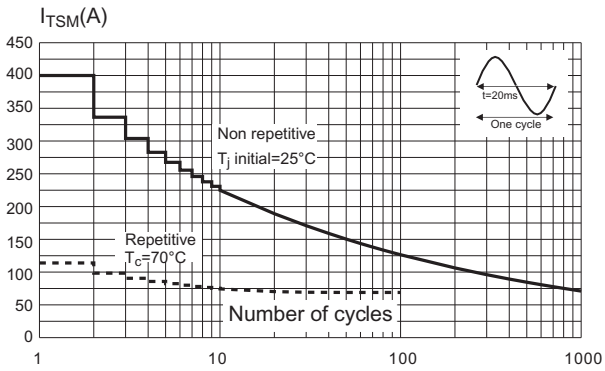


Fig.6 Non-repetitive surge peak on-state current for a sinusoidal pulse and corresponding value of I^2t.

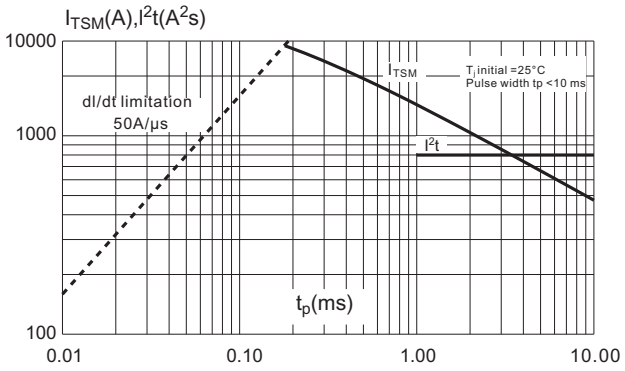


Fig.7 Relative variation of gate trigger, holding and latching current versus junction temperature.

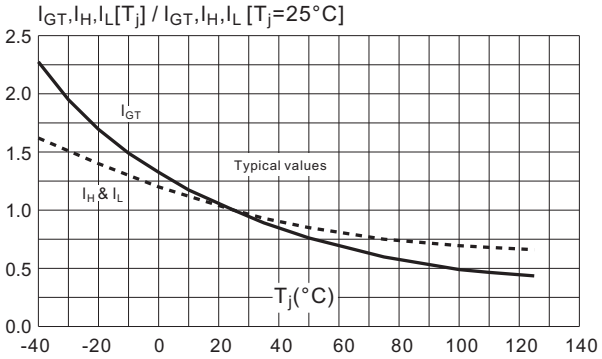


Fig.8 Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values).

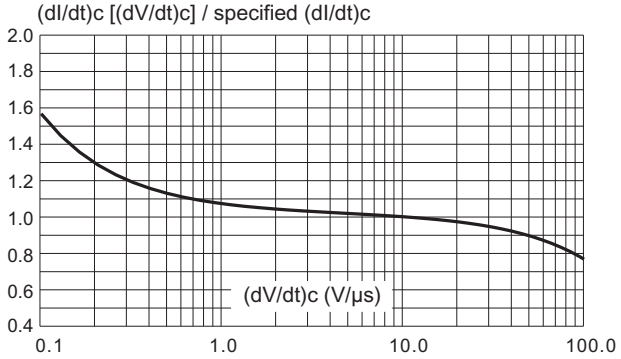
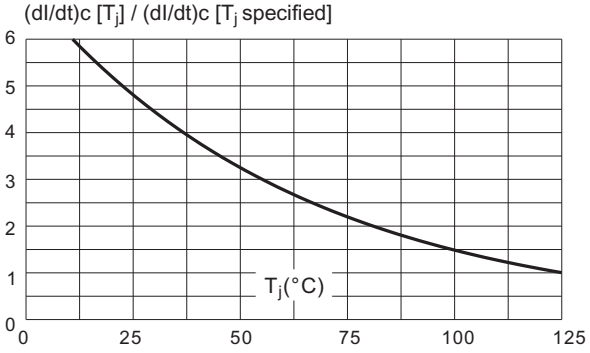
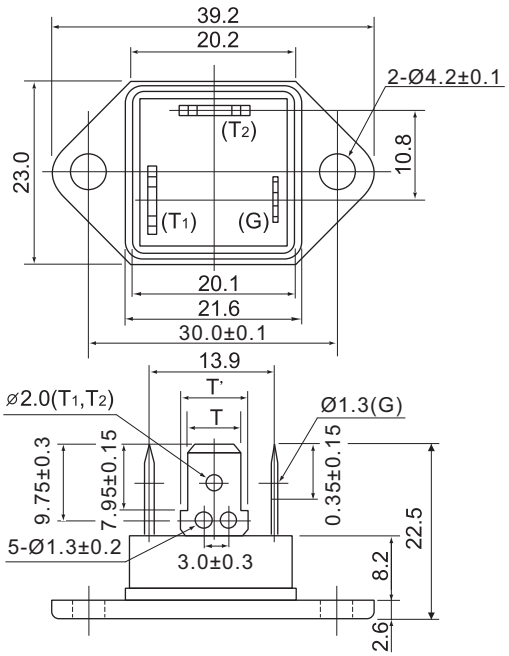


Fig.9 Relative variation of critical rate of decrease of main current versus (dV/dt)c.



Case Style

TO-3



T1:TAB250(T=6.35, T'=8.25, t=0.8)
T2:TAB250(T=6.35, T'=8.25, t=0.8)
G:TAB187(T=4.75, T'=5.7, t=0.5)

All dimensions in millimeters