TRIACs, 60A
Snubberless

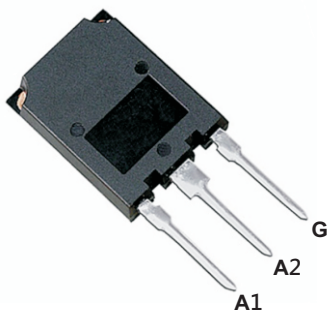
FEATURES

- High current triac
- Low thermal resistance with clip bonding
- Low thermal resistance for TO-247S (Super TO-247) package
- High commutation capability
- 60T series are **UL** certified (File ref: E320098)
- Packages are RoHS compliant

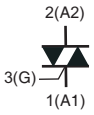
APPLICATIONS

The snubberless concept offer suppression of RC network and it is suitable for applications such as on/off function in static relays, heating regulation, induction motor starting circuits, phase control operation in light dimmers, motor speed controllers, and similar.

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



TO-247S (**non-Insulated**)
(60TxxD)



MAIN FEATURES

SYMBOL	VALUE	UNIT
$I_{T(RMS)}$	60	A
V_{DRM}/V_{RRM}	1000 to 1600	V
$I_{GT(Q1)}$	35 to 50	mA

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUE	UNIT
RMS on-state current (full sine wave)	$I_{T(RMS)}$		T_c = 72ºC	60	A
Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C)	I_{TSM}	F =50 Hz	t = 10 ms	600	A
		F =60 Hz	t = 8.3 ms	628	
I^2t Value for fusing	I^2t	t_p = 10 ms	t = 10 ms	1800	A^2s
Critical rate of rise of on-state current I_G = 2xI_{GT}, t_r≤100ns	dI/dt	F =120 Hz, I_G = 2xI_{GT}, t_r ≤ 100ns	T_j =125ºC	100	A/µs
Peak gate current	I_{GM}	T_p =20 µs	T_j =125ºC	8	A
Peak gate power dissipation	P_{GM}	T_p =20 µs	T_j =125ºC	10	W
Average gate power dissipation	$P_{G(AV)}$		T_j =125ºC	2	
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		60TxxD BW	Unit
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		120	
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			22	A/ms

STATIC CHARACTERISTICS					
SYMBOL	TEST CONDITIONS			VALUE	UNIT
V_{TM}(2)	I_{TM} = 90 A, t_P = 380 µs	T_j = 25°C	MAX.	1.75	V
V_{t0}(2)	Threshold voltage	T_j = 125°C	MAX.	0.95	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.	20	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)		0.48	°C/W
$R_{th(j-a)}$	Junction to ambient	TO-247S	40	

PRODUCT SELECTOR						
PART NUMBER	VOLTAGE (xx)			SENSITIVITY	TYPE	PACKAGE
	1000 V	1200 V	1600 V			
60TxxD-BW	V	V	V	50 mA	Snubberless	TO-247S

ORDERING INFORMATION					
ORDERING TYPE	MARKING	PACKAGE	WEIGHT	BASE Q'TY	DELIVERY MODE
60TxxD-yy	60TxxD-yy	TO-247S	6.5g	30	Tube

Note: xx = voltage, yy = sensitivity

ORDERING INFORMATION SCHEME

60 T 12 D - BW

Current

60 = 60A

Triac series

Voltage

10 = 1000V

12 = 1200V

16 = 1600V

Package type

D = TO-247S (non-insulated), Super TO-247

I_{GT} Sensitivity

BW = 50mA Snubberless

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

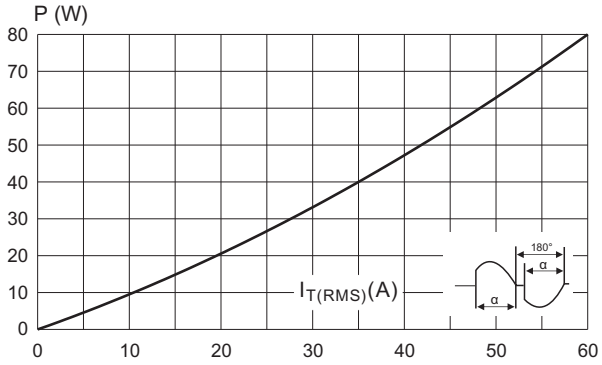


Fig.2 On-state rms current versus case temperature (full cycle)

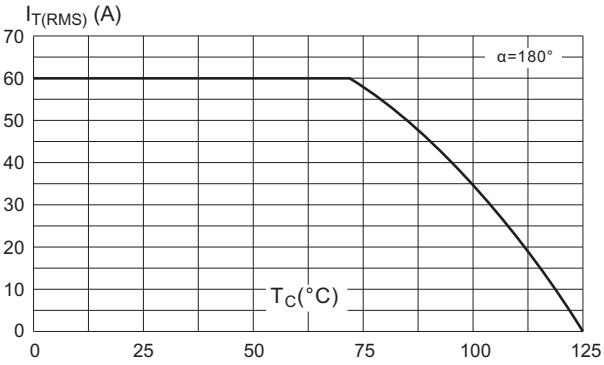


Fig.3 On-state characteristics (maximum values).

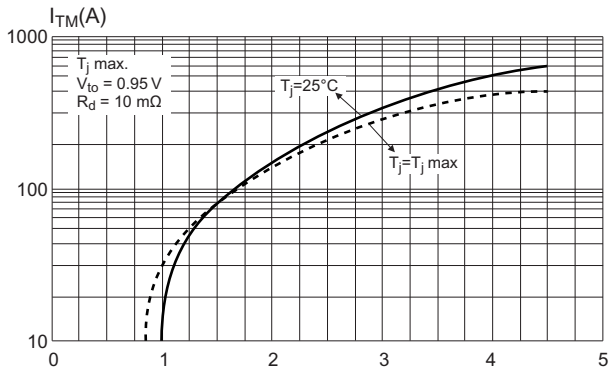


Fig.4 Surge peak on-state current versus number of cycles.

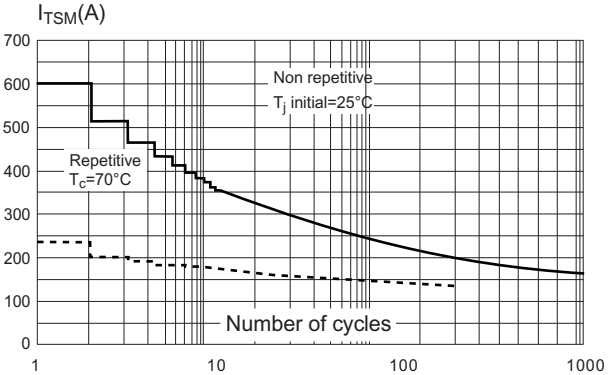


Fig.5 Non-repetitive surge peak on-state current for a sinusoidal pulse and corresponding value of I^2t.

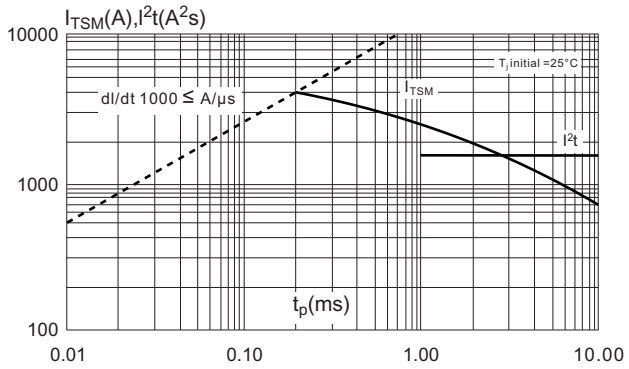
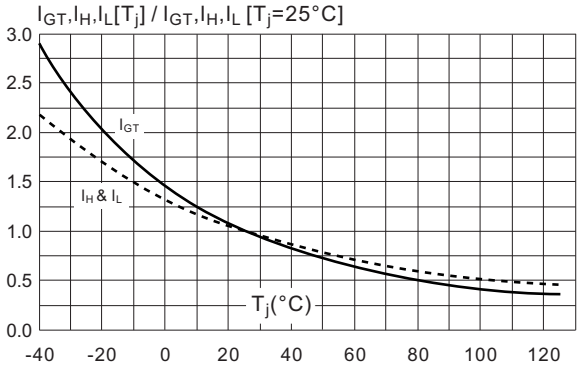
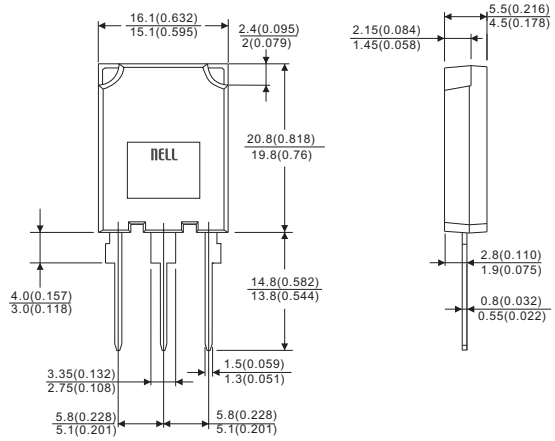


Fig.6 Relative variation of gate trigger, holding and latching current versus junction temperature (typical values)



Case Style

TO-247S



All dimensions in millimeters (inches)