

TRIACs, 60A Snubberless

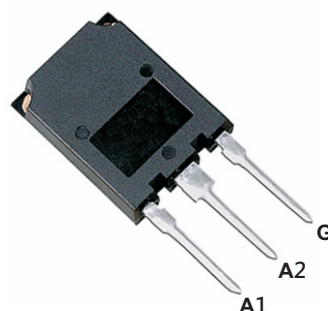
FEATURES

- 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

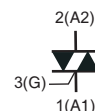
APPLICATIONS

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)	$I_{T(RMS)}$	$T_c = 72^\circ\text{C}$	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 $I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ns}$	di/dt	F = 120 Hz, $I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ns}$ $T_j = 125^\circ\text{C}$	100	$\text{A}/\mu\text{s}$
Peak gate current	I_{GM}	$T_p = 20 \mu\text{s}$ $T_j = 125^\circ\text{C}$	8	A
Peak gate power dissipation	P_{GM}	$T_p = 20 \mu\text{s}$ $T_j = 125^\circ\text{C}$	10	W
Average gate power dissipation	$P_{G(AV)}$	$T_j = 125^\circ\text{C}$	2	
Storage temperature range	T_{stg}		- 40 to + 150	$^\circ\text{C}$
Operating junction temperature range	T_j		- 40 to + 125	

© ELECTRICAL CHARACTERISTICS (T_j= 25 °C unless otherwise specified)

SNUBBERLESS and Logic level (3 quadrants)					
SYMBOL	TEST CONDITIONS	QUADRANT		60TxxD	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		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 guaranteed 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

Current 60 = 60A	60	T	12	D - BW
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)

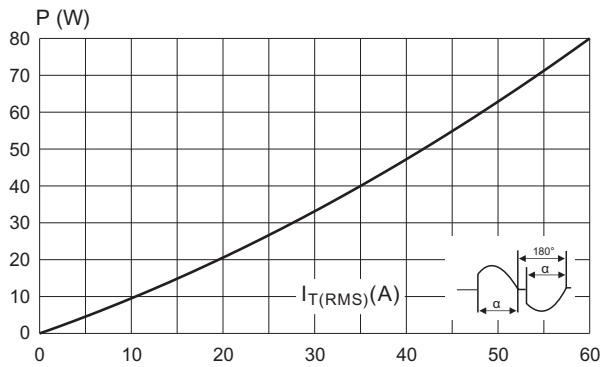


Fig.2 On-state rms current versus case temperature (full cycle)

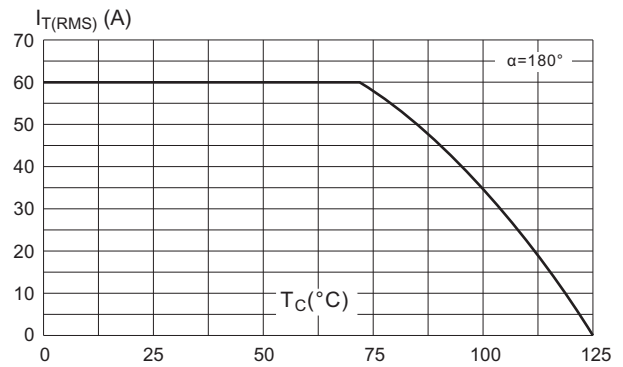


Fig.3 On-state characteristics (maximum values).

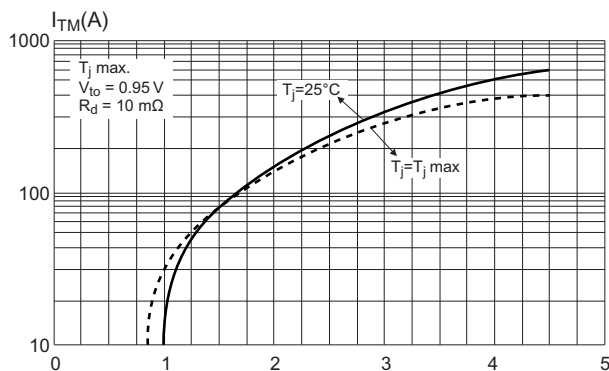


Fig.4 Surge peak on-state current versus number of cycles.

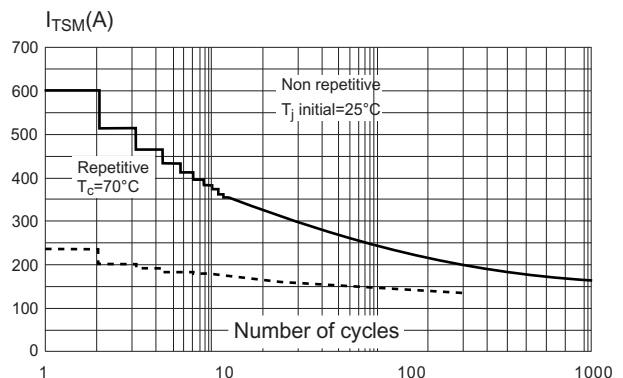


Fig.5 Non-repetitive surge peak on-state current for a sinusoidal pulse and corresponding value of I^2t .

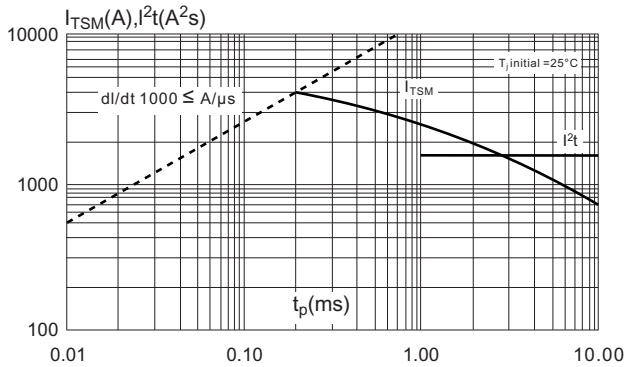
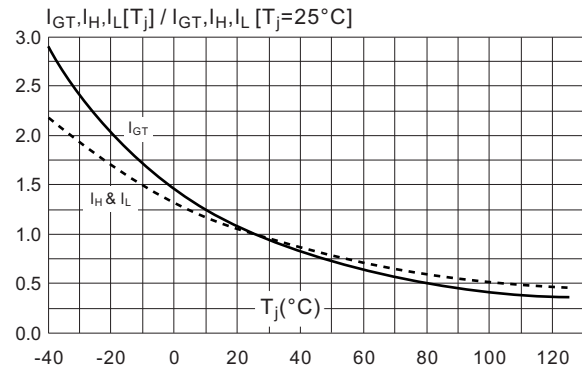


Fig.6 Relative variation of gate trigger, holding and latching current versus junction temperature (typical values)



Case Style

