

QS1600T803 1600V 80A TRIAC



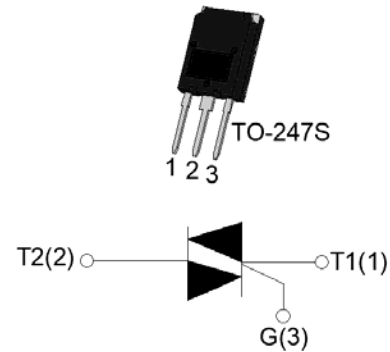
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Description

The QS1600T803 triac is suitable for general purpose AC switching. It can be used as an ON/OFF function in applications such as heating regulation, induction motor starting circuits, for phase control operation in light dimmers, motor speed controllers. QS1600T803 snubberless triac is especially recommended for use on inductive loads. Package TO-247S-3L is RoHS compliant.

Package

TO-247S-3L



Main Features

Symbol	Value	Unit
IT(RMS)	80	A
VDRM /VRRM	1600	V
IGTI/II/III	50/50/50	mA

Feature / Advantages:

- Thyristor for line frequency
- Planar passivated chip
- Long term stability

Application:

- Line rectifying 50/60 Hz
- Softstart AC motor control
- DC Motor control
- Power converter
- Ac power control
- Lighting ad temperature control

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Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Storage junction temperature range	T _{stg}	-40-150	°C
Operating junction temperature range	T _j	-40-125	°C
Repetitive peak off-state voltage (T _j =25°C)	V _{DRM}	1600	V
Repetitive peak reverse voltage (T _j =25°C)	V _{RRM}	1600	V
RMS on-state current (T _C ≤86°C)	I _{T(RMS)}	80	A
Non repetitive surge peak on-state current (full cycle , t _p =20ms , T _j =25°C)	I _{TSM}	800	A
Non repetitive surge peak on-state current (full cycle , t _p =16.6ms , T _j =25°C)		880	
I ² t value for fusing (t _p =10ms , T _j =25°C)	I ² t	3200	A ² s
Critical rate of rise of on-state current (I _G =2×I _{GT} , f=100Hz , T _j =125°C)	dI/dt	100	A/μs
Peak gate current (t _p =20μs , T _j =125°C)	I _{GM}	10	A
Average gate power dissipation (T _j =125°C)	PG(AV)	0.5	W
Peak gate power	PGM	25	W
Peak pulse voltage (T _j =25°C; non-repetitive, off-state;FIG.7)	V _{pp}	1	kV

Electrical Characteristics (T_j=25°C unless otherwise specified)

Symbol	Test Condition	Quadrant	Value	Unit
I _{GT}	V _D = 12V R _L = 33Ω	I-II-III	MAX. 50	mA
V _{GT}		I-II-III	MAX. 1.3	V
V _{GD}	V _D = V _{DRM} T _j = 125°C R _L = 3.3KΩ	I-II-III	MIN. 0.2	V
I _L	I _G = 1.2I _{GT}	I-III	80	mA
		II	MAX. 120	
I _H	I _T = 1A		MAX. 70	mA
dV/dt	V _D = 1070V Gate Open T _j = 125°C		MIN. 1500	V/μs
(dI/dt) _c	(dV/dt) _c = 20V/μs T _j = 125°C		MIN. 28	A/ms
t _{on}	I _G = 80mA I _A = 400mA I _R = 40mA T _j = 25°C		TYP. 12	μs
t _{off}			80	

Static Characteristics

Symbol	Parameter	Value(MAX.)	Unit
V_{TM}	$I_{TM} = 120A$ $t_p = 380\mu s$	$T_j = 25^\circ C$	1.9 V
V_{TO}	Threshold voltage	$T_j = 125^\circ C$	0.71 V
R_D	Dynamic resistance	$T_j = 125^\circ C$	23 mΩ
I_{DRM}	$V_D = V_{DRM} V_R = V_{RRM}$	$T_j = 25^\circ C$	20 μA
I_{RRM}		$T_j = 125^\circ C$	12 mA

Thermal Resistances

Symbol	Parameter	Value	Unit
R_{th(j-c)}	junction to case (AC)	0.3	°C/W
R_{th(j-a)}	junction to ambient (AC)	45	°C/W

FIG.1 Maximum power dissipation versus RMS on-state current

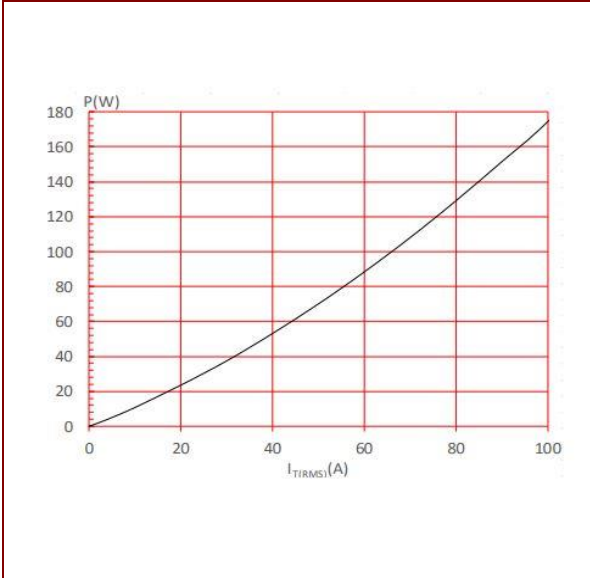


FIG.2: RMS on-state current versus case temperature

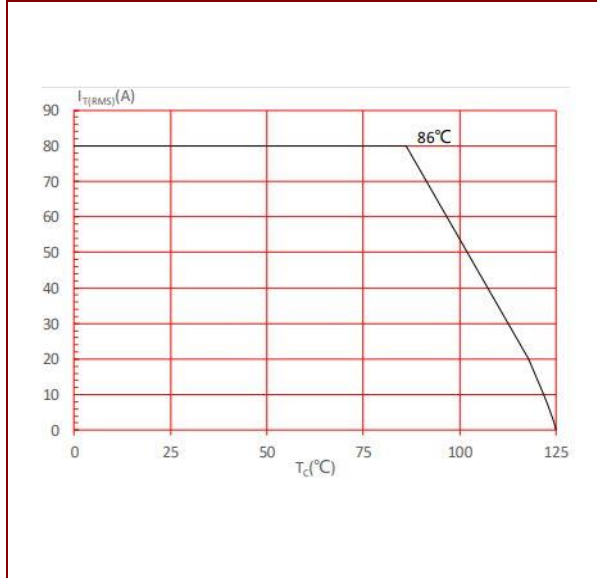


FIG.3: Surge peak on-state current versus number of cycles

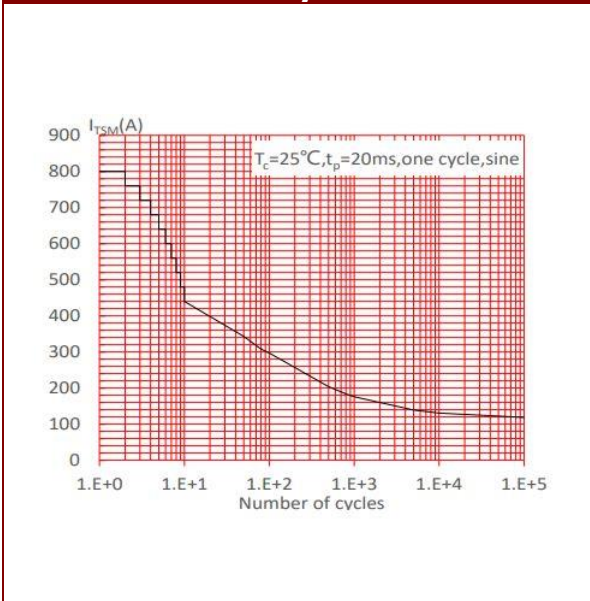
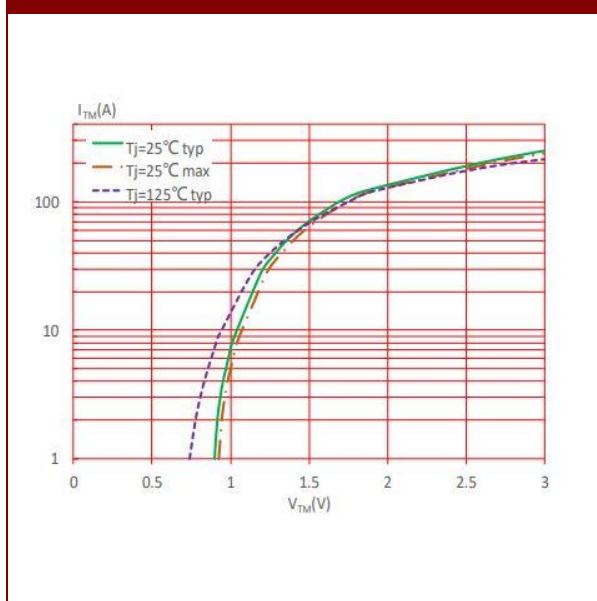


FIG.4: On-state characteristic



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FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($di/dt < 100\text{A}/\mu\text{s}$)

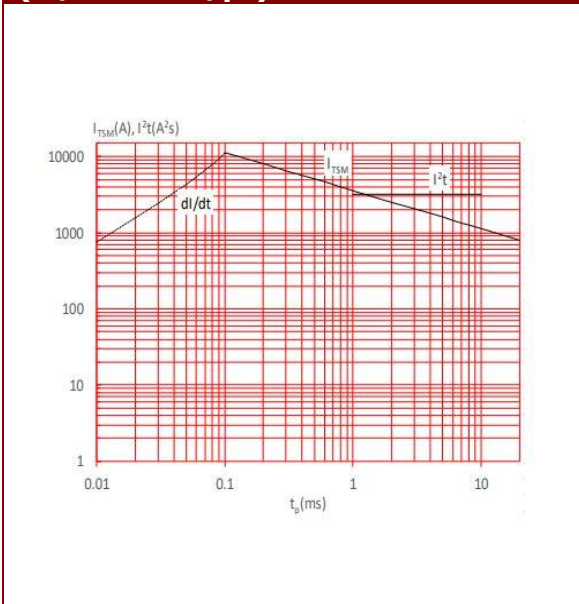


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

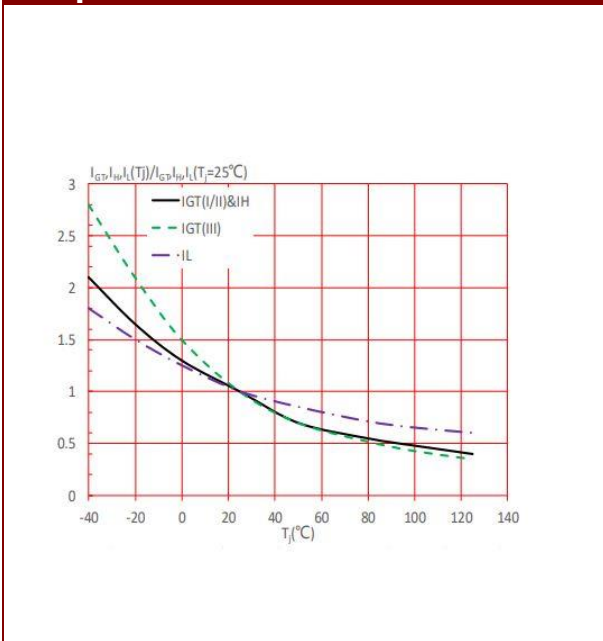
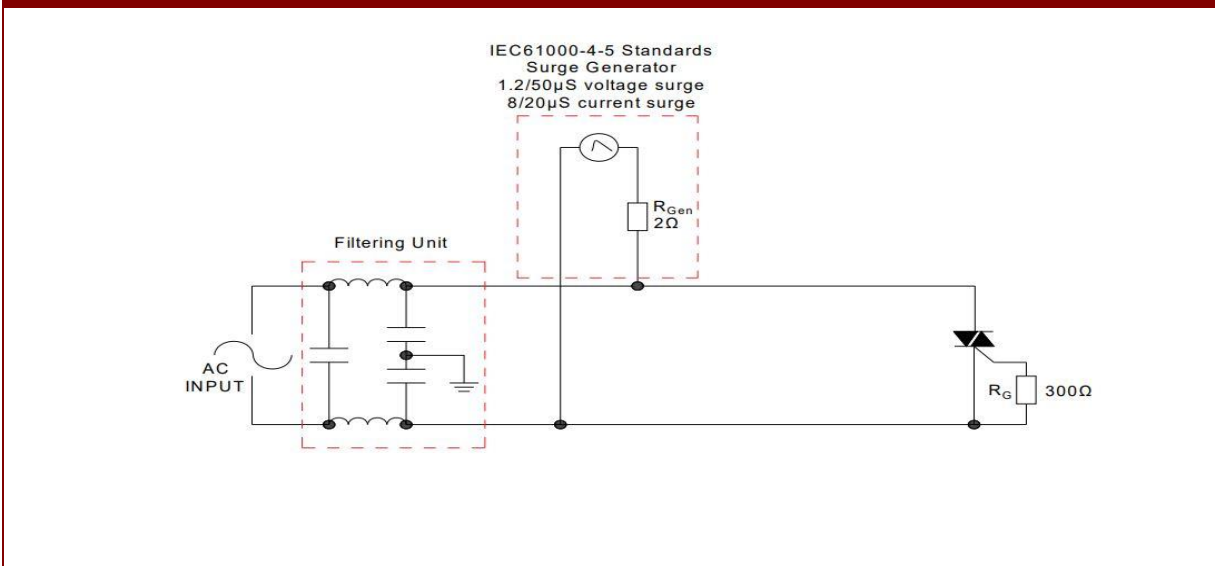


FIG.7 : Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



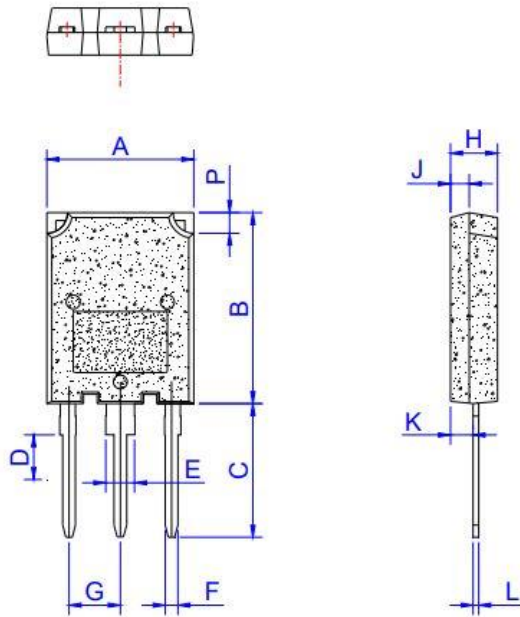
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Order code	Voltage $V_{DRM}/V_{RRM}(V)$	IGT(mA)		Package	Base qty. (pcs)	Delivery mode
		I - II - III				
QS1600T803	1600	50		TO-247S-3L	30	Tube

Package Mechanical Data

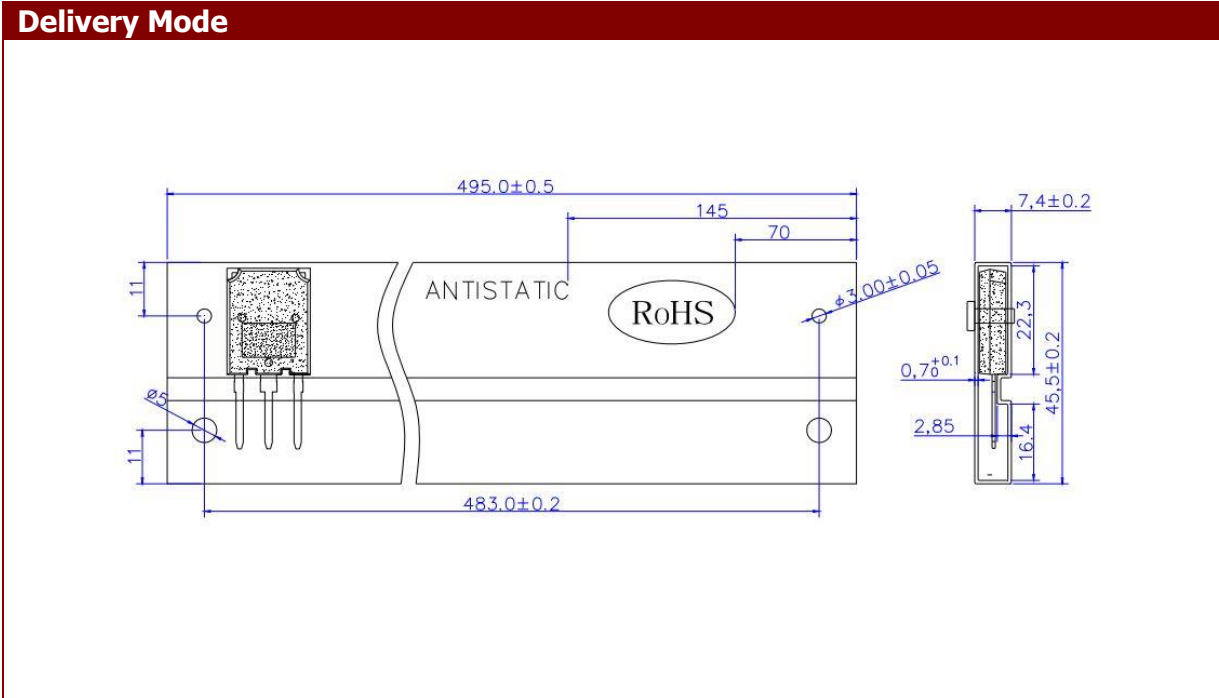


c	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.1		16.1	0.594		0.634
B	19.8		20.8	0.78		0.819
C	13.8		14.8	0.543		0.583
D	3.00		4.00	0.118		0.157
E	2.75		3.35	0.108		0.132
F	1.30		1.50	0.051		0.059
G	5.10		5.80	0.201		0.228
H	4.50		5.50	0.177		0.217
J	1.45		2.15	0.057		0.085
K	1.90		2.80	0.075		0.110
L	0.55		0.80	0.022		0.031
P	2.00		2.40	0.079		0.094

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Package	Outline	Tube (Pcs)	Inner Box (Pcs)	Per Carton
TO-247S-3L	TUBE	30	450	2,250