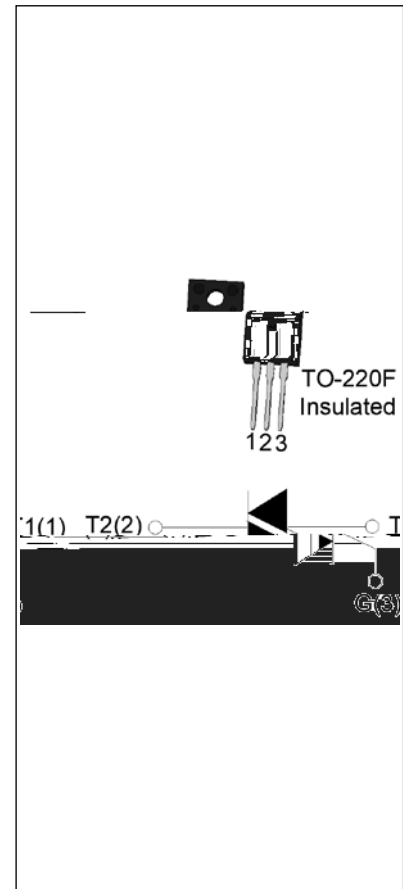


The T1610H-6F triac is suitable for general purpose AC switching. It can be used as an ON/OFF function in applications such as heating regulation, induction motor starting circuits, for phase control operation in light dimmers, motor speed controllers. Compared to traditional triacs, T1610H-6F provides a very high switching capability up to junction temperatures of 150°C. It can be driven directly through the MCU I/O port. By using an external plastic package, T1610H-6F provides a rated insulation voltage of 2000 VRMS, complying with UL standards (File ref: E252906). Package TO-220F is RoHS compliant.



Symbol	Value	Unit
$I_{T(RMS)}$	16	A
$V_{DRM}/V_{RRM}$	600	V
$I_{GT\ I/II/III}$	10/10/10	mA

Parameter	Symbol	Value	Unit
Storage junction temperature range	$T_{stg}$	-40-150	°C
Operating junction temperature range	$T_j$	-40-150	°C
Repetitive peak off-state voltage ( $T_j=25^\circ\text{C}$ )	$V_{DRM}$	600	V
Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )	$V_{RRM}$	600	V
RMS on-state current ( $T_c \leq 100^\circ\text{C}$ )	$I_{T(RMS)}$	16	A
Non repetitive surge peak on-state current (full cycle , $t_p=20\text{ms}$ , $T_j=25^\circ\text{C}$ )	$I_{TSM}$	160	A
Non repetitive surge peak on-state current (full cycle , $t_p=16.6\text{ms}$ , $T_j=25^\circ\text{C}$ )		176	
$I^2t$ value for fusing ( $t_p=10\text{ms}$ , $T_j=25^\circ\text{C}$ )	$I^2t$	128	$\text{A}^2\text{s}$
Critical rate of rise of on-state current ( $I_G=2\ I_{GT}$ , $f=100\text{Hz}$ , $T_j=150^\circ\text{C}$ )	$di/dt$	100	A s

Peak gate current ( $t_p=20 \text{ s}$ , $T_j=150^\circ\text{C}$ )	$I_{GM}$	4	A
Average gate power dissipation ( $T_j=150^\circ\text{C}$ )	$P_{G(AV)}$	1	W
Peak gate power	$P_{GM}$	10	W
Peak pulse voltage ( $T_j=25^\circ\text{C}$ ; non-repetitive, off-state; FIG.7)	$V_{pp}$	4	kV

( $T_j=25^\circ\text{C}$  unless otherwise specified)

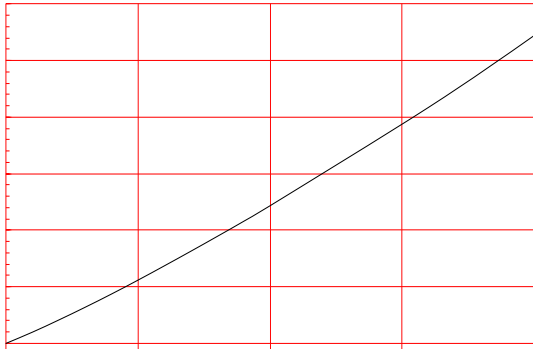
Symbol	Test Condition	Quadrant	Value		Unit
$I_{GT}$	$V_D=12V R_L=33$	I - II - III	MAX.	10	mA
$V_{GT}$		I - II - III	MAX.	1	V
$V_{GD}$	$V_D=V_{DRM} T_j=150^\circ\text{C}$ $R_L=3.3K$	I - II - III	MIN.	0.2	V
$I_L$	$I_G=1.2I_{GT}$	I - III	MAX.	20	mA
		II		35	
$I_H$	$I_T=500mA$		MAX.	20	mA
$dV/dt$	$V_D=400V$ Gate Open $T_j=150^\circ\text{C}$		MIN.	200	V s
$(dI/dt)_c$	$T_j=150^\circ\text{C}$		MIN.	1.8	A/ms
$t_{on}$	$I_G=20mA I_A=200mA I_R=20mA$ $T_j=25^\circ\text{C}$		TYP.	2.5	s
$t_{off}$				25	

Symbol	Parameter		Value(MAX.)	Unit
$V_{TM}$	$I_{TM}=22.5A t_p=380 \text{ s}$	$T_j=25^\circ\text{C}$	1.4	V
$V_{TO}$	Threshold voltage	$T_j=150^\circ\text{C}$	0.75	V
$R_D$	Dynamic resistance	$T_j=150^\circ\text{C}$	27	m
$I_{DRM}$	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^\circ\text{C}$	5	A
$I_{RRM}$		$T_j=150^\circ\text{C}$	1.5	mA

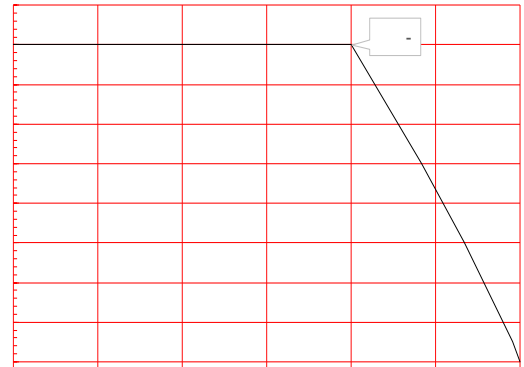
Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (AC)	2.4	$^\circ\text{C/W}$
$R_{th(j-a)}$	junction to ambient (AC)	60	$^\circ\text{C/W}$

I 16 10 H -6 F

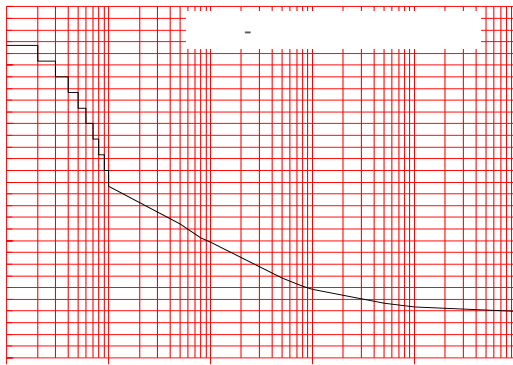
**FIG.1** Maximum power dissipation versus RMS on-state current



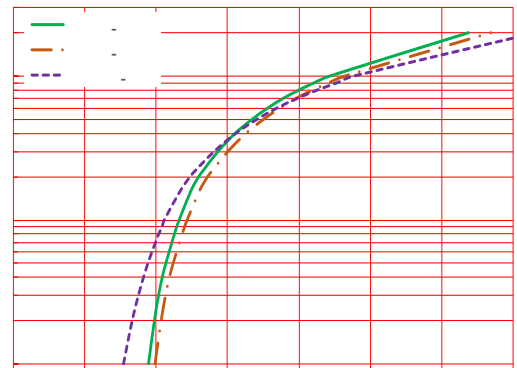
**FIG.2:** RMS on-state current versus case temperature



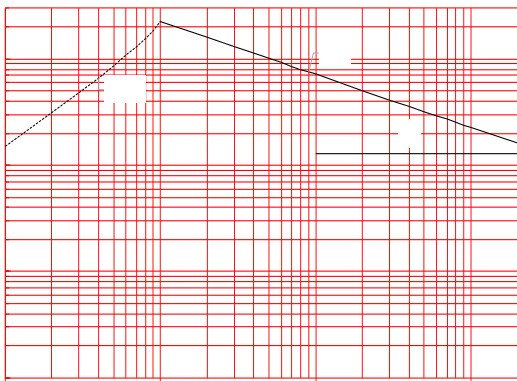
**FIG.3:** Surge peak on-state current versus number of cycles



**FIG.4:** On-state characteristics



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



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

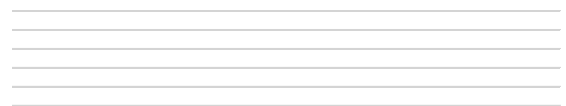
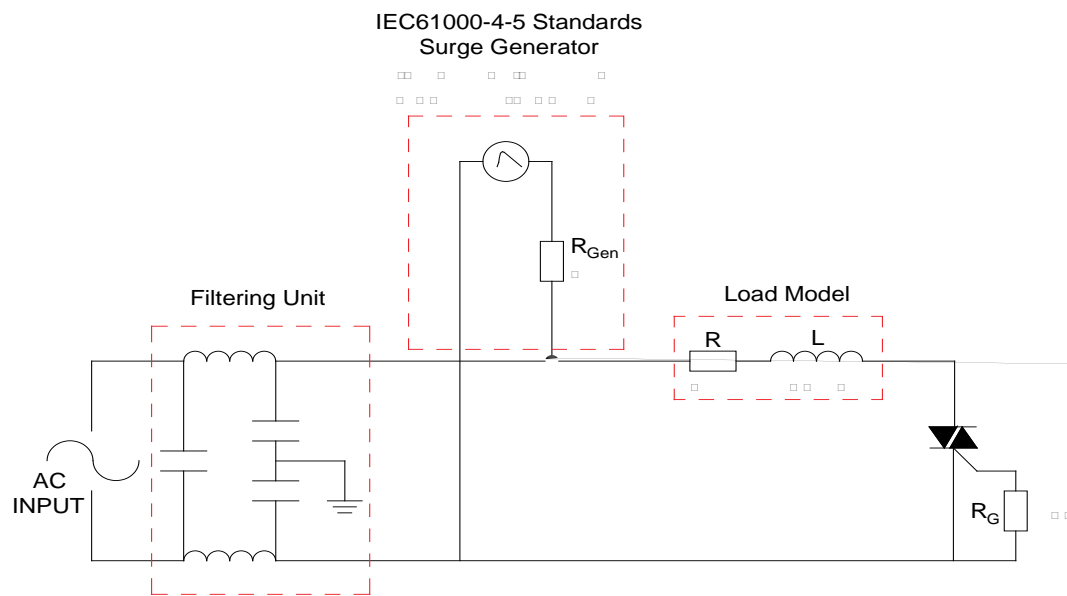


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



Order code	Voltage $V_{DRM}/V_{RRM}$ (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
		- -			
T1610H-6F	600	10	TO-220F(Ins)	50	Tube

### Document Revision History

Date	Revision	Changes
Apr.10, 2023	A.1.0	Last updated



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