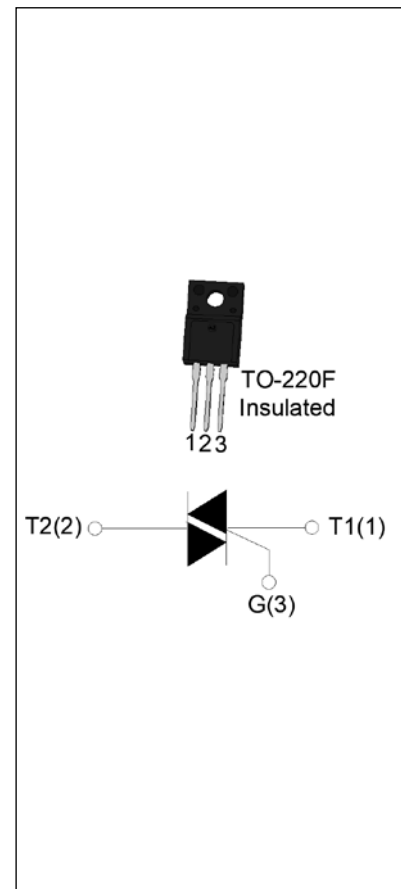


**T1610H-8F 16A TRIAC**

Rev.A.1.0

**DESCRIPTION:**

The T1610H-8F 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-8F 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-8F provides a rated insulation voltage of 2000 VRMS, complying with UL standards (File ref: E252906). Package TO-220F is RoHS compliant.


**MAIN FEATURES**

Symbol	Value	Unit
$I_{T(RMS)}$	16	A
$V_{DRM}/V_{RRM}$	800	V
$I_{GT\ I/II/III}$	10/10/10	mA

**ABSOLUTE MAXIMUM RATINGS**

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 ( $T_j=25^\circ\text{C}$ )	$V_{DRM}$	800	V
Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )	$V_{RRM}$	800	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 ( $I_G=2 \times I_{GT}$ , $f=100\text{Hz}$ , $T_j=150^\circ\text{C}$ )	$di/dt$	100	$\text{A}/\mu\text{s}$

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

**ELECTRICAL CHARACTERISTICS** ( $T_j=25^\circ C$  unless otherwise specified)

Symbol	Test Condition	Quadrant	Value		Unit
$I_{GT}$	$V_D=12V$ $R_L=33\Omega$	I - II - III	MAX.	10	mA
$V_{GT}$		I - II - III	MAX.	1	V
$V_{GD}$	$V_D=V_{DRM}$ $T_j=150^\circ C$ $R_L=3.3K\Omega$	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
$dV/dt$	$V_D=540V$ Gate Open $T_j=150^\circ C$		MIN.	150	V/ $\mu s$
$(dI/dt)_c$	$(dV/dt)_c=20V/\mu s$ , $T_j=150^\circ C$		MIN.	1.8	A/ms
$t_{on}$	$I_G=20mA$ $I_A=200mA$ $I_R=20mA$ $T_j=25^\circ C$		TYP.	2.5	$\mu s$
$t_{off}$				25	

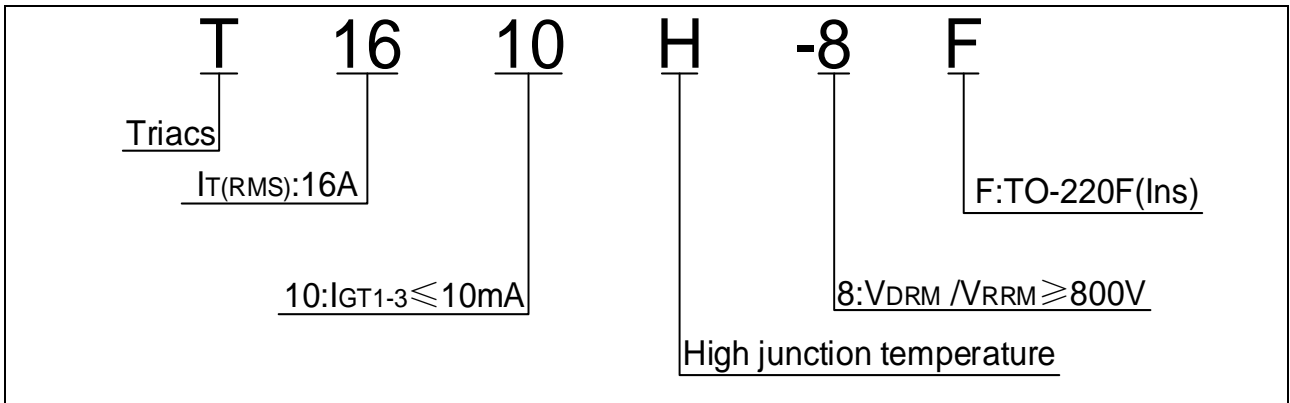
**STATIC CHARACTERISTICS**

Symbol	Parameter		Value(MAX.)	Unit
$V_{TM}$	$I_{TM}=22.5A$ $t_p=380\mu s$	$T_j=25^\circ C$	1.4	V
$V_{TO}$	Threshold voltage	$T_j=150^\circ C$	0.75	V
$R_D$	Dynamic resistance	$T_j=150^\circ C$	27	m $\Omega$
$I_{DRM}$	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ C$	5	$\mu A$
$I_{RRM}$		$T_j=150^\circ C$	2	mA

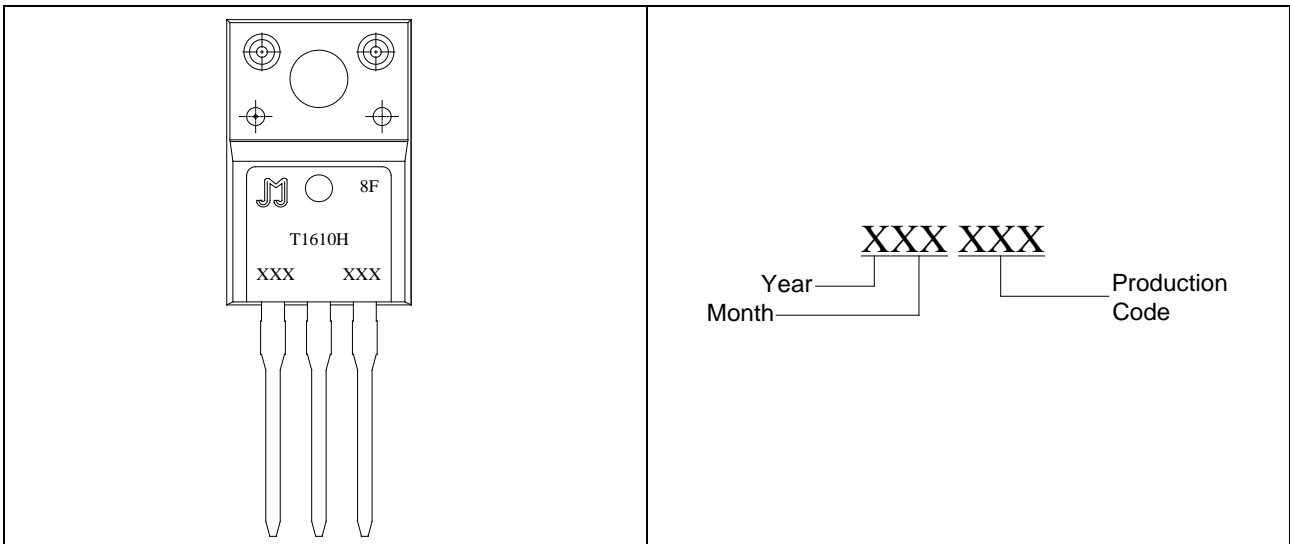
**THERMAL RESISTANCES**

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

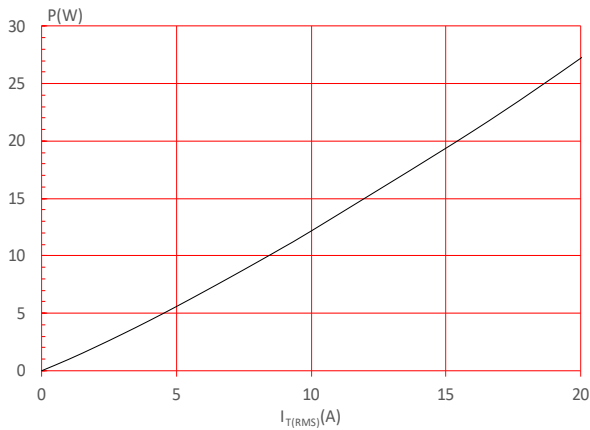
**ORDERING INFORMATION**



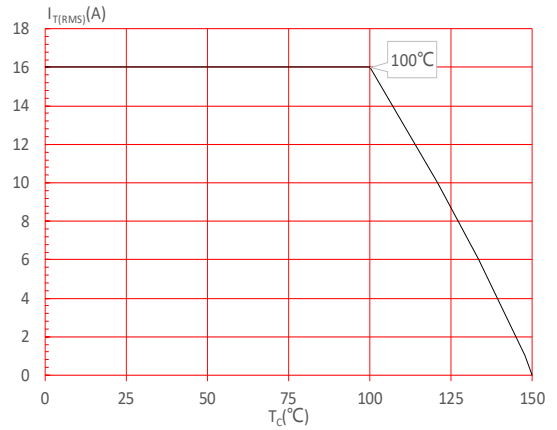
**MARKING**



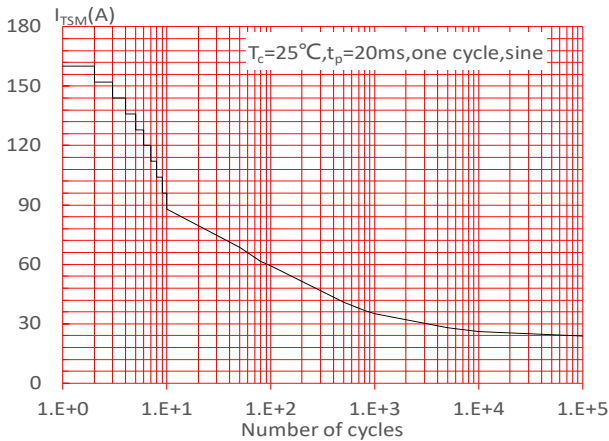
**FIG.1** Maximum power dissipation versus RMS on-state current



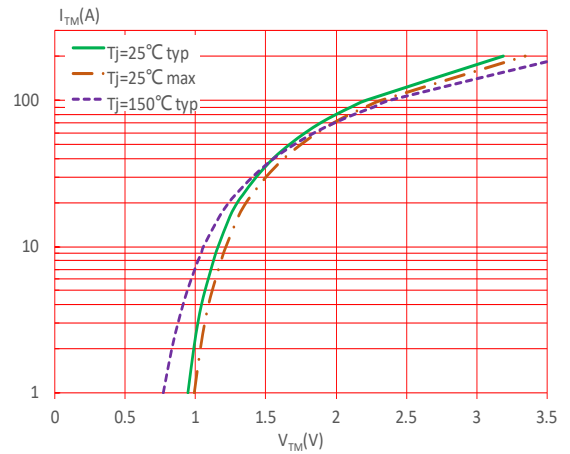
**FIG.2:** RMS on-state current versus case temperature



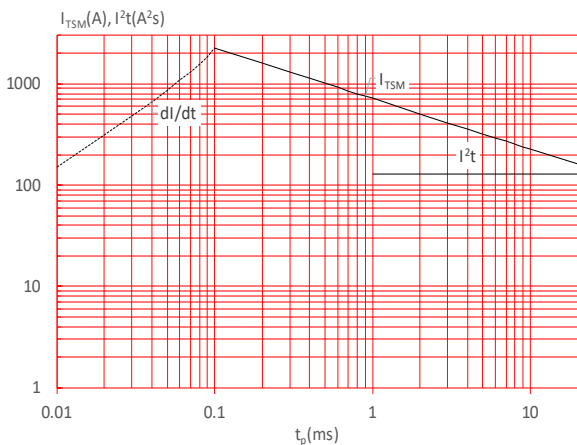
**FIG.3:** Surge peak on-state current versus number of cycles



**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  $I^2t$  ( $di/dt < 100\text{A}/\mu\text{s}$ )



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

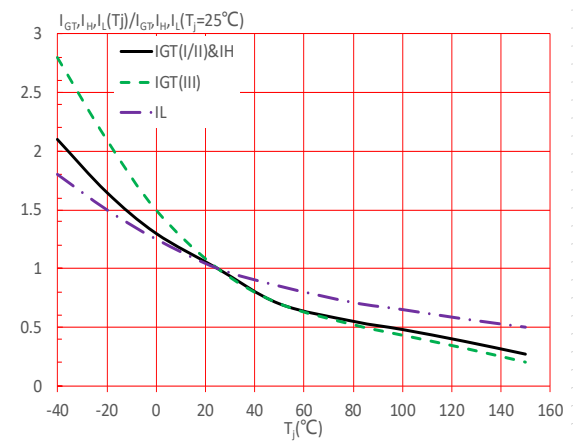
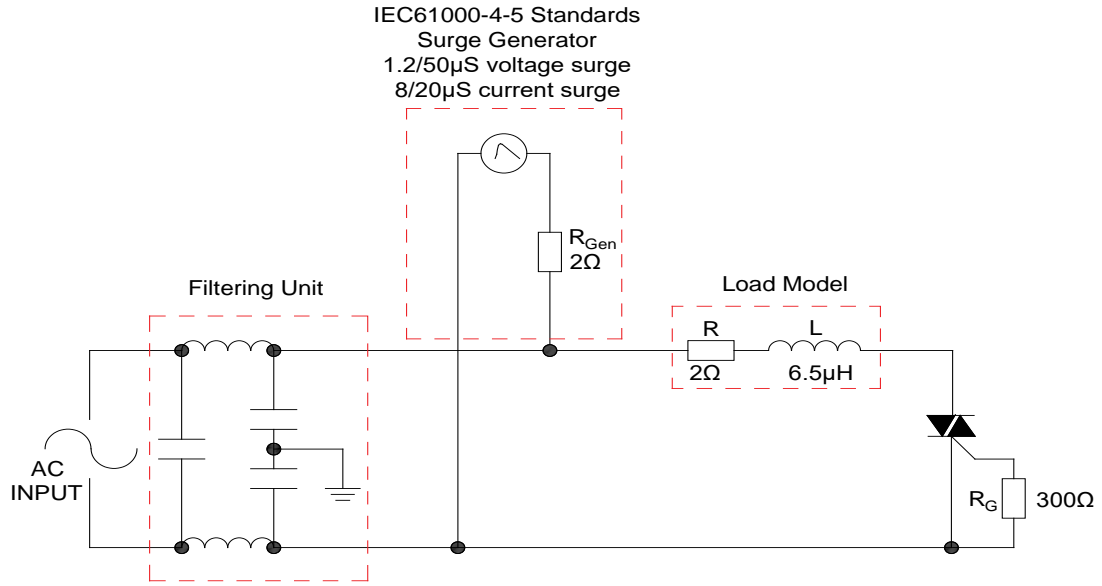


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



### SHAPING AND SOLDERING PARAMETERS

Refer to 《Instructions for installation of plastic-sealed in-line power devices》 released by JieJie

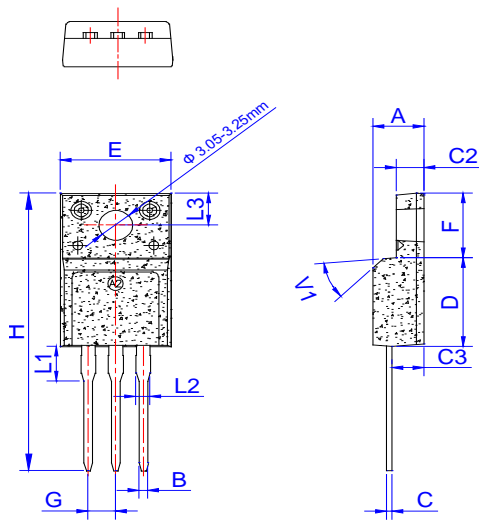
## ORDERING INFORMATION

Order code	Voltage $V_{DRM}/V_{RRM}$ (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
		I - II - III			
T1610H-8F	800	10	TO-220F(Ins)	50	Tube

## Document Revision History

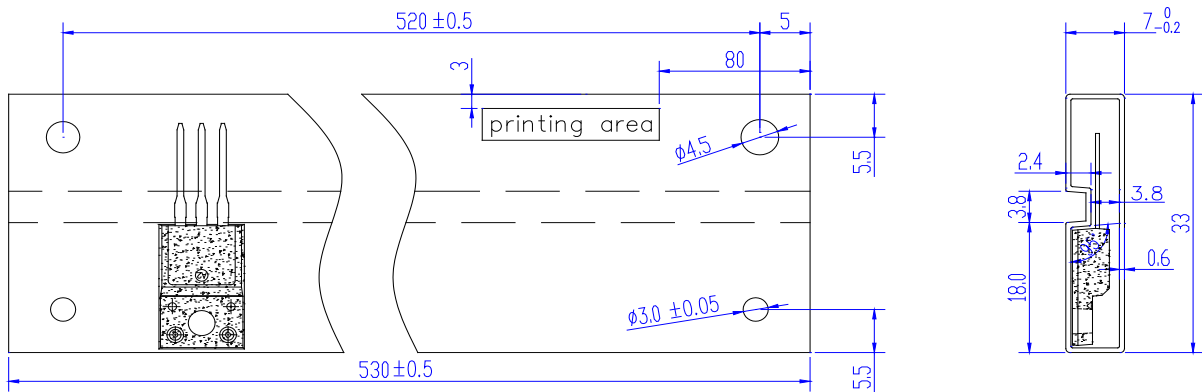
Date	Revision	Changes
Apr.10, 2023	A.1.0	Last updated

PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G	2.40		2.70	0.094		0.106
H	28.0		29.8	1.102		1.173
L1	3.20		3.80	0.126		0.150
L2	1.14		1.70	0.045		0.067
L3	3.20		3.60	0.126		0.142
V1		45°			45°	

DELIVERY MODE



PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220F	TUBE	50	1,000	5,000

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