

# 3TT12F

## MAIN CHARACTERISTICS

|              |      |
|--------------|------|
| $I_{T(RMS)}$ | 12A  |
| $V_{DRM}$    | 800V |
| $I_{GT}$     | 35mA |

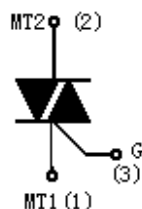
## APPLICATIONS

- AC switching
- Phase control

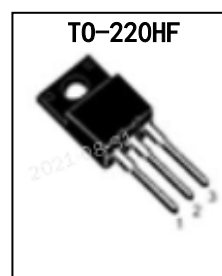
## FEATURES

- Glass-passivated mesa chip for reliability and uniform
- Uniform gate trigger currents in three quadrants
- RoHS products

## Package



| Pin | Description         |
|-----|---------------------|
| 1   | Main terminal 1 MT1 |
| 2   | Main terminal 2 MT2 |
| 3   | Gate G              |



## ORDER MESSAGES

| Order codes  |                   |             |                  | Marking | Package  |
|--------------|-------------------|-------------|------------------|---------|----------|
| Halogen-Tube | Halogen-Free-Tube | Halogen-Bag | Halogen-Free-Bag |         |          |
| 3TT12F-FA-B  | 3TT12F-FA-BR      | 3TT12F-FA-C | 3TT12F-FA-CR     | 3TT12F  | TO-220HF |

## GENERAL DESCRIPTION

3TT12F is Glass passivated three quadrant triacs, designed for high performance full-wave ac control applications where high static and dynamic  $dV/dt$  and high  $dI/dt$  can occur. They are specially recommended for use on inductive loads such as motor control circuits. Available packages is TO-220HF(plastic envelope).

**ABSOLUTE RATINGS ( $T_c=25^{\circ}\text{C}$ )**

| Parameter                                                    | Symbol              | Condition                                                                                               | Value     | Unit                   |
|--------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------|-----------|------------------------|
| Repetitive peak off-state voltage                            | $V_{\text{DRM}}$    |                                                                                                         | $\pm 800$ | V                      |
| On-state RMS current                                         | $I_{\text{T(RMS)}}$ | full sine wave                                                                                          | 12        | A                      |
| Non- repetitive surge peak on-state current                  | $I_{\text{TSM}}$    | full sine wave , $t=20\text{ms}$                                                                        | 150       | A                      |
|                                                              |                     | full sine wave , $t=16.7\text{ms}$                                                                      | 161       | A                      |
|                                                              | $I^2t$              | $t=10\text{ms}$                                                                                         | 112.5     | $\text{A}^2\text{s}$   |
| Repetitive rate of rise of on-state current after triggering | $di/dt$             | $I_{\text{TM}}=20\text{A}$ , $I_{\text{G}}=0.2\text{A}$ ,<br>$di_{\text{G}}/dt=0.2\text{A}/\mu\text{s}$ | 100       | $\text{A}/\mu\text{s}$ |
| Peak gate current                                            | $I_{\text{GM}}$     |                                                                                                         | 2         | A                      |
| Peak gate voltage                                            | $V_{\text{GM}}$     |                                                                                                         | 5         | V                      |
| Peak gate power                                              | $P_{\text{GM}}$     |                                                                                                         | 5         | W                      |
| Average gate power                                           | $P_{\text{G(AV)}}$  | over any 20ms period                                                                                    | 0.5       | W                      |
| Storage temperature                                          | $T_{\text{stg}}$    |                                                                                                         | -40~150   | $^{\circ}\text{C}$     |
| Operation junction temperature                               | $T_{\text{VJ}}$     |                                                                                                         | 125       | $^{\circ}\text{C}$     |

**ELECTRICAL CHARACTERISTIC (T<sub>c</sub>=25°C)**

| Parameter                        | Symbol           | Condition                                                                                                        | Min  | Typ | Max | Unit   |
|----------------------------------|------------------|------------------------------------------------------------------------------------------------------------------|------|-----|-----|--------|
| Peak Repetitive Blocking Current | I <sub>DRM</sub> | V <sub>DM</sub> =V <sub>DRM</sub> , T <sub>j</sub> =125°C, gate open                                             | -    | -   | 0.8 | mA     |
| Peak on-state voltage            | V <sub>TM</sub>  | I <sub>TM</sub> =17A                                                                                             | -    | 1.3 | 1.7 | V      |
| Gate trigger current             | I <sub>GT</sub>  | V <sub>DM</sub> =12V, R <sub>L</sub> =100 Ω, MT1(-),MT2(+),G(+)                                                  | 2    | -   | 35  | mA     |
|                                  |                  | MT1(-),MT2(+),G(-)                                                                                               | 2    | -   | 35  | mA     |
|                                  |                  | MT1(+),MT2(-),G(-)                                                                                               | 2    | -   | 35  | mA     |
| Gate trigger voltage             | V <sub>GT</sub>  | V <sub>DM</sub> =12V, R <sub>L</sub> =100 Ω, MT1(-),MT2(+),G(+)                                                  | -    | 0.7 | 1.5 | V      |
|                                  |                  | MT1(-),MT2(+),G(-)                                                                                               | -    | 0.7 | 1.5 | V      |
|                                  |                  | MT1(+),MT2(-),G(-)                                                                                               | -    | 0.7 | 1.5 | V      |
| Holding current                  | I <sub>H</sub>   | V <sub>DM</sub> =12V, I <sub>GT</sub> =0.1A                                                                      | -    | -   | 35  | mA     |
| Latching current                 | I <sub>L</sub>   | V <sub>DM</sub> =12V, I <sub>GT</sub> =0.1A, MT1(-),MT2(+),G(+)                                                  | -    | -   | 50  | mA     |
|                                  |                  | MT1(-),MT2(+),G(-)                                                                                               | -    | -   | 60  | mA     |
|                                  |                  | MT1(+),MT2(-),G(-)                                                                                               | -    | -   | 50  | mA     |
| Rise of off- state voltage       | dV/dt            | V <sub>DM</sub> =67% V <sub>DRM(MAX)</sub> , T <sub>j</sub> =125°C, gate open                                    | 1000 | -   | -   | V/ μ s |
| Gate controlled turn-on time     | tgt              | I <sub>TM</sub> =16A, V <sub>DM</sub> =V <sub>DRM(MAX)</sub> , I <sub>G</sub> =0.1A, dI <sub>G</sub> /dt=5A/ μ S | -    | 2   | -   | μ s    |

**THERMAL CHARACTERISTIC**

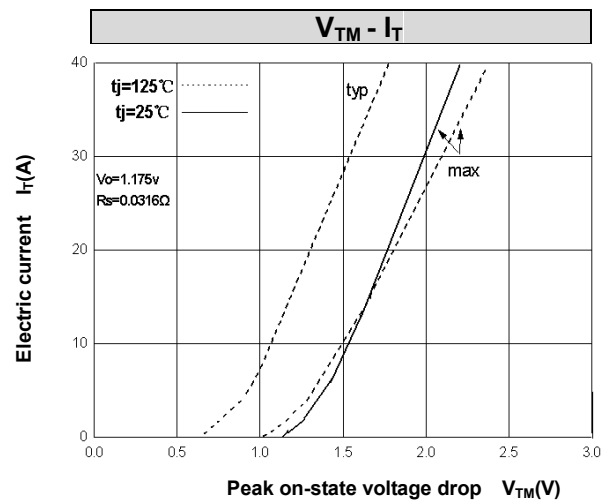
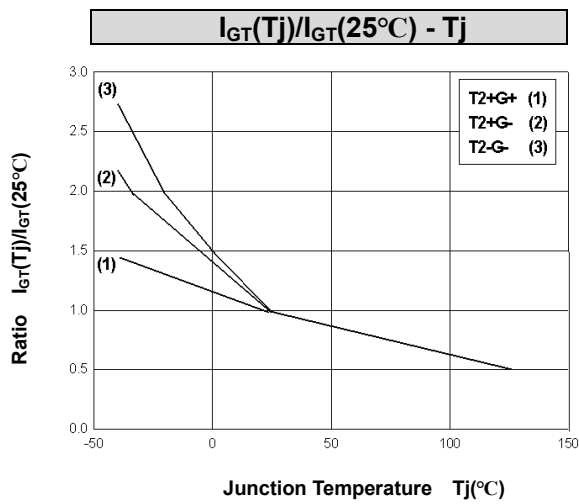
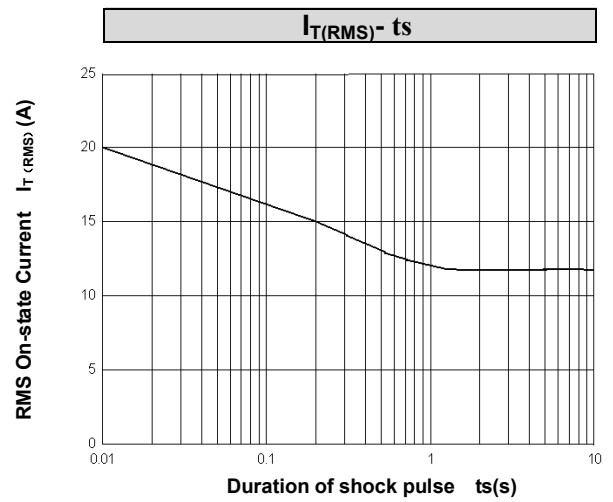
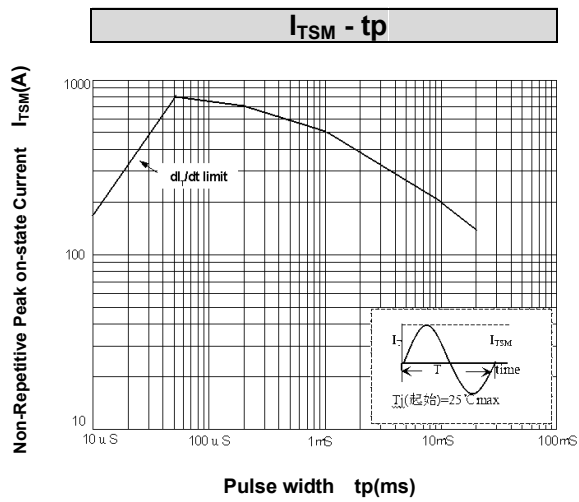
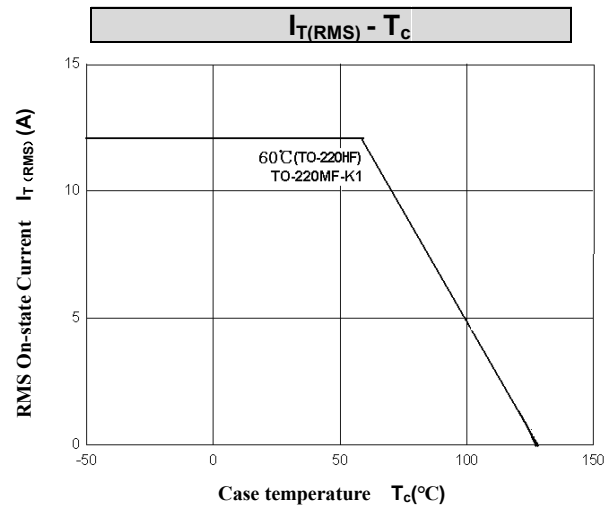
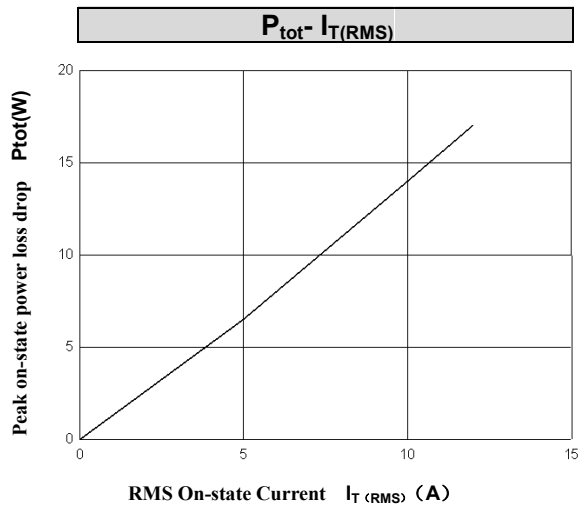
| Parameter                           | Symbol               | Condition            | Min | Typ | Max | Unit |
|-------------------------------------|----------------------|----------------------|-----|-----|-----|------|
| Thermal resistance junction to case | R <sub>th(j-c)</sub> | full cycle(TO-220HF) |     |     | 4.1 | °C/W |

**ELECTRICAL ISOLATION**

| Parameter         | Symbol            | Condition                                | Value | Unit |
|-------------------|-------------------|------------------------------------------|-------|------|
| Isolation voltage | V <sub>ISOL</sub> | 1 minute, leads to mounting tab TO-220HF | 2000  | V    |



## ELECTRICAL CHARACTERISTICS (curves)

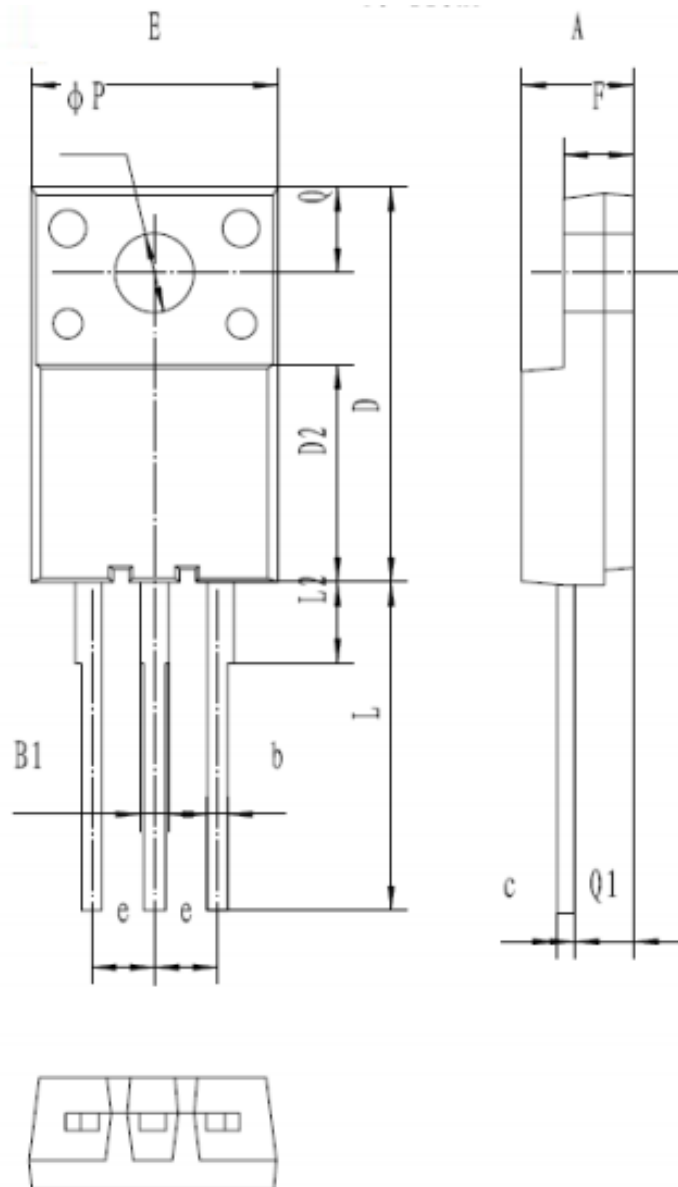




## PACKAGE MECHANICAL DATA

TO-220HF

Unit : mm



| 符号<br>symbol | MIN      | MAX   |
|--------------|----------|-------|
| A            | 4.0      | 5.0   |
| B1           | 0.87     | 1.27  |
| b            | 0.72     | 0.92  |
| c            | 0.5      | 0.7   |
| D            | 15.0     | 16.5  |
| D2           | 7.8      | 9.4   |
| E            | 9.62     | 10.62 |
| e            | 2.54 TYP |       |
| F            | 2.3      | 3.3   |
| L            | 13.0     | 14.0  |
| L2           | 3.1      | 3.5   |
| $\phi P$     | 3.0      | 3.4   |
| Q            | 3.15     | 3.55  |
| Q1           | 2.2      | 2.5   |



## NOTE

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2. We strongly recommend customers check carefully on the trademark when buying our product, if there is any question, please don't be hesitate to contact us.
3. Please do not exceed the absolute maximum ratings of the device when circuit designing.
4. Jilin Sino-microelectronics co., Ltd reserves the right to make changes in this. specification sheet and is subject to change without prior notice.

## CONTACT

### JILIN SINO-MICROELECTRONICS CO., LTD.

ADD: No.99 Shenzhen Street, Jilin City, Jilin Province, China.

Post Code: 132013

Tel: 86-432-64678411

Fax: 86-432-64665812

Web Site: [www.hwdz.com.cn](http://www.hwdz.com.cn)

