

12A 4Quadrants TRIACs

Product Summary

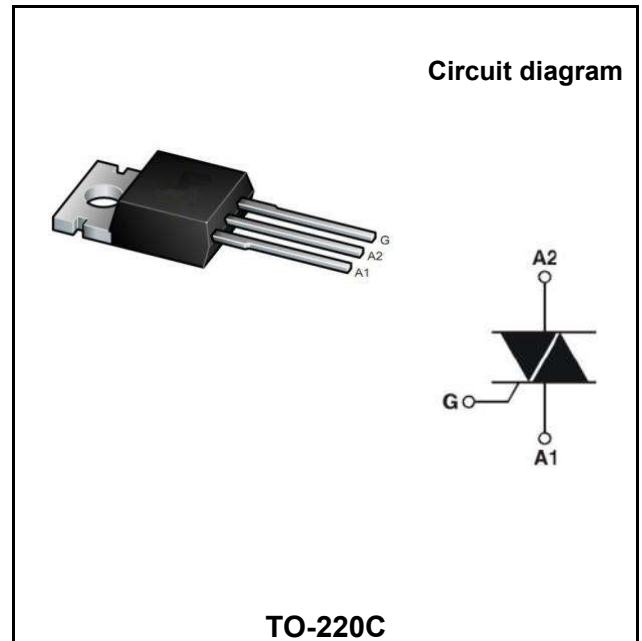
| Symbol | Value | Unit |
|-------------------|---------|------|
| $I_{T(AV)}$ | 12 | A |
| $V_{DRM} V_{RRM}$ | 600/800 | V |
| V_{TM} | 1.55 | V |

Features

With high ability to withstand the shock loading of arge current, Provide high dv/dt rate with strong resistance to electromagnetic interference

Application

Power charger, T-tools, massager, solid staterelay, AC Motor speed regulation and so on.



Order Information

| Part Number | Package | Marking | packing | packing Quantity |
|-------------|---------|------------|---------|------------------|
| BT138 | TO-220C | BT138 XXXX | Box | 1000PCS/Box |

Absolute maximum ratings (Ta=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit | |
|---|--------------|-------------|------------------|------------|
| Repetitive peak off-state voltage | V_{DRM} | 600/800 | V | |
| Repetitive peak reverse voltage | V_{RRM} | 600/800 | V | |
| RMS on-state current | $I_{T(RMS)}$ | 12 | A | |
| Non repetitive surge peak on-state current (full cycle, F=50Hz) | I_{TSM} | 95 | A | |
| I^2t value for fusing (tp=10ms) | I^2t | 45 | A ² s | |
| Critical rate of rise of on-state current ($I_G = 2 \times I_{GT}$) | di/dt | I - II -III | 50 | A/ μ s |
| | | IV | 10 | |
| Peak gate current | I_{GM} | 2 | A | |
| Gate peak power | I_{GM} | 5 | W | |
| Average gate power dissipation | $P_G(AV)$ | 0.5 | W | |
| Junction Temperature | T_J | -40~+150 | °C | |
| Storage Temperature | T_{STG} | -40 ~+125 | °C | |

Electrical characteristics (TA=25°C, unless otherwise noted)

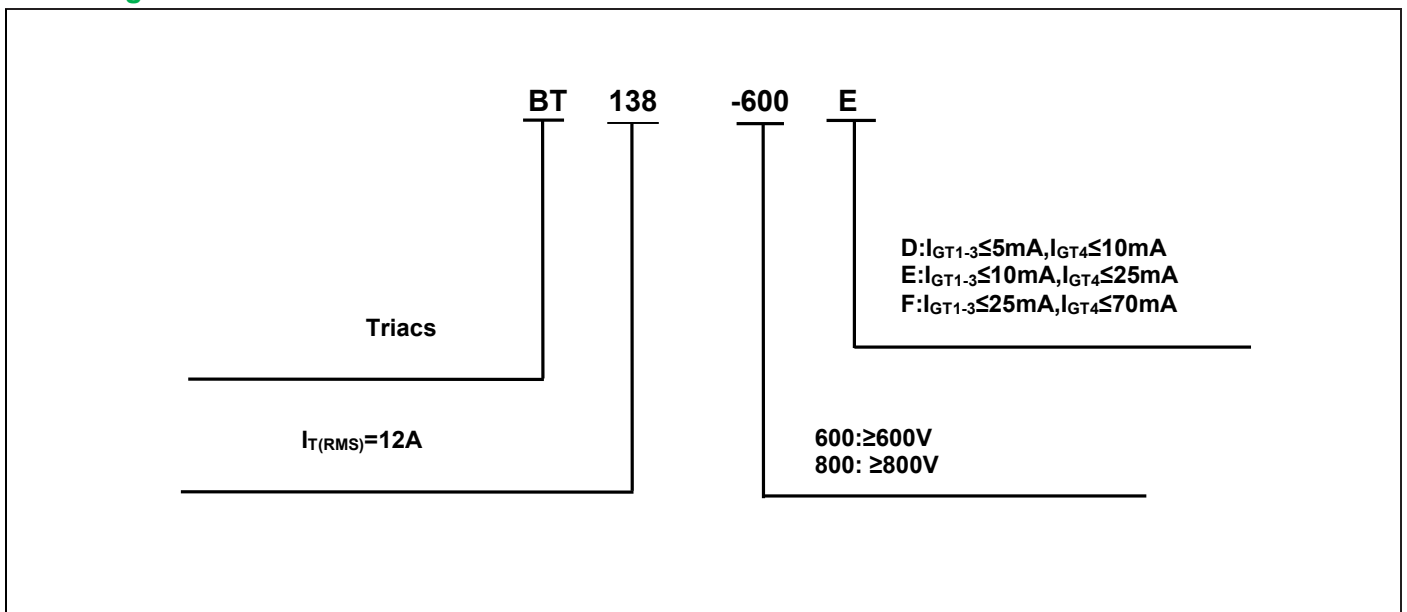
| Parameter | Symbol | Test Condition | Value | | | Unit | |
|--|-----------|---|----------------|------------|-----------|-------------|-----------|
| | | | D | E | F | | |
| Gate trigger current | I_{GT} | $V_D=12V$, $I_T=0.1A$, $T_j=25^\circ C$, Fig.6 | I - II -III | ≤ 5 | ≤ 10 | ≤ 25 | mA |
| | | | IV | ≤ 10 | ≤ 25 | ≤ 70 | |
| Gate trigger voltage | V_{GT} | | I - II -III-IV | ≤ 1.3 | | | V |
| Gate non-trigger voltage | V_{GD} | $V_D=V_{DRM}$, $T_j=125^\circ C$ | ≥ 0.2 | | | V | |
| Holding current | I_H | $V_D=12V$, $I_{GT}=0.1A$, $T_j=25^\circ C$, Fig.6 | I - II -III-IV | ≤ 10 | ≤ 30 | ≤ 30 | mA |
| Latching current | I_L | | I -III-IV | ≤ 15 | ≤ 30 | ≤ 40 | mA |
| | | | II | ≤ 20 | ≤ 40 | ≤ 60 | mA |
| Critical-rate of rise of commutation voltage | dV_D/dt | $V_D=2/3V_{DRM}$, $T_j=125^\circ C$ | ≥ 10 | ≥ 20 | ≥ 50 | V/us | |

STATIC CHARACTERISTICS

| | | | | | | | |
|-----------------------------------|-----------|------------------------------------|-------------------|------------|--|------------|-----------|
| Forward "on" voltage | V_{TM} | $I_{TM}=15A$, $t_p=380us$, Fig.4 | ≤ 1.55 | | | V | |
| Repetitive Peak Off-State Current | I_{DRM} | $V_D=V_{DRM}$ $V_R=V_{RRM}$ | $T_j=25^\circ C$ | ≤ 5 | | ≤ 5 | uA |
| Repetitive Peak Reverse Current | I_{RRM} | | $T_j=125^\circ C$ | ≤ 0.5 | | ≤ 0.5 | mA |

THERMAL RESISTANCES

| | | | | | |
|--------------------|---------------|---------------------|------|-----|--------------|
| Thermal resistance | $R_{th(j-c)}$ | Junction to case | TYP. | 1.4 | $^\circ C/W$ |
| | $R_{th(j-a)}$ | Junction to ambient | TYP. | 60 | $^\circ C/W$ |

Ordering Information


Typical Characteristics

FIG.1: Maximum power dissipation versus RMS on-state current (full cycle)

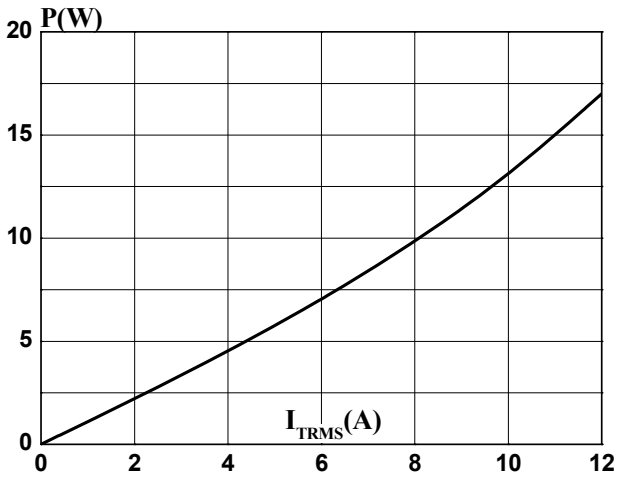


FIG.2: RMS on-state current versus case temperature (full cycle)

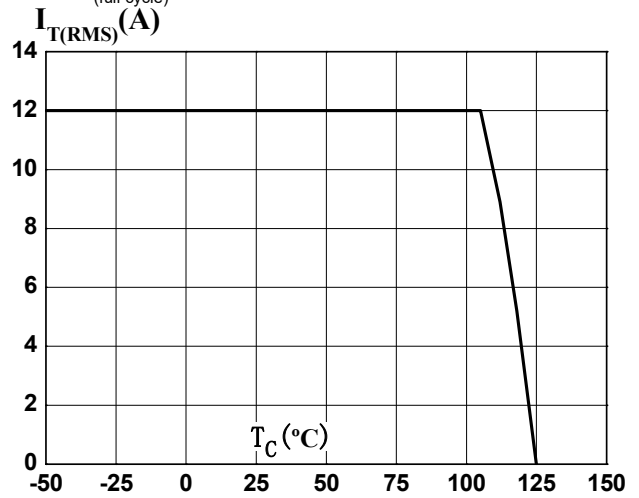


FIG.3: Surge peak on-state current versus number of cycles

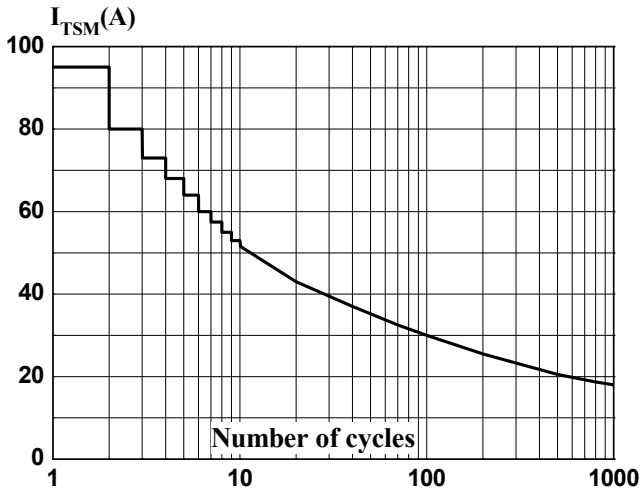


FIG.4: On-state characteristics (maximum values)

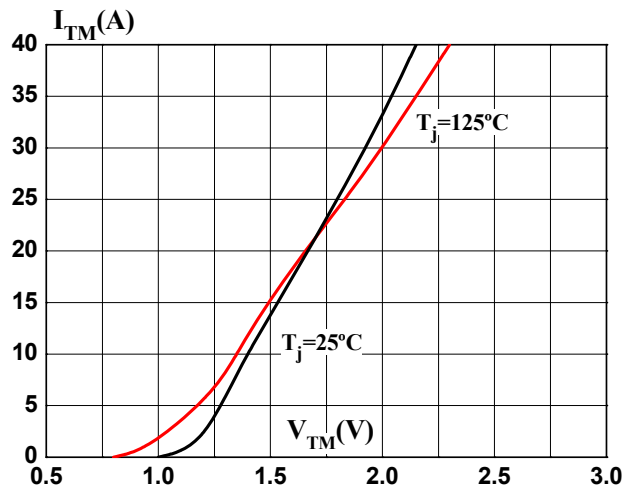


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$

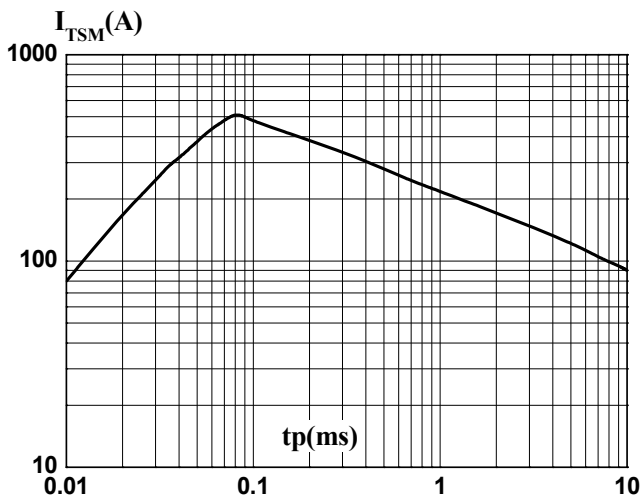
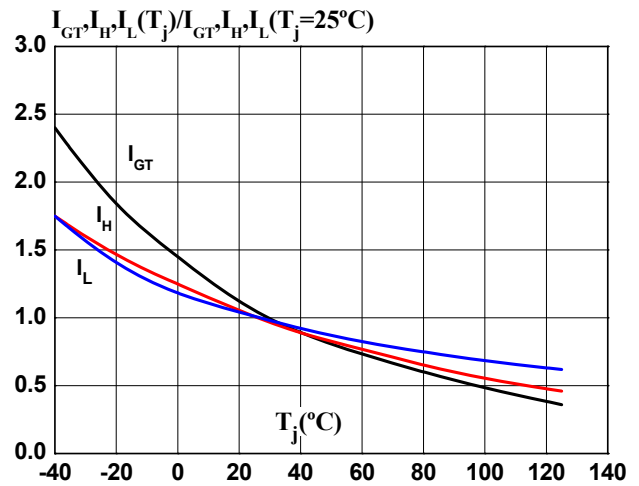
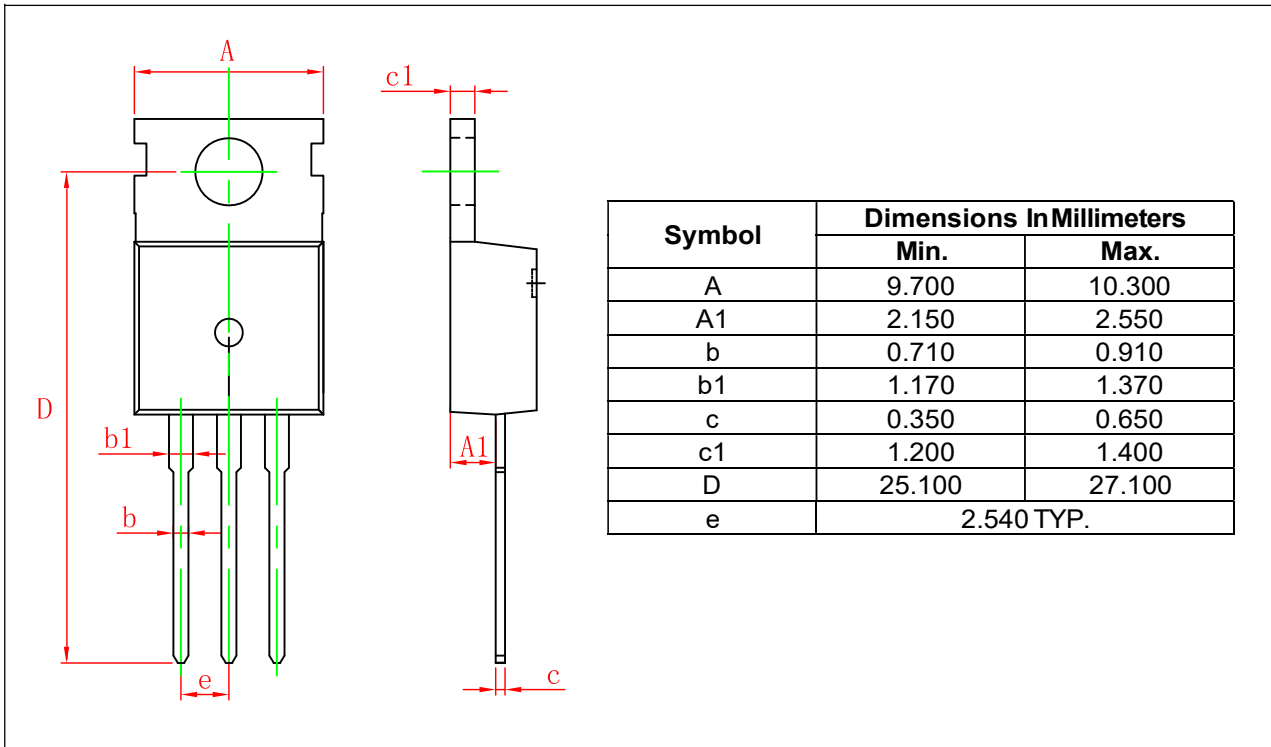


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



TO-220C



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