



BTA12

Preliminary

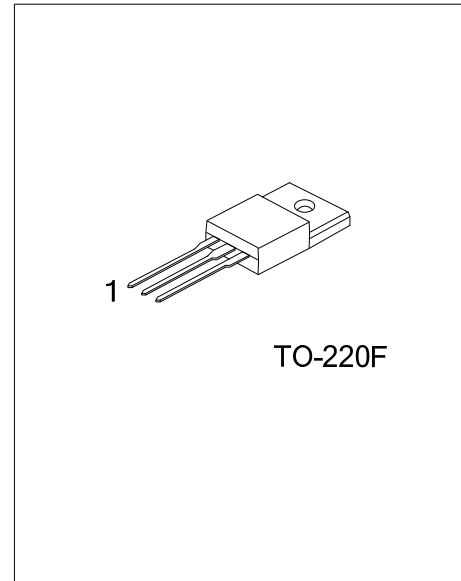
TRIAC

12A TRIACS

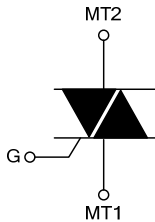
■ **DESCRIPTION**

The UTC **BTA12** is a 12A triacs which can be operated in 4 quadrants, it uses UTC's advanced technology to provide customers with high commutation performances, etc.

The UTC **BTA12** is suitable for AC switching application and phase control application such as fan speed and temperature modulation control, lighting control and static switching relay, either in through-hole or surface-mount packages.



■ **SYMBOL**



■ **ORDERING INFORMATION**

| Ordering Number | | Package | Pin Assignment | | | Packing |
|------------------|------------------|---------|----------------|-----|---|---------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| BTA12L-x-x-TF3-T | BTA12G-x-x-TF3-T | TO-220F | MT1 | MT2 | G | Tube |

| | |
|-------------------------|--|
| <p>BTA12L-x-x-TF3-T</p> | <p>(1) T: Tube (2) TF3: TO-220F (3) refer to SENSITIVITY AND TYPE (4) 6: 600V, 8: 800V (5) L: Lead Free, G: Halogen Free</p> |
|-------------------------|--|

■ **SENSITIVITY AND TYPE**

| PART NUMBER | VOLTAGE | | SENSITIVITY | TYPE |
|-------------|---------|------|-------------|----------|
| | 600V | 800V | | |
| B | ⊙ | ⊙ | 50mA | STANDARD |
| C | ⊙ | ⊙ | 25mA | STANDARD |

⊙: Available

■ **MARKING INFORMATION**

| PACKAGE | MARKING |
|---------|---------|
| TO-220F | |

■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER | | | SYMBOL | RATINGS | UNIT |
|---|-------------------------|-------------------------|-------------------|-----------------------|------------------------|
| RMS On-State Current (Full Sine Wave) | $T_C=90^\circ\text{C}$ | | $I_{T(RMS)}$ | 12 | A |
| Non Repetitive Surge Peak On-State Current (Full Cycle, T_J initial= 25°C) | F=50 Hz | t=20ms | I_{TSM} | 120 | A |
| | F=60 Hz | t=16.7ms | | 126 | A |
| I^2t Value for Fusing | $t_p=10\text{ms}$ | | I^2t | 78 | A^2s |
| Critical Rate of Rise of On-State Current $I_G=2xI_{GT}$, $t_r \leq 100\text{ns}$ | F=120 Hz | $T_J=125^\circ\text{C}$ | dI/dt | 50 | $\text{A}/\mu\text{s}$ |
| Non Repetitive Surge Peak Off-State Voltage | $t_p=10\text{ms}$ | $T_J=25^\circ\text{C}$ | V_{DSM}/V_{RSM} | $V_{DRM}/V_{RRM}+100$ | V |
| Peak Gate Current | $t_p=20\mu\text{s}$ | $T_J=125^\circ\text{C}$ | I_{GM} | 4 | A |
| Average Gate Power Dissipation | $T_J=125^\circ\text{C}$ | | $P_{G(AV)}$ | 1 | W |
| Operating Junction Temperature | | | T_J | -40~+125 | $^\circ\text{C}$ |
| Storage Junction Temperature | | | T_{STG} | -40~+150 | $^\circ\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL RESISTANCES

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-----------------------|---------------|---------|---------------------------|
| Junction to Ambient | θ_{JA} | 60 | $^\circ\text{C}/\text{W}$ |
| Junction to Case (AC) | θ_{JC} | 2.3 | $^\circ\text{C}/\text{W}$ |

■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$ unless otherwise specified)

FOR STANDARD TYPE (4 QUADRANTS)

| PARAMETER | SYMBOL | TEST CONDITIONS | C | | | B | | | UNIT | |
|--|----------------------|---|----------|-----|-----|-----|-----|-----|------|------------------------|
| | | | MIN | TYP | MAX | MIN | TYP | MAX | | |
| Gate Trigger Current (Note 1) | I_{GT} | $V_D=12\text{V}$, $R_L=33\Omega$ | I-II-III | | | 25 | | | 50 | mA |
| | | | IV | | | 50 | | | 100 | mA |
| Gate Trigger Voltage | V_{GT} | | ALL | | | 1.3 | | | 1.3 | V |
| Gate Non-Trigger Voltage | V_{GD} | $V_D=V_{DRM}$, $R_L=3.3\text{k}\Omega$, $T_J=125^\circ\text{C}$ | ALL | 0.2 | | | 0.2 | | | V |
| Holding Current (Note 2) | I_H | $I_T=500\text{mA}$ | | | | 25 | | | 50 | mA |
| Latching Current | I_L | $I_G=1.2 I_{GT}$ | I-III-IV | | | 40 | | | 50 | mA |
| | | | II | | | 80 | | | 100 | mA |
| Critical Rate of Rise of Off-State Voltage (Note 2) | dV/dt | $V_D=67\%V_{DRM}$, Gate Open, $T_J=125^\circ\text{C}$ | | 200 | | | 400 | | | $\text{V}/\mu\text{s}$ |
| Critical Rate of Rise of Off-State Voltage at Commutation (Note 2) | (dV/dt) _c | (dI/dt) _c =5.3A/ms, $T_J=125^\circ\text{C}$ | | 5 | | | 10 | | | $\text{V}/\mu\text{s}$ |

■ STATIC CHARACTERISTICS

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT | |
|-----------------------------------|-----------|--|-----|-------------------------|-----|------|------------------|
| Peak On-State Voltage (Note) | V_T | $I_{TM}=17\text{A}$, $t_p=380\mu\text{s}$ | | $T_J=25^\circ\text{C}$ | | 1.55 | V |
| Threshold Voltage (Note) | V_{TO} | | | $T_J=125^\circ\text{C}$ | | 0.85 | V |
| Dynamic Resistance (Note) | R_D | | | $T_J=125^\circ\text{C}$ | | 35 | $\text{m}\Omega$ |
| Repetitive Peak Off-State Current | I_{DRM} | $V_{DRM}=V_{RRM}$ | | $T_J=25^\circ\text{C}$ | | 5 | μA |
| | I_{RRM} | | | $T_J=125^\circ\text{C}$ | | 1 | mA |

Note: 1. Minimum I_{GT} is guaranteed at 5% of I_{GT} max.
 2. For both polarities of MT2 referenced to MT1.

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