

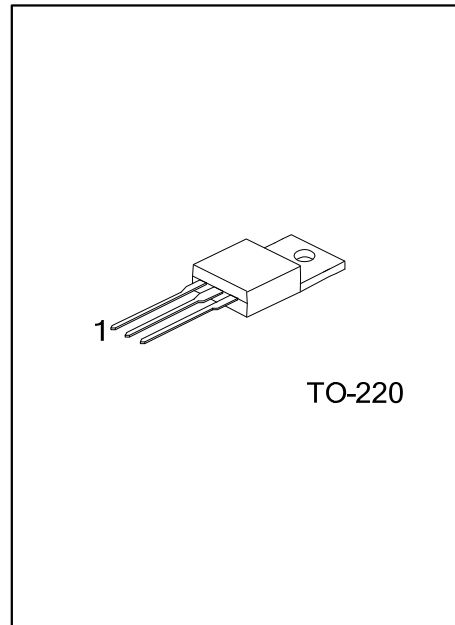
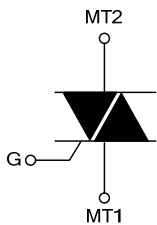
**BTB08A**

Preliminary

**TRIAC****8A TRIACS****DESCRIPTION**

The UTC **BTB08A** is a 8A triacs which can be operated in 3 quadrants only, it uses UTC's advanced technology to provide customers with high commutation performances and voltage insulated tab, etc.

The UTC **BTB08A** is suitable for inductive load switching operations, also can be used in ON/OFF function applications such as induction motor starting circuits, heating regulation, static relays etc.

**SYMBOL****ORDERING INFORMATION**

| Ordering Number    |                    | Package | Pin Assignment |     |   | Packing |
|--------------------|--------------------|---------|----------------|-----|---|---------|
| Lead Free          | Halogen Free       |         | 1              | 2   | 3 |         |
| BTB08AL-x-xx-TA3-T | BTB08AG-x-xx-TA3-T | TO-220  | MT1            | MT2 | G | Tube    |

|                    |                                                                                             |                                                                                                                                  |
|--------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| BTB08AL-x-xx-TA3-T | (1)Packing Type<br>(2)Package Type<br>(3)Sensitivity and type<br>(4)Voltage<br>(5)Lead Free | (1) T: Tube<br>(2) TA3: TO-220<br>(3) refer to SENSITIVITY AND TYPE<br>(4) 6: 600V, 8: 800V<br>(5) L: Lead Free, G: Halogen Free |
|--------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|

**SENSITIVITY AND TYPE**

| PART NUMBER | VOLTAGE |      | SENSITIVITY | TYPE        |
|-------------|---------|------|-------------|-------------|
|             | 600V    | 800V |             |             |
| BW          | ⊙       | ⊙    | 50mA        | SNUBBERLESS |
| CW          | ⊙       | ⊙    | 35mA        | SNUBBERLESS |
| SW          | ⊙       | ⊙    | 10mA        | LOGIC LEVEL |
| TW          | ⊙       | ⊙    | 5mA         | LOGIC LEVEL |

⊙: Available

**MARKING INFORMATION**

| PACKAGE | MARKING                                                                                              |
|---------|------------------------------------------------------------------------------------------------------|
| TO-220  | <br>Lot Code ← UTC<br>BTB08A<br>□ □ □ □ □<br>→ L: Lead Free<br>→ G: Halogen Free<br>→ Data Code<br>1 |

## ■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER                                                                                    | SYMBOL                                                    | RATINGS         | UNIT                   |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------|------------------------|
| RMS On-State Current (Full Sine Wave)                                                        | $T_C=100^{\circ}\text{C}$<br>$I_{T(RMS)}$                 | 8               | A                      |
| Non Repetitive Surge Peak On-State Current (Full Cycle $T_J$ initial= $25^{\circ}\text{C}$ ) | $F=50\text{Hz}$ $t=20\text{ms}$                           | 80              | A                      |
|                                                                                              | $F=60\text{Hz}$ $t=16.7\text{ms}$                         | 84              | A                      |
| $I^2t$ Value for Fusing                                                                      | $t_p=10\text{ms}$<br>$I^2t$                               | 36              | $\text{A}^2\text{s}$   |
| Critical Rate of Rise of On-State Current:<br>$I_G=2I_{GT}$ , $t_r \leq 100\text{ns}$        | $F=120\text{Hz}$ $T_J=125^{\circ}\text{C}$<br>$di/dt$     | 50              | $\text{A}/\mu\text{s}$ |
| Peak Gate Current                                                                            | $t_p=20\mu\text{s}$ $T_J=125^{\circ}\text{C}$<br>$I_{GM}$ | 4               | A                      |
| Average Gate Power Dissipation                                                               | $T_J=125^{\circ}\text{C}$<br>$P_{G(AV)}$                  | 1               | W                      |
| Operating Junction Temperature                                                               | $T_J$                                                     | $-40 \sim +125$ | $^{\circ}\text{C}$     |
| Storage Junction Temperature                                                                 | $T_{STG}$                                                 | $-40 \sim +150$ | $^{\circ}\text{C}$     |

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   | $\theta_{JA}$ | 60      | $^{\circ}\text{C}/\text{W}$ |
| Junction to Case (AC) | $\theta_{JC}$ | 1.6     | $^{\circ}\text{C}/\text{W}$ |

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

### FOR SNUBBERLESS AND LOGIC LEVEL (3 QUADRANTS)

| PARAMETER                                                          | SYMBOL      | TEST CONDITIONS                                                           | TW       |     |     | SW   |     |     | CW  |     |     | BW   |     |     | UNIT                   |
|--------------------------------------------------------------------|-------------|---------------------------------------------------------------------------|----------|-----|-----|------|-----|-----|-----|-----|-----|------|-----|-----|------------------------|
|                                                                    |             |                                                                           | MIN      | TYP | MAX | MIN  | TYP | MAX | MIN | TYP | MAX | MIN  | TYP | MAX |                        |
| Gate Trigger Current (Note 1)                                      | $I_{GT}$    | $V_D=12\text{V}$                                                          | I-II-III |     | 5   |      |     | 10  |     |     | 35  |      |     | 50  | mA                     |
| Gate Trigger Voltage                                               | $V_{GT}$    | $R_L=30\Omega$                                                            | I-II-III |     | 1.3 |      |     | 1.3 |     |     | 1.3 |      |     | 1.3 | V                      |
| Gate Non-Trigger Voltage                                           | $V_{GD}$    | $V_D=V_{DRM}$ ,<br>$R_L=3.3\text{k}\Omega$ ,<br>$T_J=125^{\circ}\text{C}$ | I-II-III | 0.2 |     | 0.2  |     |     | 0.2 |     |     | 0.2  |     |     | V                      |
| Holding Current (Note 2)                                           | $I_H$       | $I_T=100\text{mA}$                                                        |          |     | 10  |      |     | 15  |     |     | 35  |      |     | 50  | mA                     |
| Latching Current                                                   | $I_L$       | $I_G=1.2I_{GT}$                                                           | I-III    |     | 10  |      |     | 25  |     |     | 50  |      |     | 70  | mA                     |
|                                                                    |             |                                                                           | II       |     | 15  |      |     | 30  |     |     | 60  |      |     | 80  | mA                     |
| Critical Rate of Rise of Off-State Voltage (Note 2)                | $dV/dt$     | $V_D=67\%V_{DRM}$ ,<br>Gate Open,<br>$T_J=125^{\circ}\text{C}$            |          | 20  |     | 40   |     |     | 400 |     |     | 1000 |     |     | $\text{V}/\mu\text{s}$ |
| Critical Rate of Rise of Off-State Voltage at Commutation (Note 2) | $(di/dt)_c$ | $(dV/dt)_c=0.1\text{V}/\mu\text{s}$ ,<br>$T_J=125^{\circ}\text{C}$        |          | 3.5 |     | 5.4  |     |     |     |     |     |      |     |     | $\text{A}/\text{ms}$   |
|                                                                    |             | $(dV/dt)_c=10\text{V}/\mu\text{s}$ ,<br>$T_J=125^{\circ}\text{C}$         |          | 1.5 |     | 2.98 |     |     |     |     |     |      |     |     | $\text{A}/\text{ms}$   |
|                                                                    |             | Without Snubber<br>$T_J=125^{\circ}\text{C}$                              |          |     |     |      |     |     | 4.5 |     |     | 7    |     |     | $\text{A}/\text{ms}$   |

Note: 1. Minimum  $I_{GT}$  is guaranteed at 5% of  $I_{GT}$  max.

2. For both polarities of MT2 referenced to MT1.

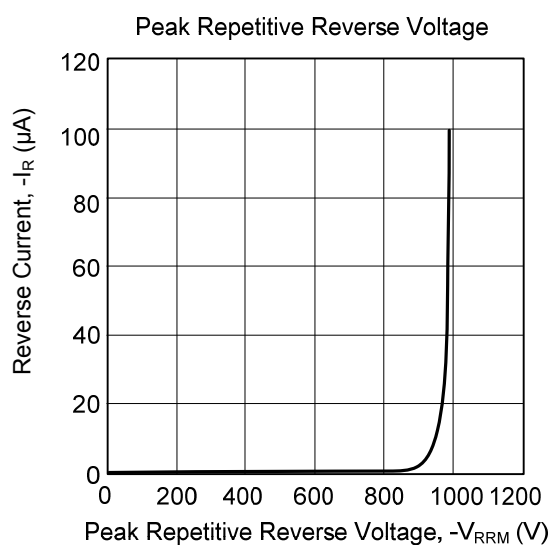
## ■ STATIC CHARACTERISTICS

| PARAMETER                         | SYMBOL    | TEST CONDITIONS               |                    | MIN | TYP | MAX  | UNIT       |
|-----------------------------------|-----------|-------------------------------|--------------------|-----|-----|------|------------|
| Peak On-State Voltage (Note 1)    | $V_{TM}$  | $I_{TM}=11A$ , $t_p=380\mu s$ | $T_J=25^{\circ}C$  |     |     | 1.55 | V          |
| Threshold Voltage (Note 2)        | $V_{TO}$  |                               | $T_J=125^{\circ}C$ |     |     | 0.85 | V          |
| Dynamic Resistance (Note 2)       | $R_D$     |                               | $T_J=125^{\circ}C$ |     |     | 50   | m $\Omega$ |
| Repetitive Peak Off-State Current | $I_{DRM}$ | $V_{DRM}=V_{RRM}$             | $T_J=25^{\circ}C$  |     |     | 5    | $\mu A$    |
|                                   | $I_{RRM}$ |                               | $T_J=125^{\circ}C$ |     |     | 1    | mA         |

Note: 1. Minimum  $I_{GT}$  is guaranteed at 5% of  $I_{GT}$  max.

2. For both polarities of MT2 referenced to MT1.

## ■ TYPICAL CHARACTERISTICS



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