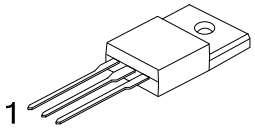
# 3A TRIACS



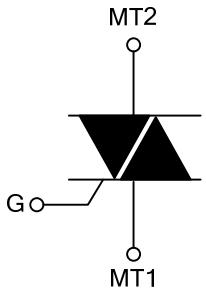

TO-220F

## ■ DESCRIPTION

The UTC **BTA303A** is a 3A triacs which can be operated in 3 quadrants only, it uses UTC's advanced technology to provide customers with high commutation performances, etc.

The UTC **BTA303A** 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 | |
| BTA303AL-x-xx-TF3-T | BTA303AG-x-xx-TF3-T | TO-220F | MT1 | MT2 | G | Tube |

Note: Pin Assignment: MT1: MT1 MT2: MT2 G: Gate

BTA303AG-x-xx-TF3-T

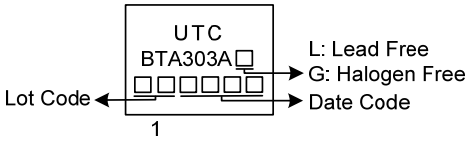
| | |
|---|---|
| (1)Packing Type | (1) R: Tape Reel, T: Tube |
| (2)Package Type | (2) TF3: TO-220F |
| (3)Sensitivity and type | (3) refer to SENSITIVITY AND TYPE |
| (4)Voltage | (4) 6: 600V. 8: 800V |
| (5)Green Package | (5) G: Halogen Free and Lead Free, L: Lead Free |

## ■ SENSITIVITY AND TYPE

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

◎: Available

## ■ MARKING



## ■ ABSOLUTE MAXIMUM RATINGS ($T_J$ = 25°C, unless otherwise specified)

| PARAMETER | | | SYMBOL | RATINGS | UNIT |
|---|---|---|---|---|---|
| RMS On-State Current (Full Sine Wave) | $T_C$=105°C | | $I_{T(RMS)}$ | 3 | A |
| Non Repetitive Surge Peak On-State Current (Full Cycle $T_J$ initial=25°C) | F=50Hz | t=20ms | $I_{TSM}$ | 20 | A |
| | F=60Hz | t=16.7ms | | 25 | A |
| $I^2t$ Value for Fusing | $t_P$=10ms | | $I^2t$ | 2.6 | $A^2s$ |
| Critical Rate of Rise of On-State Current: $I_G$=2x$I_{GT}$, tr≤100ns | | | dI/dt | 50 | A/µs |
| Peak Gate Current | $t_P$=20µs | | $I_{GM}$ | 2 | A |
| Average Gate Power Dissipation | | t=20ms | $P_{G(AV)}$ | 0.5 | W |
| Operating Junction Temperature | | | $T_J$ | -40 ~ +125 | °C |
| Storage Junction Temperature | | | $T_{STG}$ | -40 ~ +150 | °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 DATA

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Junction to Ambient | $\theta_{JA}$ | 60 | °C/W |
| Junction to Case | $\theta_{JC}$ | 6 | °C/W |

## ■ ELECTRICAL CHARACTERISTICS ($T_J$ = 25°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) | $I_{GT}$ | $V_D$=12V $I_L$=0.1A | I-II-III | | | 5 | | | 10 | | | 35 | | | 50 | mA |
| Gate Trigger Voltage | $V_{GT}$ | | I-II-III | | | 1.3 | | | 1.3 | | | 1.3 | | | 1.3 | V |
| Gate Non-Trigger Voltage | $V_{GD}$ | $V_D$=$V_{DRM}$, $R_L$=3.3kΩ, $T_J$=125°C | I-II-III | 0.2 | | | 0.2 | | | 0.2 | | | 0.2 | | | V |
| Holding Current (Note 2) | $I_H$ | $I_T$=100mA | | | | 10 | | | 15 | | | 35 | | | 50 | mA |
| Latching Current | $I_L$ | $I_G$=1.2$I_{GT}$ | 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%$V_{DRM}$, Gate Open, $T_J$=125°C | | 20 | | | 40 | | | 400 | | | 1000 | | | V/µs |
| Critical Rate of Rise of Off-State Voltage at Commutation (Note 2) | (dI/dt)c | (dV/dt)c=0.1V/µs $T_J$=125°C | | 2.7 | | | 3.5 | | | | | | | | | A/ms |
| | | (dV/dt)c=10V/µs, $T_J$=125°C | | 1.2 | | | 2.4 | | | | | | | | | A/ms |
| | | Without Snubber $T_J$= 125°C | | | | | | | | 3.5 | | | 5.3 | | | A/ms |

Notes: 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 2) | $V_{TM}$ | $I_{TM}$=4.1A, $t_P$=380μs | $T_J$=25°C | | | 1.7 | V |
| Repetitive Peak Off-State Current | $I_{DRM}$ | $V_{DRM}$=$V_{RRM}$ | $T_J$=25°C | | | 5 | μA |
| | $I_{RRM}$ | | $T_J$=125°C | | | 2 | mA |

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