



BTA/BTB08 and T8 Series

SNUBBERLESS™, LOGIC LEVEL & STANDARD

8A TRIACs

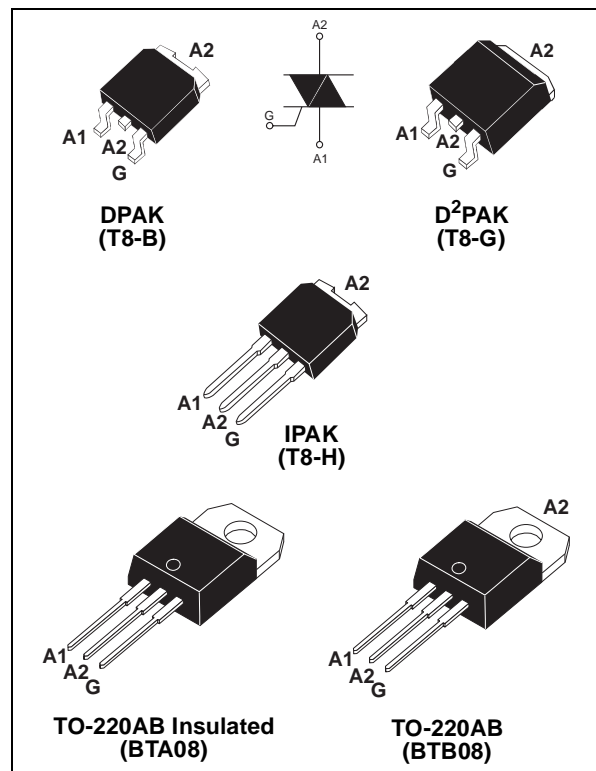
MAIN FEATURES:

| Symbol | Value | Unit |
|-------------------|-------------|------|
| $I_{T(RMS)}$ | 8 | A |
| V_{DRM}/V_{RRM} | 600 and 800 | V |
| $I_{GT}(Q_1)$ | 5 to 50 | mA |

DESCRIPTION

Available either in through-hole or surface-mount packages, the BTA/BTB08 and T8 triac series is suitable for general purpose AC switching. They can be used as an ON/OFF function in applications such as static relays, heating regulation, induction motor starting circuits... or for phase control operation in light dimmers, motor speed controllers,...

The snubberless versions (BTA/BTB...W and T8 series) are specially recommended for use on inductive loads, thanks to their high commutation performances. By using an internal ceramic pad, the BTA series provides voltage insulated tab (rated at 2500V RMS) complying with UL standards (File ref.: E81734)



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | Value | Unit | |
|--------------------|--|--|---------------------------|--------------------------------|------------------|
| $I_{T(RMS)}$ | RMS on-state current (full sine wave) | DPAK / D ² PAK IPAK / TO-220AB | $T_c = 110^\circ\text{C}$ | 8 | A |
| | | TO-220AB Ins. | $T_c = 100^\circ\text{C}$ | | |
| I_{TSM} | Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C) | F = 50 Hz | t = 20 ms | 80 | A |
| | | F = 60 Hz | t = 16.7 ms | 84 | |
| I^2t | I^2t Value for fusing | tp = 10 ms | | 36 | A ² s |
| di/dt | Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, tr ≤ 100 ns | F = 120 Hz | $T_j = 125^\circ\text{C}$ | 50 | A/μs |
| I_{GM} | Peak gate current | tp = 20 μs | $T_j = 125^\circ\text{C}$ | 4 | A |
| $P_{G(AV)}$ | Average gate power dissipation | $T_j = 125^\circ\text{C}$ | | 1 | W |
| T_{stg} T_j | Storage junction temperature range Operating junction temperature range | | | - 40 to + 150 - 40 to + 125 | °C |

BTA/BTB08 and T8 Series

ELECTRICAL CHARACTERISTICS (T_j = 25°C, unless otherwise specified)

■ SNUBBERLESS™ and LOGIC LEVEL (3 Quadrants)

| Symbol | Test Conditions | Quadrant | | T8 | | BTA/BTB08 | | | | Unit |
|--------------------------|---|--------------|------|------|------|-----------|-----|-----|------|------|
| | | | | T810 | T835 | TW | SW | CW | BW | |
| I _{GT} (1) | V _D = 12 V R _L = 30 Ω | I - II - III | MAX. | 10 | 35 | 5 | 10 | 35 | 50 | mA |
| V _{GT} | | I - II - III | MAX. | 1.3 | | | | | | V |
| V _{GD} | V _D = V _{DRM} R _L = 3.3 kΩ T _j = 125°C | I - II - III | MIN. | 0.2 | | | | | | V |
| I _H (2) | I _T = 100 mA | | MAX. | 15 | 35 | 10 | 15 | 35 | 50 | mA |
| I _L | I _G = 1.2 I _{GT} | I - III | MAX. | 25 | 50 | 10 | 25 | 50 | 70 | mA |
| | | II | | 30 | 60 | 15 | 30 | 60 | 80 | |
| dV/dt (2) | V _D = 67 %V _{DRM} gate open T _j = 125°C | | MIN. | 40 | 400 | 20 | 40 | 400 | 1000 | V/μs |
| (dl/dt) _c (2) | (dV/dt) _c = 0.1 V/μs T _j = 125°C | | MIN. | 5.4 | - | 3.5 | 5.4 | - | - | A/ms |
| | (dV/dt) _c = 10 V/μs T _j = 125°C | | | 2.8 | - | 1.5 | 2.8 | - | - | |
| | Without snubber T _j = 125°C | | | - | 4.5 | - | - | 4.5 | 7 | |

■ STANDARD (4 Quadrants)

| Symbol | Test Conditions | Quadrant | | BTA/BTB08 | | Unit |
|--------------------------|---|--------------------|------|-----------|-----------|------|
| | | | | C | B | |
| I _{GT} (1) | V _D = 12 V R _L = 30 Ω | I - II - III IV | MAX. | 25 50 | 50 100 | mA |
| V _{GT} | | ALL | MAX. | 1.3 | | V |
| V _{GD} | V _D = V _{DRM} R _L = 3.3 kΩ T _j = 125°C | ALL | MIN. | 0.2 | | V |
| I _H (2) | I _T = 500 mA | | MAX. | 25 | 50 | mA |
| I _L | I _G = 1.2 I _{GT} | I - III - IV | MAX. | 40 | 50 | mA |
| | | II | | 80 | 100 | |
| dV/dt (2) | V _D = 67 %V _{DRM} gate open T _j = 125°C | | MIN. | 200 | 400 | V/μs |
| (dV/dt) _c (2) | (dl/dt) _c = 3.5 A/ms T _j = 125°C | | MIN. | 5 | 10 | V/μs |

STATIC CHARACTERISTICS

| Symbol | Test Conditions | | | Value | Unit |
|--------------------------------------|---|------------------------|------|-------|------|
| V _{TM} (2) | I _{TM} = 11 A t _p = 380 μs | T _j = 25°C | MAX. | 1.55 | V |
| V _{to} (2) | Threshold voltage | T _j = 125°C | MAX. | 0.85 | V |
| R _d (2) | Dynamic resistance | T _j = 125°C | MAX. | 50 | mΩ |
| I _{DRM} I _{RDM} | V _{DRM} = V _{RDM} | T _j = 25°C | MAX. | 5 | μA |
| | | T _j = 125°C | | 1 | mA |

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

Note 2: for both polarities of A2 referenced to A1

THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit | |
|---------------|-----------------------|-------------------------|--|------|------|
| $R_{th(j-c)}$ | Junction to case (AC) | | DPAK / D ² PAK IPAK / TO-220AB | 1.6 | °C/W |
| | | | TO-220AB Insulated | 2.5 | |
| $R_{th(j-a)}$ | Junction to ambient | S = 1 cm ² | D ² PAK | 45 | °C/W |
| | | S = 0.5 cm ² | DPAK | 70 | |
| | | | TO-220AB TO-220AB Insulated | 60 | |
| | | | IPAK | 100 | |

S = Copper surface under tab

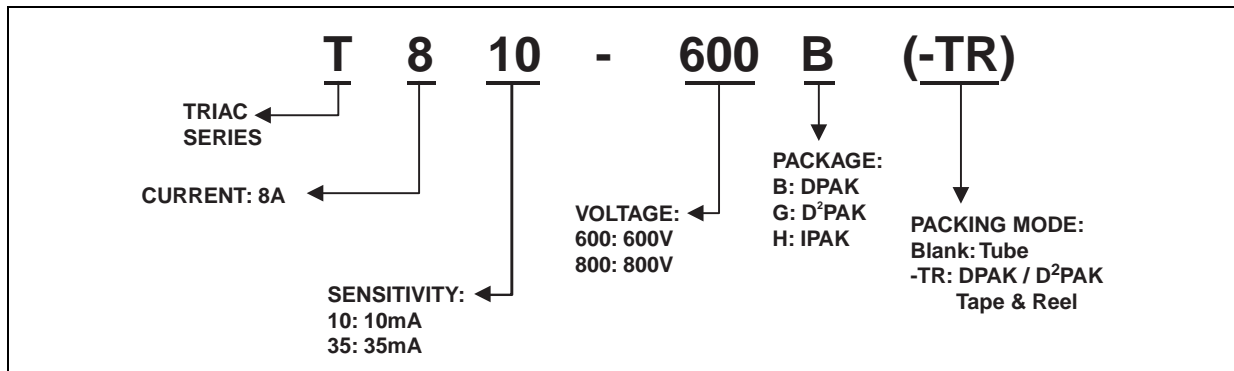
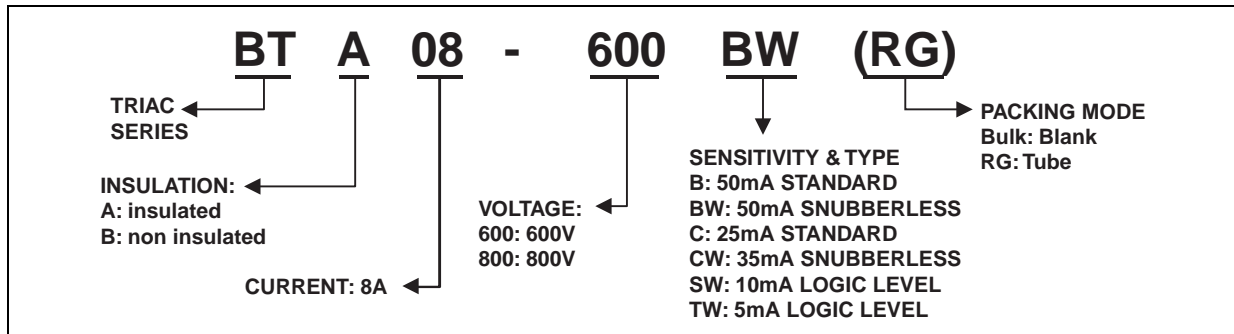
PRODUCT SELECTOR

| Part Number | Voltage (xxx) | | Sensitivity | Type | Package |
|------------------|---------------|-------|-------------|-------------|--------------------|
| | 600 V | 800 V | | | |
| BTA/BTB08-xxxB | X | X | 50 mA | Standard | TO-220AB |
| BTA/BTB108-xxxBW | X | X | 50 mA | Snubberless | TO-220AB |
| BTA/BTB08-xxxC | X | X | 25 mA | Standard | TO-220AB |
| BTA/BTB08-xxxCW | X | X | 35 mA | Snubberless | TO-220AB |
| BTA/BTB08-xxxSW | X | X | 10 mA | Logic level | TO-220AB |
| BTA/BTB08-xxxTW | X | X | 5 mA | Logic level | TO-220AB |
| T810-xxxB | X | X | 10 mA | Logic level | DPAK |
| T810-xxxH | X | X | 10 mA | Logic level | IPAK |
| T835-xxxB | X | X | 35mA | Snubberless | DPAK |
| T835-xxxG | X | X | 35 mA | Snubberless | D ² PAK |
| T835-xxxH | X | X | 35 mA | Snubberless | IPAK |

BTB: non insulated TO-220AB package

BTA/BTB08 and T8 Series

ORDERING INFORMATION



OTHER INFORMATION

| Part Number | Marking | Weight | Base quantity | Packing mode |
|-------------------|-----------------|--------|---------------|--------------|
| BTA/BTB08-xxxzy | BTA/BTB08xxxzy | 2.3 g | 250 | Bulk |
| BTA/BTB08-xxxzyRG | BTA/BTB08-xxxzy | 2.3 g | 50 | Tube |
| T8yy-xxxB | T8yyxxx | 0.3 g | 75 | Tube |
| T8yy-xxxB-TR | T8yyxxx | 0.3 g | 2500 | Tape & reel |
| T8yy-xxxH | T8yyxxx | 0.4 g | 75 | Tube |
| T8yy-xxxG | T8yyxxx | 1.5 g | 50 | Tube |
| T8yy-xxxG-TR | T8yyxxx | 1.5 g | 1000 | Tape & reel |

Note: xxx = voltage, yy = sensitivity, z = type

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

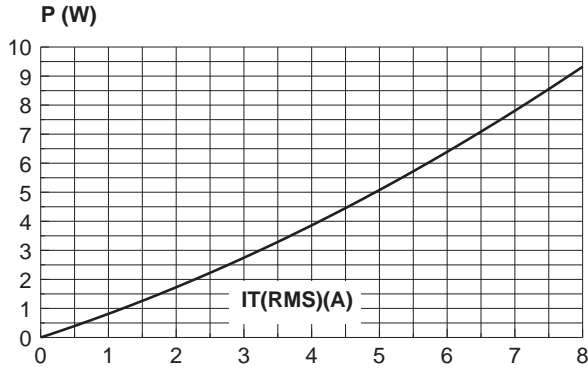


Fig. 2-1: RMS on-state current versus case temperature (full cycle).

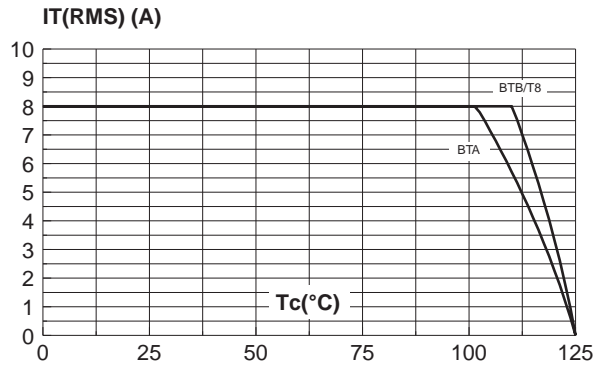


Fig. 2-2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35µm), full cycle.

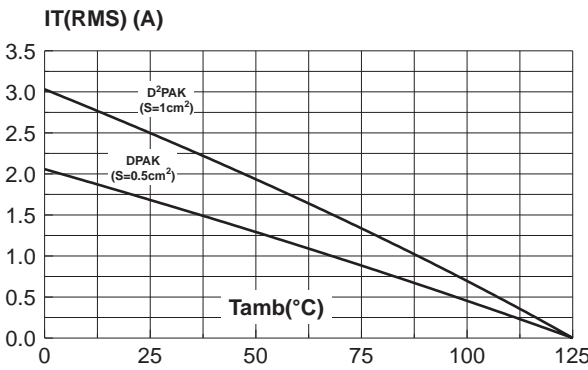


Fig. 3: Relative variation of thermal impedance versus pulse duration.

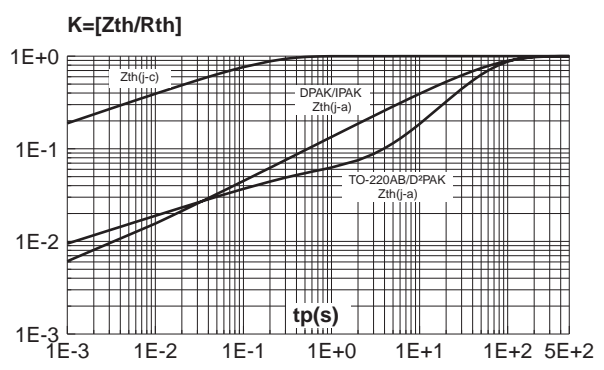


Fig. 4: On-state characteristics (maximum values).

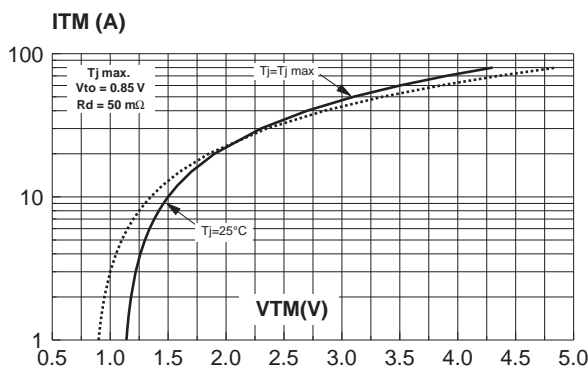


Fig. 5: Surge peak on-state current versus number of cycles.

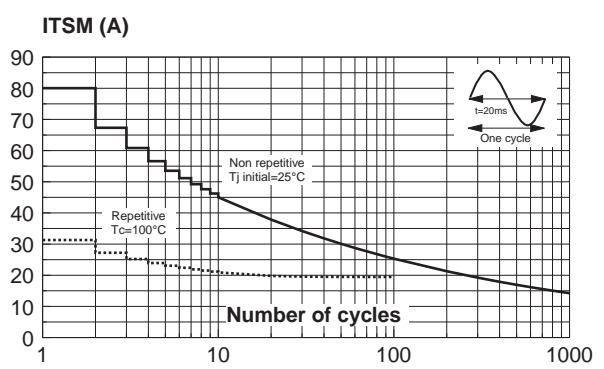


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t .

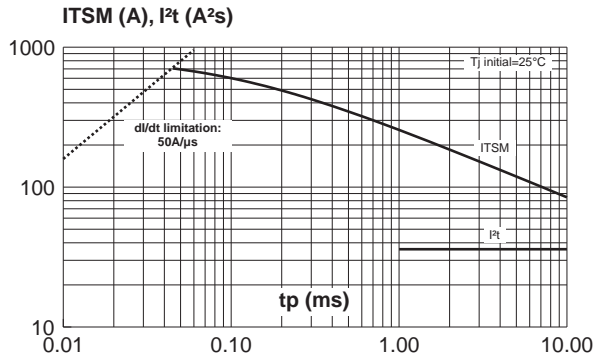


Fig. 8-1: Relative variation of critical rate of decrease of main current versus $(dV/dt)_c$ (typical values). Snubberless & Logic Level Types

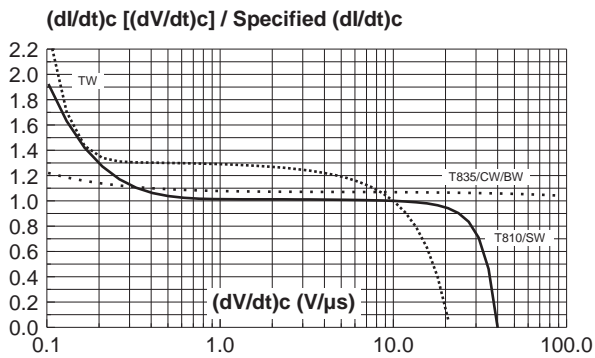


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

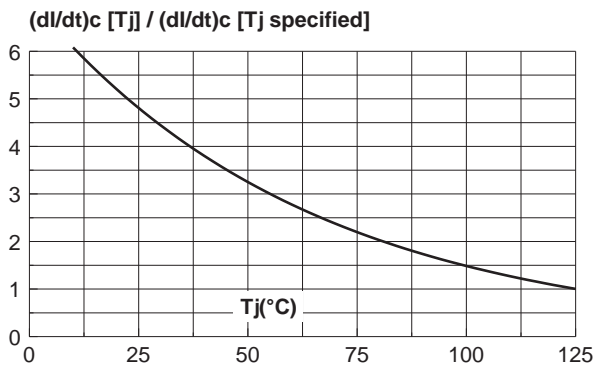


Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

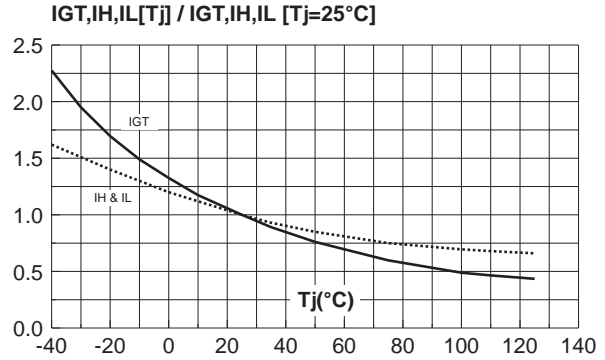


Fig. 8-2: Relative variation of critical rate of decrease of main current versus $(dV/dt)_c$ (typical values). Standard Types

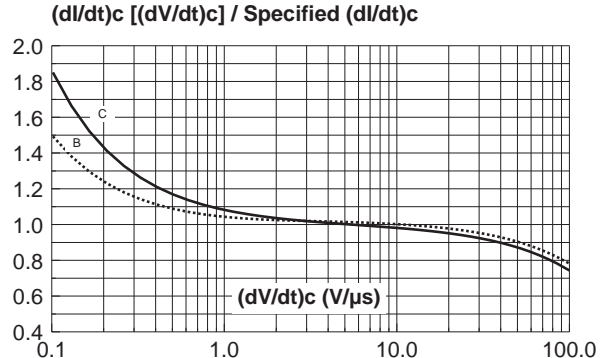
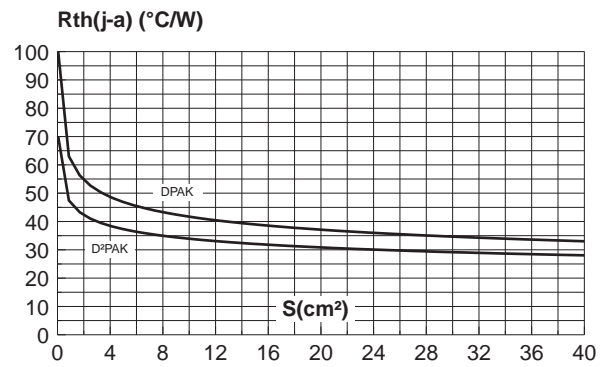
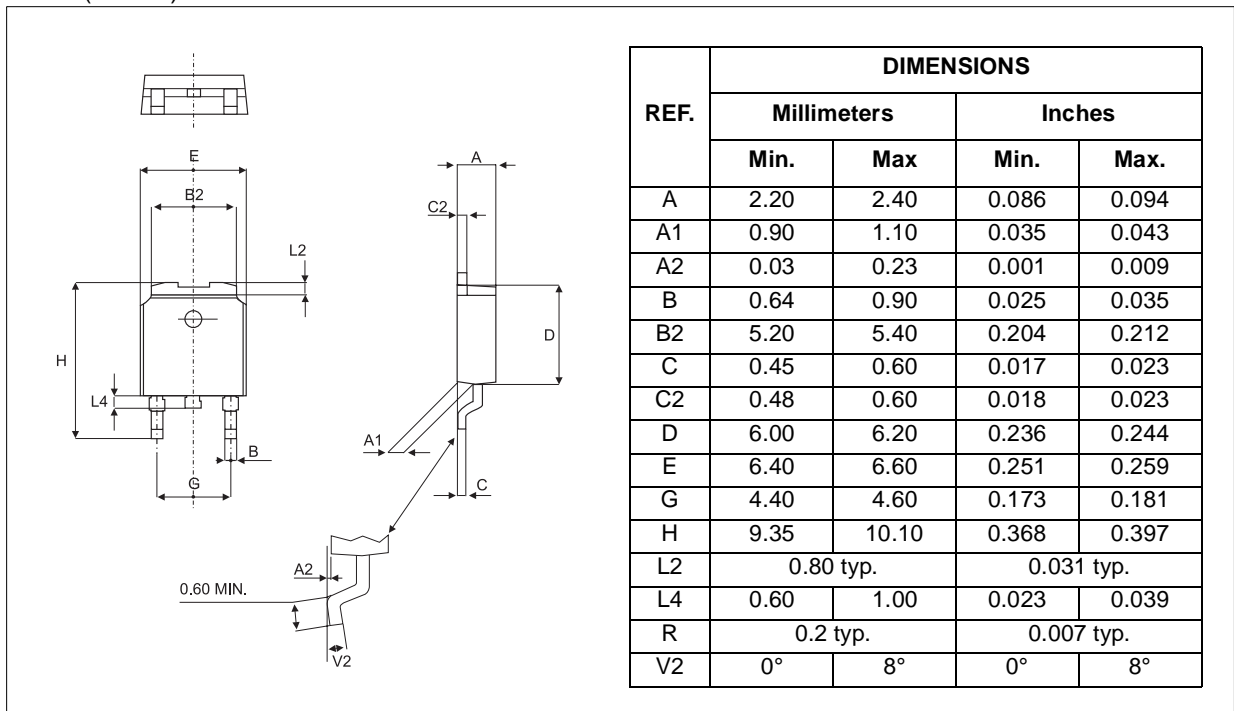


Fig. 10: DPAK and D²PAK Thermal resistance junction to ambient versus copper surface under tab (printed circuit board FR4, copper thickness: 35 µm).



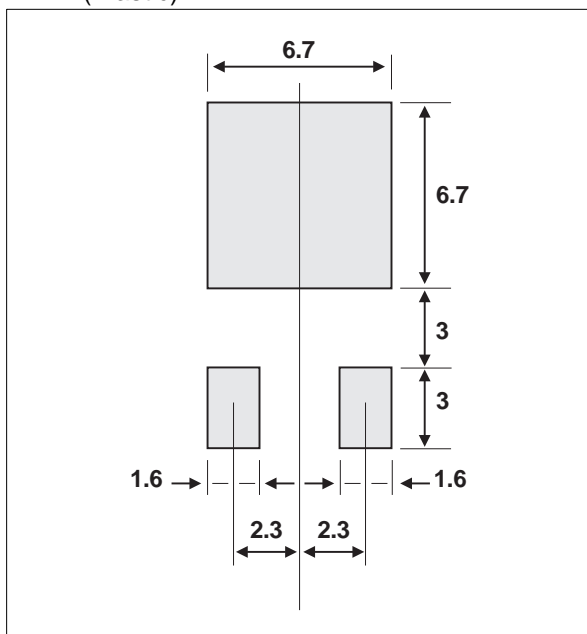
PACKAGE MECHANICAL DATA

DPAK (Plastic)



FOOTPRINT DIMENSIONS (in millimeters)

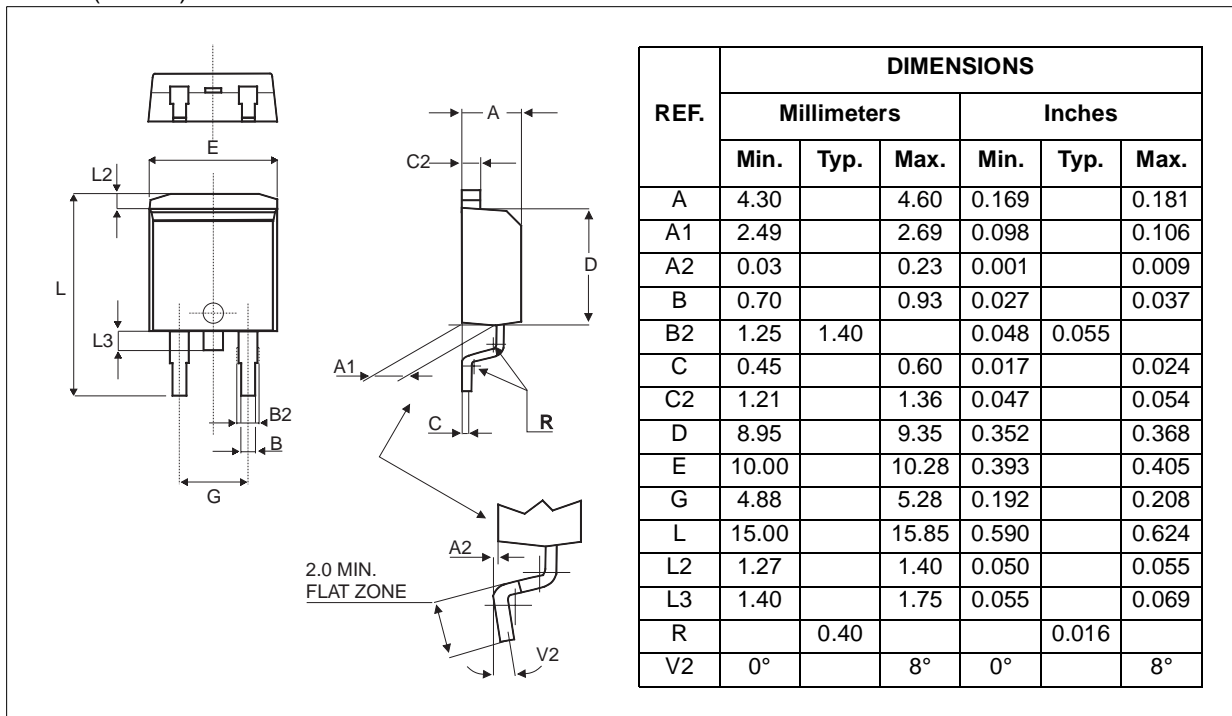
DPAK (Plastic)



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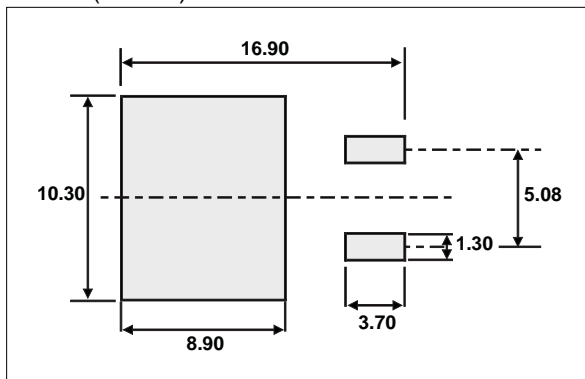
PACKAGE MECHANICAL DATA

D²PAK (Plastic)



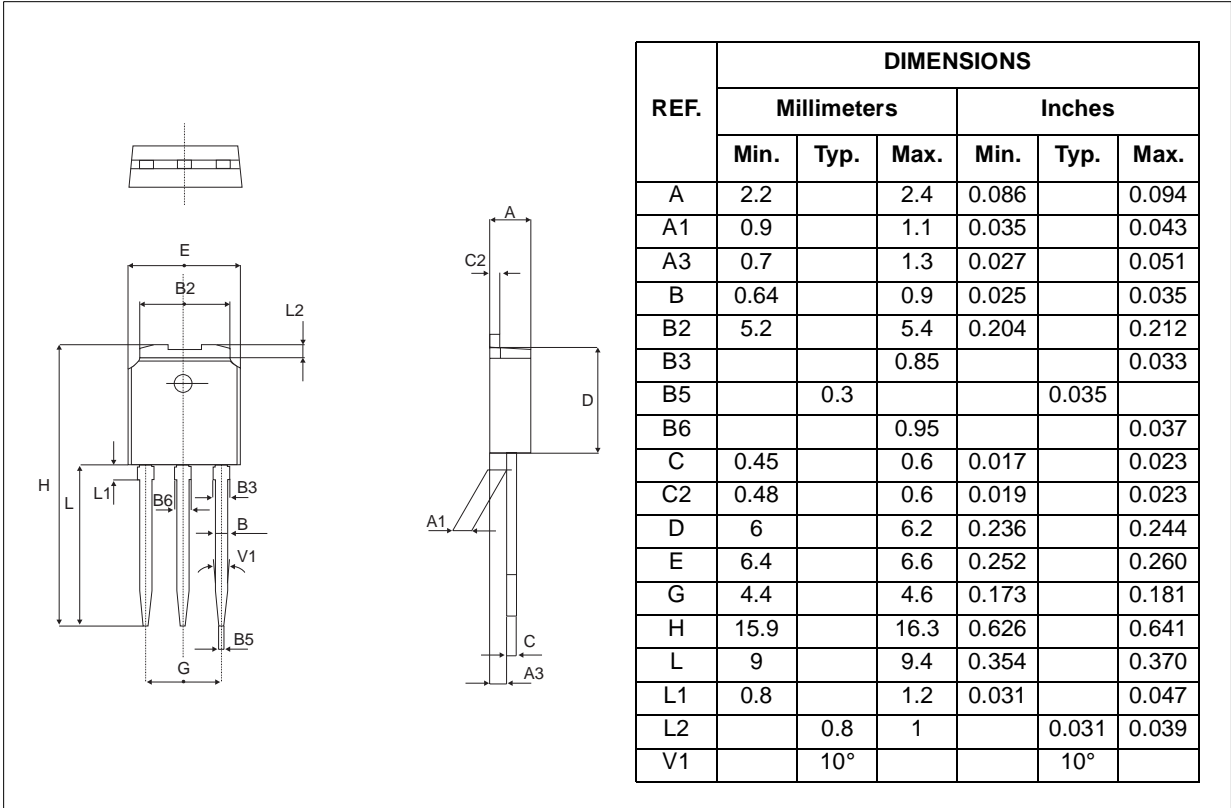
FOOTPRINT DIMENSIONS (in millimeters)

D²PAK (Plastic)



PACKAGE MECHANICAL DATA

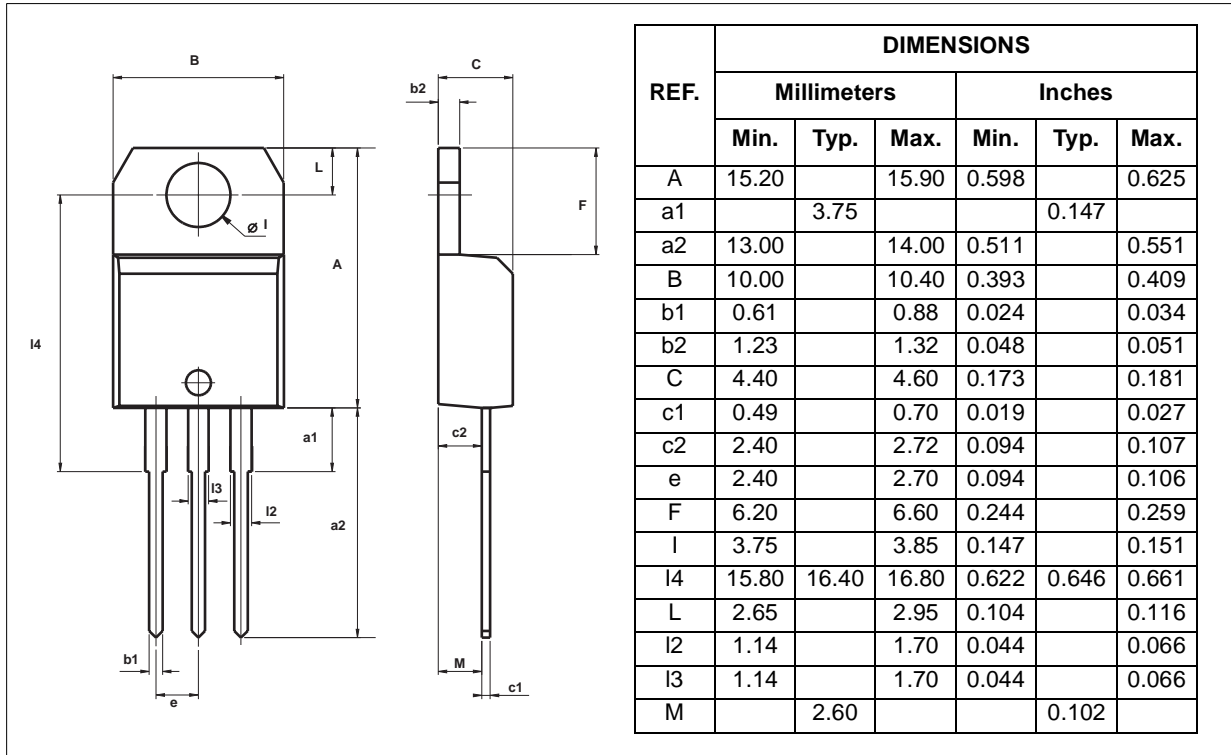
IPAK (Plastic)



BTA/BTB08 and T8 Series

PACKAGE MECHANICAL DATA

TO-220AB Ins.



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