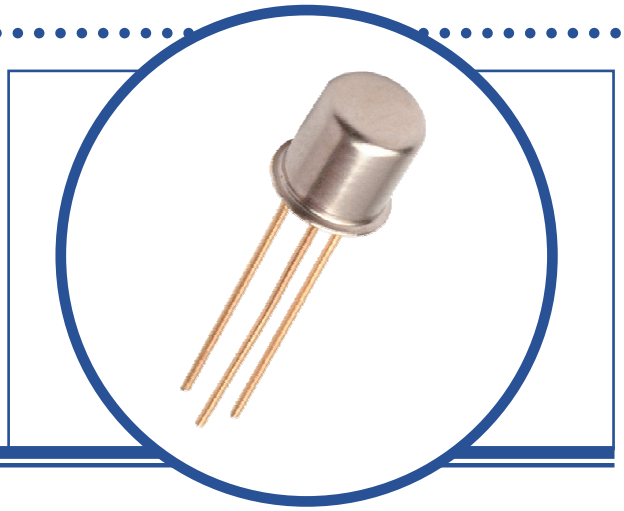
# SILICON EPITAXIAL NPN TRANSISTOR

TT electronics
Semelab Limited

# BFT29 / BFT30 / BFT31



- Hermetic TO-18 Metal Package
- Designed For General Purpose Amplifiers, and Audio Driver Applications
- Screening Options Available

## ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25°C unless otherwise stated)

| | | | BFT29 | BFT30 | BFT31 |
|---|---|---|---|---|---|
| $V_{CBO}$ | Collector – Base Voltage | | 90V | 70 | 60 |
| $V_{CEO}$ | Collector – Emitter Voltage | | 80V | 60 | 50 |
| $V_{EBO}$ | Emitter – Base Voltage | | 5V | | |
| $I_C$ | Continuous Collector Current | | 1.0A | | |
| $P_D$ | Total Power Dissipation at | $T_A$ = 25°C | 360mW | | |
| | | Derate Above 25°C | 2mW/°C | | |
| $T_J$ | Junction Temperature Range | | -65 to +200°C | | |
| $T_{stg}$ | Storage Temperature Range | | -65 to +200°C | | |

### THERMAL PROPERTIES

| Symbols | Parameters | Max | Units |
|---|---|---|---|
| $R_{\theta JA}$ | Thermal Resistance, Junction To Ambient | 486 | °C/W |



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**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25°C unless otherwise stated)

| Symbols | Parameters | Test Conditions | | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|---|
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C$ = 10μA, $I_E$ = 0 | BFT29 | 90 | | | V |
| | | | BFT30 | 70 | | | |
| | | | BFT31 | 60 | | | |
| $V_{(BR)CEO}$ (1) | Collector-Emitter Breakdown Voltage | $I_C$ = 10mA, $I_B$ = 0 | BFT29 | 80 | | | V |
| | | | BFT30 | 60 | | | |
| | | | BFT31 | 50 | | | |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E$ = 10μA | $I_C$ = 0 | 5 | | | V |
| $I_{CBO}$ | Collector-Cut-Off Current | $V_{CB}$ = Rated $V_{CEO}$, $I_E$ = 0 | | | | 100 | nA |
| $h_{FE}$ (1) | Forward-Current Transfer Ratio | $I_C$ = 1.0mA, $V_{CE}$ = 10V | BFT29 | 25 | | | |
| | | | BFT30 | 45 | | | |
| | | | BFT31 | 45 | | | |
| | | $I_C$ = 10mA, $V_{CE}$ = 10V | BFT29 | 30 | | | |
| | | | BFT30 | 50 | | | |
| | | | BFT31 | 50 | | | |
| | | $I_C$ = 100mA, $V_{CE}$ = 10V | BFT29 | 50 | | 250 | |
| | | | BFT30 | 75 | | 250 | |
| | | | BFT31 | 100 | | 300 | |
| | | $I_C$ = 500mA, $V_{CE}$ = 10V | BFT29 | 30 | | | |
| | | | BFT30 | 50 | | | |
| | | | BFT31 | 50 | | | |
| | | $I_C$ = 1.0A, $V_{CE}$ = 10V | BFT29 | 20 | | | |
| | | | BFT30 | 25 | | | |
| | | | BFT31 | 25 | | | |
| $V_{CE(sat)}$ (1) | Collector-Emitter Saturation Voltage | $I_C$ = 500mA, $I_B$ = 50mA | BFT29 | | | 0.95 | V |
| | | | BFT30 | | | 0.75 | |
| | | | BFT31 | | | 0.75 | |
| | | $I_C$ = 1.0A, $I_B$ = 100mA | BFT29 | | | 1.6 | |
| | | | BFT30 | | | 1.0 | |
| | | | BFT31 | | | 1.0 | |
| $V_{BE(sat)}$ (1) | Base-Emitter Saturation Voltage | $I_C$ = 500mA | $I_B$ = 50mA | | | 1.1 | |
| | | $I_C$ = 1.0A | $I_B$ = 100mA | | | 2.0 | |

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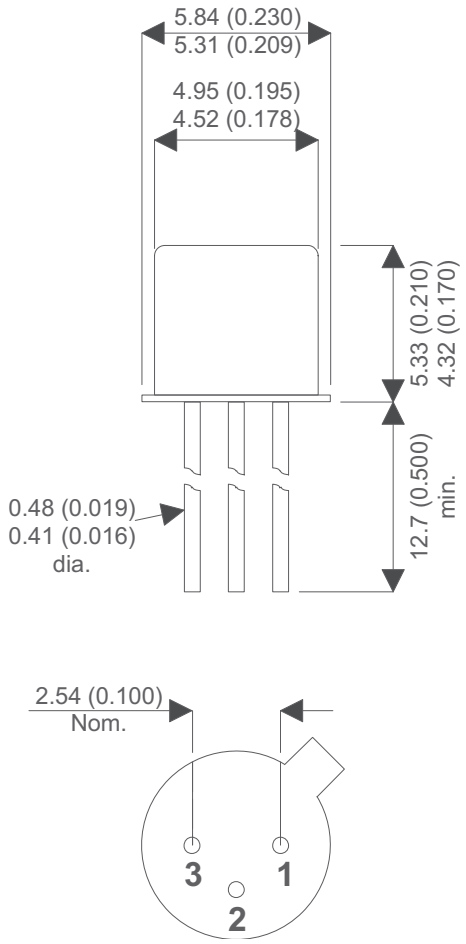
## DYNAMIC CHARACTERISTICS

| | | | | | | |
|---|---|---|---|---|---|---|
| $f_T$ | Transition Frequency | $I_C$ = 40mA $V_{CE}$ = 10V<br>f = 20MHz | 80 | 95 | | MHz |
| $C_{obo}$ | Output Capacitance | $V_{CB}$ = 10V $I_E$ = 0<br>f = 1.0MHz | | 8.5 | 10 | pF |

**Notes**
(1) Pulse Width ≤ 300us, δ ≤ 2%

## MECHANICAL DATA

Dimensions in mm (inches)




**TO-18 (TO-206AA)**

Pin 1 - Emitter Pin 2 - Base Pin 3 - Collector