



2STC4468

High power NPN epitaxial planar bipolar transistor

General features

- High breakdown voltage $V_{CE0}=140V$
- Complementary to 2STA1695
- Fast-switching speed
- Typical $f_t=20MHz$
- Fully characterized at 125 °C

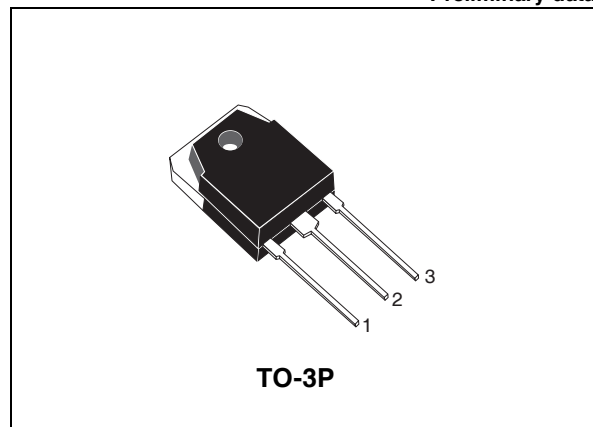
Applications

- Audio power amplifier

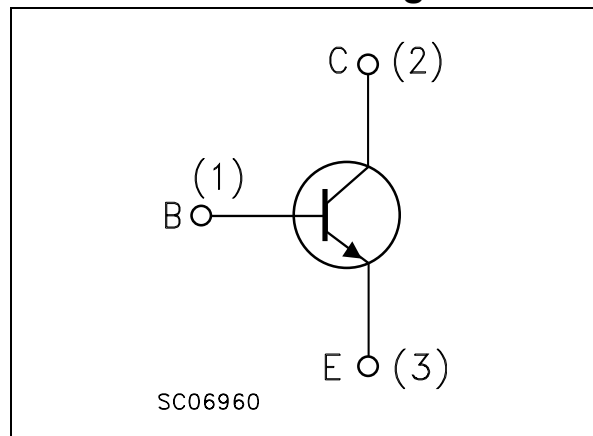
Description

The device is a NPN transistor manufactured using new BiT-LA (Bipolar transistor for linear amplifier) technology. The resulting transistor shows good gain linearity behaviour. Recommended for 70W to 100W high fidelity audio frequency amplifier output stage.

Preliminary data



Internal schematic diagram



Order codes

| Part Number | Marking | Package | Packaging |
|-------------|----------|---------|-----------|
| 2STC4468 | 2STC4468 | TO-3P | Tube |

Electrical ratings

Table 1. Absolute maximum rating

| Symbol | Parameter | Value | Unit |
|-----------|---|------------|------------|
| V_{CBO} | Collector-emitter voltage ($I_E = 0$) | 200 | V |
| V_{CEO} | Collector-emitter voltage ($I_B = 0$) | 140 | V |
| V_{EBO} | Collector-base voltage ($I_C = 0$) | 6 | V |
| I_C | Collector current | 10 | A |
| I_{CM} | Collector peak current ($t_p < 5ms$) | 20 | A |
| P_{TOT} | Total dissipation at $T_c = 25^\circ C$ | 100 | W |
| T_{stg} | Storage temperature | -65 to 150 | $^\circ C$ |
| T_J | Max. operating junction temperature | 150 | $^\circ C$ |

Table 2. Thermal data

| Symbol | Parameter | Value | Unit |
|----------------|---|-------|--------------|
| $R_{thj-case}$ | Thermal resistance junction-case max | 1.25 | $^\circ C/W$ |

1 Electrical characteristics

($T_{CASE} = 25^{\circ}C$; unless otherwise specified)

Table 3. Electrical characteristics

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---------------------|--|--|----------|------|------------|---------|
| I_{CBO} | Collector cut-off current ($I_E = 0$) | $V_{CB} = 200V$ | | | 0.1 | μA |
| I_{EBO} | Emitter cut-off current ($I_C = 0$) | $V_{EB} = 6V$ | | | 0.1 | μA |
| $V_{(BR)CEO}^{(1)}$ | Collector-emitter breakdown voltage ($I_B = 0$) | $I_C = 50mA$ | 140 | | | V |
| $V_{(BR)CBO}$ | Collector-emitter breakdown voltage ($I_E = 0$) | $I_C = 100\mu A$ | 200 | | | V |
| $V_{(BR)EBO}^{(1)}$ | Collector-emitter breakdown voltage ($I_C = 0$) | $I_E = 1mA$ | 6 | | | V |
| $V_{CE(sat)}^{(1)}$ | Collector-emitter saturation voltage | $I_C = 5A$ $I_B = 500mA$ $I_C = 7A$ $I_B = 700mA$ | | | 0.5 0.7 | V V |
| V_{BE} | Base-emitter voltage | $V_{CE} = 5V$ $I_C = 5A$ | | | 1.3 | V |
| h_{FE} | DC current gain | $I_C = 3A$ $V_{CE} = 4V$ $I_C = 5A$ $V_{CE} = 4V$ | 70 50 | | 140 | |
| f_T | Transition frequency | $I_C = 0.5A$ $V_{CE} = 12V$ | | 20 | | MHz |
| C_{CBO} | Collector-base capacitance | $I_E = 0$ $V_{CB} = 10V$ $f = 1MHz$ | | 150 | | pF |
| t_{on} | Resistive Load Turn-on time | $I_C = 5A$ $V_{CC} = 60V$ | | 0.22 | | μs |
| t_{stg} | Storage time | $I_{B1} = -I_{B2} = 0.5A$ | | 4.3 | | μs |
| t_{off} | Fall time | | | 0.5 | | μs |

Note: 1 Pulsed duration = 300 μs , duty cycle $\leq 1.5\%$

1.1 Electrical characteristics (curves)

Figure 1. Safe operating area

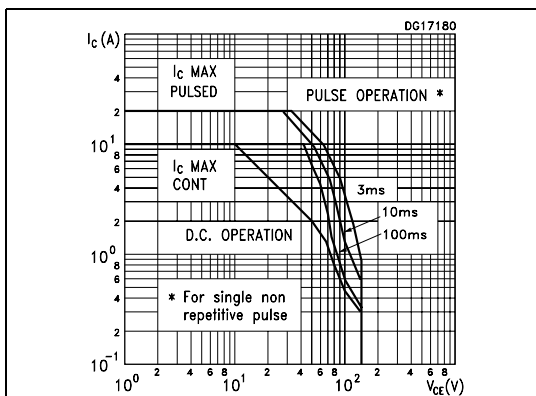


Figure 2. Output characteristics

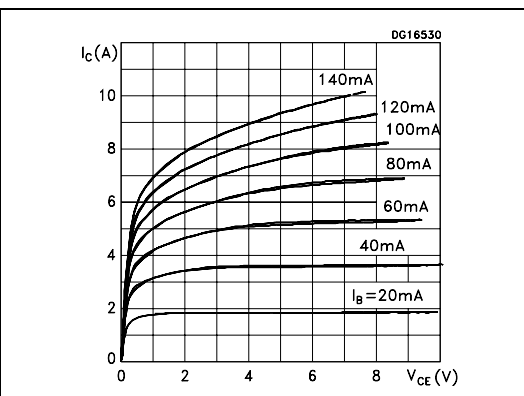


Figure 3. DC current gain

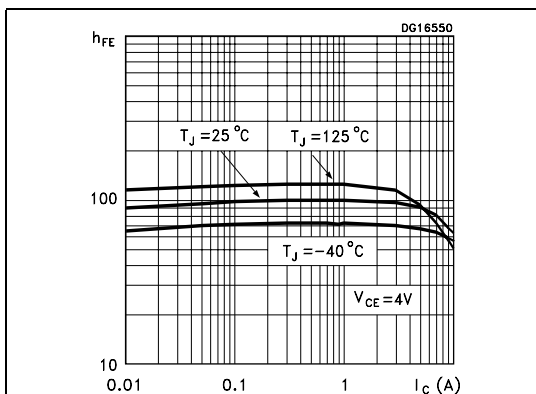


Figure 4. Collector-emitter saturation voltage

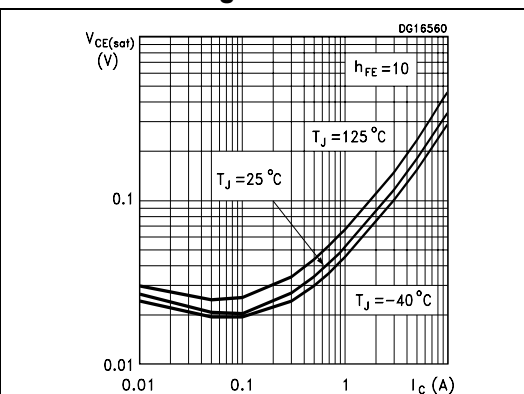


Figure 5. Base-emitter on voltage

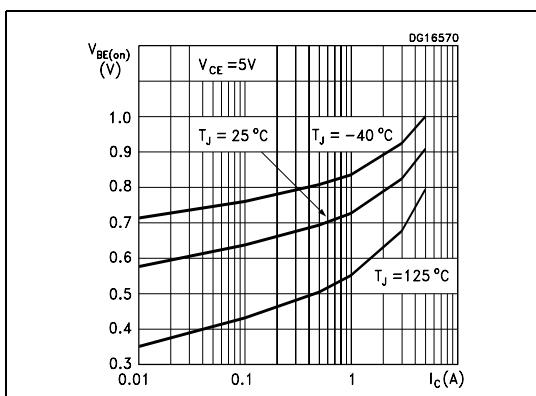
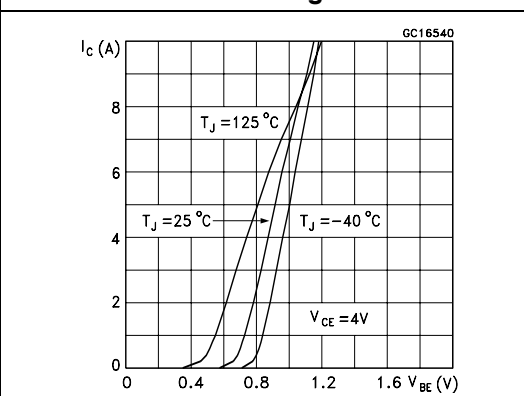
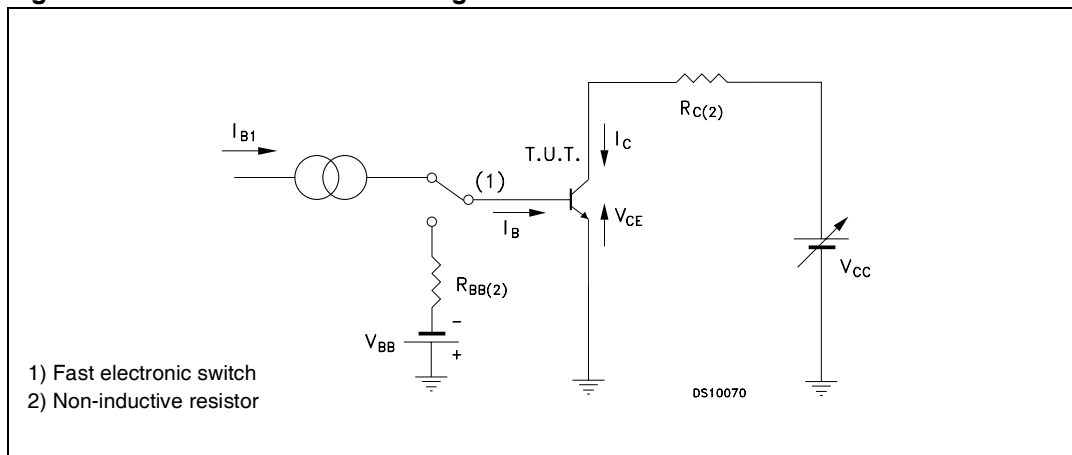


Figure 6. Collector current vs base-emitter voltage



1.2 Test circuit

Figure 7. Resistive load switching test circuit

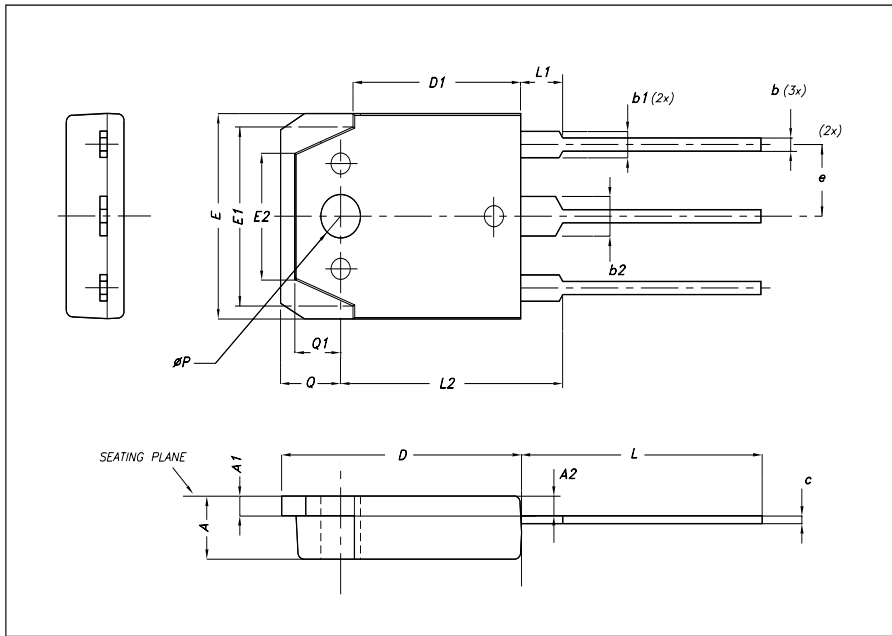


2 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

TO-3P Mechanical Data

| DIM. | mm. | | |
|------|-------|-------|-------|
| | MIN. | TYP | MAX. |
| A | 4.6 | | 5 |
| A1 | 1.45 | 1.50 | 1.65 |
| A2 | 1.20 | 1.40 | 1.60 |
| b | 0.80 | 1 | 1.20 |
| b1 | 1.80 | | 2.20 |
| b2 | 2.80 | | 3.20 |
| c | 0.55 | 0.60 | 0.75 |
| D | 19.70 | 19.90 | 20.10 |
| D1 | | 13.90 | |
| E | 15.40 | | 15.80 |
| E1 | | 13.60 | |
| E2 | | 9.60 | |
| e | 5.15 | 5.45 | 5.75 |
| L | 19.50 | 20 | 20.50 |
| L1 | | 3.50 | |
| L2 | 18.20 | 18.40 | 18.60 |
| P | 3.10 | | 3.30 |
| Q | | 5 | |
| Q1 | | 3.80 | |



3 Revision history

Table 4. Revision history

| Date | Revision | Changes |
|-------------|----------|-----------------------|
| 21-May-2007 | 1 | Initial EDOCS release |

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