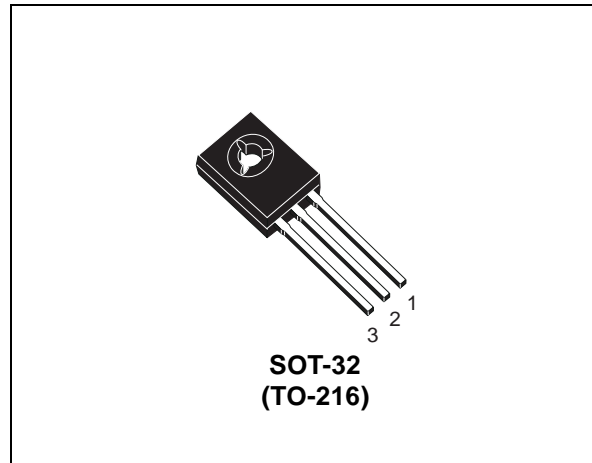

NPN MEDIUM POWER TRANSISTOR

Features

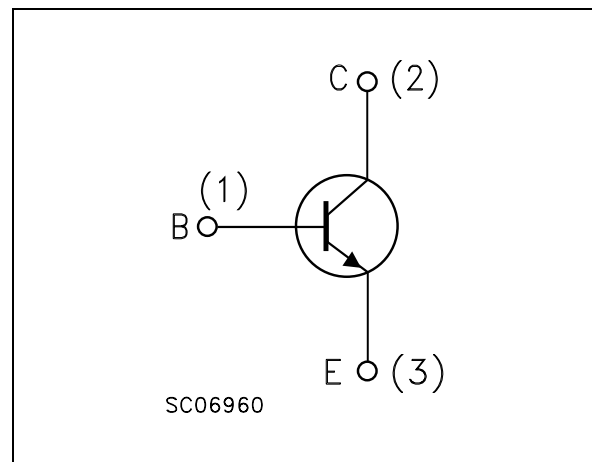
- HIGH CURRENT
- LOW SATURATION VOLTAGE
- COMPLEMENT TO 2SB772

Applications

- VOLTAGE REGULATION
- RELAY DRIVER
- GENERIC SWITCH
- AUDIO POWER AMPLIFIER
- DC-DC CONVERTER


Description

The device is a NPN transistor manufactured by using planar Technology resulting in rugged high performance devices. The complementary PNP type is 2SB772.

Internal Schematic Diagram

Order Codes

| Part Number | Marking | Package | Packing |
|-------------|---------|---------|---------|
| 2SD882 | D882 | SOT-32 | TUBE |

1 Absolute Maximum Ratings

Table 1. Absolute Maximum Rating

| Symbol | Parameter | Value | Unit |
|-----------|---|------------|------------------|
| V_{CBO} | Collector-Base Voltage ($I_E = 0$) | 60 | V |
| V_{CEO} | Collector-Emitter Voltage ($I_B = 0$) | 30 | V |
| V_{EBO} | Collector-Base Voltage ($I_C = 0$) | 5 | V |
| I_C | Collector Current | 3 | A |
| I_{CM} | Collector Peak Current ($t_p < 5\text{ms}$) | 6 | A |
| I_B | Base Current | 1 | A |
| I_{BM} | Base Peak Current ($t_p < 5\text{ms}$) | 2 | A |
| P_{TOT} | Total dissipation at $T_c = 25^\circ\text{C}$ | 12.5 | W |
| T_{STG} | Storage Temperature | -65 to 150 | $^\circ\text{C}$ |
| T_J | Max. Operating Junction Temperature | 150 | $^\circ\text{C}$ |

Table 2. Thermal Data

| Symbol | Parameter | Value | Unit |
|----------------|---|-------|--------------------|
| $R_{thJ-case}$ | Thermal Resistance Junction-Case Max | 10 | $^\circ\text{C/W}$ |

2 Electrical Characteristics

Table 3. Electrical Characteristics ($T_{CASE} = 25^{\circ}C$; unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---------------------------------|--|---|-----------------|------|-------------------|-------------|
| I_{CES} | Collector Cut-off Current ($V_{BE} = 0$) | $V_{CE} = 60\text{ V}$ | | | 10 | μA |
| I_{CEO} | Collector Cut-off Current ($I_B = 0$) | $V_{CE} = 30\text{ V}$ | | | 100 | μA |
| I_{EBO} | Emitter Cut-off Current ($I_C = 0$) | $V_{EB} = 5\text{ V}$ | | | 10 | μA |
| $V_{(BR)CEO}$ <i>Note: 1</i> | Collector-Emitter Breakdown Voltage ($I_B = 0$) | $I_C = 10\text{ mA}$ | 30 | | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage ($I_E = 0$) | $I_C = 100\text{ }\mu A$ | 60 | | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage ($I_C = 0$) | $I_E = 100\text{ }\mu A$ | 5 | | | V |
| $V_{CE(sat)}$ <i>Note: 1</i> | Collector-Emitter Saturation Voltage | $I_C = 1\text{ A}$ $I_B = 50\text{ mA}$ $I_C = 2\text{ A}$ $I_B = 100\text{ mA}$ $I_C = 3\text{ A}$ $I_B = 150\text{ mA}$ | | | 0.4 0.7 1.1 | V V V |
| $V_{BE(sat)}$ <i>Note: 1</i> | Base-Emitter Saturation Voltage | $I_C = 2\text{ A}$ $I_B = 100\text{ mA}$ | | | 1.2 | V |
| hFE | DC Current Gain | $I_C = 100\text{ mA}$ $V_{CE} = 2\text{ V}$ $I_C = 1\text{ A}$ $V_{CE} = 2\text{ V}$ $I_C = 3\text{ A}$ $V_{CE} = 2\text{ V}$ | 100 80 30 | | 300 | |
| fT | Transition Frequency | $I_C = 0.1\text{ A}$ $V_{CE} = 10\text{ V}$ | | 100 | | MHz |

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

2.1 Typical characteristics

Figure 1. Reverse biased area

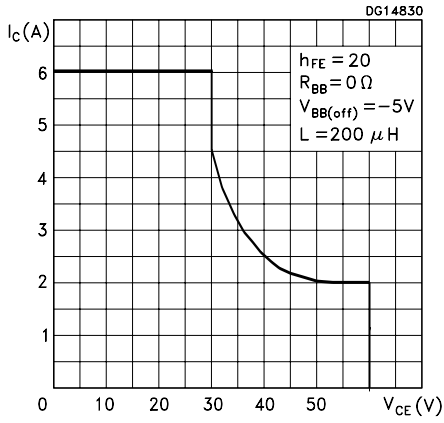


Figure 2. DC current gain

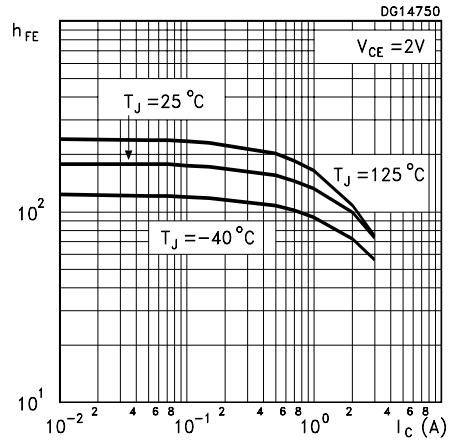
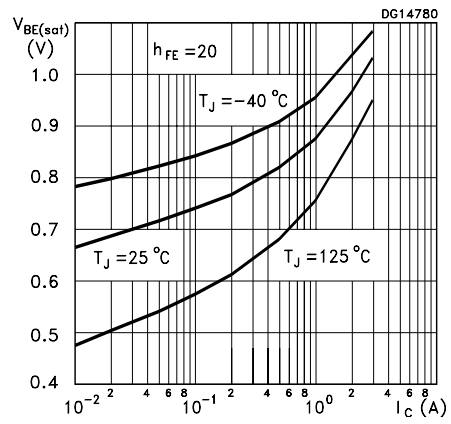
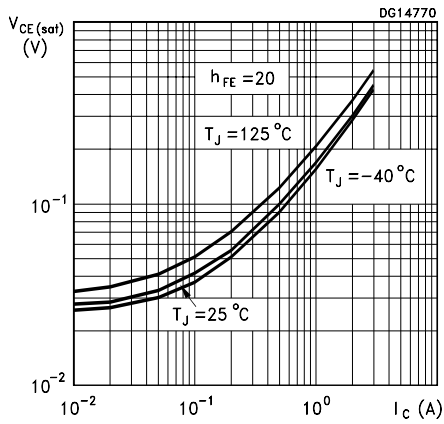


Figure 3. Collector-emitter saturation voltage Figure 4. Base-emitter saturation voltage

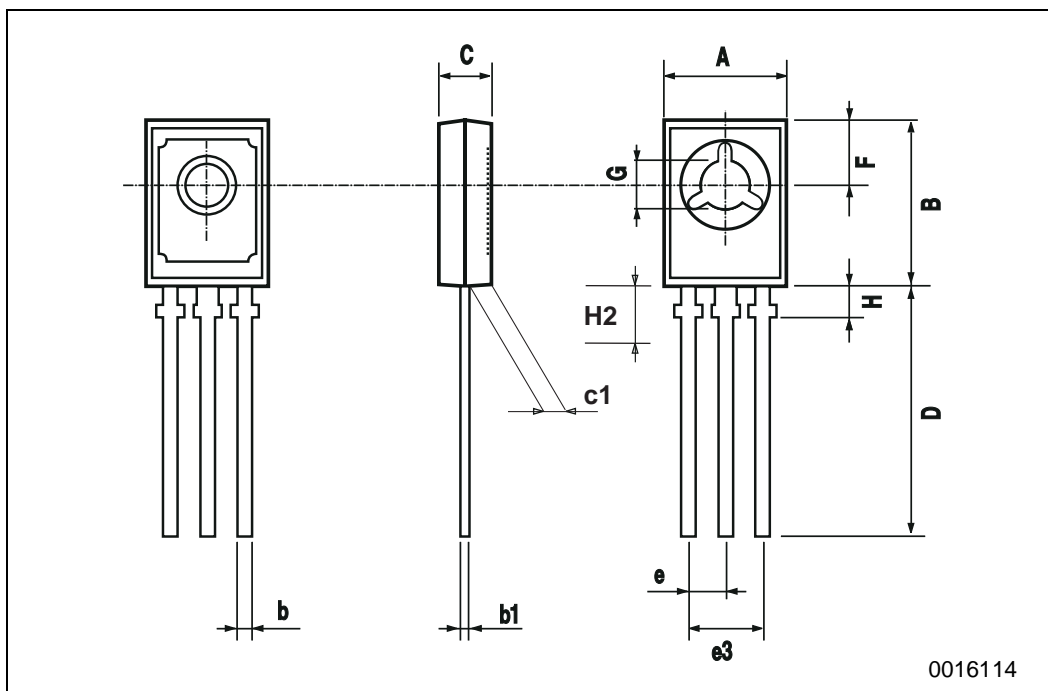


3 Package Mechanical Data

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

SOT-32 (TO-126) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|------|------|------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 7.4 | | 7.8 | 0.291 | | 0.307 |
| B | 10.5 | | 10.8 | 0.413 | | 0.445 |
| b | 0.7 | | 0.9 | 0.028 | | 0.035 |
| b1 | 0.49 | | 0.75 | 0.019 | | 0.030 |
| C | 2.4 | | 2.7 | 0.040 | | 0.106 |
| c1 | 1.0 | | 1.3 | 0.039 | | 0.050 |
| D | 15.4 | | 16.0 | 0.606 | | 0.629 |
| e | | 2.2 | | | 0.087 | |
| e3 | 4.15 | | 4.65 | 0.163 | | 0.183 |
| F | | 3.8 | | | 0.150 | |
| G | 3 | | 3.2 | 0.118 | | 0.126 |
| H | | | 2.54 | | | 0.100 |
| H2 | | 2.15 | | | 0.084 | |



4 Revision History

| Date | Revision | Changes |
|-------------|----------|-------------------------------|
| 09-Sep-2005 | 2 | Final datasheet. New template |

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