# 1 Absolute maximum ratings

**Table 2. 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 ($t_P$ < 5ms) | 6 | A |
| $I_B$ | Base current | 1 | A |
| $I_{BM}$ | Base peak current ($t_P$ < 5ms) | 2 | A |
| $P_{TOT}$ | Total dissipation at $T_c$ = 25°C | 12.5 | W |
| $T_{STG}$ | Storage temperature | -65 to 150 | °C |
| $T_J$ | Max. operating junction temperature | 150 | °C |

**Table 3. Thermal data**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{thJ\text{-}case}$ | Thermal resistance junction-case max | 10 | °C/W |

# 2 Electrical characteristics

($T_{CASE}$ = 25°C; unless otherwise specified)

**Table 4. Electrical characteristics**

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{CES}$ | Collector cut-off current ($V_{BE}$ = 0) | $V_{CE}$ = 60 V | | | 10 | µA |
| $I_{CEO}$ | Collector cut-off current ($I_B$ = 0) | $V_{CE}$ = 30 V | | | 100 | µA |
| $I_{EBO}$ | Emitter cut-off current ($I_C$ = 0) | $V_{EB}$ = 5 V | | | 10 | µA |
| $V_{(BR)CEO}$ (1) | Collector-emitter breakdown voltage ($I_B$ = 0 ) | $I_C$ = 10 mA | 30 | | | V |
| $V_{(BR)CBO}$ | Collector-base breakdown voltage ($I_E$ = 0 ) | $I_C$ = 100 µA | 60 | | | V |
| $V_{(BR)EBO}$ | Emitter-base breakdown voltage ($I_C$ = 0 ) | $I_E$ = 100 µA | 5 | | | V |
| $V_{CE(sat)}$ (1) | Collector-emitter saturation voltage | $I_C$ = 1 A $I_B$ = 50 mA<br>$I_C$ = 2 A $I_B$ = 100 mA<br>$I_C$ = 3 A $I_B$ = 150 mA | | | 0.4<br>0.7<br>1.1 | V<br>V<br>V |
| $V_{BE(sat)}$ (1) | Base-emitter saturation voltage | $I_C$ = 2 A $I_B$ = 100 mA | | | 1.2 | V |
| $h_{FE}$ | DC current gain | $I_C$ = 100 mA $V_{CE}$ = 2 V<br>$I_C$ = 1 A $V_{CE}$ = 2 V<br>$I_C$ = 3 A $V_{CE}$ = 2 V | 100<br>80<br>30 | | 300 | |
| $f_T$ | Transition frequency | $I_C$ = 0.1 A $V_{CE}$ = 10 V | | 100 | | MHz |

1. Pulsed duration = 300 ms, duty cycle ≤1.5%.

## 2.1 Typical characteristics (curves)

**Figure 2. Reverse biased safe operating area**

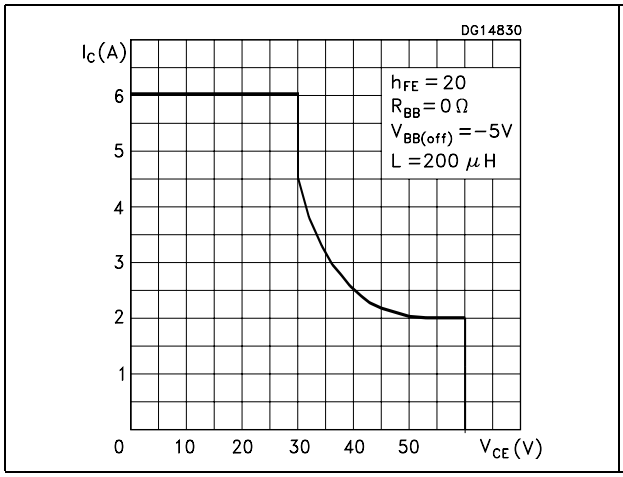



**Figure 3. DC current gain**

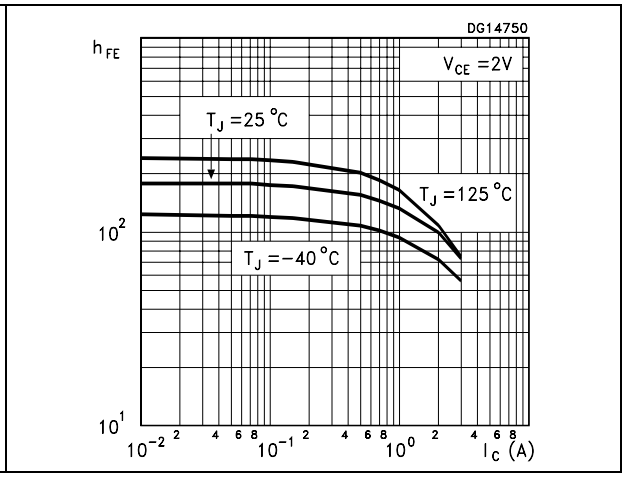



**Figure 4. Collector-emitter saturation voltage**

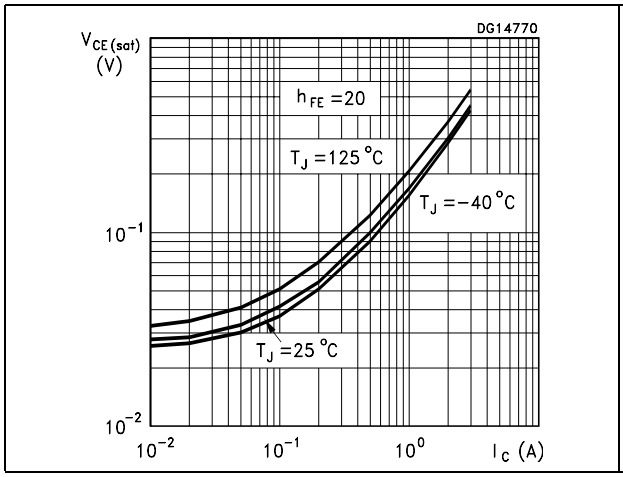
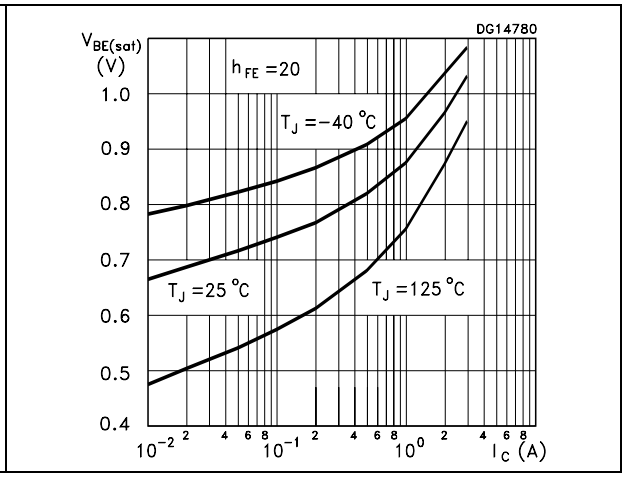



**Figure 5. Base-emitter saturation voltage**

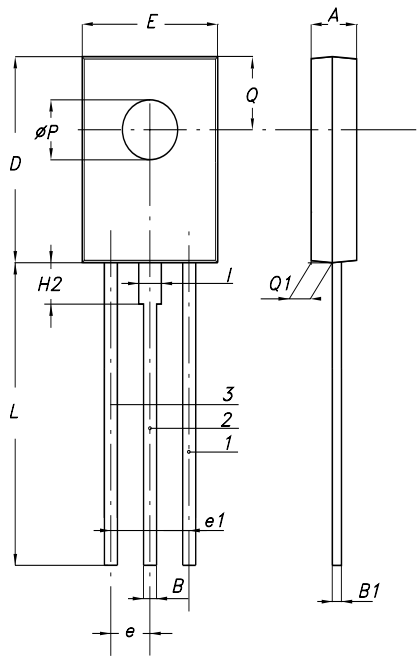


# 3 Package mechanical data

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. | | |
|---|---|---|---|
| | MIN. | TYP | MAX. |
| A | 2.4 | | 2.9 |
| B | 0.64 | | 0.88 |
| B1 | 0.39 | | 0.63 |
| D | 10.5 | | 11.05 |
| E | 7.4 | | 7.8 |
| e | 2.04 | 2.29 | 2.54 |
| e1 | 4.07 | 4.58 | 5.08 |
| L | 15.3 | | 16 |
| P | 2.9 | | 3.2 |
| Q | 3.8 | | |
| Q1 | 1 | | 1.52 |
| H2 | | 2.15 | |
| I | 1.2 | | |




1 = BASE
2 = COLLECTOR
3 = EMITTER

0016114E

# 4 Revision history

**Table 5. Document revision history**

| Date | Revision | Changes |
|---|---|---|
| 09-Sep-2005 | 2 | Final datasheet. New template |
| 02-Oct-2007 | 3 | Updated mechanical data |

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