

## TO-251-3L Plastic-Encapsulate Transistors

### 2SB1184 TRANSISTOR (PNP)

#### FEATURES

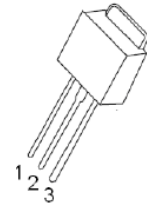
- Low  $V_{CE(sat)}$
- Complements the 2SD1760 / 2SD1864

#### MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ unless otherwise noted)

| Symbol    | Parameter                     | Value   | Unit             |
|-----------|-------------------------------|---------|------------------|
| $V_{CBO}$ | Collector Base Voltage        | -60     | V                |
| $V_{CEO}$ | Collector-Emitter Voltage     | -50     | V                |
| $V_{EBO}$ | Emitter-Base Voltage          | -5      | V                |
| $I_C$     | Collector Current –Continuous | -3      | A                |
| $P_C$     | Collector Power Dissipation   | 1       | W                |
| $T_J$     | Junction Temperature          | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature           | -55-150 | $^\circ\text{C}$ |

#### TO-251-3L

1. BASE
2. COLLECTOR
3. EMITTER



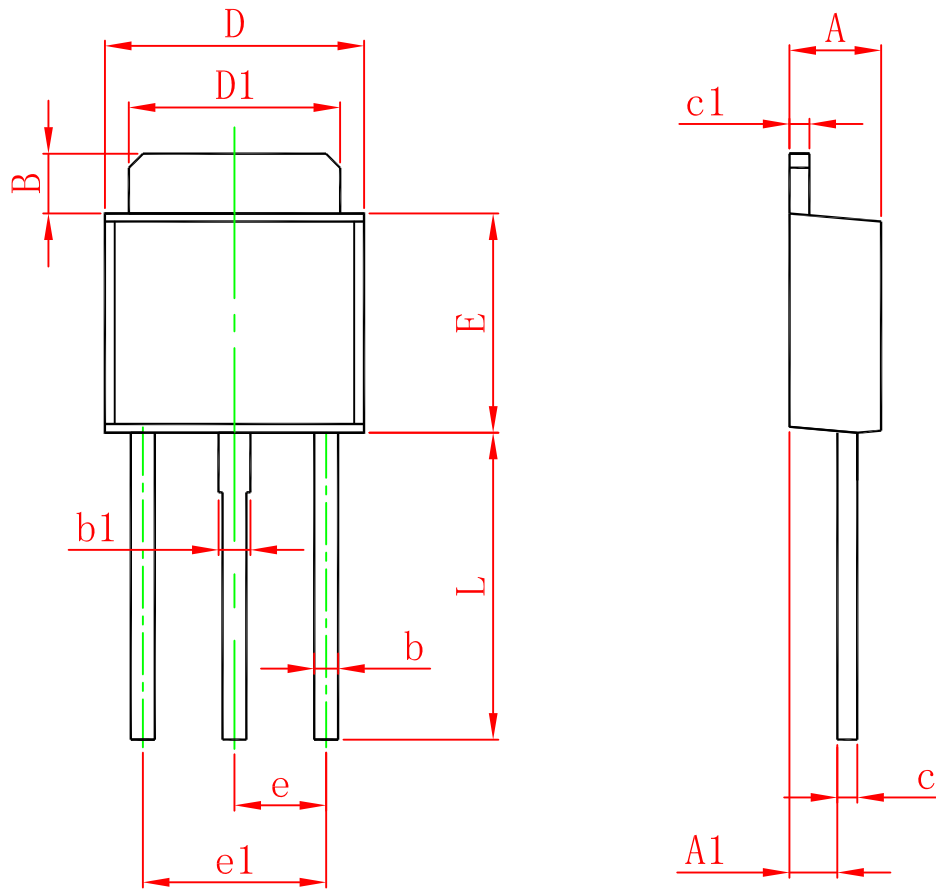
#### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ unless otherwise specified)

| Parameter                            | Symbol        | Test conditions                                       | Min | Typ | Max  | Unit          |
|--------------------------------------|---------------|---|-----|-----|------|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=-50\mu\text{A}, I_E=0$                           | -60 |     |      | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=-1\text{mA}, I_B=0$                              | -50 |     |      | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=-50\mu\text{A}, I_C=0$                           | -5  |     |      | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=-40\text{V}, I_E=0$                           |     |     | -1   | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=-4\text{V}, I_C=0$                            |     |     | -1   | $\mu\text{A}$ |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE}=-3\text{V}, I_C=-0.5\text{A}$                 | 82  |     | 390  |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=-2\text{A}, I_B=-0.2\text{A}$                    |     |     | -1   | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C=-1.5\text{A}, I_B=-0.15\text{A}$                 |     |     | -1.2 | V             |
| Transition frequency                 | $f_T$         | $V_{CE}=-5\text{V}, I_C=-0.5\text{A}, f=30\text{MHz}$ |     | 70  |      | MHz           |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=-10\text{V}, I_E=0, f=1\text{MHz}$            |     | 50  |      | pF            |

#### CLASSIFICATION OF $h_{FE(1)}$

| Rank  | P      | Q       | R       |
|-------|--------|---------|---------|
| Range | 82-180 | 120-270 | 180-390 |

# TO-251-3L Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 2.200                     | 2.400 | 0.087                | 0.094 |
| A1     | 1.050                     | 1.350 | 0.042                | 0.054 |
| B      | 1.350                     | 1.650 | 0.053                | 0.065 |
| b      | 0.500                     | 0.700 | 0.020                | 0.028 |
| b1     | 0.700                     | 0.900 | 0.028                | 0.035 |
| c      | 0.430                     | 0.580 | 0.017                | 0.023 |
| c1     | 0.430                     | 0.580 | 0.017                | 0.023 |
| D      | 6.350                     | 6.650 | 0.250                | 0.262 |
| D1     | 5.200                     | 5.400 | 0.205                | 0.213 |
| E      | 5.400                     | 5.700 | 0.213                | 0.224 |
| e      | 2.300 TYP.                |       | 0.091 TYP.           |       |
| e1     | 4.500                     | 4.700 | 0.177                | 0.185 |
| L      | 7.500                     | 7.900 | 0.295                | 0.311 |