

Complementary power transistors

Features

- Low collector-emitter saturation voltage
- Complementary NPN - PNP transistors

Applications

- General purpose
- Audio Amplifier

Description

The devices are manufactured in epitaxial-base planar technology and are suitable for audio, power linear and switching applications.

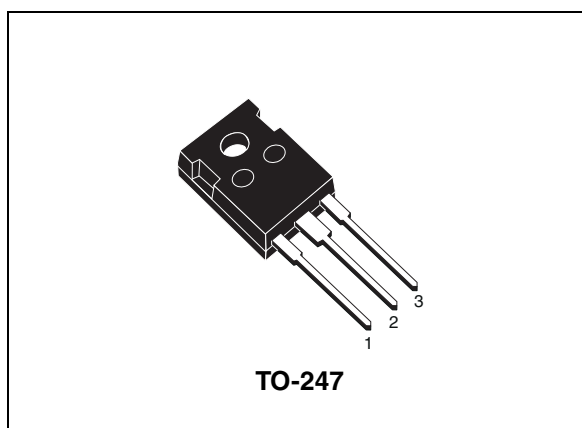


Figure 1. Internal schematic diagrams

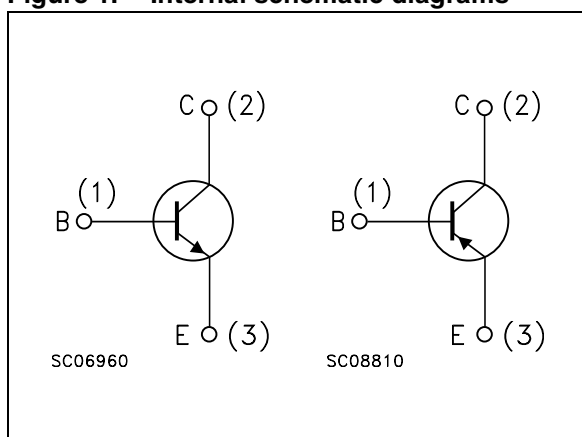


Table 1. Device summary

| Order code | Marking | Package | Packaging |
|------------|---------|---------|-----------|
| TIP2955 | TIP2955 | TO-247 | tube |
| TIP3055 | TIP3055 | | |

1 Absolute maximum rating

Table 2. Absolute maximum rating

| Symbol | Parameter | Value | | Unit |
|-----------|---|------------|---------|------------------|
| | | NPN | TIP3055 | |
| | | PNP | TIP2955 | |
| V_{CBO} | Collector-emitter voltage ($I_E = 0$) | 100 | | V |
| V_{CER} | Collector-emitter voltage ($R_{BE} = 100 \Omega$) | 70 | | V |
| V_{CEO} | Collector-emitter voltage ($I_B = 0$) | 60 | | V |
| V_{EBO} | Collector-base voltage ($I_C = 0$) | 7 | | V |
| I_C | Collector current | 15 | | A |
| I_B | Base current | 7 | | A |
| P_{tot} | Total dissipation at $T_c \leq 25^\circ\text{C}$ | 90 | | W |
| T_{stg} | Storage temperature | -65 to 150 | | $^\circ\text{C}$ |
| T_J | Max. operating junction temperature | 150 | | $^\circ\text{C}$ |

Note: For PNP type voltage and current values are negative

2 Electrical characteristics

($T_{\text{case}} = 25\text{ °C}$; unless otherwise specified)

Table 3. Electrical characteristics

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|-----------------------------|---|--|---------|------|--------|----------|
| I_{CEX} | Collector cut-off current ($V_{\text{BE}} = -1.5\text{ V}$) | $V_{\text{CE}} = 100\text{ V}$ $V_{\text{CE}} = 100\text{ V}$ $T_{\text{C}} = 150\text{ °C}$ | | | 1 5 | mA mA |
| I_{CEO} | Collector cut-off current ($I_{\text{B}} = 0$) | $V_{\text{CE}} = 30\text{ V}$ | | | 0.7 | mA |
| I_{EBO} | Emitter cut-off current ($I_{\text{C}} = 0$) | $V_{\text{EB}} = 7\text{ V}$ | | | 5 | mA |
| $V_{\text{CEO(sus)}}^{(1)}$ | Collector-emitter sustaining voltage ($I_{\text{B}} = 0$) | $I_{\text{C}} = 200\text{ mA}$ | 60 | | | V |
| $V_{\text{CER(sus)}}^{(1)}$ | Collector-emitter sustaining voltage ($R_{\text{BE}} = 100\ \Omega$) | $I_{\text{C}} = 200\text{ mA}$ | 70 | | | V |
| $V_{\text{CE(sat)}}^{(1)}$ | Collector-emitter saturation voltage | $I_{\text{C}} = 4\text{ A}$ $I_{\text{B}} = 400\text{ mA}$ $I_{\text{C}} = 10\text{ A}$ $I_{\text{B}} = 3.3\text{ A}$ | | | 1 3 | V V |
| $V_{\text{BE}}^{(1)}$ | Base-emitter voltage | $I_{\text{C}} = 4\text{ A}$ $V_{\text{CE}} = 4\text{ V}$ | | | 1.8 | V |
| $h_{\text{FE}}^{(1)}$ | DC current gain | $I_{\text{C}} = 4\text{ A}$ $V_{\text{CE}} = 4\text{ V}$ $I_{\text{C}} = 10\text{ A}$ $V_{\text{CE}} = 4\text{ V}$ | 20 5 | | 70 | |

1. Pulse duration = 300 μs , duty cycle $\leq 1.5\%$

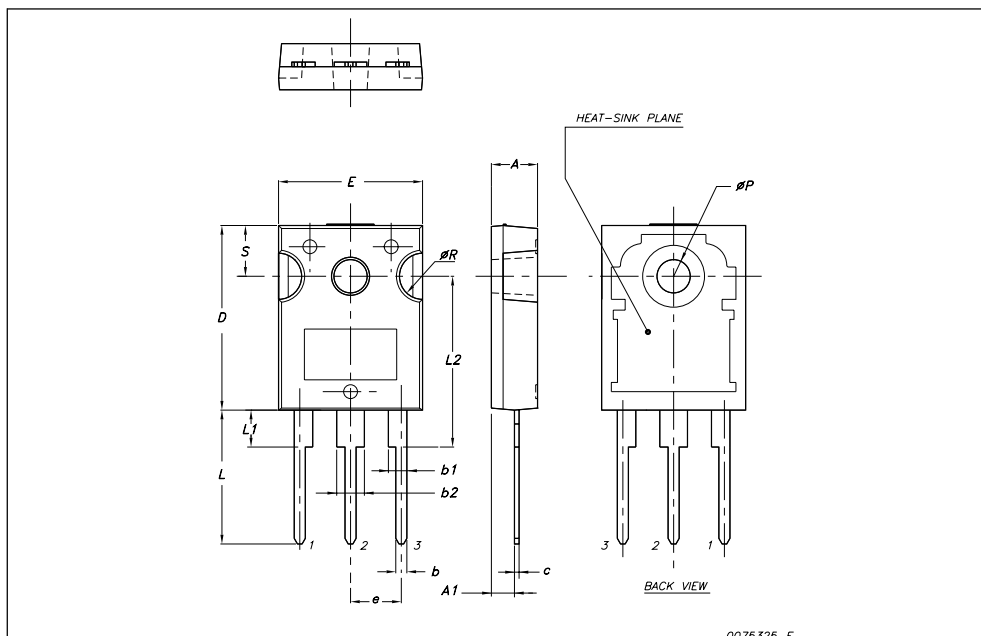
Note: For PNP type voltage and current values are negative

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

TO-247 Mechanical data

| Dim. | mm. | | |
|------|-------|-------|-------|
| | Min. | Typ | Max. |
| A | 4.85 | | 5.15 |
| A1 | 2.20 | | 2.60 |
| b | 1.0 | | 1.40 |
| b1 | 2.0 | | 2.40 |
| b2 | 3.0 | | 3.40 |
| c | 0.40 | | 0.80 |
| D | 19.85 | | 20.15 |
| E | 15.45 | | 15.75 |
| e | | 5.45 | |
| L | 14.20 | | 14.80 |
| L1 | 3.70 | | 4.30 |
| L2 | | 18.50 | |
| øP | 3.55 | | 3.65 |
| øR | 4.50 | | 5.50 |
| S | | 5.50 | |



4 Revision history

Table 4. Document revision history

| Date | Revision | Changes |
|-------------|----------|---------------------------------------|
| 30-Aug-1999 | 4 | |
| 10-Jan-2008 | 5 | Package change from TO-218 to TO-247. |

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