

PNP power bipolar transistor

Preliminary data

Features

- High breakdown voltage $V_{CE0} = -230\text{ V}$
- Complementary to 2STC4793
- High transition frequency, typical $f_T = 70\text{ MHz}$

Applications

- Audio power amplifier
- Drive stage amplifier

Description

This device is a PNP transistor manufactured using new "PB-HDC" (power bipolar high density current) technology. The resulting transistor shows good gain linearity behavior.

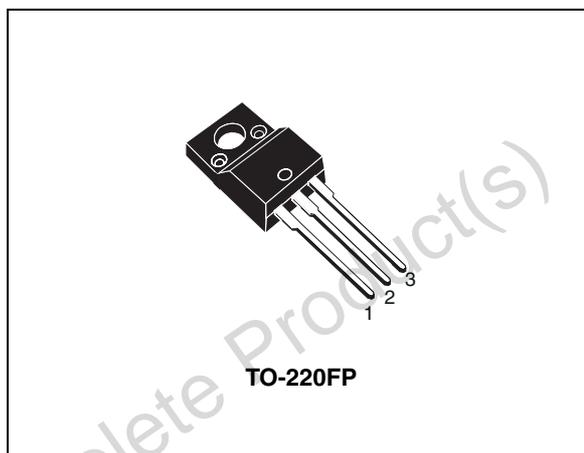


Figure 1. Internal schematic diagram

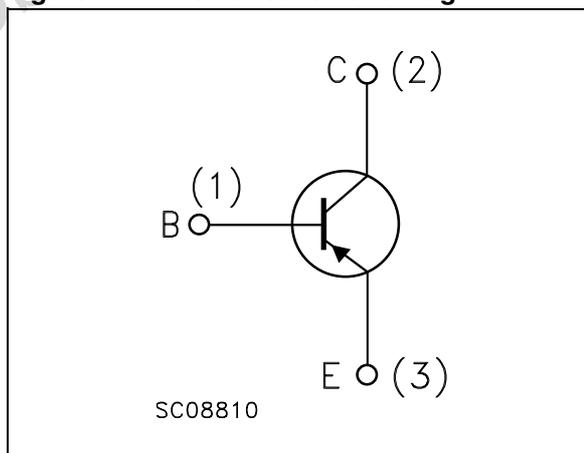


Table 1. Device summary

| Order code | Marking | Package | Packaging |
|------------|----------|----------|-----------|
| 2STA1837 | 2STA1837 | TO-220FP | Tube |

1 Electrical ratings

Table 2. Absolute maximum ratings

| Symbol | Parameter | Value | Unit |
|-----------|---|------------|------|
| V_{CBO} | Collector-base voltage ($I_E = 0$) | -230 | V |
| V_{CEO} | Collector-emitter voltage ($I_B = 0$) | -230 | V |
| V_{EBO} | Emitter-base voltage ($I_C = 0$) | -5 | V |
| I_C | Collector current | -1 | A |
| I_{CM} | Collector peak current | -2 | A |
| P_{TOT} | Total dissipation at $T_C = 25\text{ °C}$ | 20 | W |
| T_{STG} | Storage temperature | -65 to 150 | °C |
| T_J | Operating junction temperature | 150 | °C |

Table 3. Thermal data

| Symbol | Parameter | Value | Unit |
|------------|--------------------------------------|-------|------|
| R_{thJC} | Thermal resistance junction-case Max | 6.25 | °C/W |

2 Electrical characteristics

$T_{\text{case}} = 25\text{ °C}$ unless otherwise specified.

Table 4. Electrical characteristics

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|-----------------------------------|---|---|------|------|------|---------------|
| I_{CBO} | Collector cut-off current ($I_{\text{E}} = 0$) | $V_{\text{CB}} = -230\text{ V}$ | | | -1 | μA |
| I_{EBO} | Emitter cut-off current ($I_{\text{C}} = 0$) | $V_{\text{EB}} = -5\text{ V}$ | | | -1 | μA |
| $V_{(\text{BR})\text{CEO}}^{(1)}$ | Collector-emitter breakdown voltage ($I_{\text{B}} = 0$) | $I_{\text{C}} = -10\text{ mA}$ | -230 | | | V |
| $V_{(\text{BR})\text{CBO}}$ | Collector-base breakdown voltage ($I_{\text{E}} = 0$) | $I_{\text{C}} = -100\text{ }\mu\text{A}$ | -230 | | | V |
| $V_{(\text{BR})\text{EBO}}^{(1)}$ | Emitter-base breakdown voltage ($I_{\text{C}} = 0$) | $I_{\text{E}} = -1\text{ mA}$ | -5 | | | V |
| $V_{\text{CE(sat)}}^{(1)}$ | Collector-emitter saturation voltage | $I_{\text{C}} = -0.5\text{ A}$ $I_{\text{B}} = -50\text{ mA}$ | | | -1 | V |
| V_{BE} | Base-emitter voltage | $I_{\text{C}} = -0.5\text{ A}$ $V_{\text{CE}} = -5\text{ V}$ | | | -1 | V |
| h_{FE} | DC current gain | $I_{\text{C}} = -0.1\text{ A}$ $V_{\text{CE}} = -5\text{ V}$ | 100 | | 320 | |
| f_{T} | Transition frequency | $I_{\text{C}} = -0.1\text{ A}$ $V_{\text{CE}} = -10\text{ V}$ | | 70 | | MHz |
| C_{CBO} | Collector-base capacitance ($I_{\text{E}} = 0$) | $V_{\text{CB}} = -10\text{ V}$ $f = 1\text{ MHz}$ | | 30 | | pF |

1. Pulse test: pulse duration $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

3 Package mechanical data

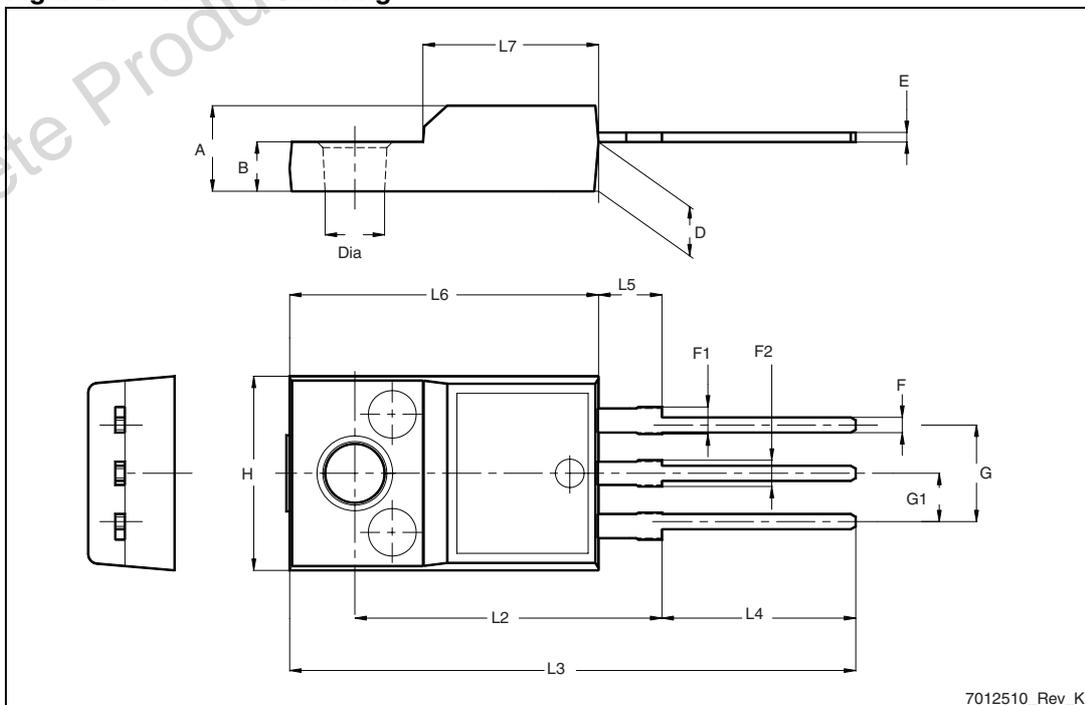
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Table 5. TO-220FP mechanical data

| Dim. | mm. | | |
|------|------|------|------|
| | Min. | Typ. | Max. |
| A | 4.4 | | 4.6 |
| B | 2.5 | | 2.7 |
| D | 2.5 | | 2.75 |
| E | 0.45 | | 0.7 |
| F | 0.75 | | 1 |
| F1 | 1.15 | | 1.70 |
| F2 | 1.15 | | 1.70 |
| G | 4.95 | | 5.2 |
| G1 | 2.4 | | 2.7 |
| H | 10 | | 10.4 |
| L2 | | 16 | |
| L3 | 28.6 | | 30.6 |
| L4 | 9.8 | | 10.6 |
| L5 | 2.9 | | 3.6 |
| L6 | 15.9 | | 16.4 |
| L7 | 9 | | 9.3 |
| Dia | 3 | | 3.2 |

Figure 2. TO-220FP drawing



4 Revision history

Table 6. Document revision history

| Date | Revision | Changes |
|-------------|----------|--|
| 13-Feb-2009 | 1 | Initial release. |
| 01-Mar-2010 | 2 | Document status promoted from target specification to preliminary data, updated package mechanical data. |

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