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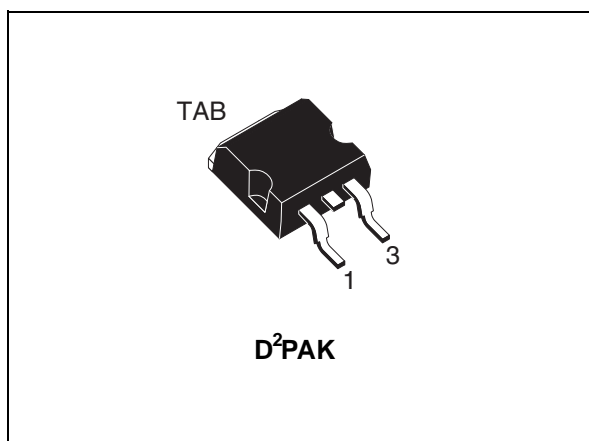
sales@integrated-circuit.com



MJB44H11T4-A

Automotive-grade low voltage NPN power transistor

Datasheet - production data



Features

- Designed for automotive applications and AEC- Q101 qualified
- Low collector-emitter saturation voltage
- Fast switching speed

Applications

- Power amplifier
- Switching circuits

Description

This device is an NPN transistor manufactured using new low voltage planar technology with double metal process. The result is a transistor which boasts exceptionally high gain performance coupled with very low saturation voltage.

Figure 1. Internal schematic diagram

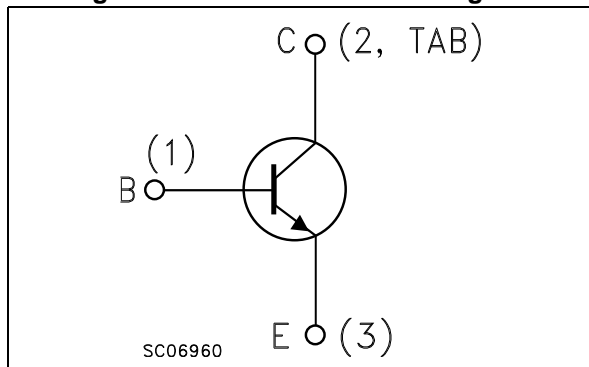


Table 1. Device summary

| Order codes | Marking | Package | Packaging |
|--------------|------------|--------------------|---------------|
| MJB44H11T4-A | MJB44H11-A | D ² PAK | Tape and reel |

Absolute maximum ratings

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1 Absolute maximum ratings

Table 2. Absolute maximum ratings

| Symbol | Parameter | Value | Unit |
|-----------|------------------------------------------------|------------|------|
| V_{CEO} | Collector-emitter voltage ($I_B = 0$) | 80 | V |
| V_{EBO} | Emitter-base voltage ($I_C = 0$) | 5 | V |
| I_C | Collector current | 10 | A |
| I_{CM} | Collector peak current | 20 | A |
| P_{TOT} | Total dissipation at $T_{case} = 25\text{ °C}$ | 50 | W |
| TSTG | Storage temperature | -55 to 150 | °C |
| T_J | Max. operating junction temperature | 150 | °C |

Table 3. Thermal data

| Symbol | Parameter | Value | Unit |
|------------|-----------------------------------------|-------|------|
| R_{thJC} | Thermal resistance junction-case max | 2.5 | °C/W |
| R_{thJA} | Thermal resistance junction-ambient max | 62.5 | °C/W |

2 Electrical characteristics

$T_{case} = 25\text{ }^{\circ}\text{C}$; unless otherwise specified.

Table 4. Electrical characteristics

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---------------------|----------------------------------------------------|------------------------------------------|------|------|------|---------------|
| $V_{CE(sus)}^{(1)}$ | Collector-emitter sustaining voltage ($I_B = 0$) | $I_C = 30\text{ mA}$ | 80 | - | | V |
| I_{CES} | Collector cut-off current ($V_{BE} = 0$) | $V_{CE} = 80\text{ V}$ | | - | 10 | μA |
| I_{EBO} | Emitter cut-off current ($I_C = 0$) | $V_{EB} = 5\text{ V}$ | | - | 50 | μA |
| $V_{CE(sat)}^{(1)}$ | Collector-emitter saturation voltage | $I_C = 8\text{ A}$ $I_B = 0.4\text{ A}$ | | - | 1 | V |
| $V_{BE(sat)}^{(1)}$ | Base-emitter saturation voltage | $I_C = 8\text{ A}$ $I_B = 0.8\text{ A}$ | | - | 1.5 | V |
| $h_{FE}^{(1)}$ | DC current gain | $I_C = 2\text{ A}$ $V_{CE} = 1\text{ V}$ | 60 | - | | |
| | | $I_C = 4\text{ A}$ $V_{CE} = 1\text{ V}$ | 40 | - | | |

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

Electrical characteristics

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2.1 Electrical characteristics (curves)

Figure 2. Safe operating area

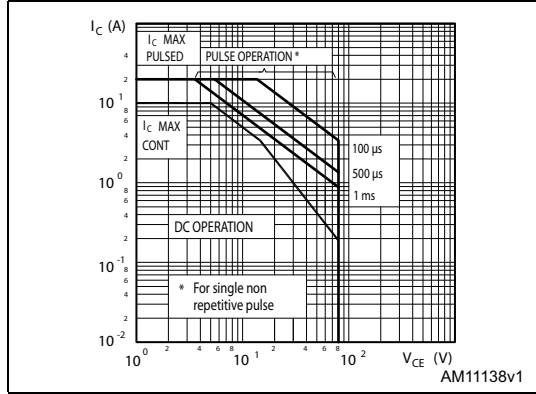


Figure 3. Derating curve

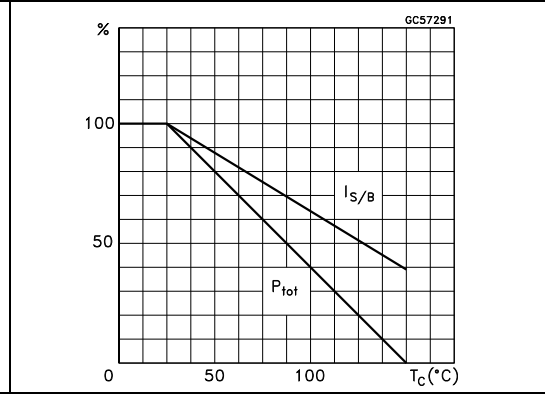


Figure 4. DC current gain

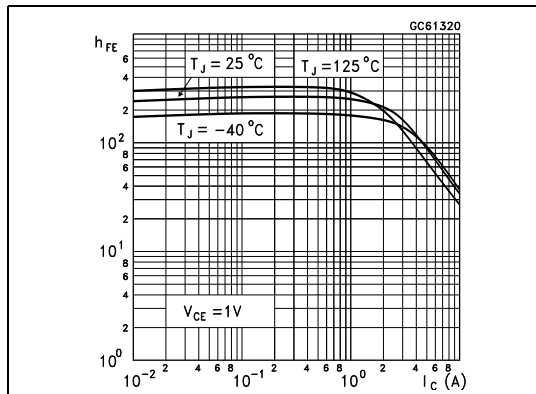
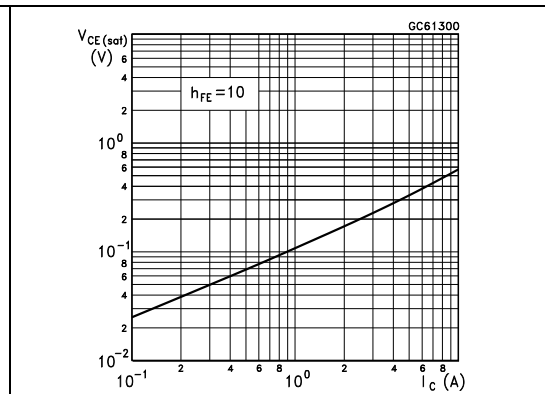


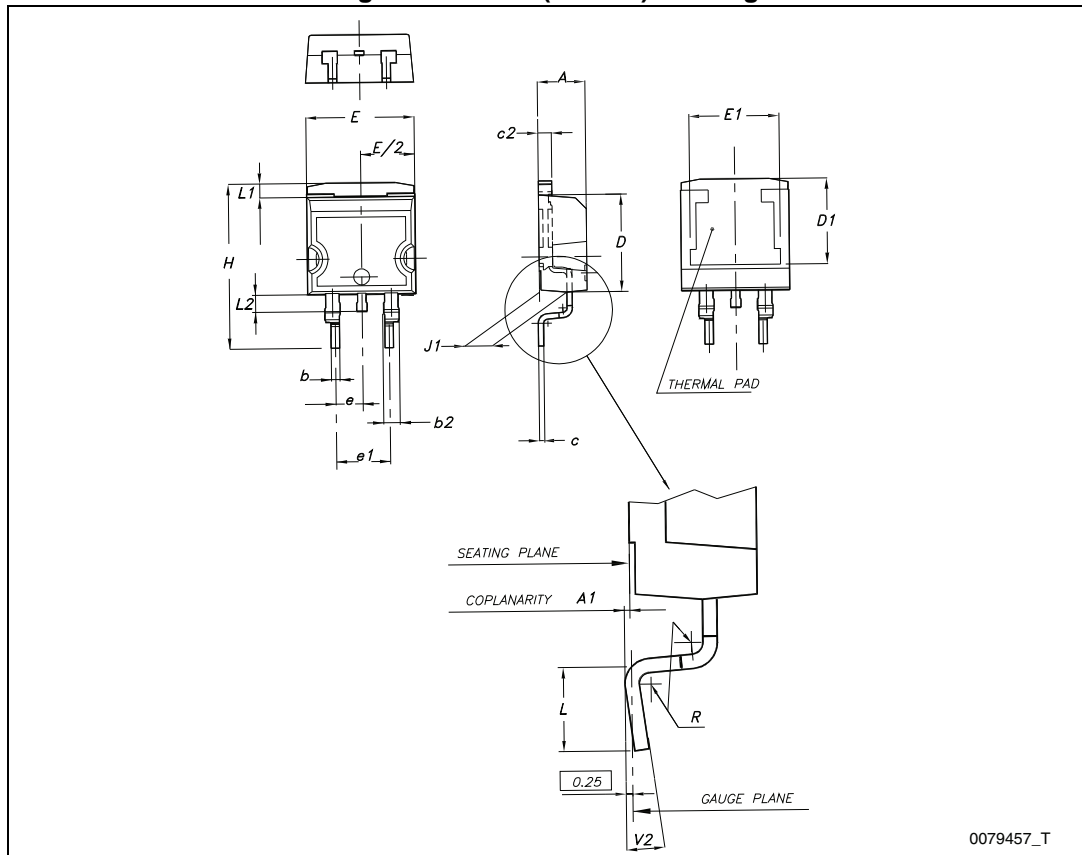
Figure 5. Collector-emitter saturation voltage



3 Package mechanical data

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Figure 6. D²PAK (TO-263) drawing



Package mechanical data

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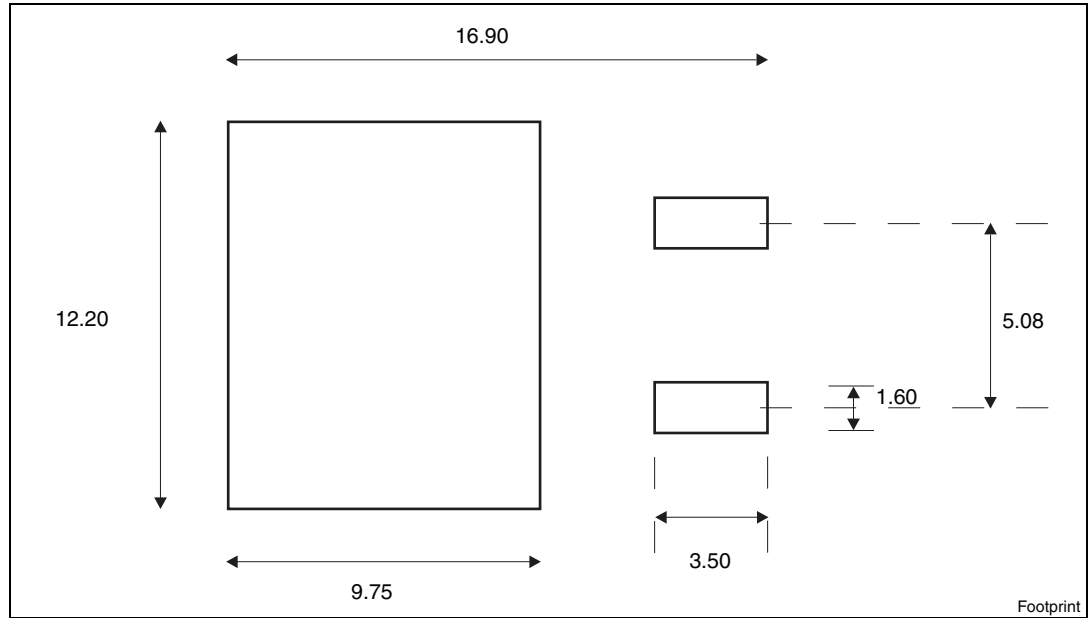
Table 5. D²PAK (TO-263) mechanical data

| Dim. | mm | | |
|------|------|------|-------|
| | Min. | Typ. | Max. |
| A | 4.40 | | 4.60 |
| A1 | 0.03 | | 0.23 |
| b | 0.70 | | 0.93 |
| b2 | 1.14 | | 1.70 |
| c | 0.45 | | 0.60 |
| c2 | 1.23 | | 1.36 |
| D | 8.95 | | 9.35 |
| D1 | 7.50 | | |
| E | 10 | | 10.40 |
| E1 | 8.50 | | |
| e | | 2.54 | |
| e1 | 4.88 | | 5.28 |
| H | 15 | | 15.85 |
| J1 | 2.49 | | 2.69 |
| L | 2.29 | | 2.79 |
| L1 | 1.27 | | 1.40 |
| L2 | 1.30 | | 1.75 |
| R | | 0.4 | |
| V2 | 0° | | 8° |

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Package mechanical data

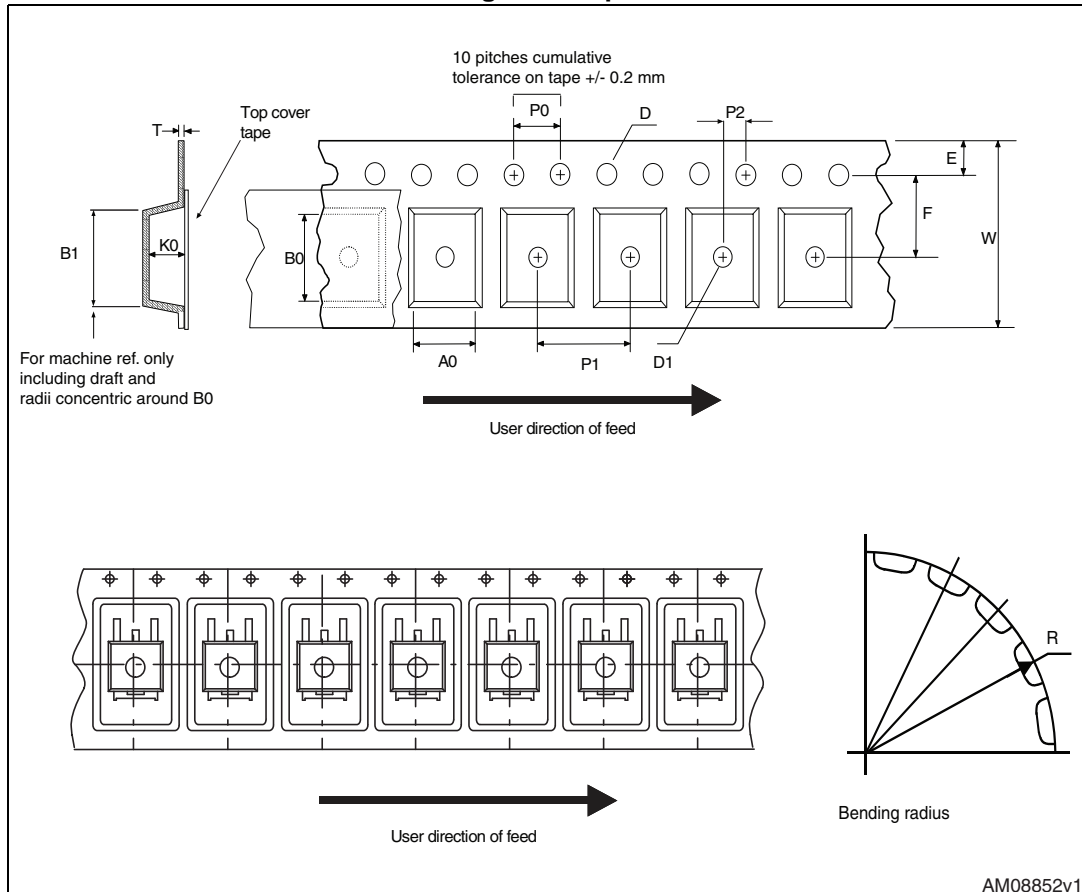
Figure 7. D²PAK footprint^(a)



a. All dimension are in millimeters

4 Packaging mechanical data

Figure 8. Tape



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Packaging mechanical data

Figure 9. Reel

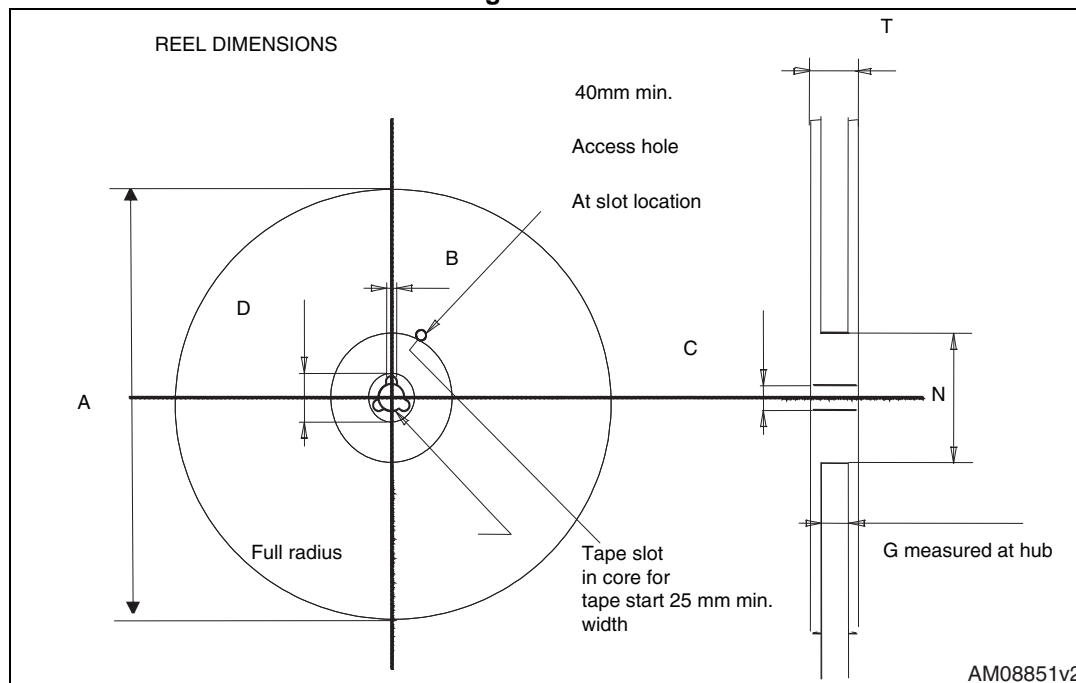


Table 6. D²PAK (TO-263) tape and reel mechanical data

| Tape | | | Reel | | |
|------|------|------|----------|------|------|
| Dim. | mm | | Dim. | mm | |
| | Min. | Max. | | Min. | Max. |
| A0 | 10.5 | 10.7 | A | | 330 |
| B0 | 15.7 | 15.9 | B | 1.5 | |
| D | 1.5 | 1.6 | C | 12.8 | 13.2 |
| D1 | 1.59 | 1.61 | D | 20.2 | |
| E | 1.65 | 1.85 | G | 24.4 | 26.4 |
| F | 11.4 | 11.6 | N | 100 | |
| K0 | 4.8 | 5.0 | T | | 30.4 |
| P0 | 3.9 | 4.1 | | | |
| P1 | 11.9 | 12.1 | Base qty | | 1000 |
| P2 | 1.9 | 2.1 | Bulk qty | | 1000 |
| R | 50 | | | | |
| T | 0.25 | 0.35 | | | |
| W | 23.7 | 24.3 | | | |

5 Revision history

Table 7. Document revision history

| Date | Revision | Changes |
|-------------|----------|------------------|
| 12-May-2014 | 1 | Initial release. |

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