

MJD44H11T4-A MJD45H11T4-A

Complementary power transistors

Features

- The devices are qualified for automotive application
- Low collector-emitter saturation voltage
- Fast switching speed
- Surface-mounting TO-252 (DPAK) power package in tape and reel (suffix "T4")

Applications

- Power amplifier
- Switching circuits

Description

The devices are manufactured in low voltage multi epitaxial planar technology. They are intended for general purpose linear and switching applications.

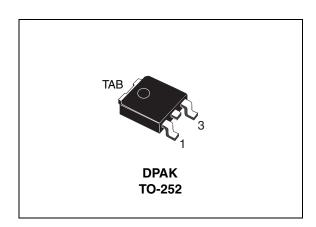


Figure 1. Internal schematic diagram

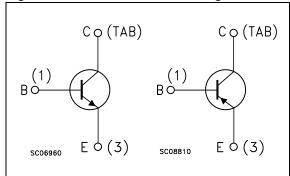


Table 1. Device summary

| Order codes | Marking | Polarity | Package | Packaging |
|--------------|----------|----------|---------|---------------|
| MJD44H11T4-A | MJD44H11 | NPN | DPAK | Tape and reel |
| MJD45H11T4-A | MJD45H11 | PNP | DPAK | Tape and reel |

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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 | ٧ |
| V _{EBO} | Emitter-base voltage (I _C = 0) | 5 | V |
| I _C | Collector current | 8 | Α |
| I _{CM} | Collector peak current | 16 | Α |
| P _{TOT} | Total dissipation at T _{case} = 25 °C | 20 | W |
| T _{STG} | Storage temperature | -55 to 150 | °C |
| T _J | Max. operating junction temperature | 150 | °C |

Note: For PNP types voltage and current values are negative.

Table 3. Thermal data

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

2 **Electrical characteristics**

 T_{case} = 25 °C; unless otherwise specified.

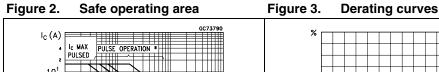
Table 4. **Electrical characteristics**

| Symbol | Parameter | Test conditions | | Min. | Тур. | Max. | Unit |
|--------------------------------------|---|-------------------------------------|--------------------|------|------|------|------|
| V _{CEO(sus)} ⁽¹⁾ | Collector-emitter sustaining voltage (I _B = 0) | I _C = 30 mA | | 80 | - | | V |
| I _{CES} | Collector cut-off current (V _{BE} = 0) | V _{CE} = 80 V | | | - | 10 | μΑ |
| I _{EBO} | Emitter cut-off current (I _C = 0) | V _{EB} = 5 V | | | | 50 | μΑ |
| V _{CE(sat)} ⁽¹⁾ | Collector-emitter saturation voltage | I _C = 8 A I _B | = 0.4 A | | - | 1 | V |
| V _{BE(sat)} ⁽¹⁾ | Base-emitter saturation voltage | I _C = 8 A I _B | = 0.8 A | | | 1.5 | ٧ |
| h _{FE} ⁽¹⁾ | DC aureant main | $I_C = 2 A$ V_C | _E = 1 V | 60 | - | | |
| | DC current gain | $I_C = 4 A$ V_C | _E = 1 V | 40 | - | · | |

^{1.} Pulse test: pulse duration \leq 300 μ s, duty cycle \leq 2 %.

For PNP types voltage and current values are negative. Note:

2.1 **Typical characteristic (curves)**



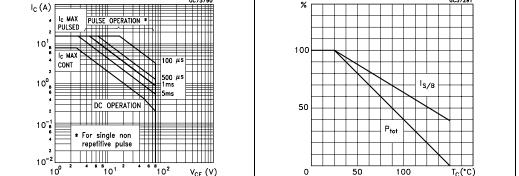
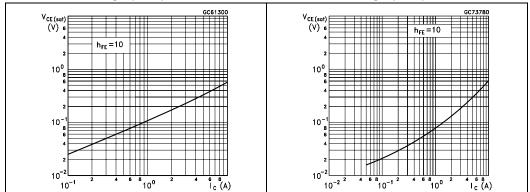


Figure 4. DC current gain (NPN) Figure 5. DC current gain (PNP) T_J = 25 °C = T_J = 25 °C T_J = 125 °C T_J=125°C T_J = -40 °C 10² $T_J = -40$ °C 10¹ 10¹ $V_{CE} = 1V$ $V_{CE} = 1V$ 4 6 8 10⁻¹ 4 6 B 10⁻¹ 10^{-2}

Figure 6. Collector-emitter saturation voltage (NPN)

Figure 7. Collector-emitter saturation voltage (PNP)



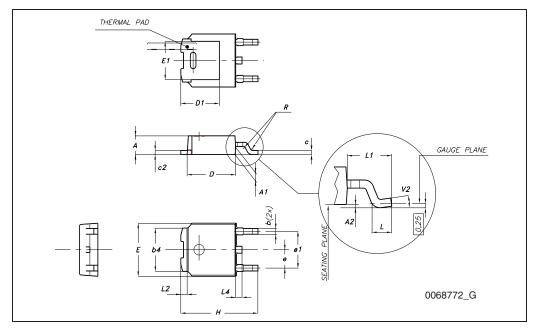
3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK[®] packages, depending on their level of environmental compliance. ECOPACK[®] specifications, grade definitions and product status are available at: www.st.com. ECOPACK[®] is an ST trademark.



| TO-252 | (DPAK) | mechanical | data |
|--------|--------|------------|------|
|--------|--------|------------|------|

| DIM. | | mm. | |
|--------|------|------|-------|
| DIIVI. | min. | typ | max. |
| А | 2.20 | | 2.40 |
| A1 | 0.90 | | 1.10 |
| A2 | 0.03 | | 0.23 |
| b | 0.64 | | 0.90 |
| b4 | 5.20 | | 5.40 |
| С | 0.45 | | 0.60 |
| c2 | 0.48 | | 0.60 |
| D | 6.00 | | 6.20 |
| D1 | | 5.10 | |
| E | 6.40 | | 6.60 |
| E1 | | 4.70 | |
| е | | 2.28 | |
| e1 | 4.40 | | 4.60 |
| Н | 9.35 | | 10.10 |
| L | 1 | | |
| L1 | | 2.80 | |
| L2 | | 0.80 | |
| L4 | 0.60 | | 1 |
| R | | 0.20 | |
| V2 | 0 ° | | 8 ° |



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4 Revision history

Table 5. Document revision history

| Date | Revision | Changes |
|-------------|----------|------------------|
| 06-Aug-2009 | 1 | Initial release. |

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