

## Complementary power transistors

### Features

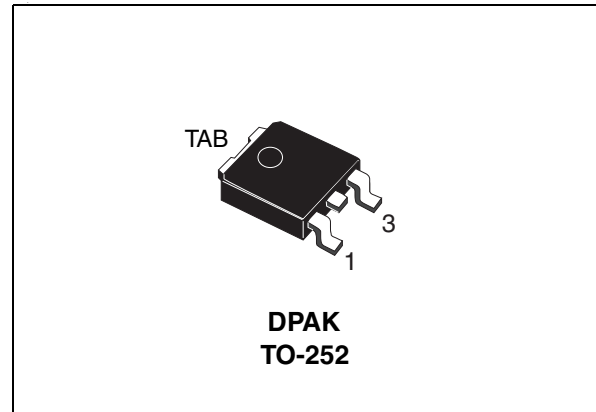
- Low collector-emitter saturation voltage
- Fast switching speed
- Surface-mounting TO-252 (DPAK) power package in tape and reel (suffix "T4")

### Applications

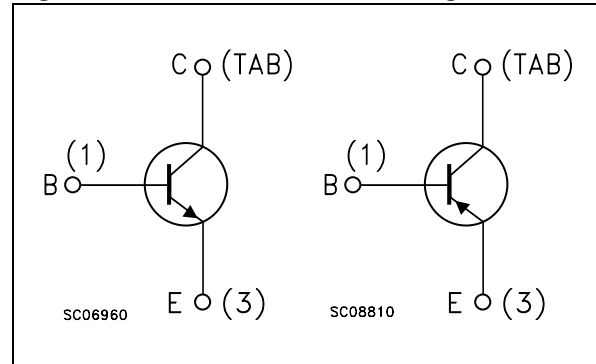
- Power amplifier
- Switching circuits

### 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  | MJD44H11 | NPN      | DPAK    | Tape and reel |
| MJD45H11T4  | MJD45H11 | PNP      | DPAK    | Tape and reel |

# 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                                    | 8          | A                  |
| $I_{CM}$  | Collector peak current                               | 16         | A                  |
| $P_{TOT}$ | Total dissipation at $T_{case} = 25^{\circ}\text{C}$ | 20         | W                  |
| $T_{STG}$ | Storage temperature                                  | -55 to 150 | $^{\circ}\text{C}$ |
| $T_J$     | Max. operating junction temperature                  | 150        | $^{\circ}\text{C}$ |

*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  | $^{\circ}\text{C/W}$ |

# 2 Electrical characteristics

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

**Table 4. Electrical characteristics**

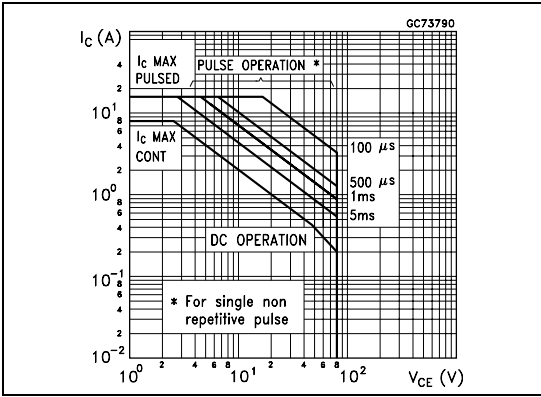
| Symbol                      | Parameter                                          | Test conditions                                 | Min. | Typ. | Max. | Unit          |
|-----------------------------|----------------------------------------------------|-------------------------------------------------|------|------|------|---------------|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

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

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

## 2.1 Typical characteristic (curves)

**Figure 2. Safe operating area**



**Figure 3. Derating curves**

