

## Complementary silicon power transistors

### Features

- STMicroelectronics preferred salestypes
- Complementary NPN - PNP devices

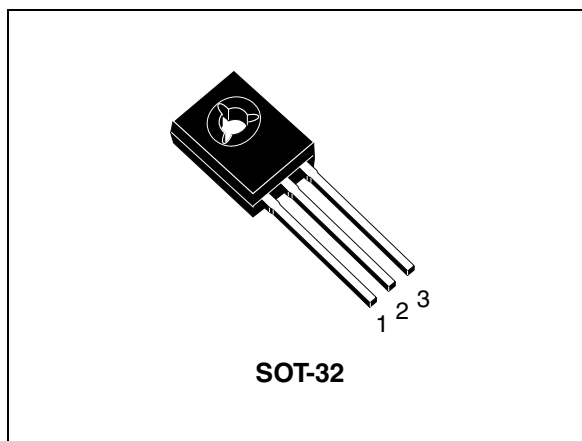
### Applications

- Linear and switching industrial equipment

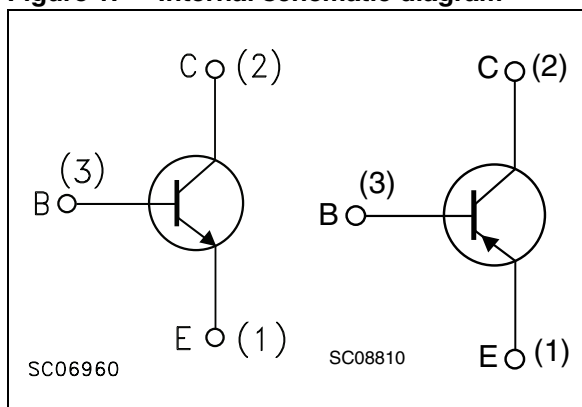
### Description

The MJE340 is a silicon planar NPN transistor intended for use in medium power linear and switching applications. It is mounted in SOT-32.

The complementary PNP type is MJE350.



**Figure 1. Internal schematic diagram**



**Table 1. Device summary**

| Order code | Marking | Polarity | Package | Packaging |
|------------|---------|----------|---------|-----------|
| MJE340     | MJE340  | NPN      | SOT-32  | Tube      |
| MJE350     | MJE350  | PNP      | SOT-32  | Tube      |

# 1 Electrical ratings

**Table 2. Absolute maximum ratings**

| Symbol    | Parameter                                    | Value        |  | Unit |
|-----------|--|--------------|--|------|
|           |  | MJE340 (NPN) |  |      |
|           |  | MJE350 (PNP) |  |      |
| $V_{CBO}$ | Collector-base voltage ( $I_E = 0$ )         | 300          |  | V    |
| $V_{CEO}$ | Collector-emitter voltage ( $I_B = 0$ )      | 300          |  | V    |
| $V_{EBO}$ | Base-emitter voltage ( $I_C = 0$ )           | 3            |  | V    |
| $I_C$     | Collector current                            | 0.5          |  | A    |
| $P_{TOT}$ | Total dissipation at $T_c \leq 25\text{ °C}$ | 20.8         |  | W    |
| $T_{stg}$ | Storage temperature                          | -65 to 150   |  | °C   |
| $T_J$     | Max operating junction temperature           | 150          |  |      |

*Note:* for PNP type voltage and current values are negative.

**Table 3. Thermal data**

| Symbol     | Parameter                            | Value | Unit |
|------------|--------------------------------------|-------|------|
| $R_{thJC}$ | Thermal resistance junction-case max | 6.0   | °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          |
|-----------------------------|--|--|------|------|------|---------------|
| $I_{\text{CBO}}$            | Collector cut-off current<br>( $I_{\text{E}} = 0$ )            | $V_{\text{CB}} = 300\text{ V}$                               |      |      | 100  | $\mu\text{A}$ |
| $I_{\text{EBO}}$            | Emitter cut-off current<br>( $I_{\text{C}} = 0$ )              | $V_{\text{EB}} = 3\text{ V}$                                 |      |      | 100  | $\mu\text{A}$ |
| $V_{\text{CEO(sus)}}^{(1)}$ | Collector-emitter<br>sustaining voltage ( $I_{\text{B}} = 0$ ) | $I_{\text{C}} = 1\text{ mA}$                                 | 300  |      |      | V             |
| $V_{\text{BE(on)}}$         | Emitter-base on voltage<br>( $I_{\text{C}} = 0$ )              | $I_{\text{C}} = 50\text{ mA}$ $V_{\text{CE}} = 10\text{ V}$  |      |      | 1    | V             |
| $V_{\text{CE(sat)}}^{(1)}$  | Collector-emitter<br>saturation voltage                        | $I_{\text{C}} = 100\text{ mA}$ $I_{\text{B}} = 10\text{ mA}$ |      |      | 0.5  | V             |
| $h_{\text{FE}}$             | DC current gain  | $I_{\text{C}} = 50\text{ mA}$ $V_{\text{CE}} = 10\text{ V}$  | 30   |      | 240  |               |

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

*Note:* for PNP type voltage and current values are negative.

## 2.1 Electrical characteristics (curves)

Figure 2. Safe operating area

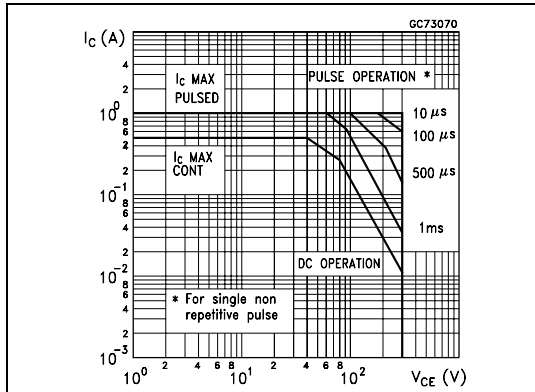


Figure 3. Derating curve

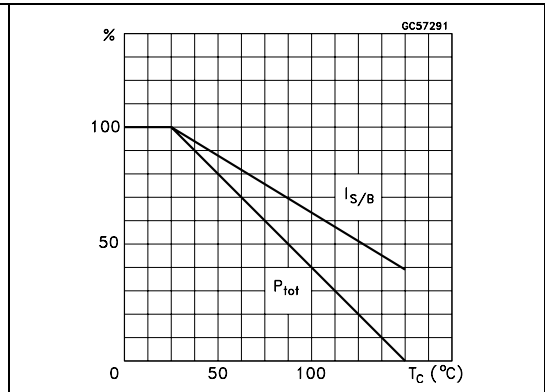


Figure 4. DC current gain (NPN type)

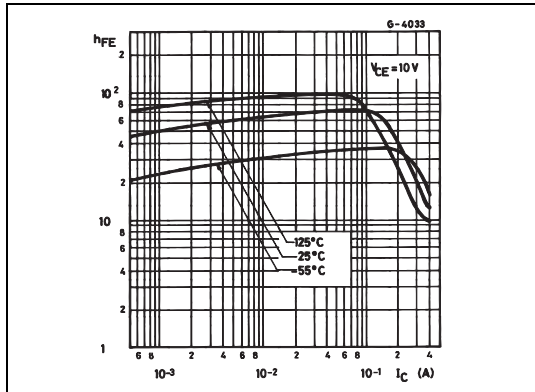


Figure 5. DC current gain (PNP type)

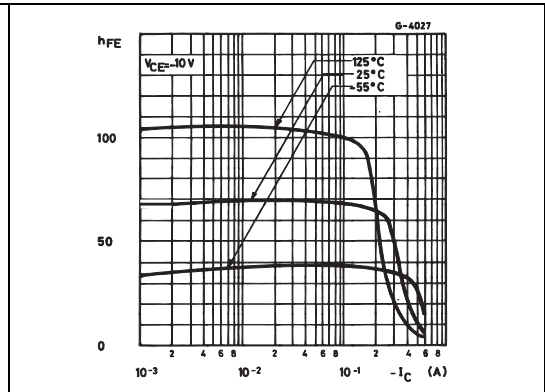


Figure 6. Collector-emitter saturation voltage (NPN type)

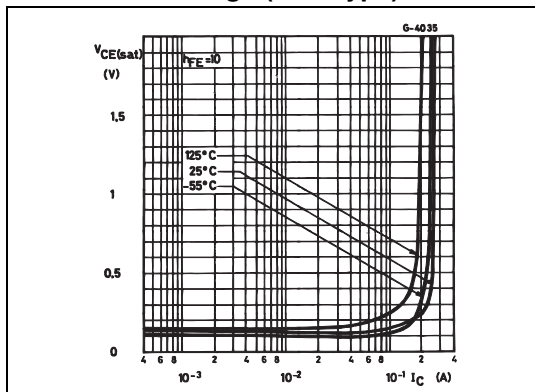
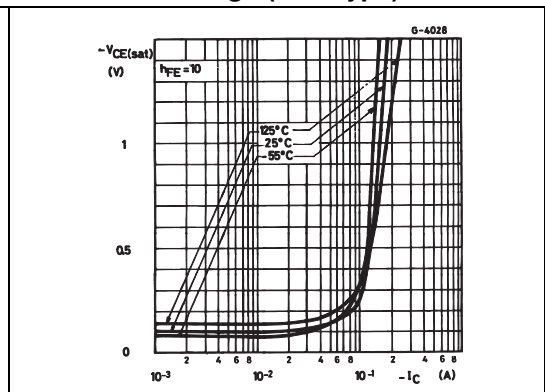


Figure 7. Base-emitter saturation voltage (PNP type)



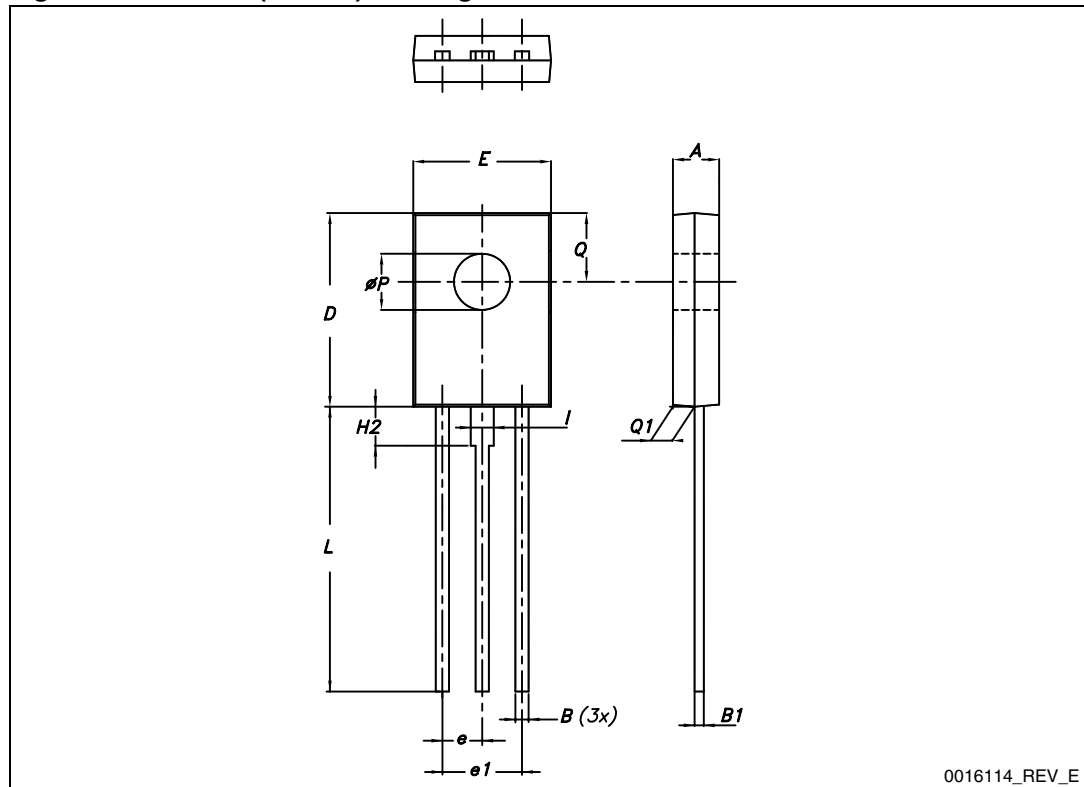
### 3 Package mechanical data

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

Table 5. SOT-32 (TO-126) mechanical data

| Dim. | mm.   |      |       |
|------|-------|------|-------|
|      | Min.  | Typ. | Max.  |
| A    | 2.40  |      | 2.90  |
| B    | 0.64  |      | 0.88  |
| B1   | 0.39  |      | 0.63  |
| D    | 10.50 |      | 11.05 |
| E    | 7.40  |      | 7.80  |
| e    | 2.04  | 2.29 | 2.54  |
| e1   | 4.07  | 4.58 | 5.08  |
| L    | 15.30 |      | 16    |
| ØP   | 2.90  |      | 3.20  |
| Q    |       | 3.80 |       |
| Q1   | 1     |      | 1.52  |
| H2   |       | 2.15 |       |
| I    |       | 1.27 |       |

Figure 8. SOT-32 (TO-126) drawing



## 4 Revision history

**Table 6. Document revision history**

| Date        | Revision | Changes   |
|-------------|----------|---|
| 05-Apr-2011 | 5        | Minor text changes  |
| 10-Nov-2011 | 6        | Added: $V_{CBO}$ in <a href="#">Table 2</a> , $V_{CE(sat)}$ and $V_{BE(on)}$ in <a href="#">Table 4</a> |

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