

## Very high voltage NPN power transistor

### Features

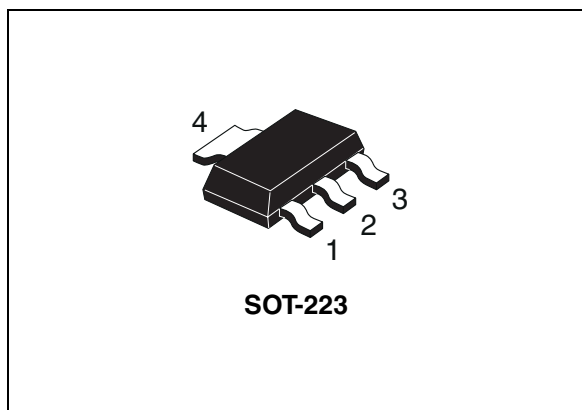
- High gain
- Very high voltage capability

### Applications

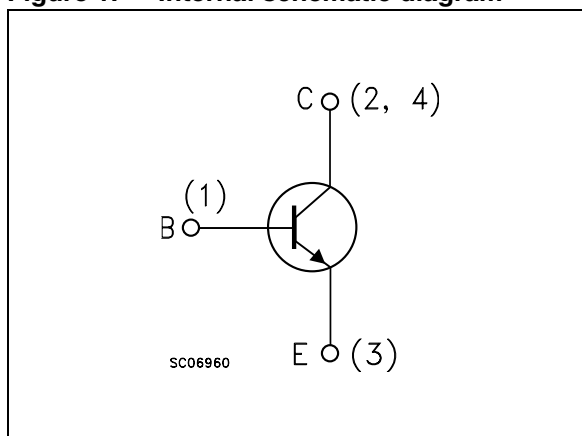
- Haptic
- High voltage solenoid driving

### Description

The device is an NPN power bipolar transistor manufactured using the latest high-voltage diffused collector technology.



**Figure 1. Internal schematic diagram**



**Table 1. Device summary**

| Order code | Marking | Package | Packaging     |
|------------|---------|---------|---------------|
| STN0214    | N0214   | SOT-223 | Tape and reel |

# 1 Electrical ratings

**Table 2. Absolute maximum ratings**

| Symbol    | Parameter                                  | Value      | Unit |
|-----------|--|------------|------|
| $V_{CES}$ | Collector-emitter voltage ( $V_{BE} = 0$ ) | 1400       | V    |
| $V_{CEO}$ | Collector-emitter voltage ( $I_B = 0$ )    | 1200       | V    |
| $V_{EBO}$ | Emitter-base voltage ( $I_C = 0$ )         | 6          | V    |
| $I_C$     | Collector current                          | 200        | mA   |
| $I_{CM}$  | Collector peak current ( $t_p < 5$ ms)     | 400        | mA   |
| $I_B$     | Base current                               | 100        | mA   |
| $I_{BM}$  | Base peak current ( $t_p < 1$ ms)          | 200        | mA   |
| $P_{TOT}$ | Total dissipation at $T_{amb} = 25$ °C     | 1.6        | W    |
| $T_{stg}$ | Storage temperature                        | -65 to 150 | °C   |
| $T_J$     | Max. operating junction temperature        | 150        |      |

**Table 3. Thermal data**

| Symbol              | Parameter                           | Value | Unit |
|---------------------|-------------------------------------|-------|------|
| $R_{thj-amb}^{(1)}$ | Thermal resistance junction-ambient | 78    | °C/W |

1. When mounted on PCB area of 1 cm<sup>2</sup>, t < 10 sec

## 2 Electrical characteristics

( $T_{CASE} = 25\text{ °C}$ ; unless otherwise specified)

**Table 4. Electrical characteristics**

| Symbol               | Parameter   | Test conditions  | Min. | Typ.       | Max. | Unit          |
|----------------------|---|--|------|------------|------|---------------|
| $I_{CES}$            | Collector cut-off current<br>( $V_{BE} = 0$ )         | $V_{CE} = 1400\text{ V}$   |      |            | 10   | $\mu\text{A}$ |
| $I_{EBO}$            | Emitter cut-off current<br>( $I_B = 0$ )              | $V_{EB} = 6\text{ V}$  |      |            | 10   | $\mu\text{A}$ |
| $V_{CEO(sus)}^{(1)}$ | Collector-emitter sustaining<br>voltage ( $I_B = 0$ ) | $I_C = 1\text{ mA}$  | 1200 |            |      | V             |
| $V_{CE(sat)}^{(1)}$  | Collector-emitter saturation<br>voltage               | $I_C = 10\text{ mA}$ $I_B = 2\text{ mA}$<br>$I_C = 100\text{ mA}$ $I_B = 20\text{ mA}$   |      | 0.1<br>0.3 |      | V<br>V        |
| $V_{BE(sat)}^{(1)}$  | Base-emitter saturation<br>voltage                    | $I_C = 100\text{ mA}$ $I_B = 20\text{ mA}$   |      | 0.8        |      | V             |
| $h_{FE}^{(1)}$       | DC current gain                                       | $I_C = 1\text{ mA}$ $V_{CE} = 2\text{ V}$<br>$I_C = 200\text{ mA}$ $V_{CE} = 2\text{ V}$ |      | 20<br>3    |      |               |

1. Pulsed duration = 300  $\mu\text{s}$ , duty cycle  $\leq 1.5\%$

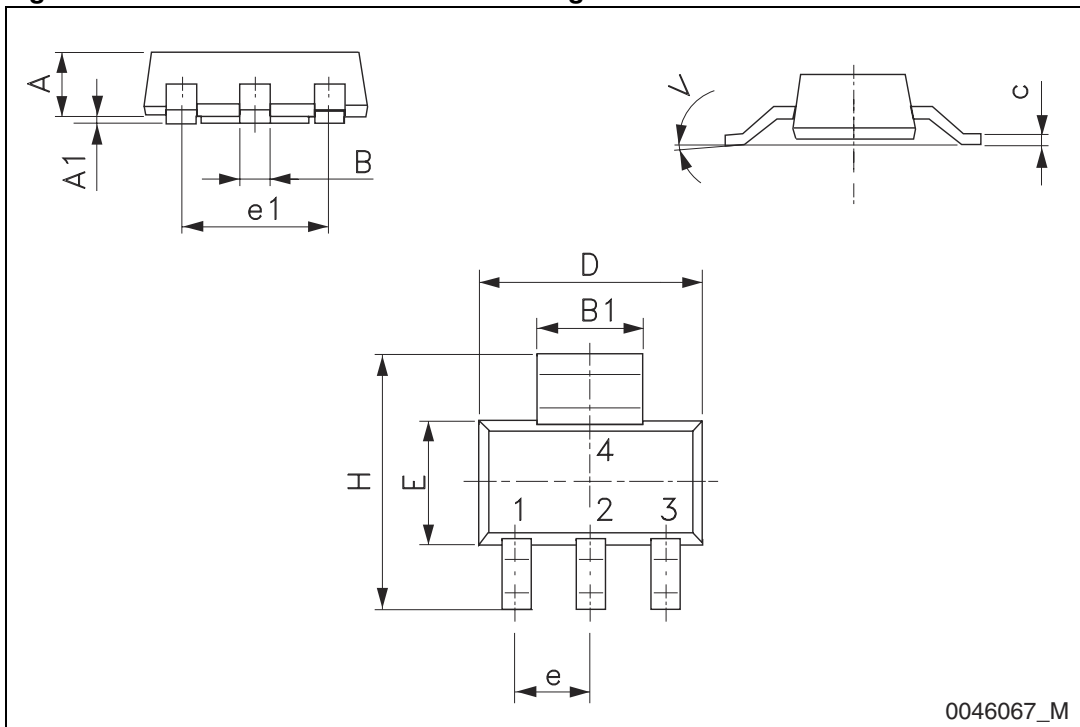
### 3 Package mechanical data

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-223 mechanical data**

| Dim. | mm   |      |      |
|------|------|------|------|
|      | Min. | Typ. | Max. |
| A    |      |      | 1.80 |
| A1   | 0.02 |      | 0.1  |
| B    | 0.60 | 0.70 | 0.85 |
| B1   | 2.90 | 3.00 | 3.15 |
| c    | 0.24 | 0.26 | 0.35 |
| D    | 6.30 | 6.50 | 6.70 |
| e    |      | 2.30 |      |
| e1   |      | 4.60 |      |
| E    | 3.30 | 3.50 | 3.70 |
| H    | 6.70 | 7.00 | 7.30 |
| V    |      |      | 10°  |

**Figure 2. SOT-223 mechanical data drawing**



## 4 Revision history

**Table 6. Document revision history**

| Date        | Revision | Changes       |
|-------------|----------|---------------|
| 02-Feb-2012 | 1        | First release |

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