

## SMALL SIGNAL PNP TRANSISTOR

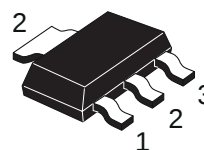
PRELIMINARY DATA

| Ordering Code | Marking |
|---------------|---------|
| BCP53-16      | BCP5316 |

- SILICON EPITAXIAL PLANAR PNP MEDIUM VOLTAGE TRANSISTORS
- SOT-223 PLASTIC PACKAGE FOR SURFACE MOUNTING CIRCUITS
- TAPE AND REEL PACKING
- THE NPN COMPLEMENTARY TYPE IS BCP56-16

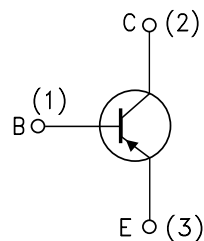
### APPLICATIONS

- MEDIUM VOLTAGE LOAD SWITCH TRANSISTORS
- OUTPUT STAGE FOR AUDIO AMPLIFIERS CIRCUITS
- AUTOMOTIVE POST-VOLTAGE REGULATION



SOT-223

### INTERNAL SCHEMATIC DIAGRAM



SC08810

### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter                                         | Value      | Unit |
|-----------|---------------------------------------------------|------------|------|
| $V_{CBO}$ | Collector-Base Voltage ( $I_E = 0$ )              | -100       | V    |
| $V_{CEO}$ | Collector-Emitter Voltage ( $I_B = 0$ )           | -80        | V    |
| $V_{CER}$ | Collector-Emitter Voltage ( $R_{BE} = 1K\Omega$ ) | -100       | V    |
| $V_{EBO}$ | Emitter-Base Voltage ( $I_C = 0$ )                | -5         | V    |
| $I_C$     | Collector Current                                 | -1         | A    |
| $I_{CM}$  | Collector Peak Current ( $t_p < 5$ ms)            | -1.5       | A    |
| $I_B$     | Base Current                                      | -0.1       | A    |
| $I_{BM}$  | Base Peak Current ( $t_p <$ ms)                   | -0.2       | A    |
| $P_{tot}$ | 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        | °C   |

## THERMAL DATA

|                 |                                     |     |    |      |
|-----------------|-------------------------------------|-----|----|------|
| $R_{thj-amb}$ • | Thermal Resistance Junction-Ambient | Max | 78 | °C/W |
|-----------------|-------------------------------------|-----|----|------|

• Device mounted on a PCB area of 1 cm<sup>2</sup>

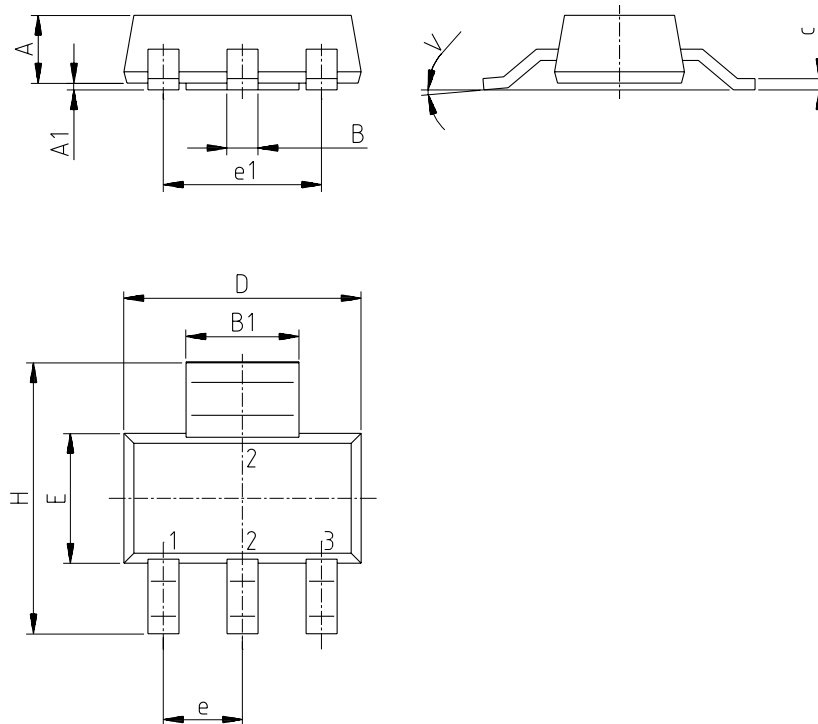
ELECTRICAL CHARACTERISTICS ( $T_{case} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)

| Symbol          | Parameter                                                           | Test Conditions                                                                                                                               | Min.            | Typ. | Max.        | Unit                |
|-----------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|-------------|---------------------|
| $I_{CBO}$       | Collector Cut-off Current ( $I_E = 0$ )                             | $V_{CB} = -30\text{ V}$<br>$V_{CB} = -30\text{ V}$ $T_j = 125\text{ }^{\circ}\text{C}$                                                        |                 |      | -100<br>-10 | nA<br>$\mu\text{A}$ |
| $V_{(BR)CBO}$   | Collector-Base Breakdown Voltage ( $I_E = 0$ )                      | $I_C = -100\text{ }\mu\text{A}$                                                                                                               | -100            |      |             | V                   |
| $V_{(BR)CEO}^*$ | Collector-Emitter Breakdown Voltage ( $I_B = 0$ )                   | $I_C = -20\text{ mA}$                                                                                                                         | -80             |      |             | V                   |
| $V_{(BR)CER}$   | Collector-Emitter Breakdown Voltage ( $R_{BE} = 1\text{ K}\Omega$ ) | $I_C = -100\text{ }\mu\text{A}$                                                                                                               | -100            |      |             | V                   |
| $V_{(BR)EBO}$   | Emitter-Base Breakdown Voltage ( $I_C = 0$ )                        | $I_E = -10\text{ }\mu\text{A}$                                                                                                                | -5              |      |             | V                   |
| $V_{CE(sat)}^*$ | Collector-Emitter Saturation Voltage                                | $I_C = -500\text{ mA}$ $I_B = -50\text{ mA}$                                                                                                  |                 |      | -0.5        | V                   |
| $V_{BE(on)}^*$  | Base-Emitter On Voltage                                             | $I_C = -500\text{ mA}$ $V_{CE} = -2\text{ V}$                                                                                                 |                 |      | -1          | V                   |
| $h_{FE}^*$      | DC Current Gain                                                     | $I_C = -5\text{ mA}$ $V_{CE} = -2\text{ V}$<br>$I_C = -150\text{ mA}$ $V_{CE} = -2\text{ V}$<br>$I_C = -500\text{ mA}$ $V_{CE} = -2\text{ V}$ | 40<br>100<br>25 |      | 250         |                     |
| $f_T$           | Transition Frequency                                                | $I_C = -10\text{ mA}$ $V_{CE} = -5\text{ V}$ $f = 20\text{ MHz}$                                                                              |                 | 50   |             | MHz                 |

\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , duty cycle  $\leq 1.5\%$

# SOT-223 MECHANICAL DATA

| DIM. | mm   |      |      | inch  |       |       |
|------|------|------|------|-------|-------|-------|
|      | MIN. | TYP. | MAX. | MIN.  | TYP.  | MAX.  |
| A    |      |      | 1.80 |       |       | 0.071 |
| B    | 0.60 | 0.70 | 0.80 | 0.024 | 0.027 | 0.031 |
| B1   | 2.90 | 3.00 | 3.10 | 0.114 | 0.118 | 0.122 |
| c    | 0.24 | 0.26 | 0.32 | 0.009 | 0.010 | 0.013 |
| D    | 6.30 | 6.50 | 6.70 | 0.248 | 0.256 | 0.264 |
| e    |      | 2.30 |      |       | 0.090 |       |
| e1   |      | 4.60 |      |       | 0.181 |       |
| E    | 3.30 | 3.50 | 3.70 | 0.130 | 0.138 | 0.146 |
| H    | 6.70 | 7.00 | 7.30 | 0.264 | 0.276 | 0.287 |
| V    |      |      | 10°  |       |       | 10°   |
| A1   |      | 0.02 |      |       |       |       |



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