SGS-THOMSON MICROELECTRONICS

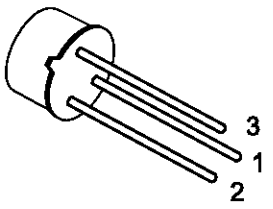
# BSS44

## SILICON NPN TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE

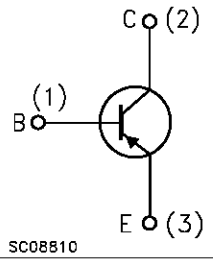
**DESCRIPTION**

The BSS44 is a silicon epitaxial planar PNP transistor in Jedec TO-39 metal case. It is used for high-current switching and power applications up to 5 A.




**TO-39**

**INTERNAL SCHEMATIC DIAGRAM**




**ABSOLUTE MAXIMUM RATINGS**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage ($I_E$ = 0) | - 65 | V |
| $V_{CEO}$ | Collector-Emitter Voltage ($I_B$ = 0) | - 60 | V |
| $V_{EBO}$ | Emitter-Base Voltage ($I_C$ = 0) | - 6 | V |
| $I_C$ | Collector Current | - 5 | A |
| $P_{tot}$ | Total Dissipation at $T_{case} \leq 25\ ^oC$<br>$T_{amb} \leq 25\ ^oC$ | 5<br>0.87 | W<br>W |
| $T_{stg}$ | Storage Temperature | -65 to 200 | $^oC$ |
| $T_j$ | Max. Operating Junction Temperature | 200 | $^oC$ |

## THERMAL DATA

| | | | |
|---|---|---|---|
| $R_{thj\text{-}case}$ | Thermal Resistance Junction-case Max | 35 | $^oC/W$ |
| $R_{thj\text{-}amb}$ | Thermal Resistance Junction-amb Max | 200 | $^oC/W$ |

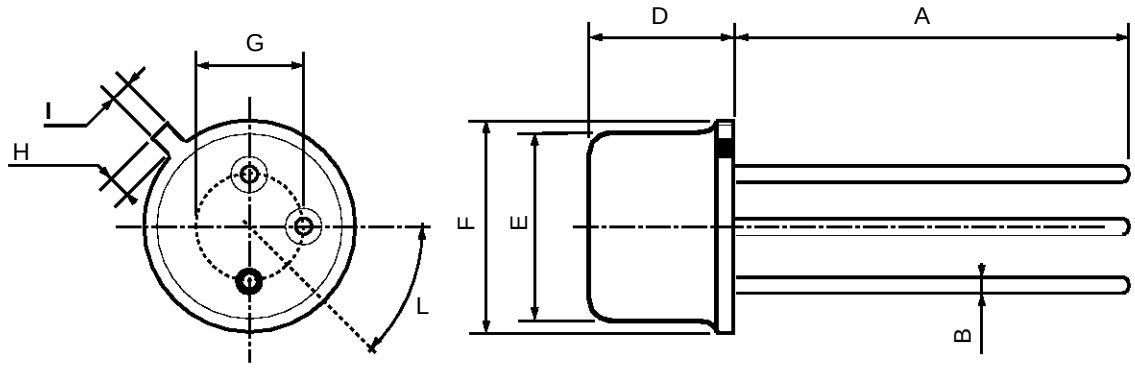
## ELECTRICAL CHARACTERISTICS ($T_{case}$ = 25 $^oC$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{CES}$ | Collector Cut-off Current ($V_{BE}$=0) | $V_{CE}$ = -60 V | | | -0.5 | µA |
| $V_{(BR)CBO}$* | Collector-base Breakdown Voltage ($I_E$ = 0) | $I_C$ = -1 mA | -65 | | | V |
| $V_{CEO(sus)}$* | Collector-Emitter Sustaining Voltage ($I_B$ = 0) | $I_C$ = -50 mA | -60 | | | V |
| $V_{EBO}$* | Emitter-base Voltage ($I_C$ = 0) | $I_E$ =.- 1 mA | -6 | | | V |
| $V_{CE(sat)}$* | Collector-Emitter Saturation Voltage | $I_C$ = -0.5 A $I_B$ = -50 mA<br>$I_C$ = - 5 A $I_B$ = -0.5 A | | -0.1<br>-0.4 | <br>-1 | V<br>V |
| $V_{BE(sat)}$* | Base-Emitter Saturation Voltage | $I_C$ = -0.5 A $I_B$ = -50 mA<br>$I_C$ = - 5 A $I_B$ = -0.5 A | | -0.8<br>-1.1 | <br>-1.6 | V<br>V |
| $h_{FE}$* | DC Current Gain | $I_C$ = -0.5 A $V_{CE}$ = -2 V<br>$I_C$ = -2 A $V_{CE}$ = -2 V<br>$I_C$ = -5 A $V_{CE}$ = -2 V | 30<br>40 | <br>70<br>45 | | |
| $f_T$* | Transition Frequency | $I_C$ = -0.5 A $V_{CE}$ = -5 V | | 80 | | MHz |
| $C_{CBO}$ | Collector-base Capacitance | IE = 0 $V_{CB}$ = 10 V<br>f = 1 MHz | | | 100 | pF |
| $t_{on}$ | Turn-on Time | $I_C$ = -0.5 A $V_{CC}$ = -20 V<br>$I_{B1}$ = -$I_{B2}$ = -50 mA | | 0.065 | | µs |
| $t_{off}$ | Turn-off Time | | | 0.45 | | µs |

∗ Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %
For PNP types voltage and current values are negative.

## TO39 MECHANICAL DATA

| DIM. | mm | | | inch | | |
|---|---|---|---|---|---|---|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 12.7 | | | 0.500 | | |
| B | | | 0.49 | | | 0.019 |
| D | | | 6.6 | | | 0.260 |
| E | | | 8.5 | | | 0.334 |
| F | | | 9.4 | | | 0.370 |
| G | 5.08 | | | 0.200 | | |
| H | | | 1.2 | | | 0.047 |
| I | | | 0.9 | | | 0.035 |
| L | $45^{o}$ (typ.) | | | | | |

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