

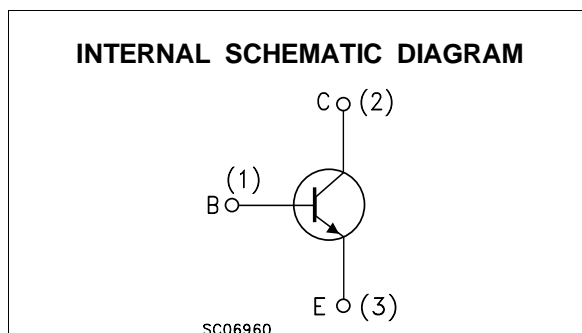
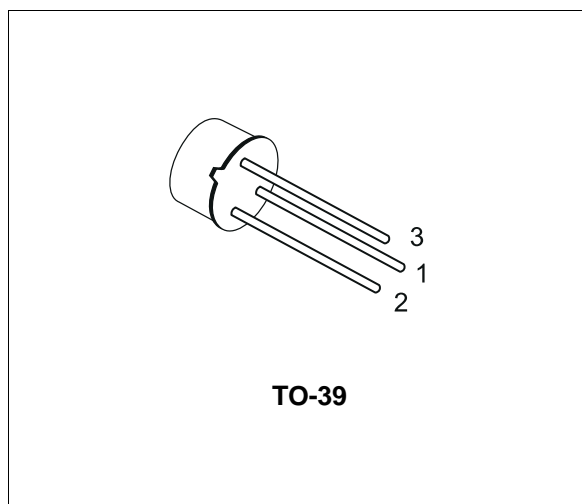
## SILICON NPN TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE
- NPN TRANSISTOR

### DESCRIPTION

The BFX34 is a silicon epitaxial planar NPN transistor in Jedec TO-39 metal case, intended for high current applications.

Very low saturation voltage and high speed at high current levels make it ideal for power drivers, power amplifiers, switching power supplies and relay drivers inverters.



### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter  | Value      | Unit             |
|-----------|--|------------|------------------|
| $V_{CBO}$ | Collector-Base Voltage ( $I_E = 0$ )   | 120        | 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 $T_{case} \leq 25\text{ }^\circ\text{C}$<br>$T_{amb} \leq 25\text{ }^\circ\text{C}$ | 0.87       | W                |
|           |  | 5          | W                |
| $T_{stg}$ | Storage Temperature  | -65 to 200 | $^\circ\text{C}$ |
| $T_j$     | Max. Operating Junction Temperature  | 200        | $^\circ\text{C}$ |

## BFX34

### THERMAL DATA

|                       |                                  |     |     |      |
|-----------------------|----------------------------------|-----|-----|------|
| R <sub>thj-case</sub> | Thermal Resistance Junction-case | Max | 35  | °C/W |
| R <sub>thj-amb</sub>  | Thermal Resistance Junction-amb  | Max | 200 | °C/W |

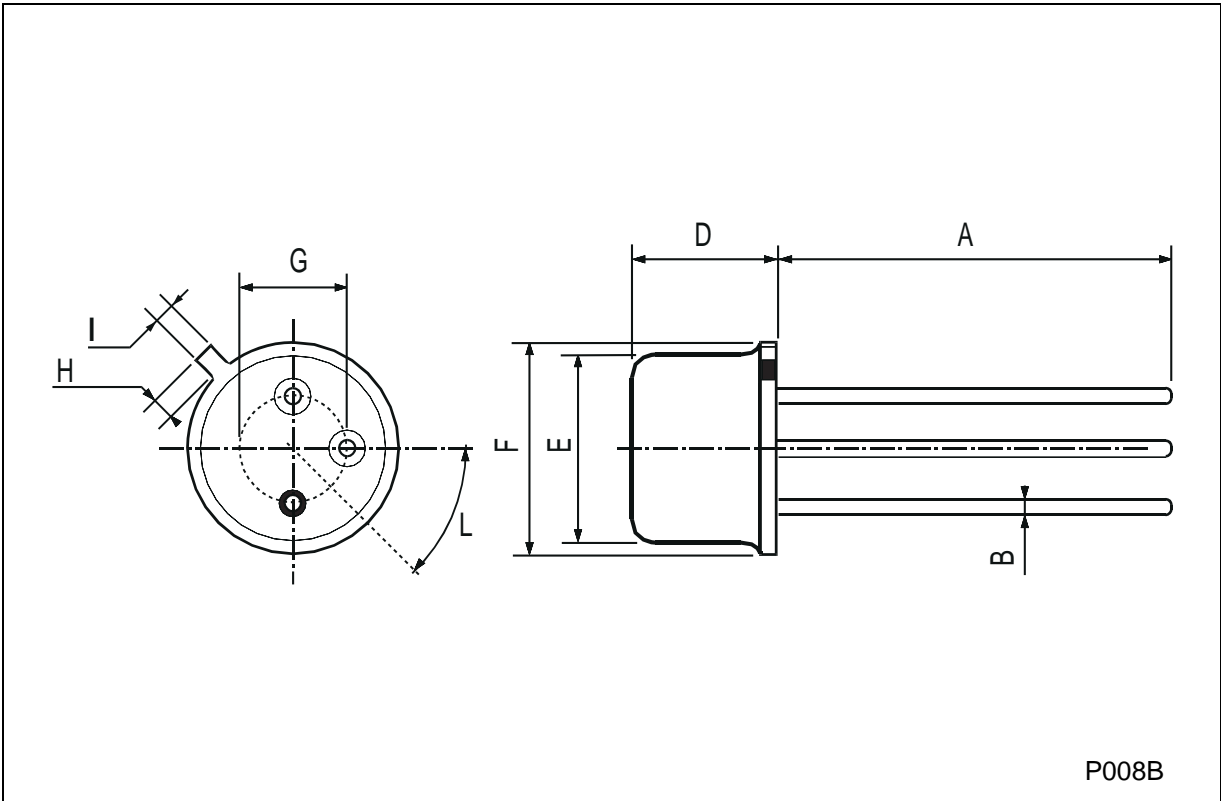
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

| Symbol                  | Parameter   | Test Conditions   | Min. | Typ.            | Max. | Unit |
|-------------------------|---|---|------|-----------------|------|------|
| I <sub>CEs</sub>        | Collector Cut-off Current (V <sub>BE</sub> = 0)           | V <sub>CE</sub> = 60 V  |      | 0.02            | 10   | μA   |
| I <sub>EBO</sub>        | Emitter Cut-off Current (I <sub>C</sub> = 0)              | V <sub>EB</sub> = 4 V   |      | 0.05            | 10   | μA   |
| V <sub>(BR)CBO</sub> *  | Collector-base Breakdown Voltage (I <sub>E</sub> = 0)     | I <sub>C</sub> = 5 mA   | 120  |                 |      | V    |
| V <sub>CEO(sus)</sub> * | Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0) | I <sub>C</sub> = 100 mA   | 60   |                 |      | V    |
| V <sub>EBO</sub> *      | Emitter-base Voltage (I <sub>C</sub> = 0)                 | I <sub>E</sub> = 1 mA   | 6    |                 |      | V    |
| V <sub>CE(sat)</sub> *  | Collector-Emitter Saturation Voltage                      | I <sub>C</sub> = 5 A      I <sub>B</sub> = 0.5 A  |      | 0.4             | 1    | V    |
| V <sub>BE(sat)</sub> *  | Base-Emitter Saturation Voltage                           | I <sub>C</sub> = 5 A      I <sub>B</sub> = -0.5 A   |      | 1.3             | 1.6  | V    |
| h <sub>FE</sub> *       | DC Current Gain   | I <sub>C</sub> = 1 A      V <sub>CE</sub> = 2 V<br>I <sub>C</sub> = 1.5 A      V <sub>CE</sub> = 0.6 V<br>I <sub>C</sub> = 2 A      V <sub>CE</sub> = 2 V | 40   | 100<br>75<br>80 | 150  |      |
| f <sub>T</sub> *        | Transition Frequency                                      | I <sub>C</sub> = 0.5 A      V <sub>CE</sub> = 5 V<br>f = 20 MHz   | 70   | 100             |      | MHz  |
| C <sub>EBO</sub>        | Emitter-base Capacitance                                  | I <sub>C</sub> = 0.5 A      V <sub>EB</sub> = 5 V<br>f = 1 MHz  |      | 300             | 500  | pF   |
| C <sub>CBO</sub>        | Collector-base Capacitance                                | I <sub>E</sub> = 0      V <sub>CB</sub> = 10 V<br>f = 1 MHz   |      | 40              | 100  | pF   |
| t <sub>on</sub>         | Turn-on Time  | I <sub>C</sub> = -0.5 A      V <sub>CC</sub> = -20 V<br>I <sub>B1</sub> = -I <sub>B2</sub> = -50 mA   |      | 0.6             | 0.25 | μs   |
| t <sub>on</sub>         | Turn-on Time  |   |      | 0.6             | 1.2  | μs   |

\* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

**TO-39 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° (typ.) |      |      |       |      |       |



Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1997 SGS-THOMSON Microelectronics - Printed in Italy - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES  
Australia - Brazil - Canada - China - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands -  
Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A  
...