

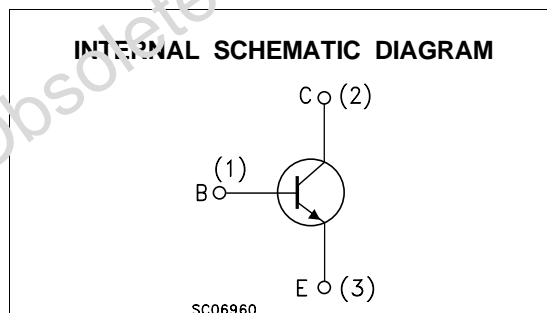
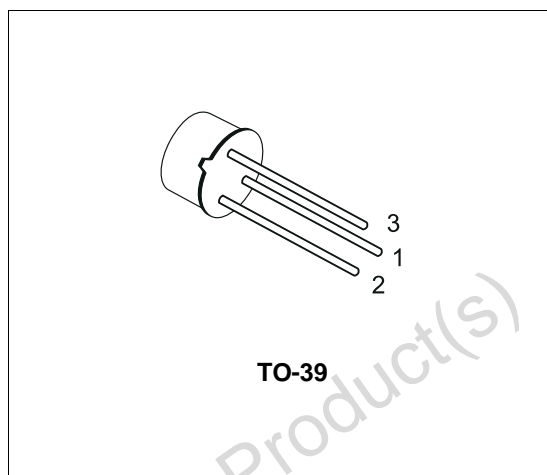
## SILICON NPN TRANSISTOR

- STMicroelectronics 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>$T_{amb} \leq 25\text{ }^\circ\text{C}$ | 5<br>0.87  | W<br>W           |
| $T_{stg}$ | Storage Temperature  | -65 to 200 | $^\circ\text{C}$ |
| $T_j$     | Max. Operating Junction Temperature  | 200        | $^\circ\text{C}$ |

## BFX34

### THERMAL DATA

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

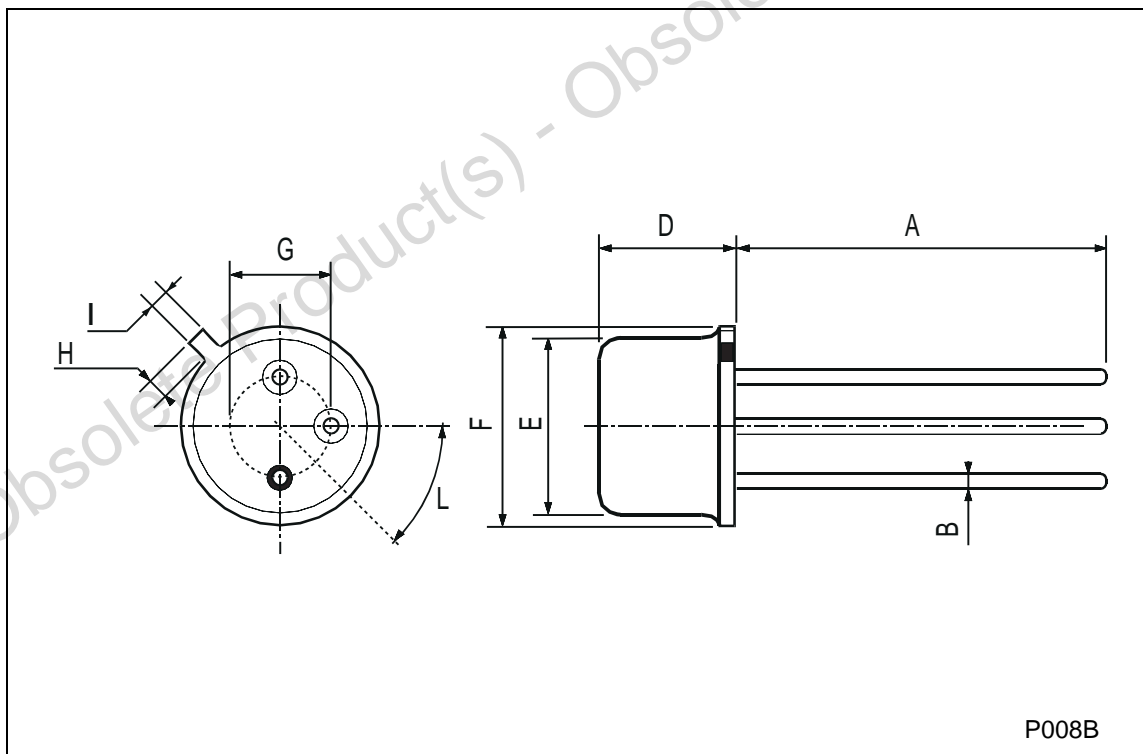
### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise specified)

| Symbol                | Parameter  | Test Conditions                             |  | Min. | Typ.            | Max.        | Unit               |
|-----------------------|--|---|--|------|-----------------|-------------|--------------------|
| $I_{CES}$             | Collector Cut-off Current ( $V_{BE} = 0$ )         | $V_{CE} = 60 V$                             |  |      | 0.02            | 10          | $\mu A$            |
| $I_{EBO}$             | Emitter Cut-off Current ( $I_C = 0$ )              | $V_{EB} = 4 V$                              |  |      | 0.05            | 10          | $\mu A$            |
| $V_{(BR)CBO}^*$       | Collector-base Breakdown Voltage ( $I_E = 0$ )     | $I_C = 5 mA$                                |  | 120  |                 |             | V                  |
| $V_{CEO(sus)}^*$      | Collector-Emitter Sustaining Voltage ( $I_B = 0$ ) | $I_C = 100 mA$                              |  | 60   |                 |             | V                  |
| $V_{EBO}^*$           | Emitter-base Voltage ( $I_C = 0$ )                 | $I_E = 1 mA$                                |  | 6    |                 |             | V                  |
| $V_{CE(sat)}^*$       | Collector-Emitter Saturation Voltage               | $I_C = 5 A$                                 | $I_B = 0.5 A$  |      | 0.4             | 1           | V                  |
| $V_{BE(sat)}^*$       | Base-Emitter Saturation Voltage                    | $I_C = 5 A$                                 | $I_B = 0.5 A$  |      | 1.3             | 1.6         | V                  |
| $h_{FE}^*$            | DC Current Gain                                    | $I_C = 1 A$<br>$I_C = 1.5 A$<br>$I_C = 2 A$ | $V_{CE} = 2 V$<br>$V_{CE} = 0.6 V$<br>$V_{CE} = 2 V$ | 40   | 100<br>75<br>80 | 150         |                    |
| $f_T^*$               | Transition Frequency                               | $I_C = 0.5 A$<br>$f = 20 MHz$               | $V_{CE} = 5 V$                                       | 70   | 100             |             | MHz                |
| $C_{EBO}$             | Emitter-base Capacitance                           | $I_C = 0$<br>$f = 1 MHz$                    | $V_{EB} = 0.5 V$                                     |      | 300             | 500         | pF                 |
| $C_{CBO}$             | Collector-base Capacitance                         | $I_E = 0$<br>$f = 1 MHz$                    | $V_{CB} = 10 V$                                      |      | 40              | 100         | pF                 |
| $t_{on}$<br>$t_{off}$ | RESISTIVE LOAD<br>Turn-on Time<br>Turn-off Time    | $I_C = 0.5 A$<br>$I_{B1} = -I_{B2} = 0.5 A$ | $V_{CC} = 20 V$                                      |      | 0.6<br>0.6      | 0.25<br>1.2 | $\mu s$<br>$\mu s$ |

\* Pulsed: Pulse duration = 300  $\mu s$ , 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.) |      |      |       |      |       |



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