# isc Silicon NPN RF Transistor — BFR106

## DESCRIPTION

- Low Noise Figure
  NF = 2.5 dB TYP. @$V_{CE}$ = 8 V, $I_C$ = 20 mA, f = 900 MHz
- High Gain
  $|S_{21e}|^2$ = 10.5 dB TYP. @$V_{CE}$= 8 V,$I_C$ = 70 mA,f = 900 MHz
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

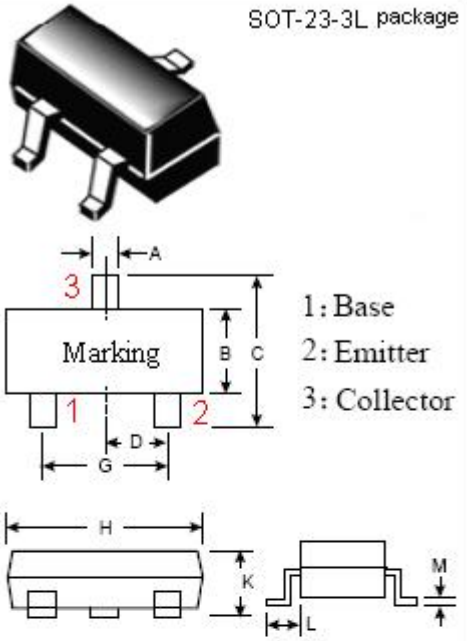
## APPLICATIONS

- Designed for use in low noise ,high-gain amplifiers and linear broadband amplifiers.

## ABSOLUTE MAXIMUM RATINGS($T_a$=25℃)

| SYMBOL | PARAMETER | VALUE | UNIT |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 20 | V |
| $V_{CES}$ | Collector-Emitter Voltage | 20 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 15 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 3 | V |
| $I_C$ | Collector Current-Continuous | 100 | mA |
| $I_B$ | Base Current-Continuous | 12 | mA |
| $P_C$ | Collector Power Dissipation @$T_C$=25℃ | 0.5 | W |
| $T_J$ | Junction Temperature | 175 | ℃ |
| $T_{stg}$ | Storage Temperature Range | -65~150 | ℃ |

SOT-23-3L package




| DIM | mm MIN | mm MAX |
|---|---|---|
| A | 0.30 | 0.40 |
| B | 1.50 | 1.70 |
| C | 2.65 | 2.95 |
| D | 0.95 | |
| G | 1.80 | 2.00 |
| H | 2.82 | 3.02 |
| K | 1.05 | 1.25 |
| L | 0.70 | |
| M | 0.10 | 0.20 |

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## ELECTRICAL CHARACTERISTICS

**$T_C$=25℃ unless otherwise specified**

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|---|---|---|---|---|---|---|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | $I_C$= 1mA ; $I_B$= 0 | 15 | | | V |
| $I_{CES}$ | Collector Cutoff Current | $V_{CE}$= 20V; $V_{BE}$= 0 | | | 100 | μA |
| $I_{CBO}$ | Collector Cutoff Current | $V_{CB}$= 10V; $I_E$= 0 | | | 0.1 | μA |
| $I_{EBO}$ | Emitter Cutoff Current | $V_{EB}$= 2V; $I_C$= 0 | | | 10 | μA |
| $h_{FE}$ | DC Current Gain | $I_C$= 70mA ; $V_{CE}$= 8V | 40 | | 220 | |
| $f_T$ | Current-Gain—Bandwidth Product | $I_C$= 70mA ; $V_{CE}$= 8V; f= 500MHz | 3.5 | 5 | | GHz |
| $C_{OB}$ | Output Capacitance | $I_E$= 0 ; $V_{CB}$= 10V; f= 1MHz | | 0.95 | 1.5 | pF |
| PG | Power Gain | $I_C$= 70mA ; $V_{CE}$= 8V; f= 900MHz | | 12.5 | | dB |
| PG | Power Gain | $I_C$= 70mA ; $V_{CE}$= 8V; f= 1.8GHz | | 7.5 | | dB |
| $\lvert S_{21e} \rvert^2$ | Insertion Power Gain | $I_C$= 70mA ; $V_{CE}$= 8V; f= 900MHz | | 10.5 | | dB |
| $\lvert S_{21e} \rvert^2$ | Insertion Power Gain | $I_C$= 70mA ; $V_{CE}$= 8V; f= 1.8GHz | | 5 | | dB |
| NF | Noise Figure | $I_C$= 20mA ; $V_{CE}$= 8V; f= 900MHz | | 2.5 | | dB |
| NF | Noise Figure | $I_C$= 20mA ; $V_{CE}$= 8V; f= 1.8GHz | | 4 | | dB |

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