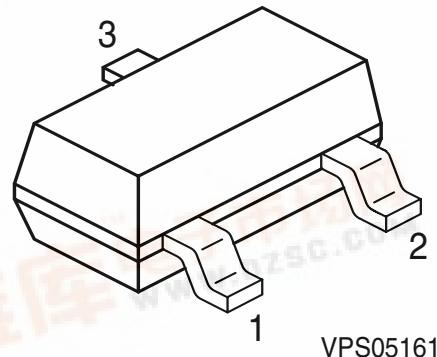**Infineon** technologies

**BF 775**

## NPN Silicon RF Transistor

- Especially suitable for TV-Sat and UHF tuners

VPS05161

**ESD**: **E**lectro**s**tatic **d**ischarge sensitive device, observe handling precaution!

| Type | Marking | Pin Configuration | | | Package |
|------|---------|-------|-------|-------|---------|
| BF 775 | LOs | 1 = B | 2 = E | 3 = C | SOT-23 |

### Maximum Ratings

| Parameter | Symbol | Value | Unit |
|-----------|--------|-------|------|
| Collector-emitter voltage | $V_{CEO}$ | 15 | V |
| Collector-emitter voltage | $V_{CES}$ | 20 | |
| Collector-base voltage | $V_{CBO}$ | 20 | |
| Emitter-base voltage | $V_{EBO}$ | 2.5 | |
| Collector current | $I_C$ | 30 | mA |
| Base current | $I_B$ | 4 | |
| Total power dissipation $T_S \leq 48°C$[1] | $P_{tot}$ | 280 | mW |
| Junction temperature | $T_j$ | 150 | °C |
| Ambient temperature | $T_A$ | -65 ... 150 | |
| Storage temperature | $T_{stg}$ | -65 ... 150 | |

### Thermal Resistance

| Parameter | Symbol | Value | Unit |
|-----------|--------|-------|------|
| Junction - soldering point | $R_{thJS}$ | $\leq 365$ | K/W |

[1] $T_S$ is measured on the collector lead at the soldering point to the pcb

1                                                    Nov-30-2000

## Electrical Characteristics

| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **Characteristics** | | | | | |
| Collector-emitter breakdown voltage $I_C$ = 1 mA, $I_B$ = 0 | $V_{(BR)CEO}$ | 15 | - | - | V |
| Collector-emitter cutoff current $V_{CE}$ = 20 V, $V_{BE}$ = 0 | $I_{CES}$ | - | - | 10 | µA |
| Collector -base cutoff current $V_{CB}$ = 10 V, $I_E$ = 0 | $I_{CBO}$ | - | - | 100 | nA |
| Emitter-base cutoff current $V_{EB}$ = 2.5 V, $I_C$ = 0 | $I_{EBO}$ | - | - | 100 | µA |
| DC current gain $I_C$ = 10 mA, $V_{CE}$ = 8 V | $h_{FE}$ | 40 | 100 | 200 | - |

## Electrical Characteristics

| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **AC Characteristics** | | | | | |
| Transition frequency<br>$I_C$ = 10 mA, $V_{CE}$ = 8 V, $f$ = 500 MHz | $f_T$ | 3.5 | 5.5 | - | GHz |
| Collector-base capacitance<br>$V_{CB}$ = 10 V, $f$ = 1 MHz | $C_{cb}$ | - | 0.38 | 0.6 | pF |
| Collector emitter capacitance<br>$V_{CE}$ = 10 V, $f$ = 1 MHz | $C_{ce}$ | - | 0.2 | - | |
| Emitter-base capacitance<br>$V_{EB}$ = 0.5 V, $f$ = 1 MHz | $C_{eb}$ | - | 0.5 | - | |
| Noise figure<br>$I_C$ = 2 mA, $V_{CE}$ = 6 V, $Z_S$ = $Z_{Sopt}$,<br>$f$ = 900 MHz<br>$f$ = 1.8 GHz | $F$ | <br><br>-<br>- | <br><br>1<br>1.6 | <br><br>-<br>- | dB |
| Power gain, maximum available[1]<br>$I_C$ = 10 mA, $V_{CE}$ = 8 V, $Z_S$ = $Z_{Sopt}$,<br>$Z_L$ = $Z_{Lopt}$, $f$ = 900 MHz<br>$f$ = 1.8 GHz | $G_{ma}$ | <br><br>-<br>- | <br><br>16<br>10.5 | <br><br>-<br>- | |
| Transducer gain<br>$I_C$ = 10 mA, $V_{CE}$ = 8 V, $Z_S$ = $Z_L$ = 50$\Omega$,<br>$f$ = 900 MHz<br>$f$ = 1.8 GHz | $|S_{21e}|^2$ | <br><br>-<br>- | <br><br>13<br>7.5 | <br><br>-<br>- | |

[1]$G_{ma} = |S_{21}/S_{12}| (k-(k^2-1)^{1/2})$