Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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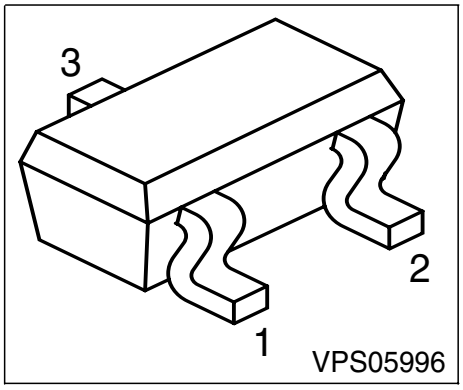
**NPN Silicon RF Transistor**

Preliminary data

- Low voltage/ low current operation
- Transition frequency of 14 GHz
- High insertion gain
- Ideal for low current amplifiers and oscillators




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

| Type | Marking | Pin Configuration | | | Package |
|---|---|---|---|---|---|
| BFR340T | FAs | 1 = B | 2 = E | 3 = C | SC75 |

**Maximum Ratings**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector-emitter voltage | $V_{CEO}$ | 6 | V |
| Collector-emitter voltage | $V_{CES}$ | 15 | |
| Collector-base voltage | $V_{CBO}$ | 15 | |
| Emitter-base voltage | $V_{EBO}$ | 2 | |
| Collector current | $I_C$ | 10 | mA |
| Base current | $I_B$ | 2 | |
| Total power dissipation[1)] $T_S \leq 113°C$ | $P_{tot}$ | 60 | 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[2)] | $R_{thJS}$ | ≤ 605 | K/W |

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

[2] For calculation of $R_{thJA}$ please refer to Application Note Thermal Resistance

**Electrical Characteristics** at $T_A$ = 25°C, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **Characteristics** | | | | | |
| Collector-emitter breakdown voltage<br>$I_C$ = 1 mA, $I_B$ = 0 | $V_{(BR)CEO}$ | 6 | 9 | - | V |
| Collector-emitter cutoff current<br>$V_{CE}$ = 15 V, $V_{BE}$ = 0 | $I_{CES}$ | - | - | 10 | µA |
| Collector-base cutoff current<br>$V_{CB}$ = 5 V, $I_E$ = 0 | $I_{CBO}$ | - | - | 100 | nA |
| Emitter-base cutoff current<br>$V_{EB}$ = 1 V, $I_C$ = 0 | $I_{EBO}$ | - | - | 1 | µA |
| DC current gain-<br>$I_C$ = 5 mA, $V_{CE}$ = 3 V | $h_{FE}$ | 60 | 130 | 200 | - |

**Electrical Characteristics** at $T_A$ = 25°C, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **AC Characteristics** (verified by random sampling) | | | | | |
| Transition frequency<br>$I_C$ = 6 mA, $V_{CE}$ = 3 V, $f$ = 1 GHz | $f_T$ | 10 | 14 | - | GHz |
| Collector-base capacitance<br>$V_{CB}$ = 5 V, $f$ = 1 MHz, emitter grounded | $C_{cb}$ | - | 0.24 | 0.4 | pF |
| Collector emitter capacitance<br>$V_{CE}$ = 5 V, $f$ = 1 MHz, base grounded | $C_{ce}$ | - | 0.2 | - | |
| Emitter-base capacitance<br>$V_{EB}$ = 0.5 V, $f$ = 1 MHz, collector grounded | $C_{eb}$ | - | 0.1 | - | |
| Noise figure<br>$I_C$ = 1 mA, $V_{CE}$ = 3 V, $Z_S$ = $Z_{Sopt}$ ,<br>$f$ = 1.8 GHz | $F_{min}$ | - | 1.15 | - | dB |
| Power gain, maximum stable[1)]<br>$I_C$ = 5 mA, $V_{CE}$ = 3 V, $Z_S$ = $Z_{Sopt}$ ,<br>$Z_L$ = $Z_{Lopt}$, $f$ = 1.8 GHz | $G_{ms}$ | - | 15 | - | - |
| Power gain, maximum available[1)]<br>$I_C$ = 5 mA, $V_{CE}$ = 3 V, $Z_S$ = $Z_{Sopt}$ ,<br>$Z_L$ = $Z_{Lopt}$ , $f$ = 3 GHz | $G_{ma}$ | - | 10.5 | - | dB |
| Transducer gain<br>$I_C$ = 5 mA, $V_{CE}$ = 3 V, $Z_S$ = $Z_L$ = 50Ω ,<br>$f$ = 1.8 GHz<br>$I_C$ = 5 mA, $V_{CE}$ = 3 V, $Z_S$ = $Z_L$ = 50Ω ,<br>$f$ = 3 GHz | $\lvert S_{21e}\rvert^2$ | <br><br>-<br><br>- | <br><br>12<br><br>8.5 | <br><br>-<br><br>- | dB |
| Third order intercept point at output[2)]<br>$V_{CE}$ = 3 V, $I_C$ = 5 mA, $f$ = 1.8 GHz,<br>$Z_S$ = $Z_L$ = 50Ω | $IP_3$ | - | 13.5 | - | dBm |
| 1dB Compression point at output<br>$I_C$ = 5 mA, $V_{CE}$ = 3 V, $Z_S$ = $Z_L$ = 50Ω ,<br>$f$ = 1.8 GHz | $P_{-1dB}$ | - | 0 | - | |

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

[2] IP3 value depends on termination of all intermodulation frequency components.
Termination used for this measurement is 50Ω from 0.1 MHz to 6 GHz

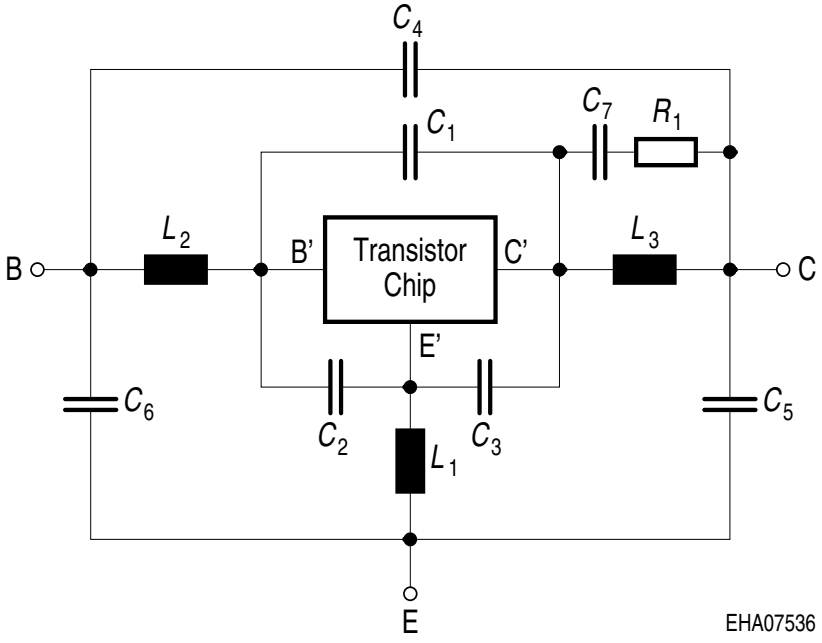
## SPICE Parameter (Gummel-Poon Model, Berkley-SPICE 2G.6 Syntax):

### Transitor Chip Data:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| IS = | 6.12 | fA | BF = | 98.48 | - | NF = | 0.4213 | - |
| VAF = | 42.228 | V | IKF = | 103 | mA | ISE = | 11.768 | nA |
| NE = | 2.4753 | - | BR = | 19.61 | - | NR = | 0.3253 | - |
| VAR = | 16.777 | V | IKR = | 0.834 | A | ISC = | 3.632 | nA |
| NC = | 0.8956 | - | RB = | 59.99 | Ω | IRB = | 0.01 | mA |
| RBM = | 0.2403 | Ω | RE = | 3.677 | - | RC = | 5.2493 | Ω |
| CJE = | 182 | fF | VJE = | 0.626 | V | MJE = | 0.4172 | - |
| TF = | 10.3 | ps | XTF = | 0 | - | VTF = | 0.262 | V |
| ITF = | 0.0017 | mA | PTF = | 0 | deg | CJC = | 222.63 | fF |
| VJC = | 0.5487 | V | MJC = | 0.319 | - | XCJC = | 0.3904 | - |
| TR = | 2.71 | ns | CJS = | 0 | fF | VJS = | 0.75 | V |
| MJS = | 0 | - | NK = | 0.5 | - | EG = | 1.11 | eV |
| XTI = | 0 | - | FC = | 0.735 | | TNOM | 300 | K |

All parameters are ready to use, no scalling is necessary. Extracted on behalf of Infineon Technologies AG by: Institut für Mobil- und Satellitentechnik (IMST)

### Package Equivalent Circuit:




| | | |
|---|---|---|
| $L_1$ = | 0.762 | nH |
| $L_2$ = | 0.706 | nH |
| $L_3$ = | 0.382 | nH |
| $C_1$ = | 62 | fF |
| $C_2$ = | 84 | fF |
| $C_3$ = | 180 | fF |
| $C_4$ = | 7 | fF |
| $C_5$ = | 40 | fF |
| $C_6$ = | 48 | fF |

Valid up to 6GHz

For examples and ready to use parameters please contact your local Infineon Technologies distributor or sales office to obtain a Infineon Technologies CD-ROM or see Internet: http//www.infineon.com/silicondiscretes