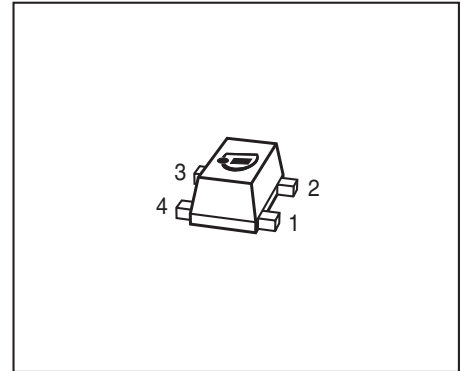


Low Noise Silicon Bipolar RF Transistor

- For highest gain and low noise amplifier
Outstanding $G_{ms} = 22.5$ dB at 1.8 GHz
Minimum noise figure $NF_{min} = 0.95$ dB at 1.8 GHz
- For oscillators up to 15 GHz
- Transition frequency $f_T = 45$ GHz
- Pb-free (RoHS compliant) and halogen-free thin small flat package with visible leads
- Qualification report according to AEC-Q101 available



ESD (Electrostatic discharge) sensitive device, observe handling precaution!

| Type | Marking | Pin Configuration | | | | | | Package |
|---------|---------|-------------------|-----|-----|-----|---|---|---------|
| BFP520F | APs | 1=B | 2=E | 3=C | 4=E | - | - | TSFP-4 |

Maximum Ratings at $T_A = 25$ °C, unless otherwise specified

| Parameter | Symbol | Value | Unit |
|--|-----------|-------------|------|
| Collector-emitter voltage $T_A = 25$ °C $T_A = -55$ °C | V_{CEO} | 2.5 2.4 | V |
| Collector-emitter voltage | V_{CES} | 10 | |
| Collector-base voltage | V_{CBO} | 10 | |
| Emitter-base voltage | V_{EBO} | 1 | |
| Collector current | I_C | 50 | mA |
| Base current | I_B | 5 | |
| Total power dissipation ¹⁾ $T_S \leq 98$ °C | P_{tot} | 120 | mW |
| Junction temperature | T_J | 150 | °C |
| Storage temperature | T_{Stg} | -55 ... 150 | |

¹⁾ T_S is measured on the emitter lead at the soldering point to pcb

Thermal Resistance

| Parameter | Symbol | Value | Unit |
|--|------------|-------|------|
| Junction - soldering point ¹⁾ | R_{thJS} | 430 | K/W |

Electrical Characteristics at $T_A = 25\text{ °C}$, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|---|---------------|--------|------|------|---------------|
| | | min. | typ. | max. | |
| DC Characteristics | | | | | |
| Collector-emitter breakdown voltage $I_C = 1\text{ mA}, I_B = 0$ | $V_{(BR)CEO}$ | 2.5 | 3 | 3.5 | V |
| Collector-emitter cutoff current $V_{CE} = 10\text{ V}, V_{BE} = 0$ | I_{CES} | - | - | 10 | μA |
| Collector-base cutoff current $V_{CB} = 5\text{ V}, I_E = 0$ | I_{CBO} | - | - | 200 | mA |
| Emitter-base cutoff current $V_{EB} = 1\text{ V}, I_C = 0$ | I_{EBO} | - | - | 35 | μA |
| DC current gain $I_C = 20\text{ mA}, V_{CE} = 2\text{ V}$, pulse measured | h_{FE} | 70 | 110 | 170 | - |

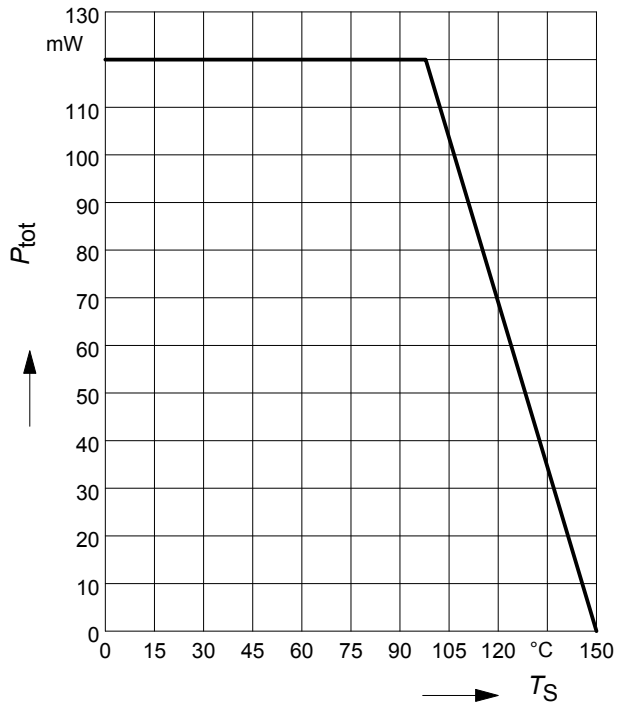
¹For the definition of R_{thJS} please refer to Application Note AN077 (Thermal Resistance Calculation)

Electrical Characteristics at $T_A = 25\text{ °C}$, unless otherwise specified

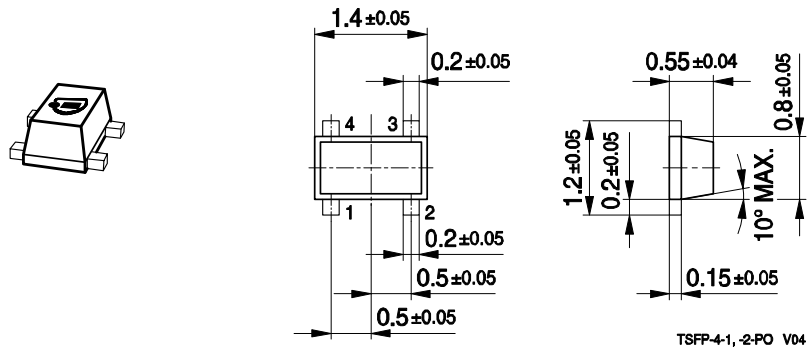
| Parameter | Symbol | Values | | | Unit |
|--|--------------|--------|------|------|------|
| | | min. | typ. | max. | |
| AC Characteristics (verified by random sampling) | | | | | |
| Transition frequency $I_C = 30\text{ mA}$, $V_{CE} = 2\text{ V}$, $f = 2\text{ GHz}$ | f_T | 32 | 45 | - | GHz |
| Collector-base capacitance $V_{CB} = 2\text{ V}$, $f = 1\text{ MHz}$, $V_{BE} = 0$, emitter grounded | C_{cb} | - | 0.07 | 0.14 | pF |
| Collector emitter capacitance $V_{CE} = 2\text{ V}$, $f = 1\text{ MHz}$, $V_{BE} = 0$, base grounded | C_{ce} | - | 0.25 | - | |
| Emitter-base capacitance $V_{EB} = 0.5\text{ V}$, $f = 1\text{ MHz}$, $V_{CB} = 0$, collector grounded | C_{eb} | - | 0.31 | - | |
| Minimum noise figure $I_C = 2\text{ mA}$, $V_{CE} = 2\text{ V}$, $Z_S = Z_{Sopt}$, $f = 1.8\text{ GHz}$ | NF_{min} | - | 0.95 | - | dB |
| Power gain, maximum stable ¹⁾ $I_C = 20\text{ mA}$, $V_{CE} = 2\text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, $f = 1.8\text{ GHz}$ | G_{ms} | - | 22.5 | - | dB |
| Insertion power gain $V_{CE} = 2\text{ V}$, $I_C = 20\text{ mA}$, $f = 1.8\text{ GHz}$, $Z_S = Z_L = 50\text{ }\Omega$ | $ S_{21} ^2$ | - | 20.5 | - | |
| Third order intercept point at output $V_{CE} = 2\text{ V}$, $I_C = 20\text{ mA}$, $f = 1.8\text{ GHz}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$ | $IP3$ | - | 23.5 | - | dBm |
| 1dB compression point $I_C = 20\text{ mA}$, $V_{CE} = 2\text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, $f = 1.8\text{ GHz}$ | P_{-1dB} | - | 10.5 | - | |

¹⁾ $G_{ms} = |S_{21} / S_{12}|$

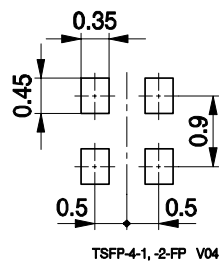
Total power dissipation $P_{\text{tot}} = f(T_S)$



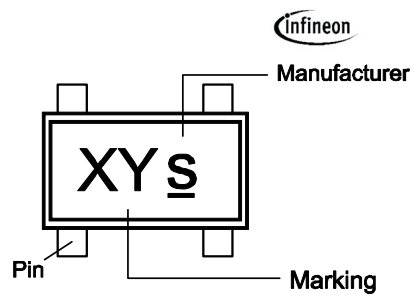
Package Outline



Foot Print

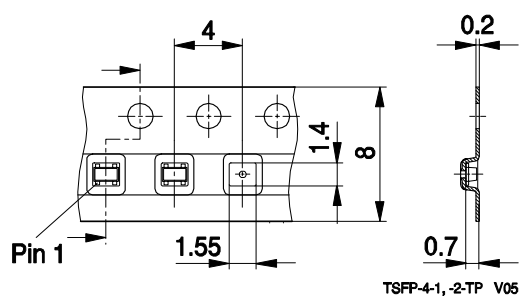


Marking Layout (Example)



Standard Packing

Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Reel \varnothing 330 mm = 10.000 Pieces/Reel



Edition 2009-11-16

**Published by
Infineon Technologies AG
81726 Munich, Germany**

**© 2009 Infineon Technologies AG
All Rights Reserved.**

Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

Information

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office (www.infineon.com).

Warnings

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.

Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Infineon:](#)

[BFP 520F H6327](#) [BFP 520F E6327](#)