

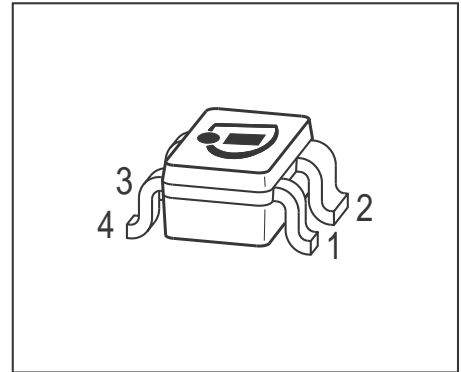


**THE DATASHEET OF
BF886H6327XTSA1**



NPN Bipolar RF Transistor

- High transducer gain of typ. 24 dB @ 13 mA, 1.9 GHz
- Low minimum noise figure of typ. 0.5 dB @ 1.9 GHz
- Pb-free (RoHS compliant) package
- For a wide range of non-automotive applications
 - 2nd and 3rd LNA stage and mixer stage in LNB
 - 5.8 GHz analog/digital cordless phone



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

| Type | Marking | Pin Configuration | | | | | | Package |
|-------|---------|-------------------|-----|-----|-----|---|---|---------|
| BF886 | RZs | 1=B | 2=E | 3=C | 4=E | - | - | SOT343 |

Maximum Ratings at $T_A = 25\text{ °C}$, unless otherwise specified

| Parameter | Symbol | Value | Unit |
|---------------------------------------|-----------|-------------|------|
| Collector-emitter voltage | V_{CEO} | 4.0 | V |
| $T_A = 25\text{ °C}$ | | 3.5 | |
| $T_A = -55\text{ °C}$ | | | |
| Collector-emitter voltage | V_{CES} | 13 | |
| Collector-base voltage | V_{CBO} | 13 | |
| Emitter-base voltage | V_{EBO} | 1.2 | |
| Collector current | I_C | 25 | mA |
| Base current | I_B | 2 | |
| Total power dissipation ¹⁾ | P_{tot} | 100 | mW |
| $T_S \leq 108\text{ °C}$ | | | |
| 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 the pcb

Thermal Resistance

| Parameter | Symbol | Value | Unit |
|--|------------|------------|------|
| Junction - soldering point ¹⁾ | R_{thJS} | ≤ 420 | K/W |

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

| Parameter | Symbol | Values | | | Unit |
|--|---------------|--------|------|------|------|
| | | min. | typ. | max. | |
| DC Characteristics | | | | | |
| Collector-emitter breakdown voltage $I_C = 1 \text{ mA}, I_B = 0$ | $V_{(BR)CEO}$ | 4 | 4.7 | - | V |
| Collector-emitter cutoff current $V_{CE} = 2 \text{ V}, V_{BE} = 0$ | I_{CES} | - | 1 | - | nA |
| Collector-base cutoff current $V_{CB} = 2 \text{ V}, I_E = 0$ | I_{CBO} | - | 1 | - | |
| Emitter-base cutoff current $V_{EB} = 0.5 \text{ V}, I_C = 0$ | I_{EBO} | - | 10 | - | |
| DC current gain $I_C = 13 \text{ V}, V_{CE} = 3 \text{ V}$, pulse measured | h_{FE} | - | 250 | - | - |

¹For calculation of R_{thJA} please refer to Application Note Thermal Resistance

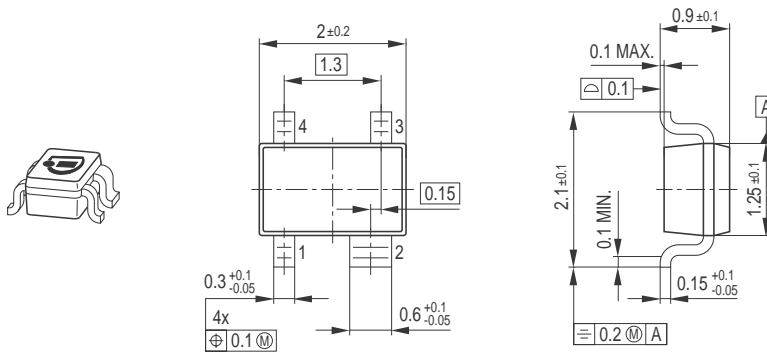
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|--|---------------|--------|------------|------|------|
| | | min. | typ. | max. | |
| AC Characteristics (verified by random sampling) | | | | | |
| Transition frequency $I_C = 13 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $f = 1 \text{ GHz}$ | f_T | - | 45 | - | GHz |
| Collector-base capacitance $V_{CB} = 3 \text{ V}$, $f = 1 \text{ MHz}$, $V_{BE} = 0$, emitter grounded | C_{cb} | - | 0.06 | - | pF |
| Collector emitter capacitance $V_{CE} = 3 \text{ V}$, $f = 1 \text{ MHz}$, $V_{BE} = 0$, base grounded | C_{ce} | - | 0.35 | - | |
| Emitter-base capacitance $V_{EB} = 0.5 \text{ V}$, $f = 1 \text{ MHz}$, $V_{CB} = 0$, collector grounded | C_{eb} | - | 0.35 | - | |
| Noise figure $I_C = 5 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $f = 1.9 \text{ GHz}$, $Z_S = Z_{Sopt}$ $I_C = 5 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $f = 5.5 \text{ GHz}$, $Z_S = Z_{Sopt}$ | F | - | 0.5 0.7 | - | dB |
| Power gain $I_C = 13 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, $f = 1.9 \text{ GHz}$ | G_{ms} | - | 26 | - | dB |
| Power gain, maximum available ¹⁾ $I_C = 13 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, $f = 5.5 \text{ GHz}$ | G_{ma} | - | 19 | - | dB |
| Transducer gain $I_C = 13 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $Z_S = Z_L = 50 \Omega$, $f = 1.9 \text{ GHz}$ $f = 5.5 \text{ GHz}$ | $ S_{21e} ^2$ | - | 24 16 | - | dB |
| Third order intercept point at output ²⁾ $V_{CE} = 3 \text{ V}$, $I_C = 13 \text{ mA}$, $f = 5.5 \text{ GHz}$, $Z_S = Z_L = 50 \Omega$ | IP_3 | - | 23 | - | dBm |
| 1dB Compression point $I_C = 13 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $Z_S = Z_L = 50 \Omega$, $f = 5.5 \text{ GHz}$ | P_{-1dB} | - | 8 | - | |

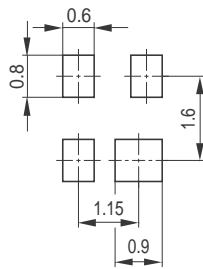
$$^1G_{ma} = |S_{21e} / S_{12e}| (k - (k^2 - 1)^{1/2})$$

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

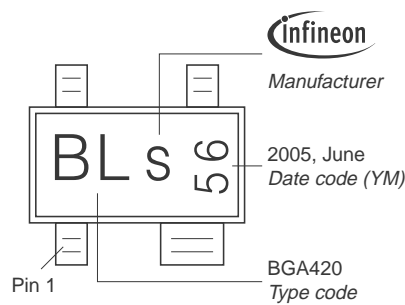
Package Outline



Foot Print

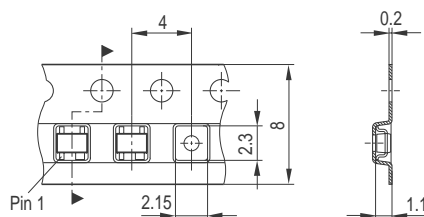


Marking Layout (Example)



Standard Packing

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



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