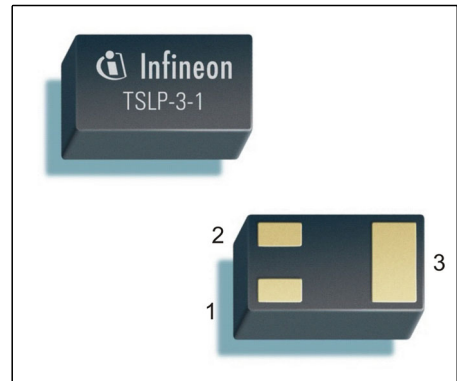


Low Noise Silicon Bipolar RF Transistor

- Low voltage/ Low current operation
- Transition frequency of 14 GHz
- High insertion gain
- Ideal for low current amplifiers and oscillators
- Pb-free (RoHS compliant) and halogen-free thin small leadless package
- Qualification report according to AEC-Q101 available



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

| Type | Marking | Pin Configuration | | | Package |
|----------|---------|-------------------|-------|-------|----------|
| BFR340L3 | FA | 1 = B | 2 = E | 3 = C | TSLP-3-1 |

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

| 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⁾ $T_S \leq 120^{\circ}\text{C}$ | P_{tot} | 60 | mW |
| Junction temperature | T_J | 150 | $^{\circ}\text{C}$ |
| Storage temperature | T_{Stg} | -55 ... 150 | |

Thermal Resistance

| Parameter | Symbol | Value | Unit |
|--|------------|-------|------|
| Junction - soldering point ²⁾ | R_{thJS} | 500 | K/W |

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

²⁾ For 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. | |
| DC Characteristics | | | | | |
| Collector-emitter breakdown voltage $I_C = 1\text{ mA}$, $I_B = 0$ | $V_{(BR)CEO}$ | 6 | 9 | - | V |
| Collector-emitter cutoff current $V_{CE} = 15\text{ V}$, $V_{BE} = 0$ | I_{CES} | - | - | 10 | μA |
| Collector-base cutoff current $V_{CB} = 5\text{ V}$, $I_E = 0$ | I_{CBO} | - | - | 100 | nA |
| Emitter-base cutoff current $V_{EB} = 1\text{ V}$, $I_C = 0$ | I_{EBO} | - | - | 1 | μA |
| DC current gain $I_C = 5\text{ mA}$, $V_{CE} = 3\text{ V}$, pulse measured | h_{FE} | 90 | 120 | 160 | - |

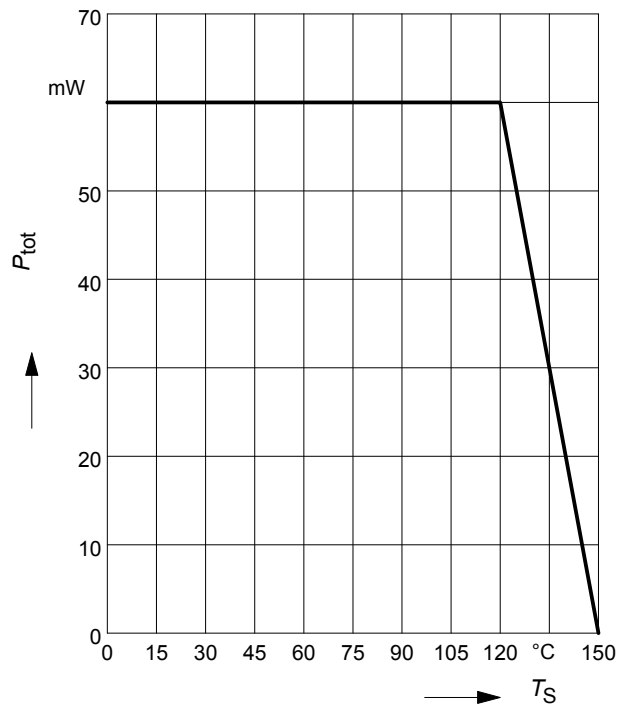
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|--|---------------|--------|----------|--------|------|
| | | min. | typ. | max. | |
| AC Characteristics (verified by random sampling) | | | | | |
| Transition frequency $I_C = 6\text{ mA}$, $V_{CE} = 3\text{ V}$, $f = 1\text{ GHz}$ | f_T | 10 | 14 | - | GHz |
| Collector-base capacitance $V_{CB} = 5\text{ V}$, $f = 1\text{ MHz}$, $V_{BE} = 0$, emitter grounded | C_{cb} | - | 0.17 | 0.4 | pF |
| Collector emitter capacitance $V_{CE} = 5\text{ V}$, $f = 1\text{ MHz}$, $V_{BE} = 0$, base grounded | C_{ce} | - | 0.13 | - | |
| Emitter-base capacitance $V_{EB} = 0.5\text{ V}$, $f = 1\text{ MHz}$, $V_{CB} = 0$, collector grounded | C_{eb} | - | 0.12 | - | |
| Minimum noise figure $I_C = 1\text{ mA}$, $V_{CE} = 3\text{ V}$, $Z_S = Z_{Sopt}$, $f = 1.8\text{ GHz}$ | NF_{min} | - | 1.15 | - | dB |
| Power gain, maximum stable ¹⁾ $I_C = 5\text{ mA}$, $V_{CE} = 3\text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, $f = 1.8\text{ GHz}$ | G_{ms} | - | 17.5 | - | - |
| Power gain, maximum available ¹⁾ $I_C = 5\text{ mA}$, $V_{CE} = 3\text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, $f = 3\text{ GHz}$ | G_{ma} | - | 13 | - | dB |
| Transducer gain $I_C = 5\text{ mA}$, $V_{CE} = 3\text{ V}$, $Z_S = Z_L = 50\Omega$, $f = 1.8\text{ GHz}$ $f = 3\text{ GHz}$ | $ S_{21e} ^2$ | - - | 14 10 | - - | dB |
| Third order intercept point at output ²⁾ $V_{CE} = 3\text{ V}$, $I_C = 5\text{ mA}$, $f = 1.8\text{ GHz}$, $Z_S = Z_L = 50\Omega$ | $IP3$ | - | 12.5 | - | dBm |
| 1dB compression point at output $I_C = 5\text{ mA}$, $V_{CE} = 3\text{ V}$, $Z_S = Z_L = 50\Omega$, $f = 1.8\text{ GHz}$ | P_{-1dB} | - | -1 | - | |

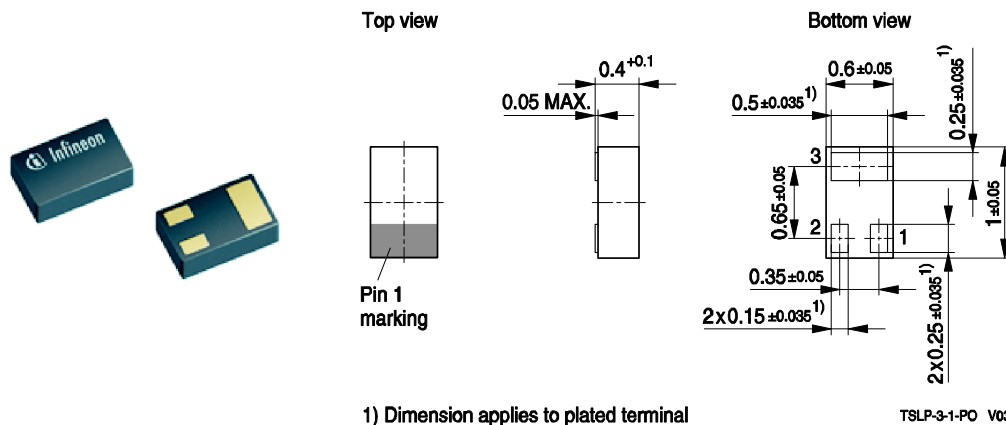
¹⁾ $G_{ma} = |S_{21e} / S_{12e}| (k - (k^2 - 1)^{1/2})$, $G_{ms} = |S_{21e} / S_{12e}|$
²⁾ $IP3$ value depends on termination of all intermodulation frequency components.

Termination used for this measurement is 50Ω from 0.1 MHz to 6 GHz

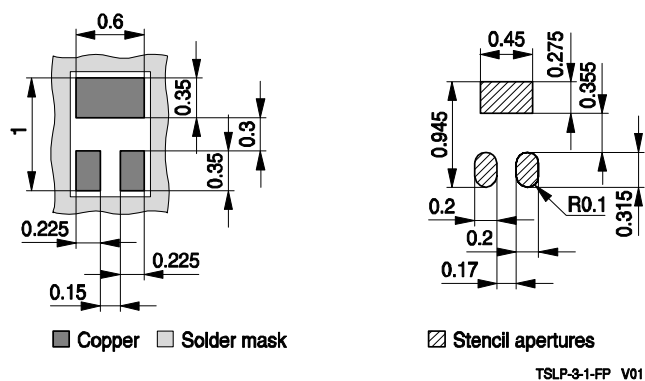
Total power dissipation $P_{\text{tot}} = f(T_S)$



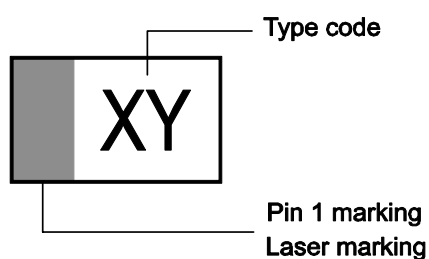
Package Outline



Foot Print

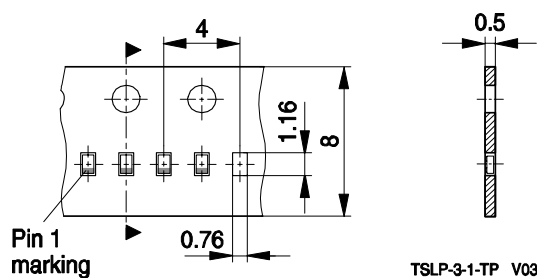


Marking Layout (Example)



Standard Packing

Reel Ø 330 mm: 15.000 Pieces/ Reel



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