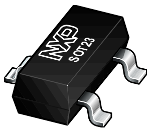


# BFU550A

## NPN wideband silicon RF transistor

Rev. 1 — 13 January 2014 — Product data sheet

## 1. Product profile

### 1.1 General description

NPN silicon RF transistor for high speed, low noise applications in a plastic, 3-pin SOT23 package.

The BFU550A is part of the BFU5 family of transistors, suitable for small signal to medium power applications up to 2 GHz.

### 1.2 Features and benefits

- Low noise, high breakdown RF transistor
- AEC-Q101 qualified
- Minimum noise figure ($NF_{min}$) = 0.6 dB at 900 MHz
- Maximum stable gain 18 dB at 900 MHz
- 11 GHz $f_T$ silicon technology

### 1.3 Applications

- Applications requiring high supply voltages and high breakdown voltages
- Broadband amplifiers up to 2 GHz
- Low noise amplifiers for ISM applications
- ISM band oscillators

### 1.4 Quick reference data

**Table 1. Quick reference data**

*$T_{amb}$ = 25 °C unless otherwise specified*

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $V_{CB}$ | collector-base voltage | open emitter | | - | - | 24 | V |
| $V_{CE}$ | collector-emitter voltage | open base | | - | - | 12 | V |
| | | shorted base | | - | - | 24 | V |
| $V_{EB}$ | emitter-base voltage | open collector | | - | - | 2 | V |
| $I_C$ | collector current | | | - | 15 | 50 | mA |
| $P_{tot}$ | total power dissipation | $T_{sp} \leq 87$ °C | [1] | - | - | 450 | mW |
| $h_{FE}$ | DC current gain | $I_C$ = 15 mA; $V_{CE}$ = 8 V | | 60 | 95 | 200 | |
| $C_c$ | collector capacitance | $V_{CB}$ = 8 V; f = 1 MHz | | - | 0.74 | - | pF |
| $f_T$ | transition frequency | $I_C$ = 25 mA; $V_{CE}$ = 8 V; f = 900 MHz | | - | 11 | - | GHz |

**Table 1. Quick reference data** *...continued*

*$T_{amb}$ = 25 °C unless otherwise specified*

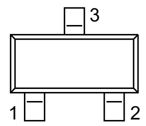
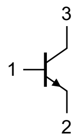
| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $G_{p(max)}$ | maximum power gain | $I_C$ = 15 mA; $V_{CE}$ = 8 V; f = 900 MHz | [2] | - | 18 | - | dB |
| $NF_{min}$ | minimum noise figure | $I_C$ = 1 mA; $V_{CE}$ = 8 V; f = 900 MHz; $\Gamma_S = \Gamma_{opt}$ | | - | 0.6 | - | dB |
| $P_{L(1dB)}$ | output power at 1 dB gain compression | $I_C$ = 25 mA; $V_{CE}$ = 8 V; $Z_S = Z_L$ = 50 Ω; f = 900 MHz | | - | 13.5 | - | dBm |

[1] $T_{sp}$ is the temperature at the solder point of the collector lead.

[2] If K > 1 then $G_{p(max)}$ is the maximum power gain. If K < 1 then $G_{p(max)}$ = MSG.

## 2. Pinning information

**Table 2. Discrete pinning**

| Pin | Description | Simplified outline | Graphic symbol |
|---|---|---|---|
| 1 | base |   |   |
| 2 | emitter | | |
| 3 | collector | | |

## 3. Ordering information

**Table 3. Ordering information**

| Type number | Package | | |
|---|---|---|---|
| | Name | Description | Version |
| BFU550A | - | plastic surface-mounted package; 3 leads | SOT23 |
| OM7961 | - | Customer evaluation kit for BFU520A, BFU530A and BFU550A [1] | - |

[1] The customer evaluation kit contains the following:

a) Unpopulated RF amplifier Printed-Circuit Board (PCB)

b) Unpopulated RF amplifier Printed-Circuit Board (PCB) with emitter degeneration

c) Four SMA connectors for fitting unpopulated Printed-Circuit Board (PCB)

d) BFU520A, BFU530A and BFU550A samples

e) USB stick with data sheets, application notes, models, S-parameter and noise files

## 4. Marking

**Table 4. Marking**

| Type number | Marking | Description |
|---|---|---|
| BFU550A | HW* | * = t : made in Malaysia |
| | | * = w : made in China |

## 5. Design support

**Table 5. Available design support**

*Download from the BFU550A product information page on http://www.nxp.com.*

| Support item | Available | Remarks |
|---|---|---|
| Device models for Agilent EEsof EDA ADS | yes | Based on Mextram device model. |
| SPICE model | yes | Based on Gummel-Poon device model. |
| S-parameters | yes | |
| Noise parameters | yes | |
| Customer evaluation kit | yes | See Section 3 and Section 10. |
| Solder pattern | yes | |
| Application notes | yes | See Section 10.1 and Section 10.2. |

## 6. Limiting values

**Table 6. Limiting values**

*In accordance with the Absolute Maximum Rating System (IEC 60134).*

| Symbol | Parameter | Conditions | Min | Max | Unit |
|---|---|---|---|---|---|
| $V_{CB}$ | collector-base voltage | open emitter | - | 30 | V |
| $V_{CE}$ | collector-emitter voltage | open base | - | 16 | V |
| | | shorted base | - | 30 | V |
| $V_{EB}$ | emitter-base voltage | open collector | - | 3 | V |
| $I_C$ | collector current | | - | 80 | mA |
| $T_{stg}$ | storage temperature | | −65 | +150 | °C |
| $V_{ESD}$ | electrostatic discharge voltage | Human Body Model (HBM) According to JEDEC standard 22-A114E | - | ±150 | V |
| | | Charged Device Model (CDM) According to JEDEC standard 22-C101B | - | ±2 | kV |

## 7. Recommended operating conditions

**Table 7. Characteristics**

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $V_{CB}$ | collector-base voltage | open emitter | | - | - | 24 | V |
| $V_{CE}$ | collector-emitter voltage | open base | | - | - | 12 | V |
| | | shorted base | | - | - | 24 | V |
| $V_{EB}$ | emitter-base voltage | open collector | | - | - | 2 | V |
| $I_C$ | collector current | | | - | - | 50 | mA |
| $P_i$ | input power | $Z_S = 50\ \Omega$ | | - | - | 10 | dBm |
| $T_j$ | junction temperature | | | −40 | - | +150 | °C |
| $P_{tot}$ | total power dissipation | $T_{sp} \leq 87$ °C | [1] | - | - | 450 | mW |

[1] $T_{sp}$ is the temperature at the solder point of the collector lead.

# 8. Thermal characteristics

**Table 8. Thermal characteristics**

| Symbol | Parameter | Conditions | | Typ | Unit |
|---|---|---|---|---|---|
| $R_{th(j-sp)}$ | thermal resistance from junction to solder point | | [1] | 140 | K/W |

[1] $T_{sp}$ is the temperature at the solder point of the collector lead.

$T_{sp}$ has the following relation to the ambient temperature $T_{amb}$:

$T_{sp} = T_{amb} + P \times R_{th(sp-a)}$

With P being the power dissipation and $R_{th(sp-a)}$ being the thermal resistance between the solder point and ambient. $R_{th(sp-a)}$ is determined by the heat transfer properties in the application.

The heat transfer properties are set by the application board materials, the board layout and the environment e.g. housing.

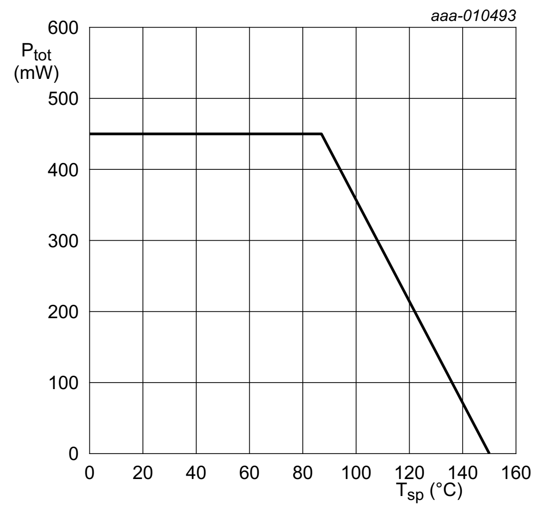



**Fig 1. Power derating curve**

# 9. Characteristics

**Table 9. Characteristics**

*$T_{amb}$ = 25 °C unless otherwise specified*

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{(BR)CBO}$ | collector-base breakdown voltage | $I_C$ = 100 nA; $I_E$ = 0 mA | 24 | - | - | V |
| $V_{(BR)CEO}$ | collector-emitter breakdown voltage | $I_C$ = 150 nA; $I_B$ = 0 mA | 12 | - | - | V |
| $I_C$ | collector current | | - | 15 | 50 | mA |
| $I_{CBO}$ | collector-base cut-off current | $I_E$ = 0 mA; $V_{CB}$ = 8 V | - | <1 | - | nA |
| $h_{FE}$ | DC current gain | $I_C$ = 15 mA; $V_{CE}$ = 8 V | 60 | 95 | 200 | |
| $C_e$ | emitter capacitance | $V_{EB}$ = 0.5 V; f = 1 MHz | - | 0.98 | - | pF |
| $C_{re}$ | feedback capacitance | $V_{CE}$ = 8 V; f = 1 MHz | - | 0.48 | - | pF |
| $C_c$ | collector capacitance | $V_{CB}$ = 8 V; f = 1 MHz | - | 0.74 | - | pF |
| $f_T$ | transition frequency | $I_C$ = 25 mA; $V_{CE}$ = 8 V; f = 900 MHz | - | 11 | - | GHz |

**Table 9. Characteristics** *...continued*
*$T_{amb}$ = 25 °C unless otherwise specified*

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $G_{p(max)}$ | maximum power gain | f = 433 MHz; $V_{CE}$ = 8 V | [1] | | | | |
| | | $I_C$ = 1 mA | | - | 15 | - | dB |
| | | $I_C$ = 15 mA | | - | 23.5 | - | dB |
| | | $I_C$ = 25 mA | | - | 24 | - | dB |
| | | f = 900 MHz; $V_{CE}$ = 8 V | [1] | | | | |
| | | $I_C$ = 1 mA | | - | 12.5 | - | dB |
| | | $I_C$ = 15 mA | | - | 18 | - | dB |
| | | $I_C$ = 25 mA | | - | 18 | - | dB |
| | | f = 1800 MHz; $V_{CE}$ = 8 V | [1] | | | | |
| | | $I_C$ = 1 mA | | - | 10.5 | - | dB |
| | | $I_C$ = 15 mA | | - | 12 | - | dB |
| | | $I_C$ = 25 mA | | - | 12 | - | dB |
| $\|s_{21}\|^2$ | insertion power gain | f = 433 MHz; $V_{CE}$ = 8 V | | | | | |
| | | $I_C$ = 1 mA | | - | 10 | - | dB |
| | | $I_C$ = 15 mA | | - | 21 | - | dB |
| | | $I_C$ = 25 mA | | - | 21.5 | - | dB |
| | | f = 900 MHz; $V_{CE}$ = 8 V | | | | | |
| | | $I_C$ = 1 mA | | - | 8.5 | - | dB |
| | | $I_C$ = 15 mA | | - | 15.5 | - | dB |
| | | $I_C$ = 25 mA | | - | 15.5 | - | dB |
| | | f = 1800 MHz; $V_{CE}$ = 8 V | | | | | |
| | | $I_C$ = 1 mA | | - | 5 | - | dB |
| | | $I_C$ = 15 mA | | - | 10 | - | dB |
| | | $I_C$ = 25 mA | | - | 10 | - | dB |
| $NF_{min}$ | minimum noise figure | f = 433 MHz; $V_{CE}$ = 8 V; $\Gamma_S = \Gamma_{opt}$ | | | | | |
| | | $I_C$ = 1 mA | | - | 0.5 | - | dB |
| | | $I_C$ = 15 mA | | - | 0.9 | - | dB |
| | | $I_C$ = 25 mA | | - | 1.2 | - | dB |
| | | f = 900 MHz; $V_{CE}$ = 8 V; $\Gamma_S = \Gamma_{opt}$ | | | | | |
| | | $I_C$ = 1 mA | | - | 0.6 | - | dB |
| | | $I_C$ = 15 mA | | - | 1.0 | - | dB |
| | | $I_C$ = 25 mA | | - | 1.3 | - | dB |
| | | f = 1800 MHz; $V_{CE}$ = 8 V; $\Gamma_S = \Gamma_{opt}$ | | | | | |
| | | $I_C$ = 1 mA | | - | 0.7 | - | dB |
| | | $I_C$ = 15 mA | | - | 1.1 | - | dB |
| | | $I_C$ = 25 mA | | - | 1.4 | - | dB |

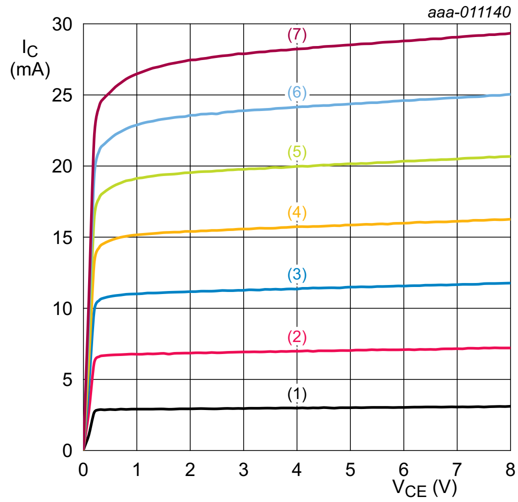
**Table 9. Characteristics** *...continued*

*$T_{amb}$ = 25 °C unless otherwise specified*

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $G_{ass}$ | associated gain | f = 433 MHz; $V_{CE}$ = 8 V; $\Gamma_S = \Gamma_{opt}$ | | | | |
| | | $I_C$ = 1 mA | - | 22 | - | dB |
| | | $I_C$ = 15 mA | - | 22 | - | dB |
| | | $I_C$ = 25 mA | - | 22 | - | dB |
| | | f = 900 MHz; $V_{CE}$ = 8 V; $\Gamma_S = \Gamma_{opt}$ | | | | |
| | | $I_C$ = 1 mA | - | 14.5 | - | dB |
| | | $I_C$ = 15 mA | - | 16 | - | dB |
| | | $I_C$ = 25 mA | - | 16 | - | dB |
| | | f = 1800 MHz; $V_{CE}$ = 8 V; $\Gamma_S = \Gamma_{opt}$ | | | | |
| | | $I_C$ = 1 mA | - | 8 | - | dB |
| | | $I_C$ = 15 mA | - | 10.5 | - | dB |
| | | $I_C$ = 25 mA | - | 10 | - | dB |
| $P_{L(1dB)}$ | output power at 1 dB gain compression | f = 433 MHz; $V_{CE}$ = 8 V; $Z_S = Z_L$ = 50 Ω | | | | |
| | | $I_C$ = 15 mA | - | 10 | - | dBm |
| | | $I_C$ = 25 mA | - | 13 | - | dBm |
| | | f = 900 MHz; $V_{CE}$ = 8 V; $Z_S = Z_L$ = 50 Ω | | | | |
| | | $I_C$ = 15 mA | - | 10.5 | - | dBm |
| | | $I_C$ = 25 mA | - | 13.5 | - | dBm |
| | | f = 1800 MHz; $V_{CE}$ = 8 V; $Z_S = Z_L$ = 50 Ω | | | | |
| | | $I_C$ = 15 mA | - | 11 | - | dBm |
| | | $I_C$ = 25 mA | - | 13 | - | dBm |
| $IP3_o$ | output third-order intercept point | $f_1$ = 433 MHz; $f_2$ = 434 MHz; $V_{CE}$ = 8 V; $Z_S = Z_L$ = 50 Ω | | | | |
| | | $I_C$ = 15 mA | - | 20 | - | dBm |
| | | $I_C$ = 25 mA | - | 23 | - | dBm |
| | | $f_1$ = 900 MHz; $f_2$ = 901 MHz; $V_{CE}$ = 8 V; $Z_S = Z_L$ = 50 Ω | | | | |
| | | $I_C$ = 15 mA | - | 20 | - | dBm |
| | | $I_C$ = 25 mA | - | 23 | - | dBm |
| | | $f_1$ = 1800 MHz; $f_2$ = 1801 MHz; $V_{CE}$ = 8 V; $Z_S = Z_L$ = 50 Ω | | | | |
| | | $I_C$ = 15 mA | - | 21 | - | dBm |
| | | $I_C$ = 25 mA | - | 23 | - | dBm |

[1] If K > 1 then $G_{p(max)}$ is the maximum power gain. If K < 1 then $G_{p(max)}$ = MSG.

## 9.1 Graphs




$T_{amb}$ = 25 °C.

(1) $I_B$ = 25 μA

(2) $I_B$ = 75 μA

(3) $I_B$ = 125 μA

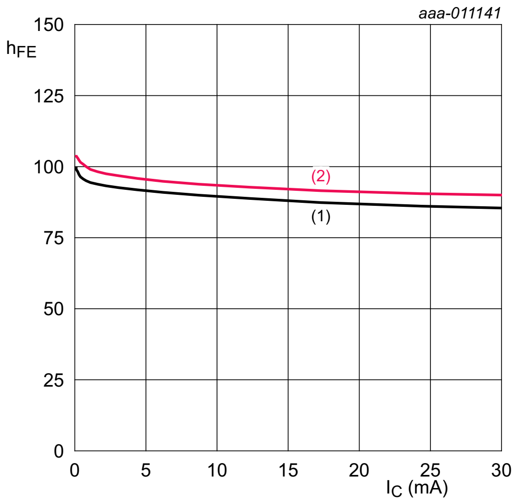
(4) $I_B$ = 175 μA

(5) $I_B$ = 225 μA

(6) $I_B$ = 275 μA

(7) $I_B$ = 325 μA

**Fig 2. Collector current as a function of collector-emitter voltage; typical values**

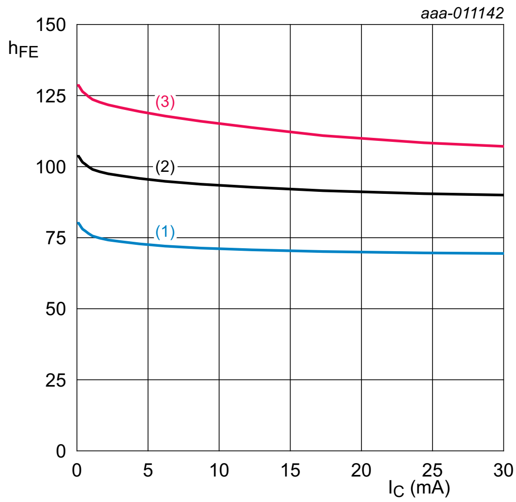



$T_{amb}$ = 25 °C.

(1) $V_{CE}$ = 3.0 V

(2) $V_{CE}$ = 8.0 V

**Fig 3. DC current gain as function of collector current; typical values**



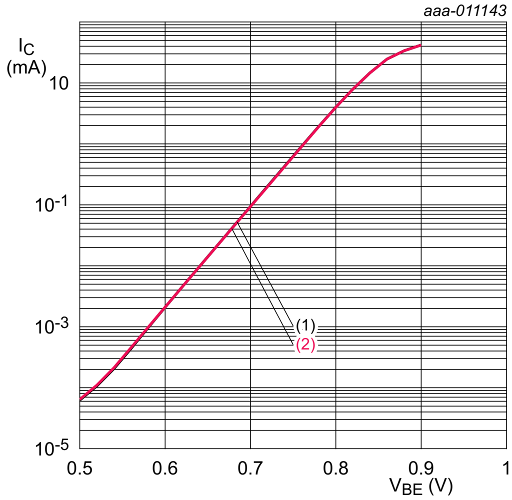

$V_{CE}$ = 8 V.

(1) $T_{amb}$ = −40 °C

(2) $T_{amb}$ = +25 °C

(3) $T_{amb}$ = +125 °C

**Fig 4. DC current gain as function of collector current; typical values**

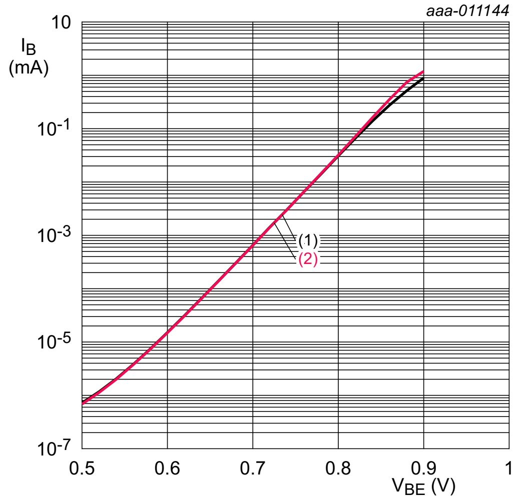



$T_{amb}$ = 25 °C.

(1) $V_{CE}$ = 3.0 V

(2) $V_{CE}$ = 8.0 V

**Fig 5. Collector current as a function of base-emitter voltage; typical values**

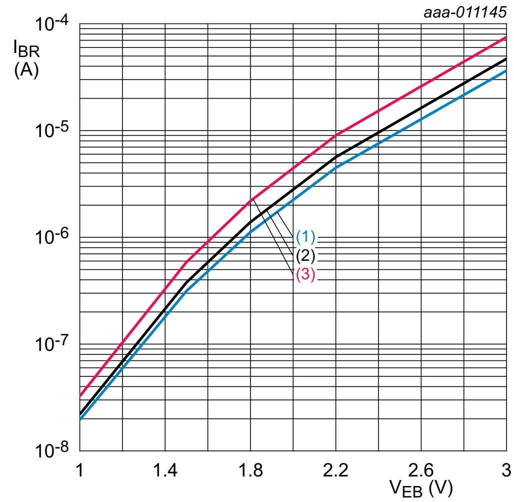



$T_{amb}$ = 25 °C.

(1) $V_{CE}$ = 3.0 V

(2) $V_{CE}$ = 8.0 V

**Fig 6. Base current as a function of base-emitter voltage; typical values**



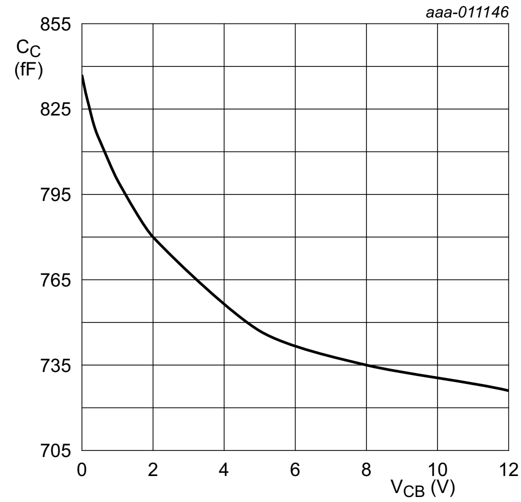

$V_{CE}$ = 3 V.

(1) $T_{amb}$ = −40 °C

(2) $T_{amb}$ = +25 °C

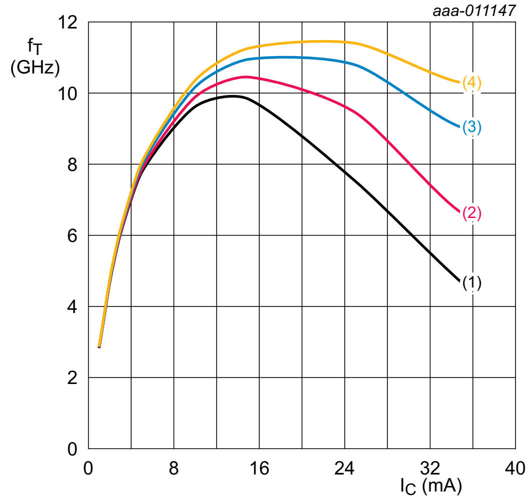
(3) $T_{amb}$ = +125 °C

**Fig 7. Reverse base current as a function of emitter-base voltage; typical values**




$I_C$ = 0 mA; f = 1 MHz; $T_{amb}$ = 25 °C.

**Fig 8. Collector capacitance as a function of collector-base voltage; typical values**




$T_{amb}$ = 25 °C.

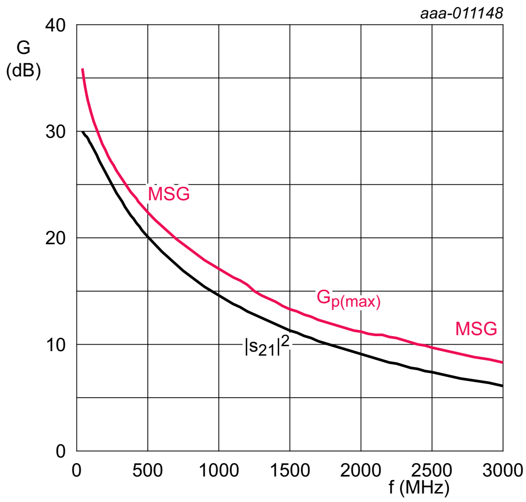
(1) $V_{CE}$ = 3.3 V

(2) $V_{CE}$ = 5.0 V

(3) $V_{CE}$ = 8.0 V

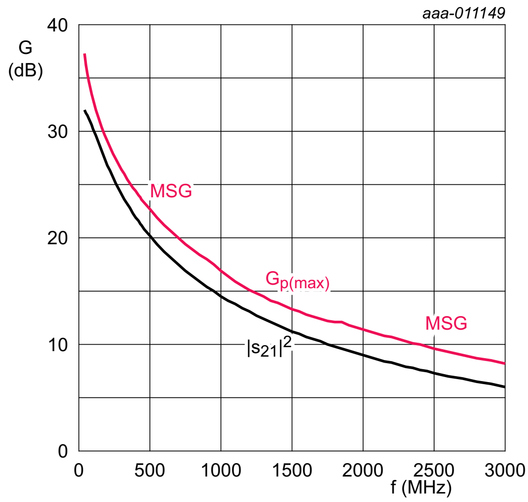
(4) $V_{CE}$ = 12.0 V

**Fig 9. Transition frequency as a function of collector current; typical values**



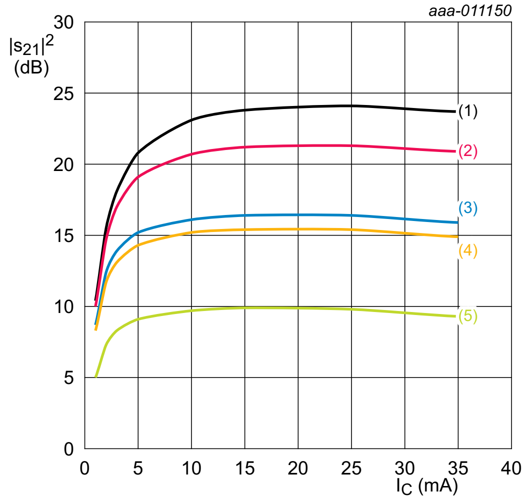

$I_C$ = 15 mA; $V_{CE}$ = 8 V; $T_{amb}$ = 25 °C.

**Fig 10. Gain as a function of frequency; typical values**




$I_C$ = 25 mA; $V_{CE}$ = 8 V; $T_{amb}$ = 25 °C.

**Fig 11. Gain as a function of frequency; typical values**




$V_{CE}$ = 8 V; $T_{amb}$ = 25 °C.

(1) f = 300 MHz

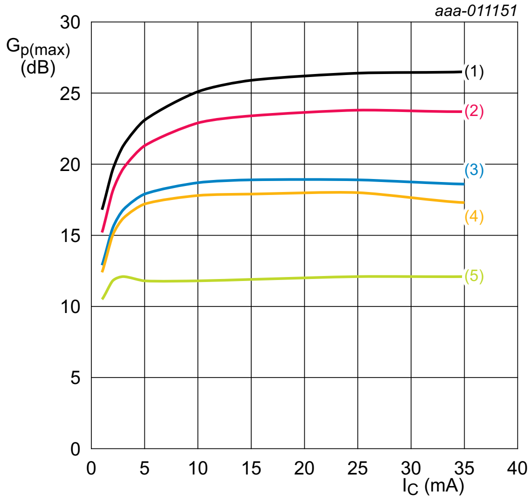
(2) f = 433 MHz

(3) f = 800 MHz

(4) f = 900 MHz

(5) f = 1800 MHz

**Fig 12. Insertion power gain as a function of collector current; typical values**




$V_{CE}$ = 8 V; $T_{amb}$ = 25 °C.

If K >1 then $G_{p(max)}$ = maximum power gain. If K < 1 then $G_{p(max)}$ = MSG.

(1) f = 300 MHz

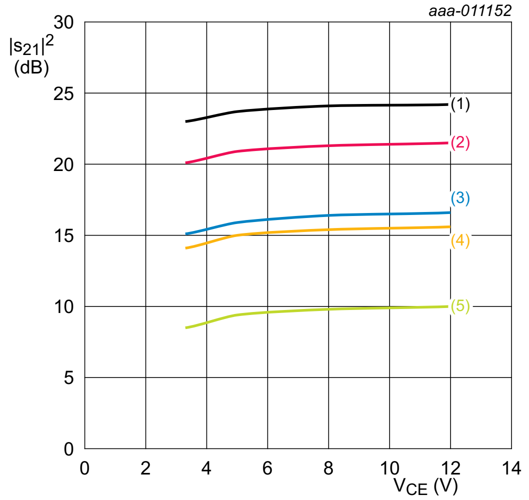
(2) f = 433 MHz

(3) f = 800 MHz

(4) f = 900 MHz

(5) f = 1800 MHz

**Fig 13. Maximum power gain as a function of collector current; typical values**




$I_C$ = 25 mA; $T_{amb}$ = 25 °C.

(1) f = 300 MHz

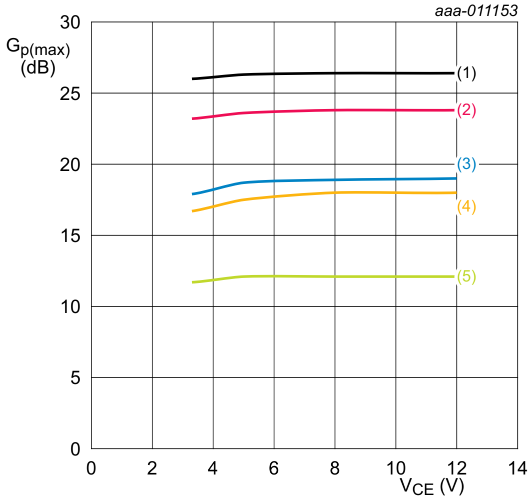
(2) f = 433 MHz

(3) f = 800 MHz

(4) f = 900 MHz

(5) f = 1800 MHz

**Fig 14. Insertion power gain as a function of collector-emitter voltage; typical values**




$I_C$ = 25 mA; $T_{amb}$ = 25 °C.

If K >1 then $G_{p(max)}$ = maximum power gain. If K < 1 then $G_{p(max)}$ = MSG.

(1) f = 300 MHz

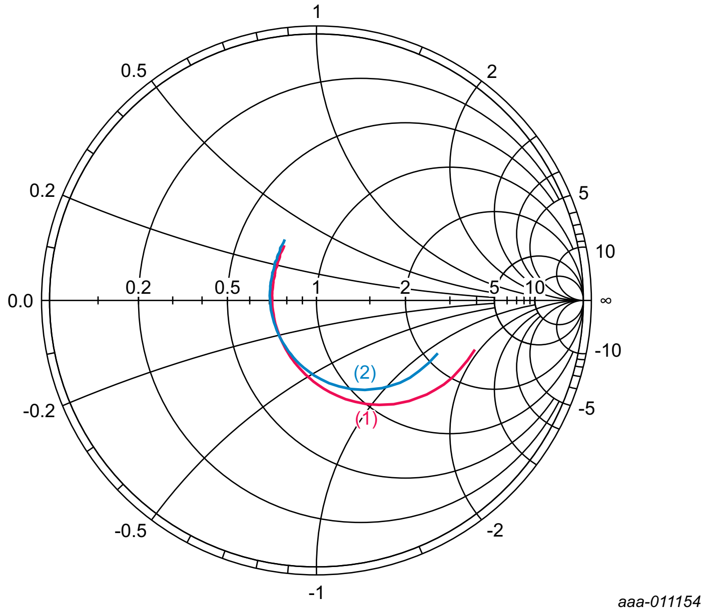
(2) f = 433 MHz

(3) f = 800 MHz

(4) f = 900 MHz

(5) f = 1800 MHz

**Fig 15. Maximum power gain as a function of collector-emitter voltage; typical values**

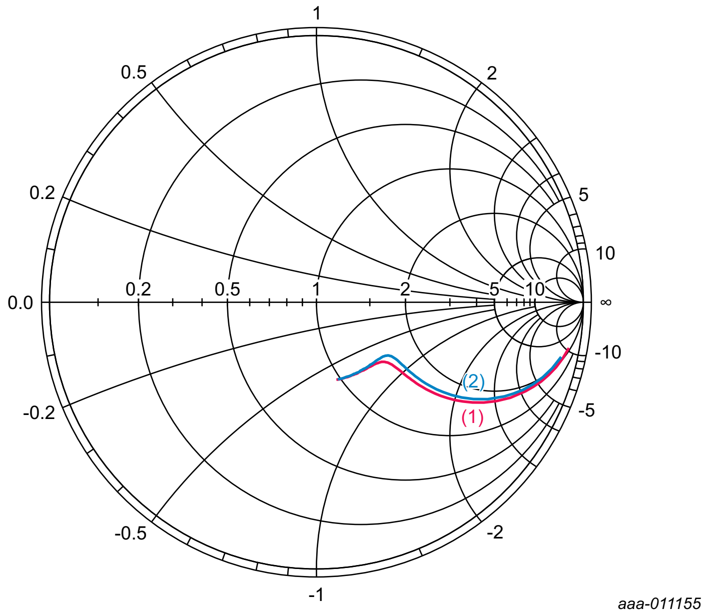



$V_{CE}$ = 8 V; 40 MHz ≤ f ≤ 3 GHz.

(1) $I_C$ = 15 mA

(2) $I_C$ = 25 mA

**Fig 16. Input reflection coefficient ($s_{11}$); typical values**

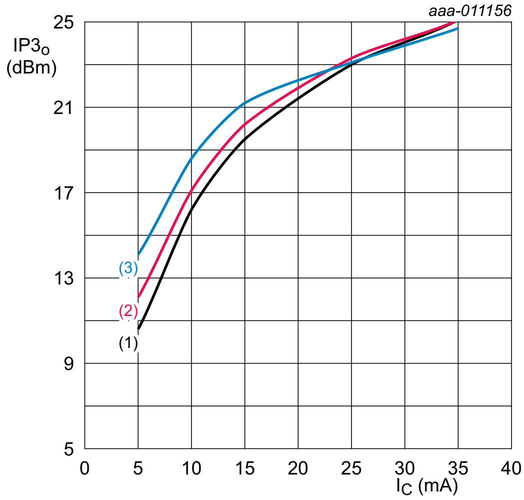



$V_{CE}$ = 8 V; 40 MHz ≤ f ≤ 3 GHz.

(1) $I_C$ = 15 mA

(2) $I_C$ = 25 mA

**Fig 17. Output reflection coefficient ($s_{22}$); typical values**



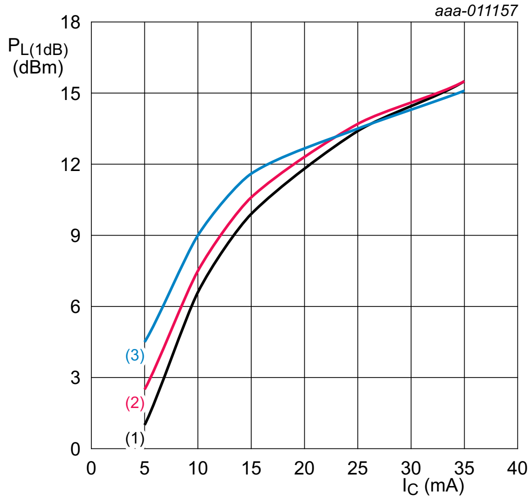

$V_{CE}$ = 8 V; $T_{amb}$ = 25 °C.

(1) $f_1$ = 433 MHz; $f_2$ = 434 MHz

(2) $f_1$ = 900 MHz; $f_2$ = 901 MHz

(3) $f_1$ = 1800 MHz; $f_2$ = 1801 MHz

**Fig 18. Output third-order intercept point as a function of collector current; typical values**



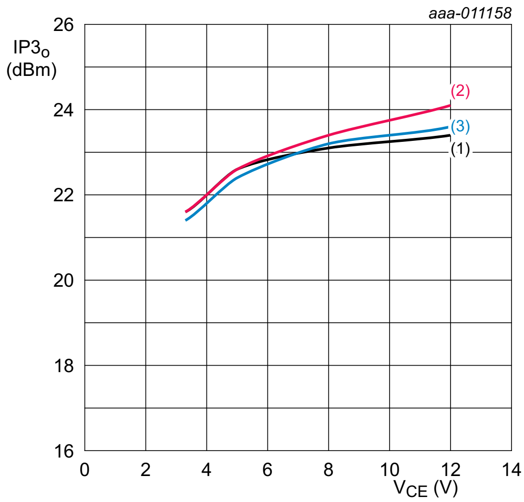

$V_{CE}$ = 8 V; $T_{amb}$ = 25 °C.

(1) f = 433 MHz

(2) f = 900 MHz

(3) f = 1800 MHz

**Fig 19. Output power at 1 dB gain compression as a function of collector current; typical values**



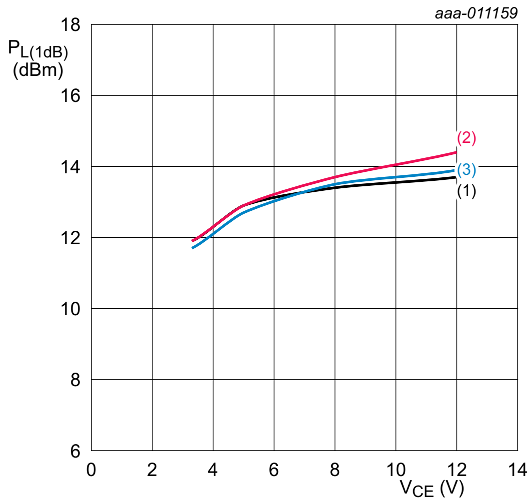

$I_C$ = 25 mA; $T_{amb}$ = 25 °C.

(1) $f_1$ = 433 MHz; $f_2$ = 434 MHz

(2) $f_1$ = 900 MHz; $f_2$ = 901 MHz

(3) $f_1$ = 1800 MHz; $f_2$ = 1801 MHz

**Fig 20. Output third-order intercept point as a function of collector-emitter voltage; typical values**



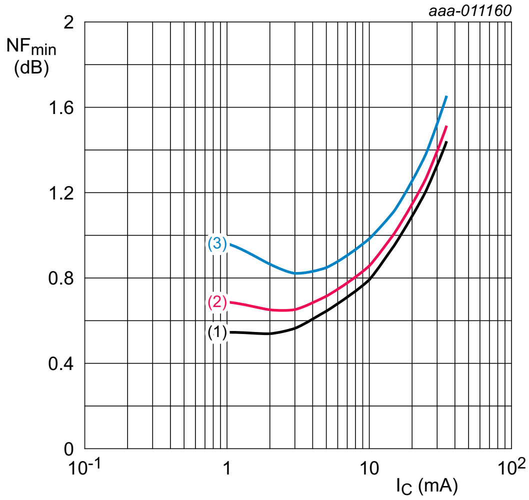

$I_C$ = 25 mA; $T_{amb}$ = 25 °C.

(1) f = 433 MHz

(2) f = 900 MHz

(3) f = 1800 MHz

**Fig 21. Output power at 1 dB gain compression as a function of collector-emitter voltage; typical values**



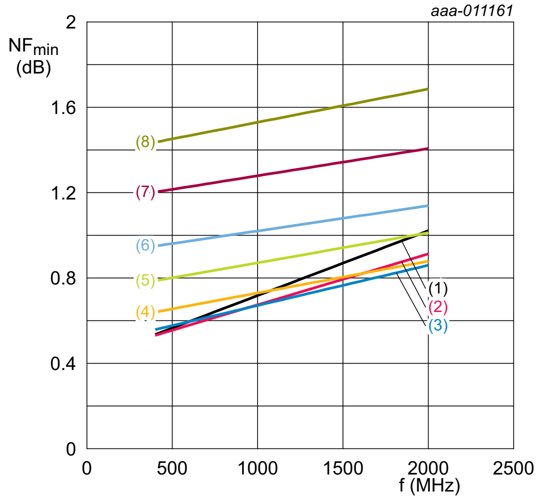

$V_{CE}$ = 8 V; $T_{amb}$ = 25 °C; $\Gamma_S = \Gamma_{opt}$.

(1) f = 433 MHz

(2) f = 900 MHz

(3) f = 1800 MHz

**Fig 22. Minimum noise figure as a function of collector current; typical values**




$V_{CE}$ = 8 V; $T_{amb}$ = 25 °C; $\Gamma_S = \Gamma_{opt}$.

(1) $I_C$ = 1 mA

(2) $I_C$ = 2 mA

(3) $I_C$ = 3 mA

(4) $I_C$ = 5 mA

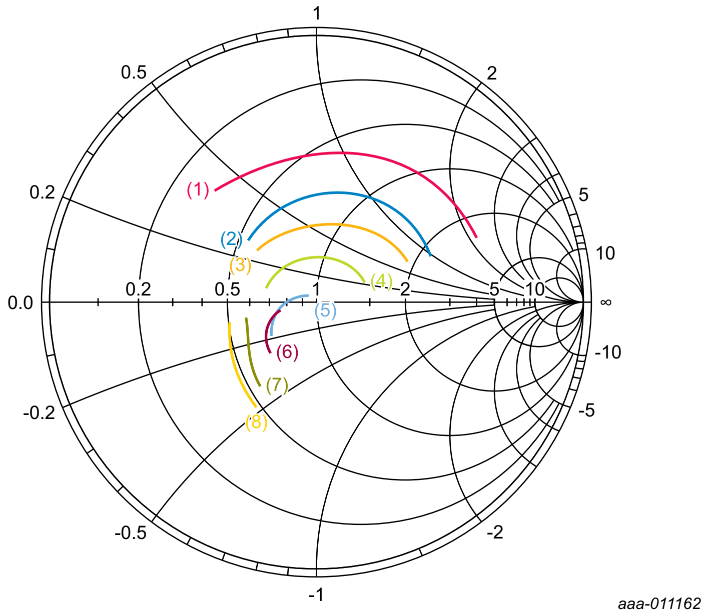
(5) $I_C$ = 10 mA

(6) $I_C$ = 15 mA

(7) $I_C$ = 25 mA

(8) $I_C$ = 35 mA

**Fig 23. Minimum noise figure as a function of frequency; typical values**




$V_{CE}$ = 8 V; 400 MHz ≤ f ≤ 2 GHz.

(1) $I_C$ = 1 mA

(2) $I_C$ = 2 mA

(3) $I_C$ = 3 mA

(4) $I_C$ = 5 mA

(5) $I_C$ = 10 mA

(6) $I_C$ = 15 mA

(7) $I_C$ = 25 mA

(8) $I_C$ = 35 mA

**Fig 24. Optimum reflection coefficient ($\Gamma_{opt}$); typical values**

## 10. Application information

More information about the following application example can be found in the application notes. See Section 5 “Design support”.

The following application example can be implemented using the evaluation kit. See Section 3 “Ordering information” for the order type number.

The following application example can be simulated using the simulation package. See Section 5 “Design support”.

## 10.1 Application example: 433 ISM band LNA

433 ISM band LNA, optimized for low noise.

More detailed information of the application example can be found in the application note: *AN11381.*

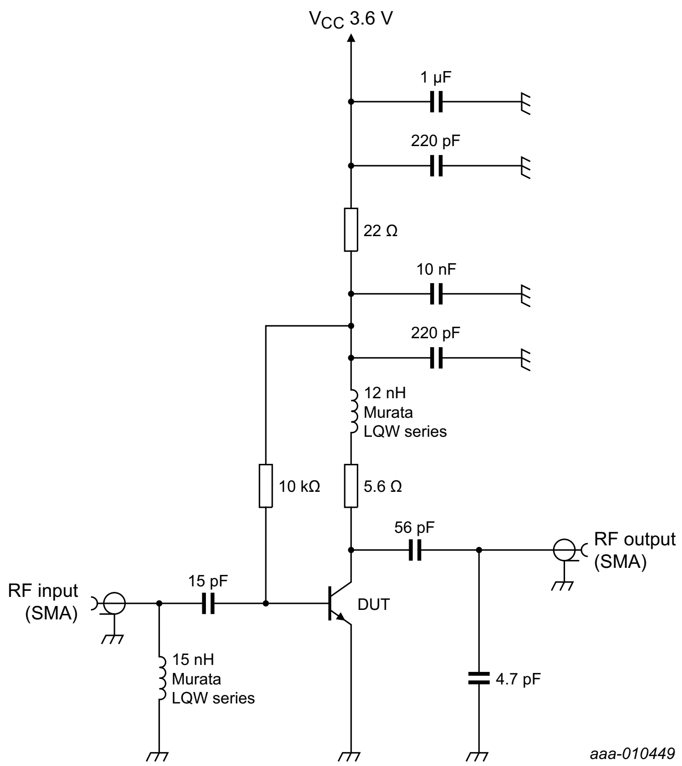



**Fig 25. Schematic 433 MHz ISM band LNA**

**Table 10. Application performance data at 433 MHz**

*$I_{CC}$ = 20 mA; $V_{CC}$ = 3.6 V*

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $\|s_{21}\|^2$ | insertion power gain | | - | 19 | - | dB |
| NF | noise figure | | - | 1.3 | - | dB |
| $IP3_o$ | output third-order intercept point | $f_1$ = 433.1 MHz; $f_2$ = 433.2 MHz; $P_i$ = −30 dBm per carrier | - | 19 | - | dBm |

## 10.2 Application example: 866 ISM band LNA

866 ISM band LNA, optimized for low noise.

More detailed information of the application example can be found in the application note: *AN11382.*

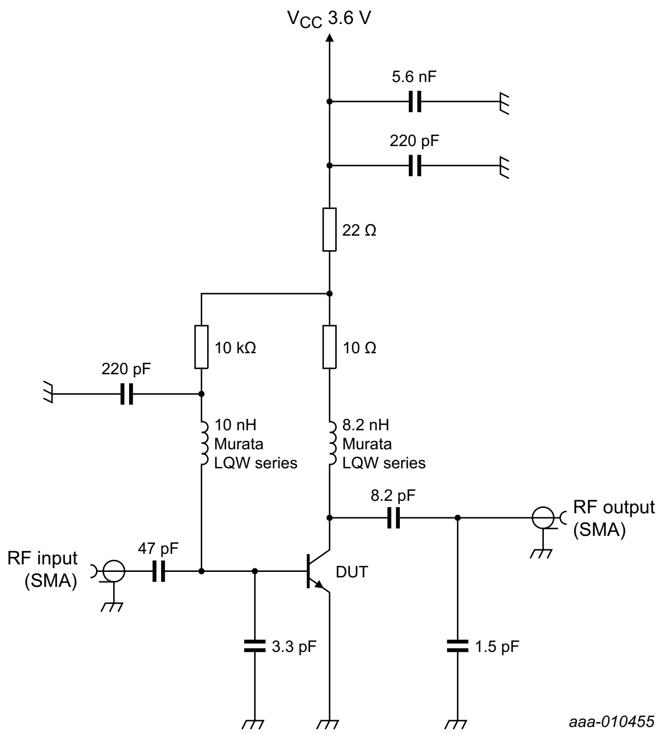


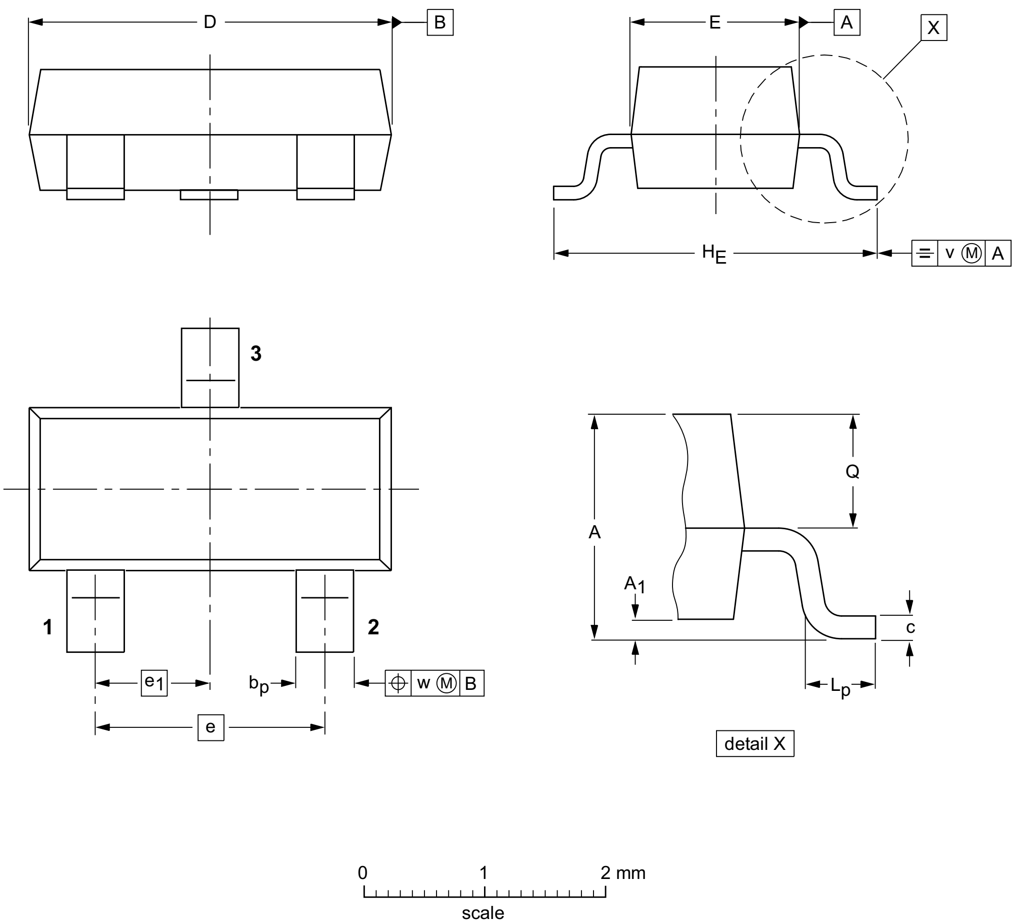

**Fig 26. Schematic 866 MHz ISM band LNA**

**Table 11. Application performance data at 866 MHz**
*$I_{CC}$ = 20 mA; $V_{CC}$ = 3.6 V*

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $\|s_{21}\|^2$ | insertion power gain | | - | 13 | - | dB |
| NF | noise figure | | - | 1.4 | - | dB |
| $IP3_o$ | output third-order intercept point | $f_1$ = 866.1 MHz; $f_2$ = 866.2 MHz; $P_i$ = −30 dBm per carrier | - | 19 | - | dBm |

# 11. Package outline

**Plastic surface-mounted package; 3 leads** **SOT23**




**DIMENSIONS (mm are the original dimensions)**

| UNIT | A | $A_1$ max. | $b_p$ | c | D | E | e | $e_1$ | $H_E$ | $L_p$ | Q | v | w |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 1.1<br>0.9 | 0.1 | 0.48<br>0.38 | 0.15<br>0.09 | 3.0<br>2.8 | 1.4<br>1.2 | 1.9 | 0.95 | 2.5<br>2.1 | 0.45<br>0.15 | 0.55<br>0.45 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT23 | | TO-236AB | | | | ~~04-11-04~~<br>06-03-16 |

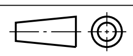


**Fig 27. Package outline SOT23**

## 12. Handling information

**CAUTION**

This device is sensitive to ElectroStatic Discharge (ESD). Observe precautions for handling electrostatic sensitive devices.

Such precautions are described in the *ANSI/ESD S20.20*, *IEC/ST 61340-5*, *JESD625-A* or equivalent standards.

## 13. Abbreviations

**Table 12. Abbreviations**

| Acronym | Description |
|---|---|
| AEC | Automotive Electronics Council |
| ISM | Industrial, Scientific and Medical |
| LNA | Low-Noise Amplifier |
| MSG | Maximum Stable Gain |
| NPN | Negative-Positive-Negative |
| SMA | SubMiniature version A |

## 14. Revision history

**Table 13. Revision history**

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|---|---|---|---|---|
| BFU550A v.1 | 20140113 | Product data sheet | - | - |

# 15. Legal information

## 15.1 Data sheet status

| Document status[1][2] | Product status[3] | Definition |
|---|---|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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## 17. Contents





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**Document identifier: BFU550A**