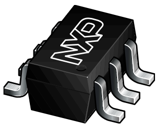


# BGA2816

## MMIC wideband amplifier

Rev. 5 — 13 July 2015 Product data sheet

## 1. Product profile

### 1.1 General description

Silicon Monolithic Microwave Integrated Circuit (MMIC) wideband amplifier with internal matching circuit in a 6-pin SOT363 plastic SMD package.

### 1.2 Features and benefits

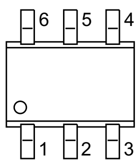
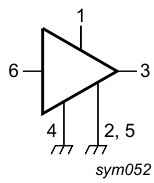
- Input internally matched to 50 Ω
- A gain of 31 dB at 950 MHz
- Output power at 1 dB gain compression = 5 dBm
- Supply current = 22.2 mA at a supply voltage of 3.3 V
- Reverse isolation > 30 dB up to 2 GHz
- Good linearity with low second order and third order products
- Noise figure = 3.1 dB at 950 MHz
- Unconditionally stable (K > 1)
- No output inductor required

### 1.3 Applications

- LNB IF amplifiers
- General purpose low noise wideband amplifier for frequencies between DC and 2.2 GHz

## 2. Pinning information

**Table 1. Pinning**

| Pin | Description | Simplified outline | Graphic symbol |
|---|---|---|---|
| 1 | $V_{CC}$ |  |  |
| 2, 5 | GND2 | | |
| 3 | RF_OUT | | |
| 4 | GND1 | | |
| 6 | RF_IN | | |

## 3. Ordering information

**Table 2. Ordering information**

| Type number | Package | | |
|---|---|---|---|
| | Name | Description | Version |
| BGA2816 | - | plastic surface-mounted package; 6 leads | SOT363 |

## 4. Marking

**Table 3. Marking**

| Type number | Marking code | Description |
|---|---|---|
| BGA2816 | *EA | * = - : made in Hong Kong |
| | | * = p : made in Hong Kong |
| | | * = W : made in China |
| | | * = t : made in Malaysia |

## 5. Limiting values

**Table 4. Limiting values**

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

| Symbol | Parameter | Conditions | Min | Max | Unit |
|---|---|---|---|---|---|
| $V_{CC}$ | supply voltage | RF input AC coupled | –0.5 | +5.0 | V |
| $I_{CC}$ | supply current | | - | 55 | mA |
| $P_{tot}$ | total power dissipation | $T_{sp}$ = 90 °C | - | 200 | mW |
| $T_{stg}$ | storage temperature | | –40 | +125 | °C |
| $T_j$ | junction temperature | | - | 125 | °C |
| $P_{drive}$ | drive power | | - | +10 | dBm |

## 6. Thermal characteristics

**Table 5. Thermal characteristics**

| Symbol | Parameter | Conditions | Typ | Unit |
|---|---|---|---|---|
| $R_{th(j-sp)}$ | thermal resistance from junction to solder point | $P_{tot}$ = 200 mW; $T_{sp}$ = 90 °C | 300 | K/W |

## 7. Characteristics

**Table 6. Characteristics**

*$V_{CC}$ = 3.3 V; $Z_S$ = $Z_L$ = 50 Ω; $P_i$ = –39 dBm; $T_{amb}$ = 25 °C; measured on demo board; unless otherwise specified.*

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{CC}$ | supply voltage | | 3.0 | 3.3 | 3.6 | V |
| $I_{CC}$ | supply current | | 18.9 | 22.2 | 25.5 | mA |

**Table 6. Characteristics** *...continued*

*$V_{CC}$ = 3.3 V; $Z_S$ = $Z_L$ = 50 Ω; $P_i$ = –39 dBm; $T_{amb}$ = 25 °C; measured on demo board; unless otherwise specified.*

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $G_p$ | power gain | f = 250 MHz | 31.4 | 32.0 | 32.6 | dB |
| | | f = 950 MHz | 30.6 | 31.3 | 32.0 | dB |
| | | f = 2150 MHz | 24.8 | 26.3 | 27.8 | dB |
| $RL_{in}$ | input return loss | f = 250 MHz | 16 | 18 | 20 | dB |
| | | f = 950 MHz | 13 | 15 | 17 | dB |
| | | f = 2150 MHz | 12 | 19 | 26 | dB |
| $RL_{out}$ | output return loss | f = 250 MHz | 23 | 27 | 32 | dB |
| | | f = 950 MHz | 12 | 13 | 14 | dB |
| | | f = 2150 MHz | 20 | 22 | 25 | dB |
| ISL | isolation | f = 250 MHz | 46 | 67 | 87 | dB |
| | | f = 950 MHz | 43 | 44 | 46 | dB |
| | | f = 2150 MHz | 35 | 38 | 40 | dB |
| NF | noise figure | f = 250 MHz | 2.6 | 3.0 | 3.5 | dB |
| | | f = 950 MHz | 2.7 | 3.1 | 3.5 | dB |
| | | f = 2150 MHz | 2.9 | 3.4 | 3.8 | dB |
| $B_{-3dB}$ | –3 dB bandwidth | 3 dB below gain at 1 GHz | 1.5 | 1.8 | 2.1 | GHz |
| K | Rollett stability factor | f = 250 MHz | 10 | 27 | 82 | |
| | | f = 950 MHz | 1.1 | 2.2 | 3.4 | |
| | | f = 2150 MHz | 1.3 | 1.9 | 2.5 | |
| $P_{L(sat)}$ | saturated output power | f = 250 MHz | 8 | 8 | 9 | dBm |
| | | f = 950 MHz | 4 | 6 | 7 | dBm |
| | | f = 2150 MHz | 0 | 1 | 2 | dBm |
| $P_{L(1dB)}$ | output power at 1 dB gain compression | f = 250 MHz | 6 | 7 | 8 | dBm |
| | | f = 950 MHz | 4 | 5 | 6 | dBm |
| | | f = 2150 MHz | –2 | –1 | 0 | dBm |
| $IP3_I$ | input third-order intercept point | $P_{drive}$ = –41 dBm (for each tone) | | | | |
| | | $f_1$ = 250 MHz; $f_2$ = 251 MHz | –15 | –13 | –11 | dBm |
| | | $f_1$ = 950 MHz; $f_2$ = 951 MHz | –18 | –16 | –13 | dBm |
| | | $f_1$ = 2150 MHz; $f_2$ = 2151 MHz | –21 | –18 | –15 | dBm |
| $IP3_O$ | output third-order intercept point | $P_{drive}$ = –41 dBm (for each tone) | | | | |
| | | $f_1$ = 250 MHz; $f_2$ = 251 MHz | 17 | 19 | 21 | dBm |
| | | $f_1$ = 950 MHz; $f_2$ = 951 MHz | 14 | 16 | 18 | dBm |
| | | $f_1$ = 2150 MHz; $f_2$ = 2151 MHz | 5 | 8 | 11 | dBm |
| $P_{L(2H)}$ | second harmonic output power | $P_{drive}$ = –38 dBm | | | | |
| | | $f_{1H}$ = 250 MHz; $f_{2H}$ = 500 MHz | –46 | –44 | –41 | dBm |
| | | $f_{1H}$ = 950 MHz; $f_{2H}$ = 1900 MHz | –39 | –37 | –35 | dBm |
| ΔIM2 | second-order intermodulation distance | $P_{drive}$ = –41 dBm (for each tone) | | | | |
| | | $f_1$ = 250 MHz; $f_2$ = 251 MHz | 29 | 40 | 51 | dBc |
| | | $f_1$ = 950 MHz; $f_2$ = 951 MHz | 17 | 28 | 40 | dBc |

# 8. Application information

Figure 1 shows a typical application circuit for the BGA2816 MMIC. The device is internally matched to 50 Ω and therefore does not need any external matching. The value of the input and output DC blocking capacitors C2 and C3 should not be more than 100 pF for applications above 100 MHz. However, when the device is operated below 100 MHz, the capacitor value should be increased.

The 22 nF supply decoupling capacitor C1 should be located as close as possible to the MMIC.

The PCB top ground plane, connected to pins 2, 4 and 5 must be as close as possible to the MMIC, preferably also below the MMIC. When using via holes, use multiple via holes as close as possible to the MMIC.

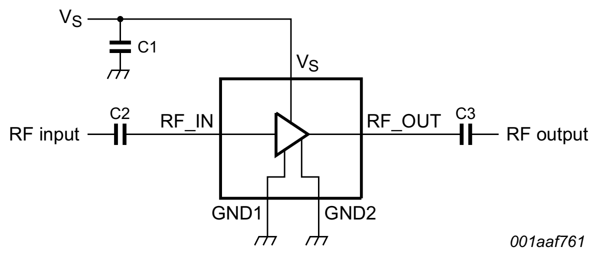
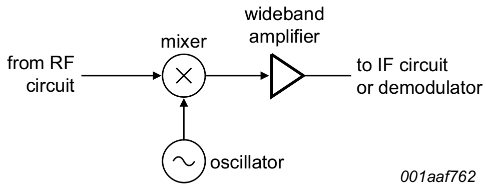


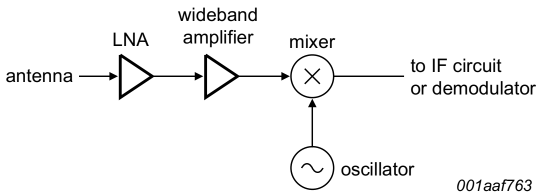

**Fig 1. Typical application circuit**

## 8.1 Application examples




The MMIC is very suitable as IF amplifier in e.g. LNB's. The excellent wideband characteristics make it an easy building block.

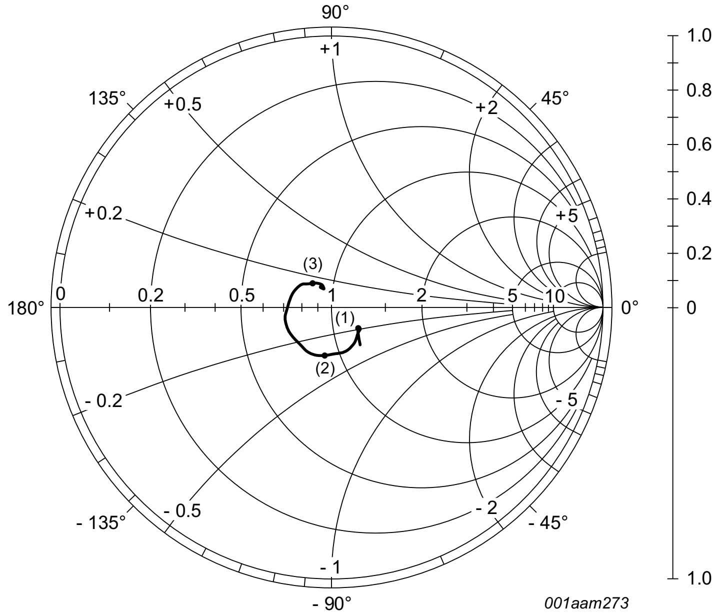
**Fig 2. Application as IF amplifier**




As second amplifier after an LNA, the MMIC offers an easy matching, low noise solution.

**Fig 3. Application as RF amplifier**

## 8.2 Graphs



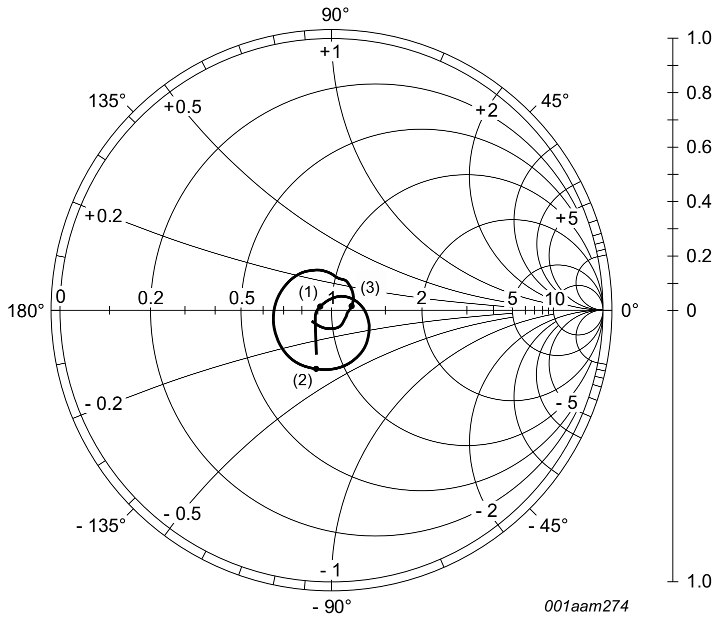

$T_{amb}$ = 25 °C; $I_{CC}$ = 21.3 mA; $V_{CC}$ = 3.3 V; $Z_0$ = 50 Ω.

(1) f = 250 MHz

(2) f = 950 MHz

(3) f = 2150 MHz

**Fig 4. Input reflection coefficient ($S_{11}$); typical values**



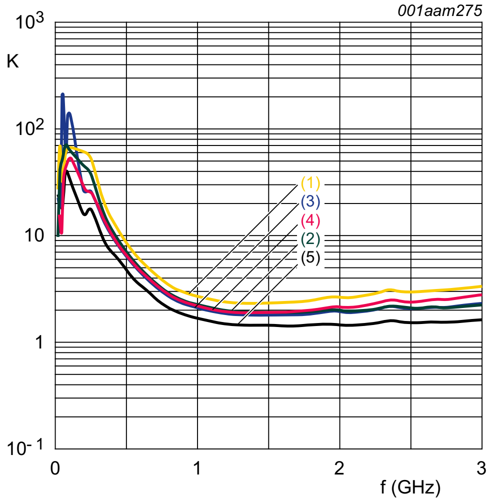

$T_{amb}$ = 25 °C; $I_{CC}$ = 21.3 mA; $V_{CC}$ = 3.3 V; $Z_0$ = 50 Ω.

(1) f = 250 MHz

(2) f = 950 MHz

(3) f = 2150 MHz

**Fig 5. Output reflection coefficient ($S_{22}$); typical values**




$P_{drive}$ = −39 dBm; $Z_0$ = 50 Ω.

(1) $V_{CC}$ = 3.0 V; $T_{amb}$ = 85 °C; $I_{CC}$ = 18.72 mA

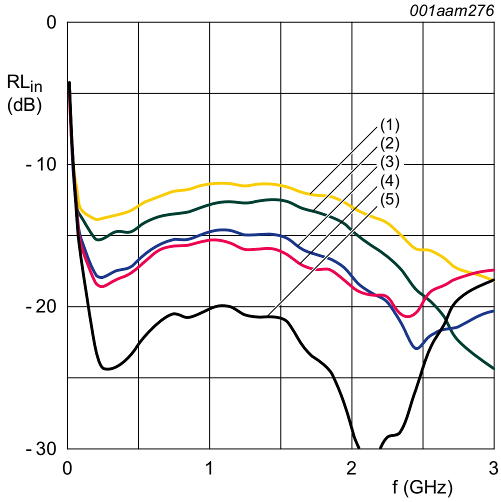
(2) $V_{CC}$ = 3.0 V; $T_{amb}$ = −40 °C; $I_{CC}$ = 19.68 mA

(3) $V_{CC}$ = 3.3 V; $T_{amb}$ = 25 °C; $I_{CC}$ = 21.32 mA

(4) $V_{CC}$ = 3.6 V; $T_{amb}$ = 85 °C; $I_{CC}$ = 23.22 mA

(5) $V_{CC}$ = 3.6 V; $T_{amb}$ = −40 °C; $I_{CC}$ = 24.60 mA

**Fig 6. Rollett stability factor as function of frequency; typical values**




$P_{drive}$ = −40 dBm; $Z_0$ = 50 Ω.

(1) $V_{CC}$ = 3.0 V; $T_{amb}$ = 85 °C; $I_{CC}$ = 18.72 mA

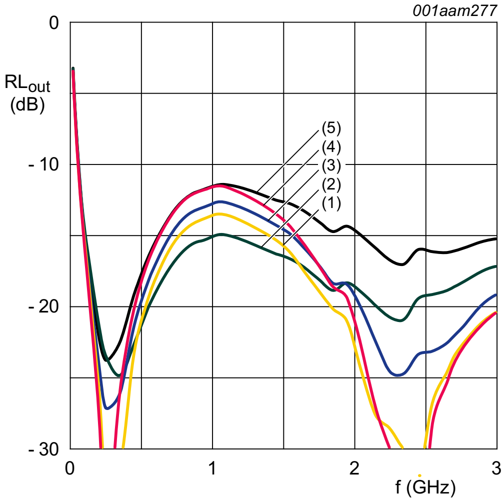
(2) $V_{CC}$ = 3.0 V; $T_{amb}$ = −40 °C; $I_{CC}$ = 19.68 mA

(3) $V_{CC}$ = 3.3 V; $T_{amb}$ = 25 °C; $I_{CC}$ = 21.32 mA

(4) $V_{CC}$ = 3.6 V; $T_{amb}$ = 85 °C; $I_{CC}$ = 23.22 mA

(5) $V_{CC}$ = 3.6 V; $T_{amb}$ = −40 °C; $I_{CC}$ = 24.60 mA

**Fig 7. Input return loss as function of frequency; typical values**




$P_{drive}$ = −39 dBm; $Z_0$ = 50 Ω.

(1) $V_{CC}$ = 3.0 V; $T_{amb}$ = 85 °C; $I_{CC}$ = 18.72 mA

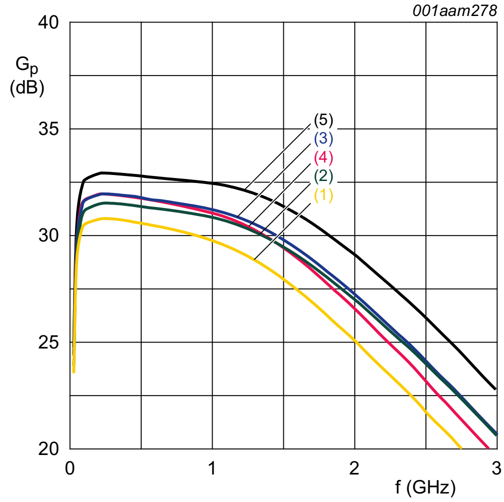
(2) $V_{CC}$ = 3.0 V; $T_{amb}$ = −40 °C; $I_{CC}$ = 19.68 mA

(3) $V_{CC}$ = 3.3 V; $T_{amb}$ = 25 °C; $I_{CC}$ = 21.32 mA

(4) $V_{CC}$ = 3.6 V; $T_{amb}$ = 85 °C; $I_{CC}$ = 23.22 mA

(5) $V_{CC}$ = 3.6 V; $T_{amb}$ = −40 °C; $I_{CC}$ = 24.60 mA

**Fig 8. Output return loss as function of frequency; typical values**




$P_{drive}$ = −39 dBm; $Z_0$ = 50 Ω.

(1) $V_{CC}$ = 3.0 V; $T_{amb}$ = 85 °C; $I_{CC}$ = 18.72 mA

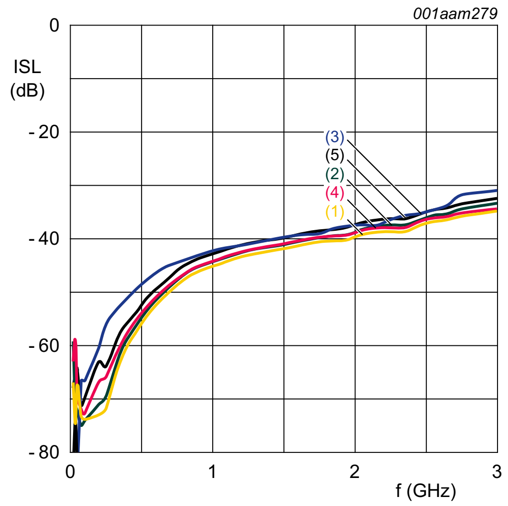
(2) $V_{CC}$ = 3.0 V; $T_{amb}$ = −40 °C; $I_{CC}$ = 19.68 mA

(3) $V_{CC}$ = 3.3 V; $T_{amb}$ = 25 °C; $I_{CC}$ = 21.32 mA

(4) $V_{CC}$ = 3.6 V; $T_{amb}$ = 85 °C; $I_{CC}$ = 23.22 mA

(5) $V_{CC}$ = 3.6 V; $T_{amb}$ = −40 °C; $I_{CC}$ = 24.60 mA

**Fig 9. Power gain as function of frequency; typical values**




$P_{drive}$ = –40 dBm; $Z_0$ = 50 Ω.

(1) $V_{CC}$ = 3.0 V; $T_{amb}$ = 85 °C; $I_{CC}$ = 18.72 mA

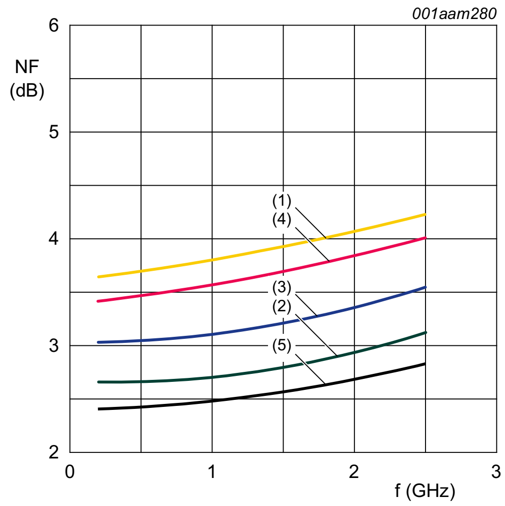
(2) $V_{CC}$ = 3.0 V; $T_{amb}$ = –40 °C; $I_{CC}$ = 19.68 mA

(3) $V_{CC}$ = 3.3 V; $T_{amb}$ = 25 °C; $I_{CC}$ = 21.32 mA

(4) $V_{CC}$ = 3.6 V; $T_{amb}$ = 85 °C; $I_{CC}$ = 23.22 mA

(5) $V_{CC}$ = 3.6 V; $T_{amb}$ = –40 °C; $I_{CC}$ = 24.60 mA

**Fig 10. Isolation as function of frequency; typical values**




$Z_0$ = 50 Ω.

(1) $V_{CC}$ = 3.0 V; $T_{amb}$ = 85 °C; $I_{CC}$ = 18.72 mA

(2) $V_{CC}$ = 3.0 V; $T_{amb}$ = –40 °C; $I_{CC}$ = 19.68 mA

(3) $V_{CC}$ = 3.3 V; $T_{amb}$ = 25 °C; $I_{CC}$ = 21.32 mA

(4) $V_{CC}$ = 3.6 V; $T_{amb}$ = 85 °C; $I_{CC}$ = 23.22 mA

(5) $V_{CC}$ = 3.6 V; $T_{amb}$ = –40 °C; $I_{CC}$ = 24.60 mA

**Fig 11. Noise figure as function of frequency; typical values**

## 8.3 Tables

**Table 7. Supply current over temperature and supply voltages**

*Typical values.*

| Symbol | Parameter | Conditions | $T_{amb}$ (°C) | | | Unit |
|---|---|---|---|---|---|---|
| | | | –40 | +25 | +85 | |
| $I_{CC}$ | supply current | $V_{CC}$ = 3.0 V | 19.68 | 18.96 | 18.72 | mA |
| | | $V_{CC}$ = 3.3 V | 22.63 | 21.32 | 20.64 | mA |
| | | $V_{CC}$ = 3.6 V | 24.60 | 23.70 | 23.22 | mA |

**Table 8. Second harmonic output power over temperature and supply voltages**

*Typical values.*

| Symbol | Parameter | Conditions | $T_{amb}$ (°C) | | | Unit |
|---|---|---|---|---|---|---|
| | | | –40 | +25 | +85 | |
| $P_{L(2H)}$ | second harmonic output power | f = 250 MHz; $P_{drive}$ = –36 dBm | | | | |
| | | $V_{CC}$ = 3.0 V | –39 | –42 | –45 | dBm |
| | | $V_{CC}$ = 3.3 V | –41 | –44 | –45 | dBm |
| | | $V_{CC}$ = 3.6 V | –43 | –44 | –46 | dBm |
| | | f = 950 MHz; $P_{drive}$ = –36 dBm | | | | |
| | | $V_{CC}$ = 3.0 V | –35 | –36 | –37 | dBm |
| | | $V_{CC}$ = 3.3 V | –36 | –37 | –37 | dBm |
| | | $V_{CC}$ = 3.6 V | –37 | –38 | –38 | dBm |

**Table 9. Input power at 1 dB gain compression over temperature and supply voltages**

*Typical values.*

| Symbol | Parameter | Conditions | $T_{amb}$ (°C) | | | Unit |
|---|---|---|---|---|---|---|
| | | | –40 | +25 | +85 | |
| $P_{i(1dB)}$ | input power at 1 dB gain compression | f = 250 MHz | | | | |
| | | $V_{CC}$ = 3.0 V | –24 | –24 | –24 | dBm |
| | | $V_{CC}$ = 3.3 V | –23 | –24 | –24 | dBm |
| | | $V_{CC}$ = 3.6 V | –23 | –24 | –24 | dBm |
| | | f = 950 MHz | | | | |
| | | $V_{CC}$ = 3.0 V | –24 | –25 | –25 | dBm |
| | | $V_{CC}$ = 3.3 V | –24 | –25 | –25 | dBm |
| | | $V_{CC}$ = 3.6 V | –24 | –25 | –25 | dBm |
| | | f = 2150 MHz | | | | |
| | | $V_{CC}$ = 3.0 V | –24 | –25 | –25 | dBm |
| | | $V_{CC}$ = 3.3 V | –25 | –25 | –26 | dBm |
| | | $V_{CC}$ = 3.6 V | –25 | –25 | –26 | dBm |

**Table 10. Output power at 1 dB gain compression over temperature and supply voltages**

*Typical values.*

| Symbol | Parameter | Conditions | $T_{amb}$ (°C) | | | Unit |
|---|---|---|---|---|---|---|
| | | | –40 | +25 | +85 | |
| $P_{L(1dB)}$ | output power at 1 dB gain compression | f = 250 MHz | | | | |
| | | $V_{CC}$ = 3.0 V | 7 | 6 | 6 | dBm |
| | | $V_{CC}$ = 3.3 V | 8 | 7 | 6 | dBm |
| | | $V_{CC}$ = 3.6 V | 8 | 8 | 7 | dBm |
| | | f = 950 MHz | | | | |
| | | $V_{CC}$ = 3.0 V | 5 | 4 | 3 | dBm |
| | | $V_{CC}$ = 3.3 V | 6 | 5 | 4 | dBm |
| | | $V_{CC}$ = 3.6 V | 7 | 6 | 5 | dBm |
| | | f = 2150 MHz | | | | |
| | | $V_{CC}$ = 3.0 V | 0 | –1 | –3 | dBm |
| | | $V_{CC}$ = 3.3 V | +1 | –1 | –2 | dBm |
| | | $V_{CC}$ = 3.6 V | +2 | 0 | –2 | dBm |

**Table 11. Saturated output power over temperature and supply voltages**

*Typical values.*

| Symbol | Parameter | Conditions | $T_{amb}$ (°C) | | | Unit |
|---|---|---|---|---|---|---|
| | | | –40 | +25 | +85 | |
| $P_{L(sat)}$ | saturated output power | f = 250 MHz | | | | |
| | | $V_{CC}$ = 3.0 V | 8 | 8 | 7 | dBm |
| | | $V_{CC}$ = 3.3 V | 8 | 8 | 8 | dBm |
| | | $V_{CC}$ = 3.6 V | 9 | 9 | 8 | dBm |
| | | f = 950 MHz | | | | |
| | | $V_{CC}$ = 3.0 V | 6 | 5 | 4 | dBm |
| | | $V_{CC}$ = 3.3 V | 6 | 6 | 5 | dBm |
| | | $V_{CC}$ = 3.6 V | 7 | 6 | 5 | dBm |
| | | f = 2150 MHz | | | | |
| | | $V_{CC}$ = 3.0 V | +2 | 0 | –1 | dBm |
| | | $V_{CC}$ = 3.3 V | +2 | +1 | –1 | dBm |
| | | $V_{CC}$ = 3.6 V | +3 | +1 | –1 | dBm |

**Table 12. Second-order intermodulation distance over temperature and supply voltages**

*Typical values.*

| Symbol | Parameter | Conditions | $T_{amb}$ (°C) | | | Unit |
|---|---|---|---|---|---|---|
| | | | –40 | +25 | +85 | |
| ΔIM2 | second-order intermodulation distance | $f_1$ = 250 MHz; $f_2$ = 251 MHz; $P_{drive}$ = –39 dBm | | | | |
| | | $V_{CC}$ = 3.0 V | 34 | 37 | 38 | dBc |
| | | $V_{CC}$ = 3.3 V | 38 | 40 | 39 | dBc |
| | | $V_{CC}$ = 3.6 V | 41 | 41 | 39 | dBc |
| | | $f_1$ = 950 MHz; $f_2$ = 951 MHz; $P_{drive}$ = –39 dBm | | | | |
| | | $V_{CC}$ = 3.0 V | 28 | 28 | 27 | dBc |
| | | $V_{CC}$ = 3.3 V | 29 | 28 | 28 | dBc |
| | | $V_{CC}$ = 3.6 V | 29 | 29 | 28 | dBc |

**Table 13. Output third-order intercept point over temperature and supply voltages**

*Typical values.*

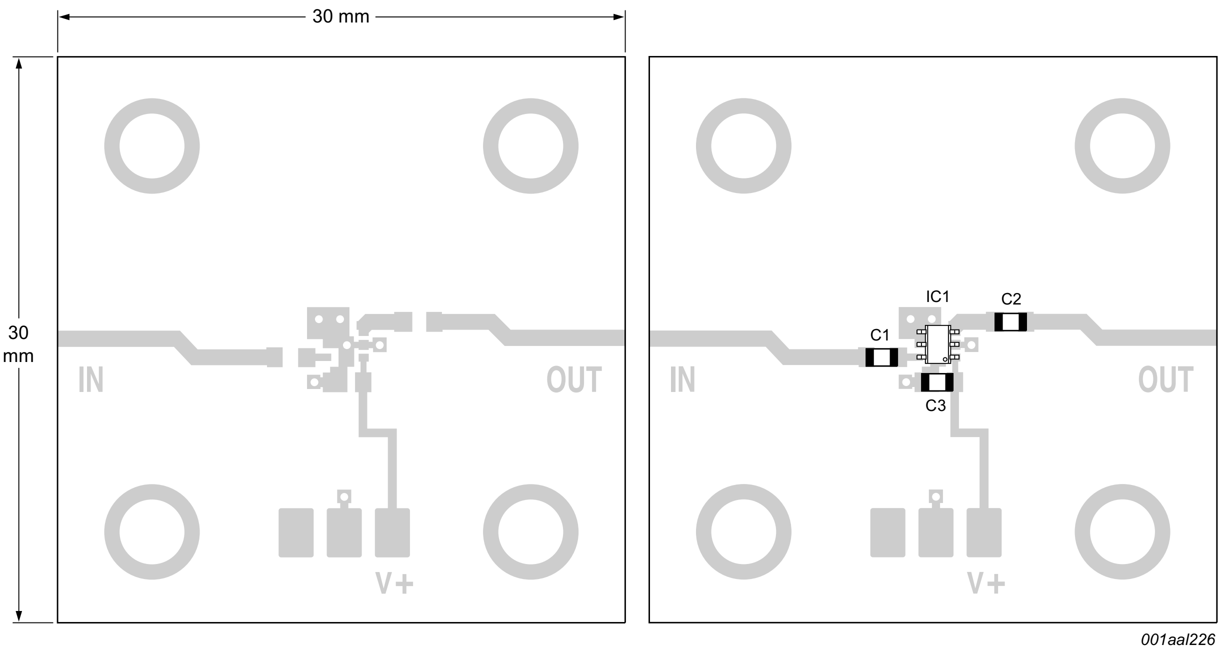
| Symbol | Parameter | Conditions | $T_{amb}$ (°C) | | | Unit |
|---|---|---|---|---|---|---|
| | | | −40 | +25 | +85 | |
| $IP3_O$ | output third-order intercept point | $f_1$ = 250 MHz; $f_2$ = 251 MHz; $P_{drive}$ = −39 dBm | | | | |
| | | $V_{CC}$ = 3.0 V | 18 | 18 | 17 | dBm |
| | | $V_{CC}$ = 3.3 V | 20 | 19 | 17 | dBm |
| | | $V_{CC}$ = 3.6 V | 21 | 20 | 18 | dBm |
| | | $f_1$ = 950 MHz; $f_2$ = 951 MHz; $P_{drive}$ = −39 dBm | | | | |
| | | $V_{CC}$ = 3.0 V | 18 | 15 | 13 | dBm |
| | | $V_{CC}$ = 3.3 V | 18 | 16 | 14 | dBm |
| | | $V_{CC}$ = 3.6 V | 18 | 17 | 14 | dBm |
| | | $f_1$ = 2150 MHz; $f_2$ = 2151 MHz; $P_{drive}$ = −39 dBm | | | | |
| | | $V_{CC}$ = 3.0 V | 11 | 8 | 6 | dBm |
| | | $V_{CC}$ = 3.3 V | 10 | 8 | 6 | dBm |
| | | $V_{CC}$ = 3.6 V | 10 | 9 | 6 | dBm |

**Table 14. −3 dB bandwidth over temperature and supply voltages**

*Typical values.*

| Symbol | Parameter | Conditions | $T_{amb}$ (°C) | | | Unit |
|---|---|---|---|---|---|---|
| | | | −40 | +25 | +85 | |
| $B_{-3dB}$ | −3 dB bandwidth | $V_{CC}$ = 3.0 V | 1.835 | 1.784 | 1.713 | GHz |
| | | $V_{CC}$ = 3.3 V | 1.888 | 1.819 | 1.735 | GHz |
| | | $V_{CC}$ = 3.6 V | 1.925 | 1.842 | 1.749 | GHz |

## 9. Test information




True size = 30 mm × 30 mm.

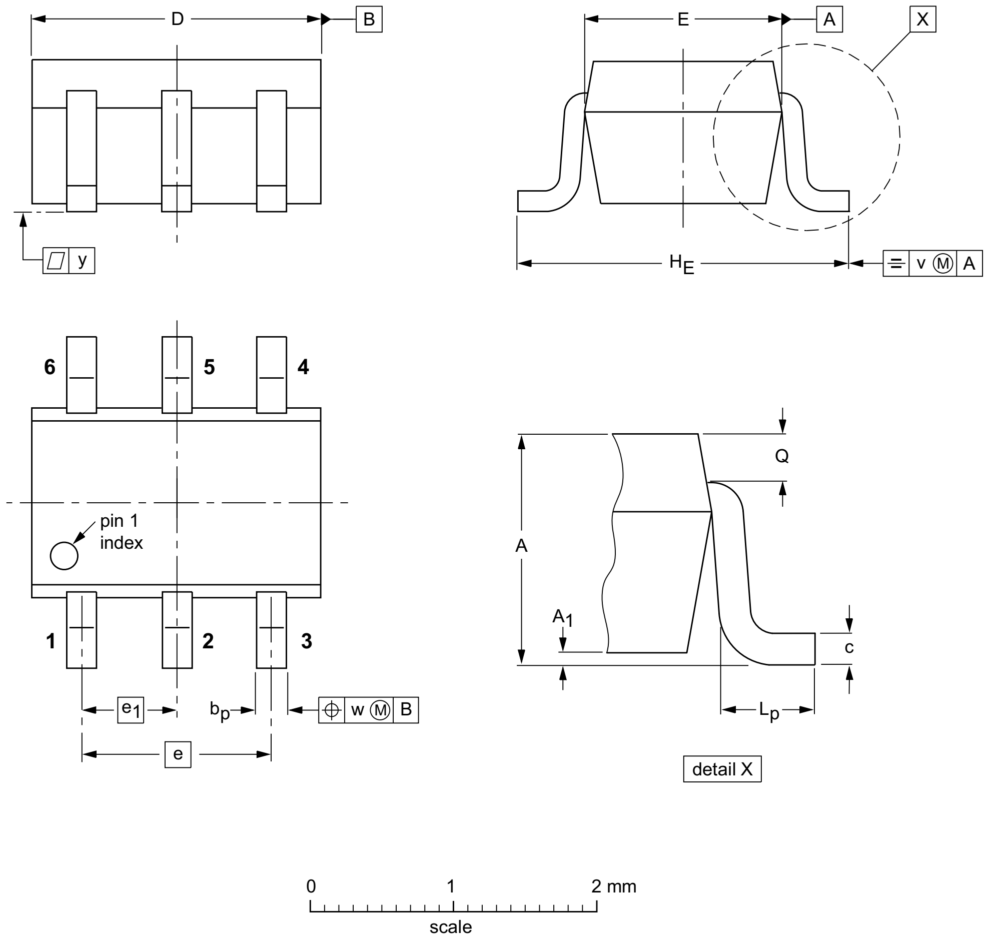
**Fig 12. PCB layout and demo board with components**

**Table 15. List of components used for the typical application**

| Component | Description | Value | Dimensions |
|---|---|---|---|
| C1, C2 | multilayer ceramic chip capacitor | 100 pF | 0603 |
| C3 | multilayer ceramic chip capacitor | 22 nF | 0603 |
| IC1 | BGA2816 MMIC | - | SOT363 |

## 10. Package outline

**Plastic surface-mounted package; 6 leads** **SOT363**




**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 | y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 1.1<br>0.8 | 0.1 | 0.30<br>0.20 | 0.25<br>0.10 | 2.2<br>1.8 | 1.35<br>1.15 | 1.3 | 0.65 | 2.2<br>2.0 | 0.45<br>0.15 | 0.25<br>0.15 | 0.2 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT363 | | | SC-88 | | | 04-11-08<br>06-03-16 |

Fig 13. Package outline SOT363

## 11. Abbreviations

**Table 16. Abbreviations**

| Acronym | Description |
|---|---|
| IF | Intermediate Frequency |
| LNA | Low-Noise Amplifier |
| LNB | Low-Noise Block converter |
| PCB | Printed-Circuit Board |
| SMD | Surface Mounted Device |

## 12. Revision history

**Table 17. Revision history**

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|---|---|---|---|---|
| BGA2816 v.5 | 20150713 | Product data sheet | - | BGA2816 v.4 |
| Modifications: | • The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.<br>• Legal texts have been adapted to the new company name where appropriate. | | | |
| BGA2816 v.4 | 20141209 | Product data sheet | - | BGA2816 v.3 |
| BGA2816 v.3 | 20130905 | Product data sheet | - | BGA2816 v.2 |
| BGA2816 v.2 | 20101029 | Product data sheet | - | BGA2816 v.1 |
| BGA2816 v.1 | 20100830 | Product data sheet | - | - |

# 13. Legal information

## 13.1 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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## 15. Contents





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