



**THE DATASHEET OF
BLM8G0710S-15PBGY**



BLM8G0710S-15PB; BLM8G0710S-15PBG

LDMOS 2-stage power MMIC

Rev. 5 — 28 September 2018

AMPLEON

Product data sheet

1. Product profile

1.1 General description

The BLM8G0710S-15PB(G) is a dual section, 2-stage power MMIC using Ampleon's state of the art GEN8 LDMOS technology. This multiband device is perfectly suited as general purpose driver or small cell final in the frequency range from 700 MHz to 1000 MHz. Available in gull wing or straight lead outline.

Table 1. Performance

Typical RF performance at $T_{case} = 25\text{ }^{\circ}\text{C}$; $I_{Dq1} = 15\text{ mA}$; $I_{Dq2} = 60\text{ mA}$.

Test signal: 3GPP test model 1; 64 DPCH; PAR = 9.9 dB at 0.01 % probability on CCDF; per section unless otherwise specified in a class-AB production circuit.

| Test signal | f | V _{DS} | P _{L(AV)} | G _p | η_D | ACPR _{5M} |
|-----------------------|-------|-----------------|--------------------|----------------|----------|--------------------|
| | (MHz) | (V) | (W) | (dB) | (%) | (dBc) |
| single carrier W-CDMA | 957.5 | 28 | 1.5 | 36 | 27 | -41 |

1.2 Features and benefits

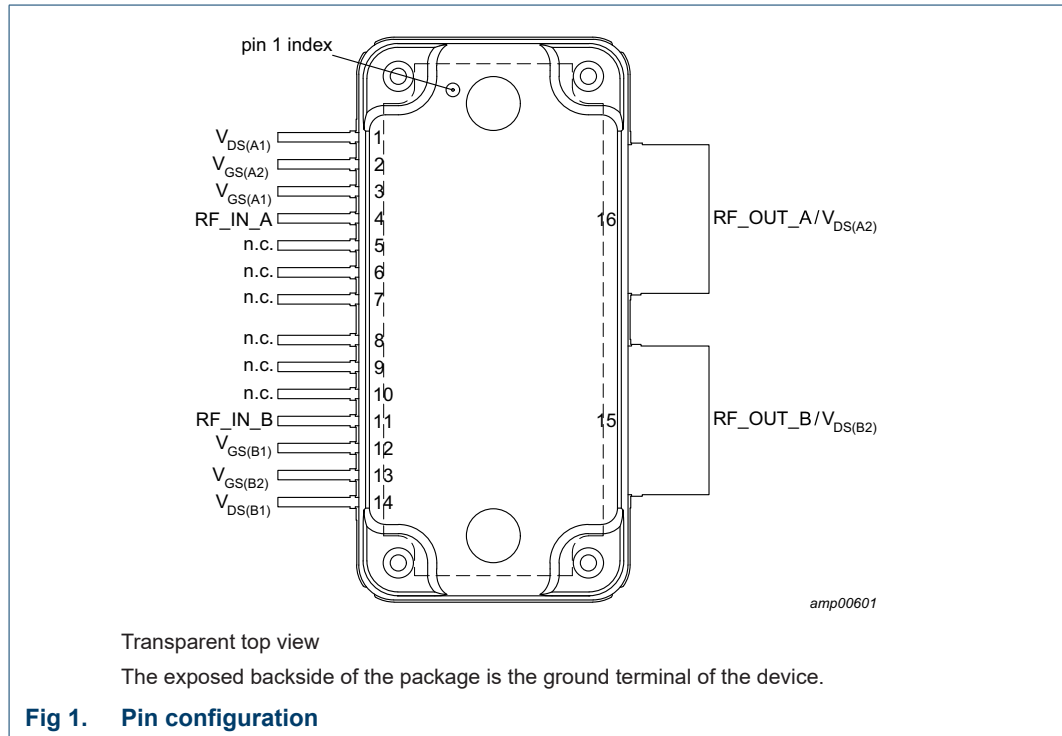
- Designed for broadband operation (frequency 700 MHz to 1000 MHz)
- High section-to-section isolation enabling multiple combinations
- Integrated temperature compensated bias
- Biasing of individual stages is externally accessible
- Integrated ESD protection
- Excellent thermal stability
- High power gain
- On-chip matching for ease of use
- For RoHS compliance see the product details on the Ampleon website

1.3 Applications

- RF power MMIC for W-CDMA base stations in the 700 MHz to 1000 MHz frequency range. Possible circuit topologies are the following as also depicted in [Section 8.1](#):
 - ◆ Dual section or single ended
 - ◆ Doherty
 - ◆ Quadrature combined
 - ◆ Push-pull

2. Pinning information

2.1 Pinning



2.2 Pin description

Table 2. Pin description

| Symbol | Pin | Description |
|--------------|-----|------------------------------------|
| $V_{DS(A1)}$ | 1 | drain-source voltage of stage (A1) |
| $V_{GS(A2)}$ | 2 | gate-source voltage of stage (A2) |
| $V_{GS(A1)}$ | 3 | gate-source voltage of stage (A1) |
| RF_IN_A | 4 | RF input section A |
| n.c. | 5 | not connected |
| n.c. | 6 | not connected |
| n.c. | 7 | not connected |
| n.c. | 8 | not connected |
| n.c. | 9 | not connected |
| n.c. | 10 | not connected |
| RF_IN_B | 11 | RF input section B |
| $V_{GS(B1)}$ | 12 | gate-source voltage of stage (B1) |
| $V_{GS(B2)}$ | 13 | gate-source voltage of stage (B2) |
| $V_{DS(B1)}$ | 14 | drain-source voltage of stage (B1) |

Table 2. Pin description ...continued

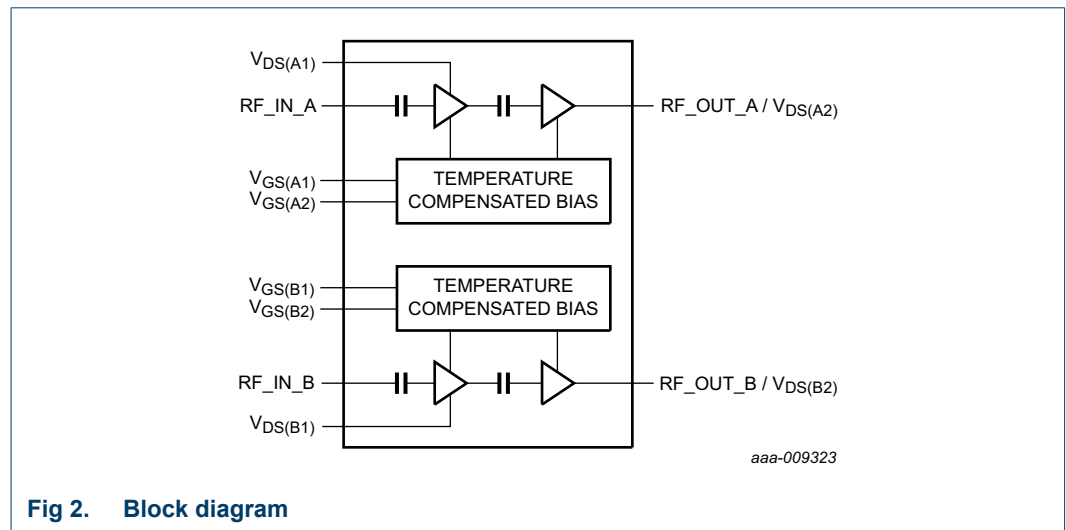
| Symbol | Pin | Description |
|------------------------|--------|--|
| RF_OUT_B/ $V_{DS(B2)}$ | 15 | RF output section B / drain-source voltage of stage (B2) |
| RF_OUT_A/ $V_{DS(A2)}$ | 16 | RF output section A / drain-source voltage of stage (A2) |
| GND | flange | RF ground |

3. Ordering information

Table 3. Ordering information

| Type number | Package | | |
|------------------|---------|--|-----------|
| | Name | Description | Version |
| BLM8G0710S-15PB | - | plastic, heatsink small outline package; 16 leads (flat) | SOT1211-3 |
| BLM8G0710S-15PBG | - | plastic, heatsink small outline package; 16 leads | SOT1212-3 |

4. Block diagram



5. Limiting values

Table 4. Limiting values

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

| Symbol | Parameter | Conditions | Min | Max | Unit |
|------------|----------------------|------------|------|------|------|
| V_{DS} | drain-source voltage | | - | 65 | V |
| V_{GS} | gate-source voltage | | -0.5 | +13 | V |
| T_{stg} | storage temperature | | -65 | +150 | °C |
| T_j | junction temperature | [1] | - | 225 | °C |
| T_{case} | case temperature | | - | 150 | °C |

[1] Continuous use at maximum temperature will affect the reliability. For details refer to the online MTF calculator.

6. Thermal characteristics

Table 5. Thermal characteristics

Measured for total device.

| Symbol | Parameter | Conditions | Value | Unit |
|----------------------|--|--|-------|------|
| R _{th(j-c)} | thermal resistance from junction to case | final stage; T _{case} = 90 °C; P _L = 1.26 W [1] | 2.41 | K/W |
| | | driver stage; T _{case} = 90 °C; P _L = 1.26 W [1] | 7.5 | K/W |

[1] When operated with a CW signal.

7. Characteristics

Table 6. DC characteristics

T_{case} = 25 °C; per section unless otherwise specified.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------------------|--|--|-----|-----|-----|------|
| Final stage | | | | | | |
| V _{(BR)DSS} | drain-source breakdown voltage | V _{GS} = 0 V; I _D = 0.12 mA | 65 | - | - | V |
| V _{GSq} | gate-source quiescent voltage | V _{DS} = 28 V; I _D = 60 mA | 1.6 | 2.1 | 2.5 | V |
| | | V _{DS} = 28 V; I _D = 60 mA [1] | 1.6 | 2.6 | 3.6 | V |
| ΔI _{Dq} /ΔT | quiescent drain current variation with temperature | -40 °C ≤ T _{case} ≤ +85 °C [1] | - | 2 | - | % |
| I _{DSS} | drain leakage current | V _{GS} = 0 V; V _{DS} = 28 V | - | - | 1.4 | μA |
| I _{DSX} | drain cut-off current | V _{GS} = 5.65 V; V _{DS} = 10 V | - | 2.2 | - | A |
| I _{GSS} | gate leakage current | V _{GS} = 1 V; V _{DS} = 0 V | - | - | 140 | nA |
| Driver stage | | | | | | |
| V _{(BR)DSS} | drain-source breakdown voltage | V _{GS} = 0 V; I _D = 0.03 mA | 65 | - | - | V |
| V _{GSq} | gate-source quiescent voltage | V _{DS} = 28 V; I _D = 15 mA | 1.6 | 2.1 | 2.5 | V |
| | | V _{DS} = 28 V; I _D = 15 mA [2] | 1.6 | 2.6 | 3.5 | V |
| ΔI _{Dq} /ΔT | quiescent drain current variation with temperature | -40 °C ≤ T _{case} ≤ +85 °C [2] | - | 2 | - | % |
| I _{DSS} | drain leakage current | V _{GS} = 0 V; V _{DS} = 28 V | - | - | 1.4 | μA |
| I _{GSS} | gate leakage current | V _{GS} = 1 V; V _{DS} = 0 V | - | - | 140 | nA |

[1] In production circuit with 1.3 kΩ gate feed resistor.

[2] In production circuit with 1.2 kΩ gate feed resistor.

Table 7. RF Characteristics

Typical RF performance at f = 957.5 MHz; T_{case} = 25 °C; V_{DS} = 28 V; I_{Dq1} = 15 mA (driver stage); I_{Dq2} = 60 mA (final stage); P_{L(AV)} = 1.5 W. Unless otherwise specified, measured in an Ampleon straight lead production circuit.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|------------------|---------------|------|-----|------|------|
| Test signal: single carrier W-CDMA [1] | | | | | | |
| G _p | power gain | f = 730.5 MHz | - | 36 | - | dB |
| | | f = 957.5 MHz | 34.5 | 36 | 37.5 | dB |
| η _D | drain efficiency | f = 730.5 MHz | - | 23 | - | % |
| | | f = 957.5 MHz | 22.5 | 27 | - | % |

Table 7. RF Characteristics ...continued

Typical RF performance at $f = 957.5$ MHz; $T_{case} = 25$ °C; $V_{DS} = 28$ V; $I_{Dq1} = 15$ mA (driver stage); $I_{Dq2} = 60$ mA (final stage); $P_{L(AV)} = 1.5$ W. Unless otherwise specified, measured in an Ampleon straight lead production circuit.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------------------------|--------------------------------------|------------------|------|-------|------|------|
| RL _{in} | input return loss | f = 730.5 MHz | - | -18 | - | dB |
| | | f = 957.5 MHz | - | -16 | -10 | dB |
| ACPR _{5M} | adjacent channel power ratio (5 MHz) | f = 730.5 MHz | - | -38.7 | - | dBc |
| | | f = 957.5 MHz | - | -41 | -36 | dBc |
| PAR _O | output peak-to-average ratio | f = 730.5 MHz | - | 8.8 | - | dB |
| | | f = 957.5 MHz | 7 | 8.1 | - | dB |
| Test signal: CW [2] | | | | | | |
| $\Delta\phi_{s21}$ | phase response difference | between sections | -10 | - | +10 | deg |
| $\Delta s_{21} ^2$ | insertion power gain difference | between sections | -0.5 | - | +0.5 | dB |

[1] 3GPP test model 1; 64 DPCH; PAR = 9.9 dB at 0.01 % probability on CCDF.

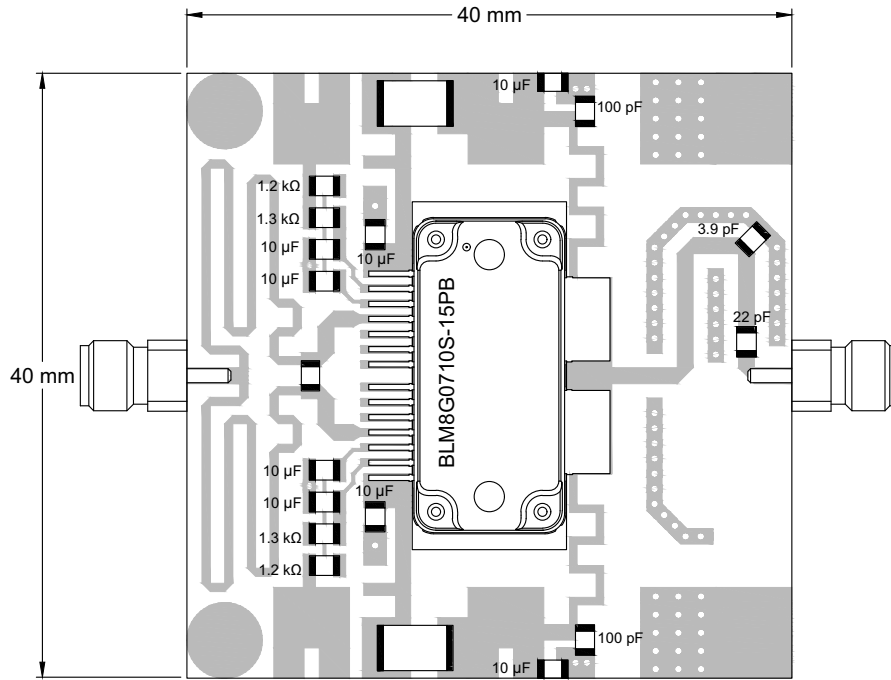
[2] f = 957.5 MHz.

8. Application information

Table 8. Typical performance

Test signal: 1-tone CW; RF performance at $T_{case} = 25$ °C; $V_{DS} = 28$ V; $I_{Dq1} = 15$ mA; $I_{Dq2} = 60$ mA unless otherwise specified, measured in an Ampleon wideband f = 700 MHz to 1000 MHz class AB application circuit.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------------------------------|---------------------------------------|---|-----|-------|-----|-------|
| P _{L(1dB)} | output power at 1 dB gain compression | f = 800 MHz | - | 23.3 | - | W |
| η_D | drain efficiency | at P _{L(1dB)} ; f = 800 MHz | - | 55 | - | % |
| G _p | power gain | P _{L(AV)} = 4 W; f = 800 MHz | - | 35 | - | dB |
| B _{video} | video bandwidth | 2-tone CW; P _{L(AV)} = 10 W; f = 800 MHz | - | 190 | - | MHz |
| G _{flat} | gain flatness | P _{L(AV)} = 4 W | - | 1 | - | dB |
| $\Delta G/\Delta T$ | gain variation with temperature | f = 800 MHz | - | 0.022 | - | dB/°C |
| s ₁₂ ² | isolation | between sections A and B; P _{L(AV)} = 4 W; f = 800 MHz | - | 29 | - | dB |
| K | Rollett stability factor | T = -40 °C; f = 0.1 GHz to 3 GHz | - | 3 | - | |



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Printed-Circuit Board (PCB): Rogers 4350; thickness = 0.508 mm.

Fig 3. Component layout for class-AB application circuit

BLM8G0710S-15PB
Single ended class AB compact board
schematics 700-1000 MHz V110

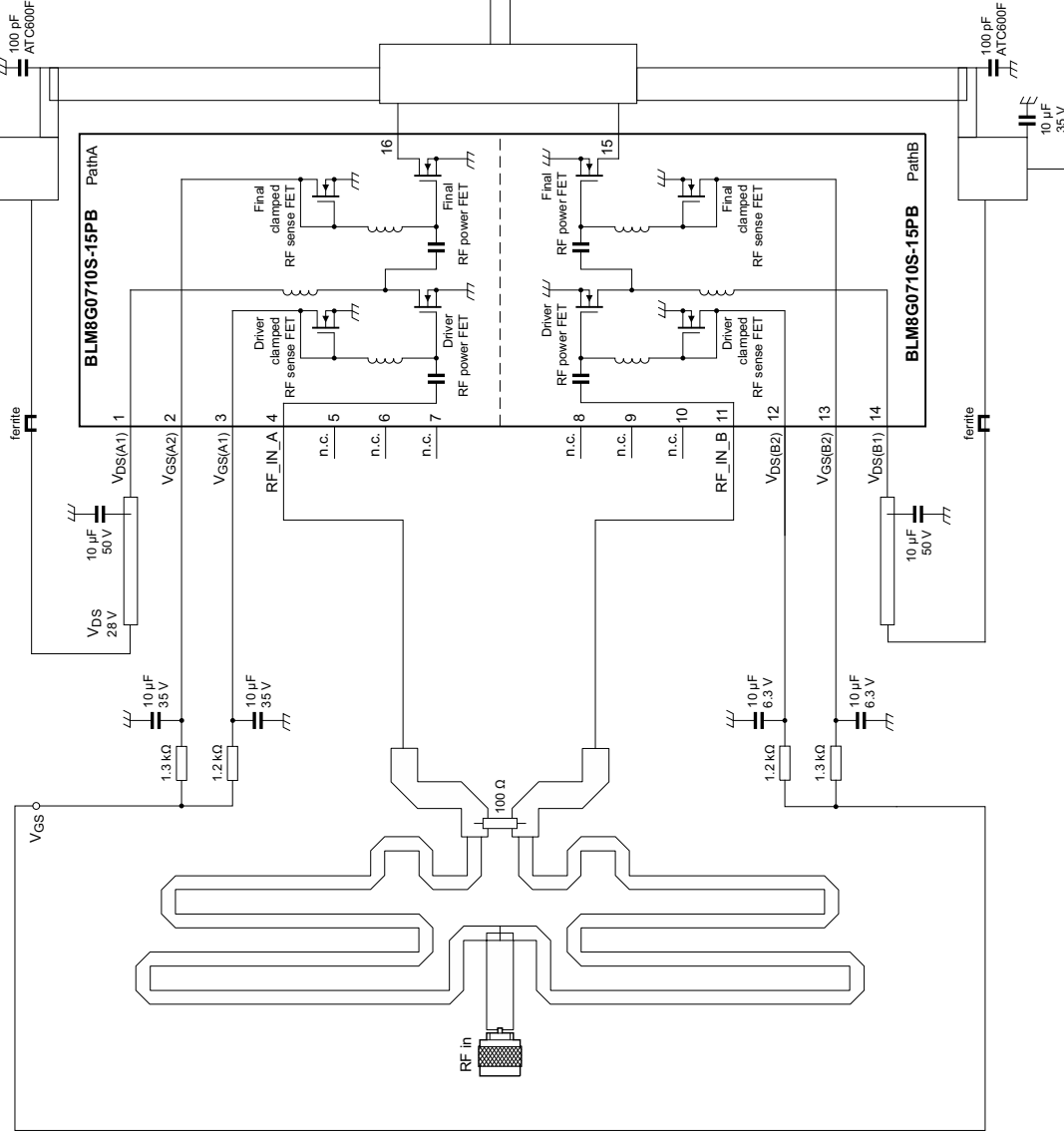


Fig 4. Electrical schematic

8.1 Possible circuit topologies

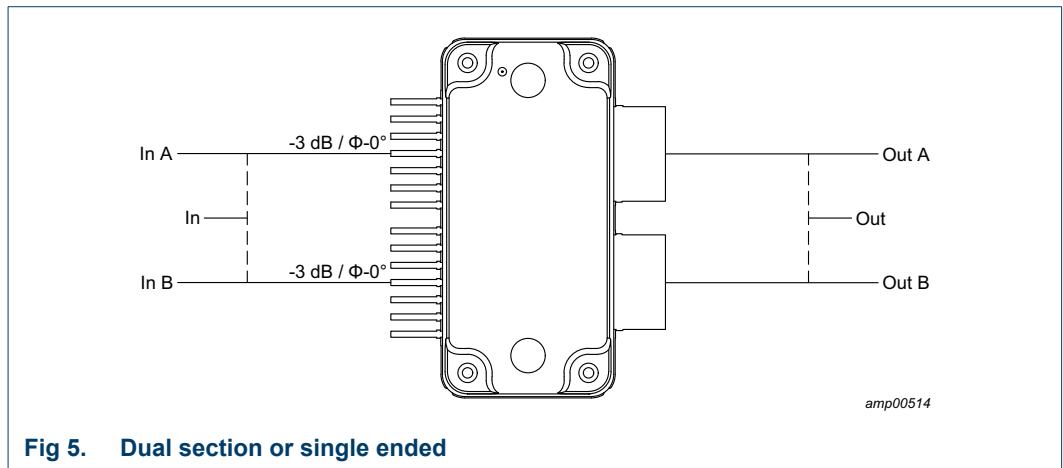


Fig 5. Dual section or single ended

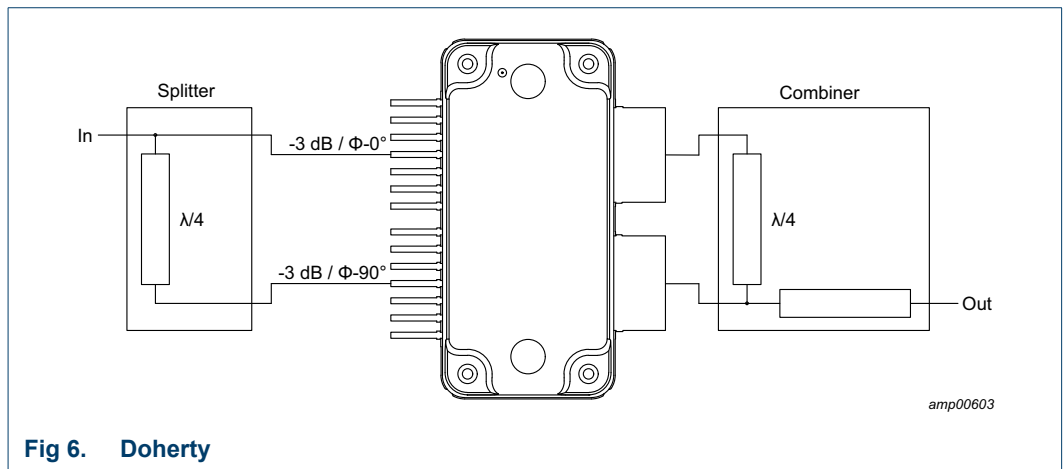


Fig 6. Doherty

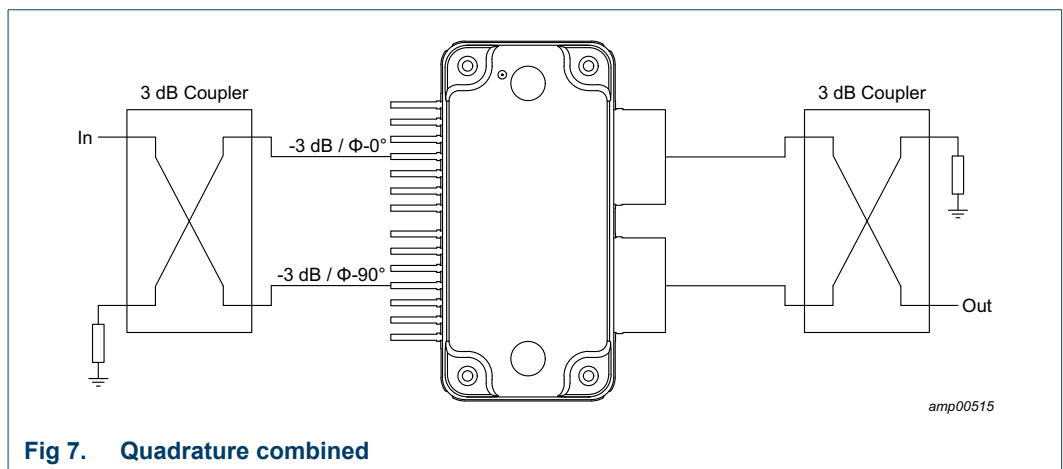


Fig 7. Quadrature combined

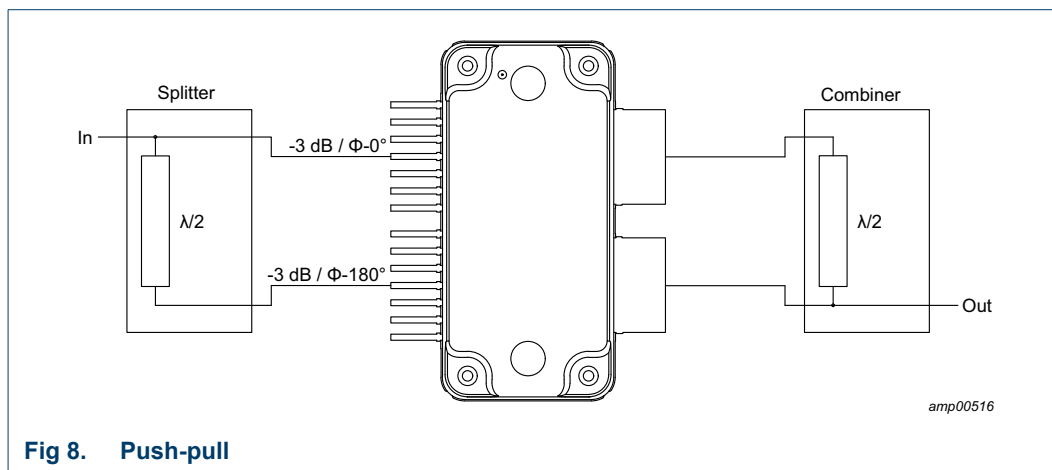


Fig 8. Push-pull

8.2 Ruggedness in class-AB operation

The BLM8G0710S-15PB and BLM8G0710S-15PBG are capable of withstanding a load mismatch corresponding to VSWR = 10 : 1 through all phases under the following conditions: $V_{DS} = 32\text{ V}$; $I_{Dq1} = 15\text{ mA}$; $I_{Dq2} = 60\text{ mA}$; P_i is corresponding to $P_{L(3dB)}$ under $Z_S = 50\ \Omega$ load; $f = 840\text{ MHz}$.

8.3 Impedance information

Table 9. Typical impedance tuned for maximum output power

Measured load-pull data per section; test signal: pulsed CW; $T_{case} = 25\text{ }^\circ\text{C}$; $V_{DS} = 28\text{ V}$; $I_{Dq1} = 15\text{ mA}$; $I_{Dq2} = 60\text{ mA}$; $t_p = 100\ \mu\text{s}$; $\delta = 10\%$; $Z_S = 50\ \Omega$. Typical values unless otherwise specified.

| f (MHz) | at 1dB gain compression point | | | | | at 3dB gain compression point | | | | |
|------------------------|-------------------------------|----------------------|----------------|---------------------|------------------------------|-------------------------------|----------------------|----------------|---------------------|------------------------------|
| | Z_L (Ω) | $G_{p(max)}$ (dB) | P_L (dBm) | η_{add} (%) | AM-PM conversion (deg) | Z_L (Ω) | $G_{p(max)}$ (dB) | P_L (dBm) | η_{add} (%) | AM-PM conversion (deg) |
| BLM8G0710S-15PB | | | | | | | | | | |
| 680 | 17.5 + j5.9 | 36.4 | 40.9 | 57.9 | -11.1 | 14.2 + j6.0 | 36.1 | 41.7 | 58.6 | -12.5 |
| 700 | 14.3 + j5.8 | 36.4 | 40.7 | 53.9 | -9.9 | 16.1 + j4.4 | 36.4 | 41.6 | 58.6 | -10.6 |
| 720 | 14.3 + j5.7 | 36.3 | 40.6 | 53.4 | -9 | 16.3 + j4.1 | 36.3 | 41.6 | 58.1 | -9.5 |
| 740 | 15.4 + j7.2 | 36.4 | 40.7 | 57 | -8.7 | 14.2 + j5.9 | 36 | 41.6 | 58 | -9.7 |
| 760 | 15.4 + j7.2 | 35.9 | 40.6 | 57.2 | -8.5 | 16.1 + j4.6 | 35.6 | 41.6 | 58.4 | -9 |
| 780 | 16.1 + j4.6 | 35.2 | 40.7 | 54.3 | -6.9 | 16.1 + j4.6 | 35.2 | 41.6 | 58.5 | -7.6 |
| 800 | 14.2 + j5.9 | 34.9 | 40.6 | 53.4 | -6.2 | 16.0 + j4.5 | 34.9 | 41.6 | 58.3 | -6.2 |
| 820 | 14.1 + j5.9 | 34.8 | 40.7 | 54.4 | -5.4 | 16.0 + j4.5 | 34.7 | 41.7 | 58.9 | -5.4 |
| 840 | 14.1 + j5.9 | 34.8 | 40.8 | 54.7 | -5.2 | 16.0 + j4.6 | 34.7 | 41.7 | 58.8 | -5.3 |
| 860 | 16.0 + j4.6 | 34.7 | 40.8 | 54.7 | -4.2 | 18.3 + j3.7 | 34.7 | 41.8 | 59.8 | -3.7 |
| 880 | 18.3 + j3.6 | 34.7 | 40.9 | 55.4 | -3.4 | 18.3 + j3.6 | 34.7 | 41.8 | 59.8 | -3 |
| 900 | 18.2 + j3.6 | 34.9 | 40.9 | 55.4 | -2.9 | 18.2 + j3.6 | 34.9 | 41.8 | 59.4 | -2.4 |
| 920 | 18.2 + j3.7 | 35 | 40.9 | 54.8 | -3 | 18.2 + j3.7 | 35 | 41.8 | 58.9 | -2.6 |
| 940 | 18.2 + j3.8 | 35.2 | 40.8 | 54.7 | -4.1 | 18.2 + j3.8 | 35.2 | 41.8 | 58.7 | -4.1 |
| 960 | 18.3 + j3.8 | 35.2 | 40.8 | 54 | -4.5 | 16.0 + j4.7 | 35.3 | 41.7 | 58.5 | -5.2 |

Table 9. Typical impedance tuned for maximum output power ...continued

Measured load-pull data per section; test signal: pulsed CW; $T_{case} = 25\text{ }^{\circ}\text{C}$; $V_{DS} = 28\text{ V}$; $I_{Dq1} = 15\text{ mA}$; $I_{Dq2} = 60\text{ mA}$; $t_p = 100\text{ }\mu\text{s}$; $\delta = 10\text{ }\%$; $Z_S = 50\text{ }\Omega$. Typical values unless otherwise specified.

| f | at 1dB gain compression point | | | | | at 3dB gain compression point | | | | |
|-------------------------|-------------------------------|---------------------|----------------|--------------|------------------|-------------------------------|---------------------|----------------|--------------|------------------|
| | Z _L | G _{p(max)} | P _L | η_{add} | AM-PM conversion | Z _L | G _{p(max)} | P _L | η_{add} | AM-PM conversion |
| | (MHz) | (Ω) | (dB) | (dBm) | (%) | (deg) | (Ω) | (dB) | (dBm) | (%) |
| 980 | 18.3 + j3.7 | 35.1 | 40.7 | 53.5 | -5.1 | 18.3 + j3.7 | 35.1 | 41.7 | 57.7 | -5.6 |
| 1000 | 18.2 + j3.7 | 34.9 | 40.6 | 52.7 | -5.6 | 18.2 + j3.7 | 34.9 | 41.6 | 57.2 | -6.7 |
| BLM8G0710S-15PBG | | | | | | | | | | |
| 700 | 14.6 + j5.2 | 35.8 | 40.7 | 53.7 | -10.5 | 15.3 + j4.0 | 35.7 | 41.7 | 56.7 | -11.7 |
| 720 | 14.1 + j6.2 | 35.8 | 40.7 | 54.7 | -9 | 15.8 + j4.3 | 35.7 | 41.6 | 57.8 | -9.6 |
| 740 | 14.2 + j5.1 | 35.7 | 40.7 | 52.9 | -8 | 15.8 + j3.9 | 35.6 | 41.6 | 56.7 | -9.2 |
| 760 | 15.0 + j4.1 | 35.3 | 40.6 | 52.5 | -8.1 | 14.9 + j3.3 | 35.2 | 41.6 | 55.2 | -9.3 |
| 780 | 14.9 + j4.2 | 34.6 | 40.6 | 52.1 | -7.7 | 15.5 + j2.9 | 34.4 | 41.6 | 54.9 | -8.5 |
| 800 | 14.7 + j4.7 | 34.5 | 40.8 | 53.6 | -7 | 15.5 + j3.3 | 34.3 | 41.7 | 56.3 | -7.3 |
| 820 | 14.8 + j4.1 | 34.2 | 40.8 | 52.7 | -5.7 | 15.7 + j3.4 | 34.1 | 41.7 | 56.3 | -5.9 |
| 0.84 | 15.4 + j4.1 | 34.2 | 40.9 | 54 | -4.3 | 16.1 + j2.5 | 34 | 41.8 | 56.1 | -4.7 |
| 860 | 16.1 + j3.0 | 34.1 | 40.9 | 52.6 | -4 | 16.1 + j3.0 | 34.1 | 41.8 | 56.3 | -4.3 |
| 880 | 17.5 + j3.4 | 34.3 | 40.8 | 53.4 | -4 | 16.0 + j2.8 | 34.2 | 41.8 | 55.4 | -4.5 |
| 900 | 17.8 + j2.7 | 34.3 | 40.8 | 52.4 | -3.7 | 17.9 + j1.7 | 34.2 | 41.7 | 54.8 | -4.1 |
| 920 | 17.3 + j2.8 | 34.5 | 40.8 | 52.7 | -3.6 | 17.3 + j1.9 | 34.4 | 41.8 | 55 | -4.1 |
| 940 | 17.4 + j2.7 | 34.6 | 40.7 | 51.8 | -4 | 17.3 + j1.8 | 34.4 | 41.7 | 54.4 | -4.2 |
| 960 | 17.6 + j3.5 | 34.8 | 40.7 | 52.4 | -4.1 | 16.8 + j2.5 | 34.7 | 41.7 | 54.9 | -4.8 |
| 980 | 18.5 + j3.0 | 34.7 | 40.6 | 51.5 | -4.5 | 16.9 + j2.5 | 34.7 | 41.6 | 54.6 | -5.6 |
| 1000 | 19.3 + j1.9 | 34.2 | 40.6 | 50.3 | -5 | 17.6 + j2.5 | 34.3 | 41.6 | 54.9 | -6.1 |

Table 10. Typical impedance tuned for maximum power added efficiency

Measured load-pull data per section; test signal: pulsed CW; $T_{case} = 25\text{ }^{\circ}\text{C}$; $V_{DS} = 28\text{ V}$; $I_{Dq1} = 15\text{ mA}$; $I_{Dq2} = 60\text{ mA}$; $t_p = 100\text{ }\mu\text{s}$; $\delta = 10\text{ }\%$; $Z_S = 50\text{ }\Omega$. Typical values unless otherwise specified.

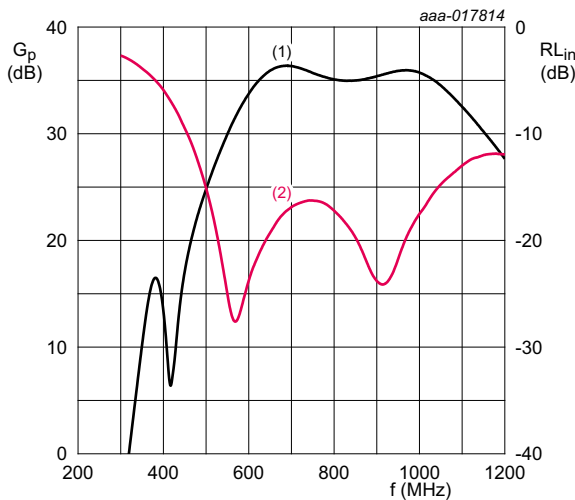
| f | at 1dB gain compression point | | | | | at 3dB gain compression point | | | | |
|------------------------|-------------------------------|---------------------|----------------|--------------|------------------|-------------------------------|---------------------|----------------|--------------|------------------|
| | Z _L | G _{p(max)} | P _L | η_{add} | AM-PM conversion | Z _L | G _{p(max)} | P _L | η_{add} | AM-PM conversion |
| | (MHz) | (Ω) | (dB) | (dBm) | (%) | (deg) | (Ω) | (dB) | (dBm) | (%) |
| BLM8G0710S-15PB | | | | | | | | | | |
| 680 | 21.4 + j15.6 | 37.4 | 39.7 | 63.9 | -11.6 | 18.4 + j18.2 | 37.7 | 40 | 66.4 | -14.8 |
| 700 | 20.7 + j20.5 | 38 | 38.8 | 63.7 | -10.6 | 23.8 + j16.8 | 37.7 | 40.2 | 66.6 | -9.6 |
| 720 | 20.1 + j22.8 | 38 | 38.3 | 63.5 | -9.6 | 21.1 + j18.1 | 37.7 | 40 | 66.5 | -10.1 |
| 740 | 18.4 + j18.1 | 37.6 | 39.1 | 64 | -9.7 | 21.1 + j18.1 | 37.5 | 40 | 66.9 | -9.3 |
| 760 | 21.1 + j18.1 | 37.1 | 39.1 | 63.8 | -7.9 | 18.7 + j16.1 | 37.1 | 40.3 | 67 | -10 |
| 780 | 21.1 + j18.1 | 36.8 | 39.1 | 63.3 | -6.6 | 21.1 + j18.1 | 36.8 | 40 | 66.2 | -6.4 |
| 800 | 17.9 + j20.2 | 36.8 | 38.6 | 62.8 | -6.5 | 20.6 + j20.5 | 36.7 | 39.6 | 66.2 | -4.7 |
| 820 | 17.8 + j20.2 | 36.6 | 38.8 | 63.7 | -5.8 | 18.6 + j16.0 | 36.3 | 40.4 | 67.3 | -5.5 |
| 840 | 18.2 + j18.1 | 36.4 | 39.2 | 64 | -5.3 | 21.0 + j18.1 | 36.3 | 40.2 | 67.4 | -3.4 |
| 860 | 18.7 + j16.1 | 36.2 | 39.7 | 64.3 | -4.6 | 18.3 + j18.2 | 36.4 | 40.1 | 67.6 | -4.2 |

Table 10. Typical impedance tuned for maximum power added efficiency ...continued

Measured load-pull data per section; test signal: pulsed CW; $T_{case} = 25\text{ }^{\circ}\text{C}$; $V_{DS} = 28\text{ V}$; $I_{Dq1} = 15\text{ mA}$; $I_{Dq2} = 60\text{ mA}$; $t_p = 100\text{ }\mu\text{s}$; $\delta = 10\text{ }\%$; $Z_S = 50\text{ }\Omega$. Typical values unless otherwise specified.

| f | at 1dB gain compression point | | | | | at 3dB gain compression point | | | | |
|-------------------------|-------------------------------|---------------------|----------------|--------------|------------------|-------------------------------|---------------------|----------------|--------------|------------------|
| | Z _L | G _{p(max)} | P _L | η_{add} | AM-PM conversion | Z _L | G _{p(max)} | P _L | η_{add} | AM-PM conversion |
| | (MHz) | (Ω) | (dB) | (dBm) | (%) | (deg) | (Ω) | (dB) | (dBm) | (%) |
| 880 | 17.9 + j20.1 | 36.6 | 39 | 64.4 | -4.3 | 17.9 + j20.1 | 36.6 | 39.8 | 67.3 | -3.5 |
| 900 | 18.3 + j18.1 | 36.6 | 39.4 | 64.4 | -3.8 | 16.4 + j14.9 | 36.4 | 40.7 | 67.1 | -4.1 |
| 920 | 16.3 + j14.9 | 36.6 | 39.8 | 63.4 | -4.6 | 18.6 + j16.0 | 36.5 | 40.5 | 66.2 | -2.7 |
| 940 | 15.4 + j19.2 | 37 | 38.9 | 63.3 | -5.5 | 15.9 + j17.2 | 36.9 | 40.1 | 65.7 | -4.7 |
| 960 | 15.4 + j19.2 | 37 | 38.9 | 63.2 | -5.6 | 15.4 + j19.2 | 37 | 39.7 | 66.1 | -4.7 |
| 980 | 15.9 + j17.2 | 36.7 | 39.2 | 62.5 | -5.6 | 15.9 + j17.2 | 36.7 | 40.1 | 65.5 | -4.9 |
| 1000 | 13.6 + j17.6 | 36.6 | 38.7 | 61.4 | -6.3 | 16.4 + j14.9 | 36.3 | 40.5 | 65.3 | -5.5 |
| 680 | 21.4 + j15.6 | 37.4 | 39.7 | 63.9 | -11.6 | 18.4 + j18.2 | 37.7 | 40 | 66.4 | -14.8 |
| 700 | 20.7 + j20.5 | 38 | 38.8 | 63.7 | -10.6 | 23.8 + j16.8 | 37.7 | 40.2 | 66.6 | -9.6 |
| 720 | 20.1 + j22.8 | 38 | 38.3 | 63.5 | -9.6 | 21.1 + j18.1 | 37.7 | 40 | 66.5 | -10.1 |
| 740 | 18.4 + j18.1 | 37.6 | 39.1 | 64 | -9.7 | 21.1 + j18.1 | 37.5 | 40 | 66.9 | -9.3 |
| 760 | 21.1 + j18.1 | 37.1 | 39.1 | 63.8 | -7.9 | 18.7 + j16.1 | 37.1 | 40.3 | 67 | -10 |
| 780 | 21.1 + j18.1 | 36.8 | 39.1 | 63.3 | -6.6 | 21.1 + j18.1 | 36.8 | 40 | 66.2 | -6.4 |
| BLM8G0710S-15PBG | | | | | | | | | | |
| 700 | 18.8 + j16.8 | 37.2 | 39.2 | 60.9 | -11.4 | 19.8 + j14.0 | 37 | 40.5 | 63.4 | -11.8 |
| 720 | 19.3 + j17.3 | 37 | 39.1 | 61.7 | -9.8 | 19.8 + j15.2 | 36.9 | 40.4 | 64.4 | -10.3 |
| 740 | 18.3 + j16.0 | 37.1 | 39.3 | 61.2 | -9.3 | 19.0 + j14.7 | 37 | 40.4 | 63.9 | -10.4 |
| 760 | 18.5 + j16.6 | 36.9 | 39.1 | 60.8 | -8.7 | 19.7 + j17.0 | 36.9 | 40 | 63.6 | -8.6 |
| 780 | 18.3 + j16.1 | 36.1 | 39.2 | 60.4 | -8.1 | 18.3 + j16.1 | 36.1 | 40.1 | 63.2 | -8.4 |
| 800 | 17.0 + j15.1 | 36 | 39.5 | 61.1 | -7.7 | 18.0 + j15.6 | 36 | 40.3 | 64.1 | -7.6 |
| 820 | 18.1 + j16.5 | 35.8 | 39.3 | 61.1 | -6 | 19.0 + j16.0 | 35.7 | 40.3 | 64.2 | -5 |
| 840 | 16.9 + j16.1 | 35.7 | 39.4 | 62.1 | -5.4 | 17.7 + j15.6 | 35.6 | 40.4 | 64.8 | -4.3 |
| 860 | 16.8 + j16.1 | 35.8 | 39.4 | 61.6 | -4.8 | 15.9 + j15.7 | 35.8 | 40.2 | 64.1 | -5.6 |
| 880 | 16.1 + j15.4 | 35.9 | 39.4 | 60.7 | -5.3 | 15.9 + j14.7 | 35.8 | 40.4 | 63 | -5.6 |
| 900 | 15.7 + j16.2 | 36.1 | 39.2 | 60.5 | -5.1 | 15.6 + j15.4 | 36 | 40.2 | 62.9 | -5 |
| 920 | 16.0 + j15.5 | 36.2 | 39.4 | 60.7 | -4.6 | 15.9 + j14.7 | 36.1 | 40.4 | 63.1 | -4.1 |
| 940 | 16.2 + j15.7 | 36.2 | 39.3 | 59.9 | -4.6 | 16.0 + j14.8 | 36.2 | 40.3 | 62.4 | -4 |
| 960 | 15.6 + j15.3 | 36.3 | 39.3 | 59.3 | -4.5 | 15.5 + j14.4 | 36.3 | 40.3 | 62.3 | -4.3 |
| 980 | 15.7 + j15.2 | 36.2 | 39.3 | 59.1 | -4.7 | 14.8 + j14.7 | 36.2 | 40.2 | 62.5 | -4 |
| 1000 | 14.8 + j15.6 | 35.8 | 39.1 | 59.2 | -4.5 | 14.6 + j14.0 | 35.8 | 40.4 | 62.8 | -4.5 |

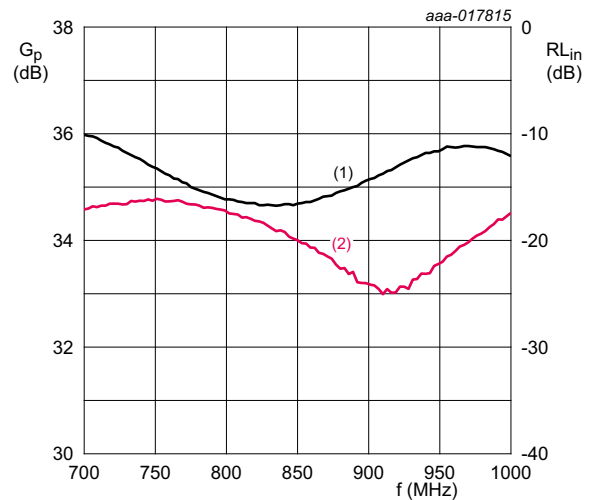
8.4 Graphs



$T_{case} = 25\text{ }^\circ\text{C}$; $V_{DS} = 28\text{ V}$; $I_{Dq1} = 15\text{ mA}$; $I_{Dq2} = 60\text{ mA}$; $P_L = 0.2\text{ W}$. Per section.

- (1) magnitude of G_p
- (2) magnitude of RL_{in}

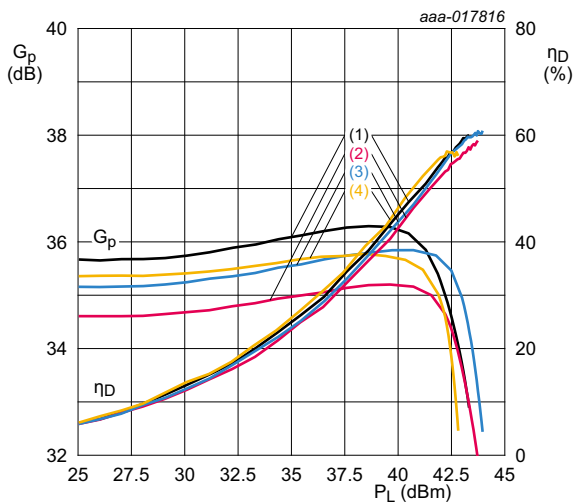
Fig 9. Wideband power gain and input return loss as function of frequency; typical values



$T_{case} = 25\text{ }^\circ\text{C}$; $V_{DS} = 28\text{ V}$; $I_{Dq1} = 15\text{ mA}$; $I_{Dq2} = 60\text{ mA}$; $P_L = 0.2\text{ W}$. Per section.

- (1) magnitude of G_p
- (2) magnitude of RL_{in}

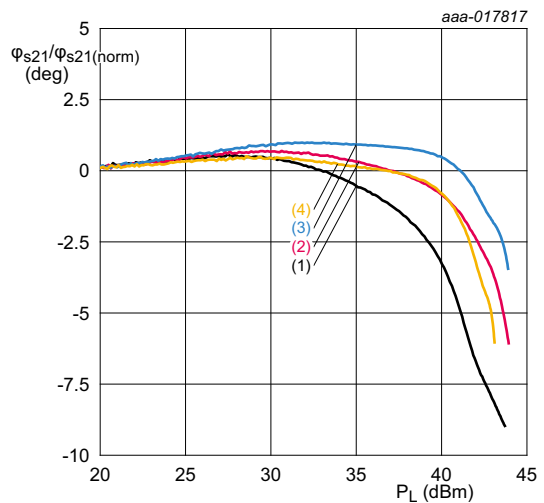
Fig 10. In-band power gain and input return loss as function of frequency; typical values



$T_{case} = 25\text{ }^\circ\text{C}$; $V_{DS} = 28\text{ V}$; $I_{Dq1} = 15\text{ mA}$; $I_{Dq2} = 60\text{ mA}$. Per section.

- (1) $f = 700\text{ MHz}$
- (2) $f = 800\text{ MHz}$
- (3) $f = 900\text{ MHz}$
- (4) $f = 1000\text{ MHz}$

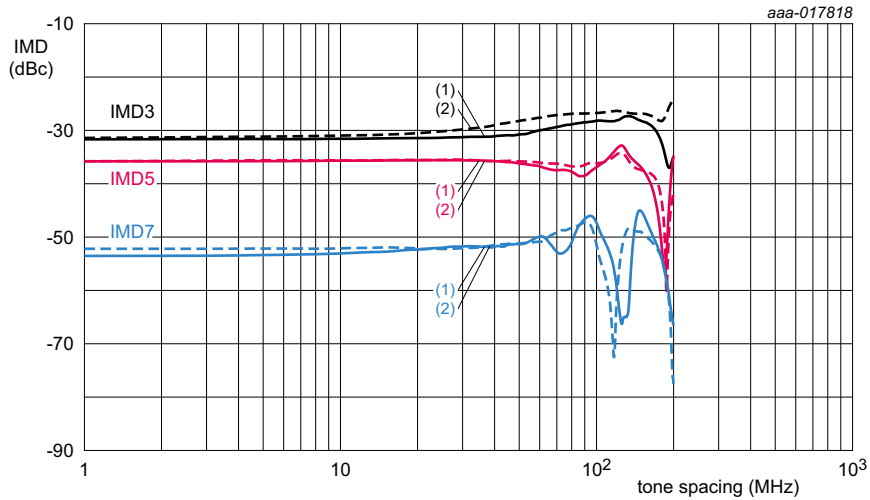
Fig 11. Power gain and drain efficiency as function of output power; typical values



Normalized at $P_L = 26\text{ dBm}$; $T_{case} = 25\text{ }^\circ\text{C}$; $V_{DS} = 28\text{ V}$; $I_{Dq1} = 15\text{ mA}$; $I_{Dq2} = 60\text{ mA}$. Per section.

- (1) $f = 700\text{ MHz}$
- (2) $f = 800\text{ MHz}$
- (3) $f = 900\text{ MHz}$
- (4) $f = 1000\text{ MHz}$

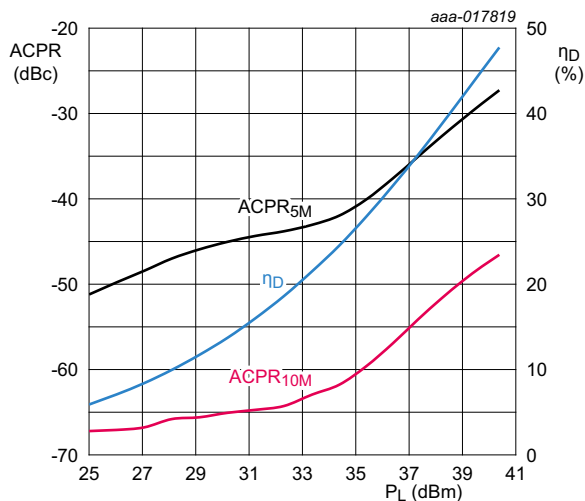
Fig 12. Normalized phase response as a function of output power; typical values



$T_{case} = 25\text{ }^{\circ}\text{C}$; $V_{DS} = 28\text{ V}$; $I_{Dq1} = 15\text{ mA}$; $I_{Dq2} = 60\text{ mA}$; $f = 881\text{ MHz}$; 2-tone CW; $P_L = 5\text{ W}$. Per section.

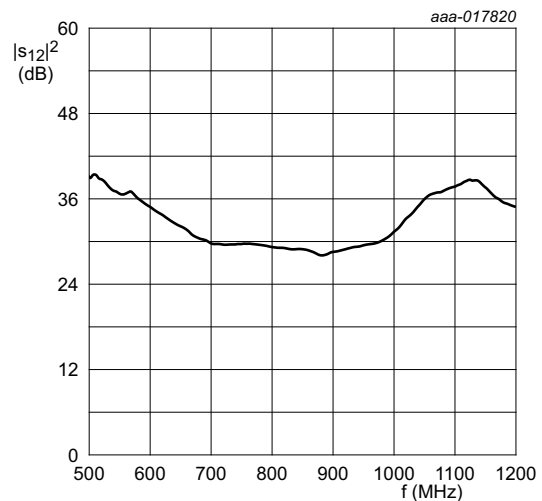
- (1) IMD low
- (2) IMD high

Fig 13. Intermodulation distortion as a function of tone spacing; typical values



$T_{case} = 25\text{ }^{\circ}\text{C}$; $V_{DS} = 28\text{ V}$; $I_{Dq1} = 16\text{ mA}$; $I_{Dq2} = 60\text{ mA}$;
 $f = 900\text{ MHz}$; 1-carrier W-CDMA; test model 1;
 PAR = 9.9 dB at 0.01 % probability on CCDF. Per section.

Fig 14. Adjacent channel power ratio and drain efficiency as function of output power; typical values

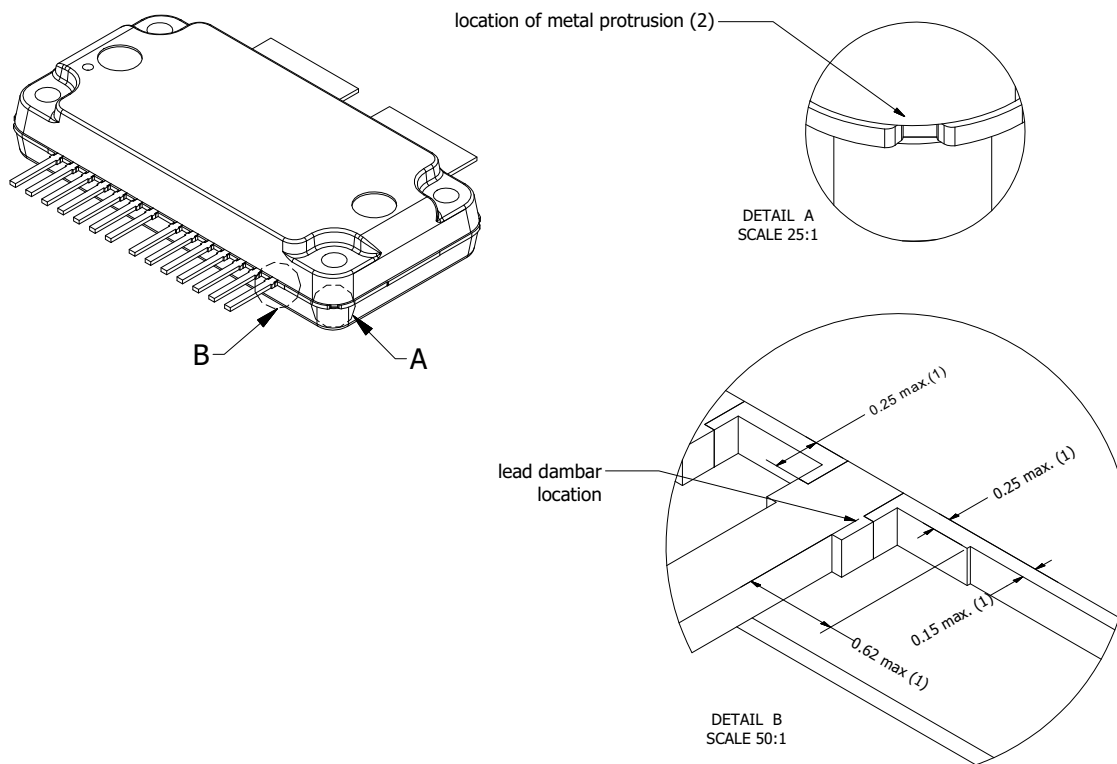


$T_{case} = 25\text{ }^{\circ}\text{C}$; $V_{DS} = 28\text{ V}$; $I_{Dq1} = 15\text{ mA}$; $I_{Dq2} = 60\text{ mA}$;
 measured on evaluation board.

Fig 15. Isolation as a function of frequency; typical values

SOT1211-3

| Drawing Notes | |
|---------------|---|
| Items | Description |
| (1) | Dimensions are excluding mold protrusion. Areas located adjacent to the leads have a maximum mold protrusion of 0.25 mm (per side) and 0.62 mm max. in length. In between the 14 leads the protrusion is 0.25 mm. max. At all other areas the mold protrusion is maximum 0.15 mm per side. See also detail B. |
| (2) | The metal protrusion (tie bars) in the corner will not stick out of the molding compound protrusions (detail A). |
| (3) | The lead dambar (metal) protrusions are not included. Add 0.14 mm max to the total lead dimension at the dambar location. |
| (4) | The lead coplanarity over all leads is 0.1 mm maximum. |
| (5) | Dimension is measured 0.5 mm from the edge of the top package body. |
| (6) | The hatched area indicates the exposed metal heatsink. |
| (7) | The leads and exposed heatsink are plated with matte Tin (Sn). |



| | | | |
|--------------------------|--------------|---|---|
| Package outline drawing: | units in mm. | Tolerances unless otherwise stated: Dimension: ± 0.05 Angle: $\pm 1^\circ$ | Revision: 1 Revision date: 7/26/2018 |
| SOT1211-3 | | Third angle projection | Sheet 2 of 2 |

Fig 17. Package outline SOT1211-3 (sheet 2 of 2)

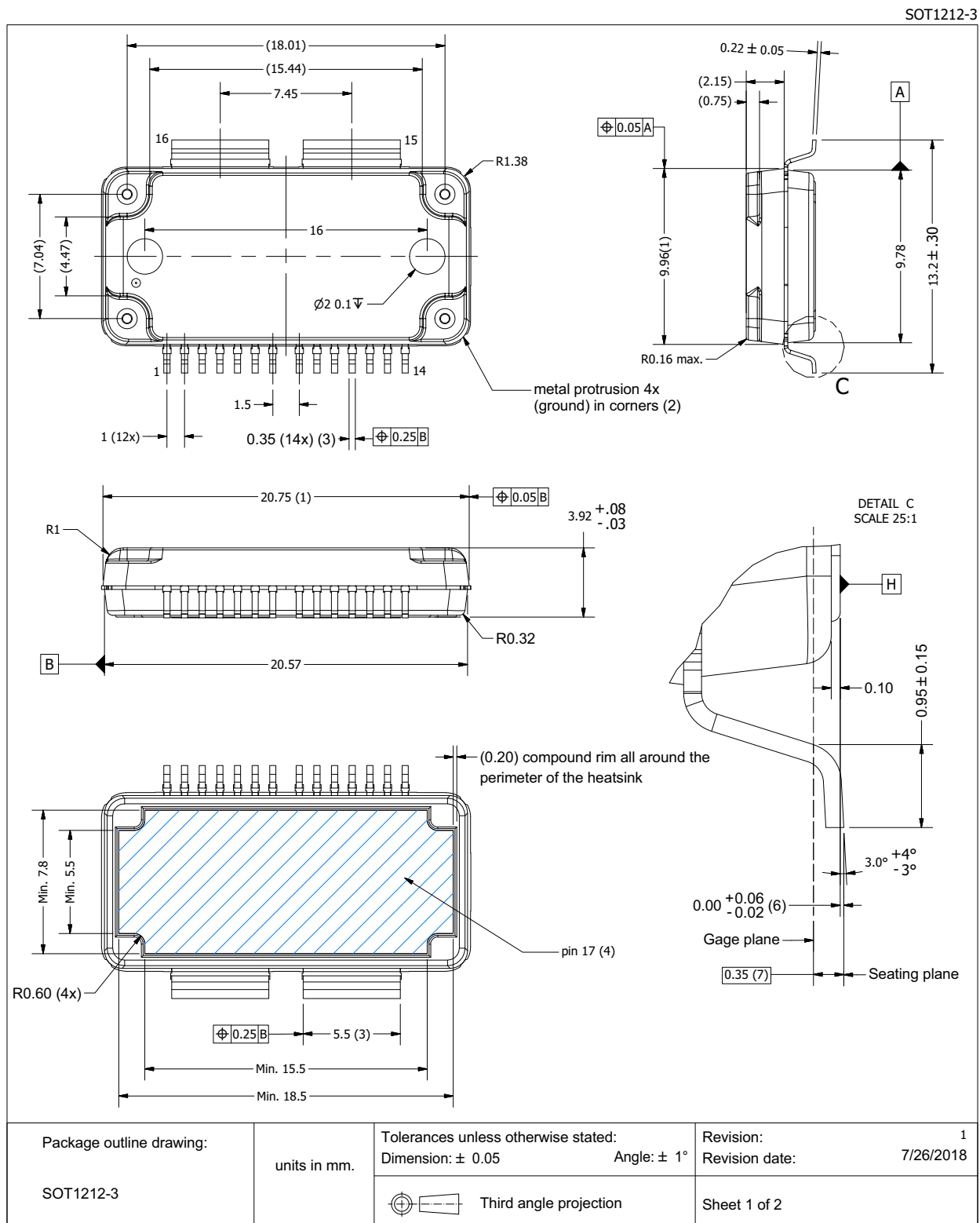
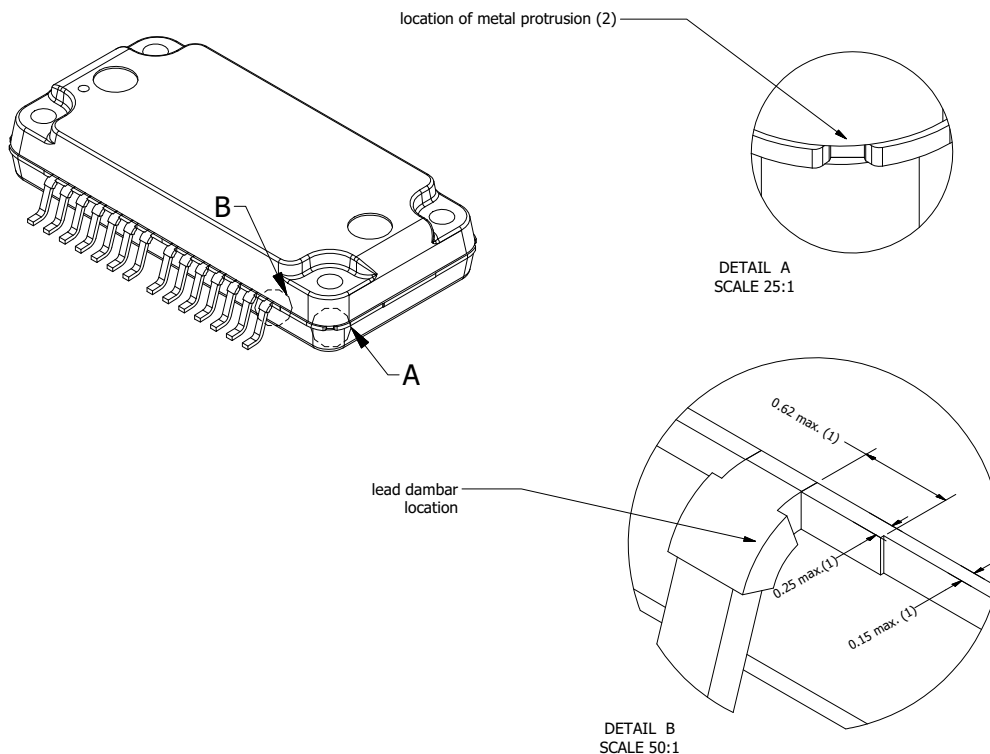


Fig 18. Package outline SOT1212-3 (sheet 1 of 2)

SOT1212-3

| Drawing Notes | |
|---------------|--|
| Items | Description |
| (1) | Dimensions are excluding mold protrusion. Areas located adjacent to the leads have a maximum mold protrusion of 0.25 mm (per side) and 0.62 mm max. in length. In between the 14 leads the protrusion is 0.25 mm max. At all other areas the mold protrusion is maximum 0.15 mm per side. See also detail B. |
| (2) | The metal protrusion (tie bars) in the corner will not stick out of the molding compound protrusions (detail A). |
| (3) | The lead dambar (metal) protrusions are not included. Add 0.14 mm max to the total lead dimension at the dambar location. |
| (4) | The hatched area indicated the exposed heatsink. |
| (5) | The leads and exposed heatsink are plated with matte Tin (Sn). |
| (6) | Dimension is measured with respect to the bottom of the heatsink Datum H. Positive value means that the bottom of the heatsink is higher than the bottom of the lead. |
| (7) | Gage plane (foot length) to be measured from the seating plane. |



| | | | |
|--------------------------|--------------|---|---|
| Package outline drawing: | units in mm. | Tolerances unless otherwise stated: Dimension: ± 0.05 Angle: $\pm 1^\circ$ | Revision: 1 Revision date: 7/26/2018 |
| SOT1212-3 | | Third angle projection | Sheet 2 of 2 |

Fig 19. Package outline SOT1212-3 (sheet 2 of 2)

10. 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.

Table 11. ESD sensitivity

| ESD model | Class |
|--|-------------------------|
| Charged Device Model (CDM); According to ANSI/ESDA/JEDEC standard JS-002 | C0B [1] |
| Human Body Model (HBM); According to ANSI/ESDA/JEDEC standard JS-001 | 1B [2] |

[1] CDM classification C0B is granted to any part that passes after exposure to an ESD pulse of 125 V.

[2] HBM classification 1B is granted to any part that passes after exposure to an ESD pulse of 500 V.

11. Abbreviations

Table 12. Abbreviations

| Acronym | Description |
|---------|--|
| AM | Amplitude Modulation |
| 3GPP | 3rd Generation Partnership Project |
| CCDF | Complementary Cumulative Distribution Function |
| CW | Continuous Wave |
| DPCH | Dedicated Physical CHannel |
| ESD | ElectroStatic Discharge |
| GEN8 | Eighth Generation |
| LDMOS | Laterally Diffused Metal Oxide Semiconductor |
| MMIC | Monolithic Microwave Integrated Circuit |
| MTF | Median Time to Failure |
| PAR | Peak-to-Average Ratio |
| PM | Phase Modulation |
| RoHS | Restriction of Hazardous Substances |
| VSWR | Voltage Standing Wave Ratio |
| W-CDMA | Wideband Code Division Multiple Access |

12. Revision history

Table 13. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|-----------------------------|--|------------------------|---------------|-----------------------------|
| BLM8G0710S-15PB_S-15PBG v.5 | 20180928 | Product data sheet | - | BLM8G0710S-15PB_S-15PBG v.4 |
| Modifications | <ul style="list-style-type: none"> Section 9 on page 14: package outline versions updated | | | |
| BLM8G0710S-15PB_S-15PBG v.4 | 20180418 | Product data sheet | - | BLM8G0710S-15PB_S-15PBG v.3 |
| BLM8G0710S-15PB_S-15PBG v.3 | 20150909 | Product data sheet | - | BLM8G0710S-15PB_S-15PBG#2 |
| BLM8G0710S-15PB_S-15PBG#2 | 20150901 | Product data sheet | - | BLM8G0710S-15PB_S-15PBG v.2 |
| BLM8G0710S-15PB_S-15PBG v.2 | 20150831 | Product data sheet | - | BLM8G0710S-15PB_S-15PBG v.1 |
| BLM8G0710S-15PB_S-15PBG v.1 | 20150702 | Preliminary 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.ampleon.com>.

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