BLM8G0710S-45AB; BLM8G0710S-45ABG

LDMOS 2-stage power MMIC

Rev. 1 — 20 August 2015 | Objective data sheet

1. Product profile

1.1 General description

The BLM8G0710S-45AB(G) is a dual section, asymmetric, 2-stage power MMIC using NXP's state of the art GEN8 LDMOS technology. This multiband device is perfectly suited as small cell final stage in Doherty configuration, or as general purpose driver in the 700 MHz to 1000 MHz frequency range. Available in gull wing or straight lead outline.

Table 1. Performance

Typical RF performance at T_{case} = 25 °C. Test signal: 3GPP test model 1; 64 DPCH; PAR = 9.9 dB at 0.01% probability on CCDF; specified in a class-AB production circuit.

Test signal	f	I_{Dq1} [1]	I_{Dq2} [1]	V_{DS}	$P_{L(AV)}$	G_p	η_D	$ACPR_{5M}$
	(MHz)	(mA)	(mA)	(V)	(W)	(dB)	(%)	(dBc)
single carrier W-CDMA								
carrier section	957.5	30	120	28	3	35	27	–41.5
peaking section	957.5	60	240	28	6	35.2	24.5	–40

[1] I_{Dq1} represents driver stage; I_{Dq2} represents final stage.

1.2 Features and benefits

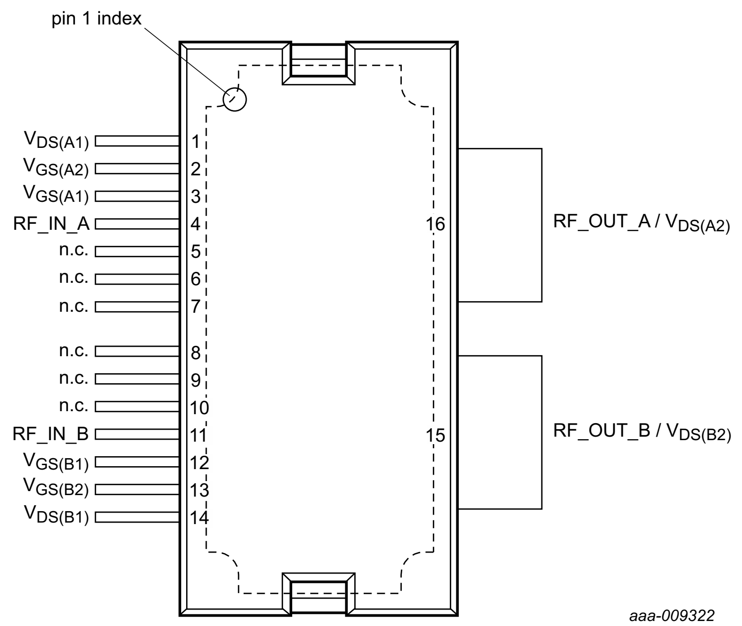
- Designed for broadband operation (frequency 700 MHz to 1000 MHz)
- High section-to-section isolation enabling multiple combinations
- High Doherty efficiency thanks to 2 : 1 asymmetry
- Integrated temperature compensated bias
- Biasing of individual stages is externally accessible
- Integrated ESD protection
- Excellent thermal stability
- High power gain
- On-chip matching for ease of use
- Compliant to Directive 2002/95/EC, regarding restriction of hazardous substances (RoHS)

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:
    - Asymmetric final stage in Doherty configuration
    - Asymmetric driver for high power Doherty amplifier

2. Pinning information

2.1 Pinning



Transparent top view

The exposed backside of the package is the ground terminal of the device.

Fig 1. Pin configuration

2.2 Pin description

Table 2. Pin description

Symbol	Pin	Description
$V_{DS(A1)}$	1	drain-source voltage of carrier section, driver stage (A1)
$V_{GS(A2)}$	2	gate-source voltage of carrier section, final stage (A2)
$V_{GS(A1)}$	3	gate-source voltage of carrier section, driver stage (A1)
RF_IN_A	4	RF input carrier 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 peaking section (B)
$V_{GS(B1)}$	12	gate-source voltage of peaking section, driver stage (B1)
$V_{GS(B2)}$	13	gate-source voltage of peaking section, final stage (B2)
$V_{DS(B1)}$	14	drain-source voltage of peaking section, driver stage (B1)

Table 2. Pin description *...continued*

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

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BLM8G0710S-45AB	HSOP16F	plastic, heatsink small outline package; 16 leads(flat)	SOT1211-2
BLM8G0710S-45ABG	HSOP16	plastic, heatsink small outline package; 16 leads	SOT1212-2

4. Block diagram

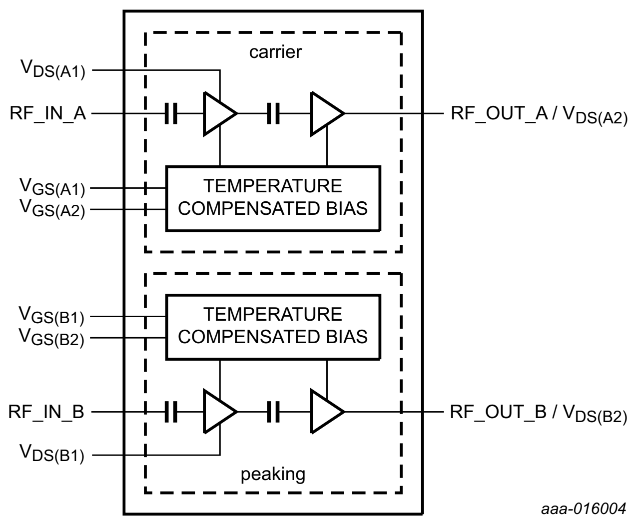


Fig 2. Block diagram

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

Symbol	Parameter	Conditions		Value	Unit
Carrier section					
$R_{th(j-c)}$	thermal resistance from junction to case	final stage; T_{case} = 90 °C; P_L = 1.26 W	[1]	2.9	K/W
		driver stage; T_{case} = 90 °C; P_L = 1.26 W	[1]	10.5	K/W
Peaking section					
$R_{th(j-c)}$	thermal resistance from junction to case	final stage; T_{case} = 90 °C; P_L = 2.51 W	[1]	1.78	K/W
		driver stage; T_{case} = 90 °C; P_L = 2.51 W	[1]	7.4	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
Carrier section							
Final stage							
$V_{(BR)DSS}$	drain-source breakdown voltage	V_{GS} = 0 V; I_D = 0.241 mA		65	-	-	V
V_{GSq}	gate-source quiescent voltage	V_{DS} = 28 V; I_D = 120 mA		<tbd>	2	<tbd>	V
		V_{DS} = 28 V; I_D = 120 mA	[1]	<tbd>	2.6	<tbd>	V
$\Delta I_{Dq}/\Delta T$	quiescent drain current variation with temperature	−40 °C ≤ T_{case} ≤ +85 °C	[1]	-	±0.5	-	%
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		-	4.4	-	A
I_{GSS}	gate leakage current	V_{GS} = 1.0 V; V_{DS} = 0 V		-	-	140	nA
Driver stage							
$V_{(BR)DSS}$	drain-source breakdown voltage	V_{GS} = 0 V; I_D = 0.06 mA		65	-	-	V
V_{GSq}	gate-source quiescent voltage	V_{DS} = 28 V; I_D = 30 mA		<tbd>	2.1	<tbd>	V
		V_{DS} = 28 V; I_D = 30 mA	[2]	<tbd>	2.6	<tbd>	V
$\Delta I_{Dq}/\Delta T$	quiescent drain current variation with temperature	−40 °C ≤ T_{case} ≤ +85 °C	[2]	-	±0.5	-	%
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		-	1.1	-	A
I_{GSS}	gate leakage current	V_{GS} = 1.0 V; V_{DS} = 0 V		-	-	140	nA
Peaking section							
Final stage							
$V_{(BR)DSS}$	drain-source breakdown voltage	V_{GS} = 0 V; I_D = 0.482 mA		65	-	-	V
V_{GSq}	gate-source quiescent voltage	V_{DS} = 28 V; I_D = 240 mA		<tbd>	1.9	<tbd>	V
		V_{DS} = 28 V; I_D = 240 mA	[3]	<tbd>	2.4	<tbd>	V
$\Delta I_{Dq}/\Delta T$	quiescent drain current variation with temperature	−40 °C ≤ T_{case} ≤ +85 °C	[3]	-	<tbd>	-	%
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		-	8.4	-	A
I_{GSS}	gate leakage current	V_{GS} = 1.0 V; V_{DS} = 0 V		-	-	140	nA

Table 6. DC characteristics *...continued*

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Driver stage						
$V_{(BR)DSS}$	drain-source breakdown voltage	V_{GS} = 0 V; I_D = 0.120 mA	65	-	-	V
V_{GSq}	gate-source quiescent voltage	V_{DS} = 28 V; I_D = 60 mA	<tbd>	1.9	<tbd>	V
		V_{DS} = 28 V; I_D = 60 mA [4]	<tbd>	2.4	<tbd>	V
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} = 1.0 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.

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

[4] 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} = 30 mA (carrier section, driver stage); I_{Dq2} = 120 mA (carrier section, final stage); $P_{L(AV)}$ = 3 W (carrier section); I_{Dq1} = 60 mA (peaking section, driver stage); I_{Dq2} = 240 mA (peaking section, final stage); $P_{L(AV)}$ = 6 W (peaking section) unless otherwise specified, measured in an NXP wideband f = 700 MHZ to 1000 MHz straight lead production circuit.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Carrier section						
Test signal: single carrier W-CDMA [1]						
G_p	power gain	f = 730.5 MHz	-	35.7	-	dB
		f = 957.5 MHz	<tbd>	35	<tbd>	dB
η_D	drain efficiency	f = 730.5 MHz	-	24	-	%
		f = 957.5 MHz	<tbd>	27	-	%
RL_{in}	input return loss	f = 730.5 MHz	-	–16	<tbd>	dB
$ACPR_{5M}$	adjacent channel power ratio (5 MHz)	f = 957.5 MHz	-	–39	-	dBc
		f = 730.5 MHz	-	–41.5	<tbd>	dBc
PAR_O	output peak-to-average ratio	f = 957.5 MHz	-	8	-	dB
		f = 730.5 MHz	<tbd>	8	-	dB
Peaking section						
Test signal: single carrier W-CDMA [1]						
G_p	power gain	f = 730.5 MHz	-	36.5	-	dB
		f = 957.5 MHz	<tbd>	35.2	<tbd>	dB
η_D	drain efficiency	f = 730.5 MHz	-	24.5	-	%
		f = 957.5 MHz	<tbd>	24.5	-	%
RL_{in}	input return loss	f = 957.5 MHz	-	–20	<tbd>	dB
$ACPR_{5M}$	adjacent channel power ratio (5 MHz)	f = 730.5 MHz	-	–40	-	dBc
		f = 957.5 MHz	-	–40	<tbd>	dBc
PAR_O	output peak-to-average ratio	f = 730.5 MHz	-	8	-	dB
		f = 957.5 MHz	<tbd>	8.3	-	dB

Table 7. RF Characteristics *...continued*

Typical RF performance at f = 957.5 MHz; T_{case} = 25 °C; V_{DS} = 28 V; I_{Dq1} = 30 mA (carrier section, driver stage); I_{Dq2} = 120 mA (carrier section, final stage); $P_{L(AV)}$ = 3 W (carrier section); I_{Dq1} = 60 mA (peaking section, driver stage); I_{Dq2} = 240 mA (peaking section, final stage); $P_{L(AV)}$ = 6 W (peaking section) unless otherwise specified, measured in an NXP wideband f = 700 MHZ to 1000 MHz straight lead production circuit.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Test signal: CW [2]						
$\Delta\varphi_{s21}$	phase response difference	normalized; between sections	–10	-	+10	deg
$\Delta\lvert s_{21}\rvert^2$	insertion power gain difference	normalized; 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. Doherty typical performance

Test signal: 1-tone CW; RF performance at T_{case} = 25 °C; V_{DS} = 28 V; I_{Dq1} = 130 mA (carrier section, final stage); I_{Dq2} = 4 mA (peaking section, final stage); unless otherwise specified, measured in an NXP, f = 925 MHz to 960 MHz, Doherty application circuit (see Figure 3 and Figure 4).

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$P_{L(3dB)}$	output power at 3 dB gain compression	f = 942.5 MHz; 1-tone pulsed CW (10 % duty cycle)	-	63.9	-	W
η_D	drain efficiency	at $P_{L(3dB)}$; f = 942.5 MHz; 1-tone pulsed CW (10 % duty cycle)	-	<tbd>	-	%
G_p	power gain	$P_{L(AV)}$ = 8.3 W; f = 942.5 MHz	-	8.3	-	dB
B_{video}	video bandwidth	$P_{L(AV)}$ = 4 W; f = 942.5 MHz; 2-tone CW	-	160	-	MHz
G_{flat}	gain flatness	$P_{L(AV)}$ = 8.3 W	-	0.7	-	dB
K	Rollett stability factor	T_{case} = –40 °C; f = 0.1 GHz to 3 GHz [1]	-	>1	-	

[1] For carrier and peaking sections (S-parameters measured with load-pull jig).

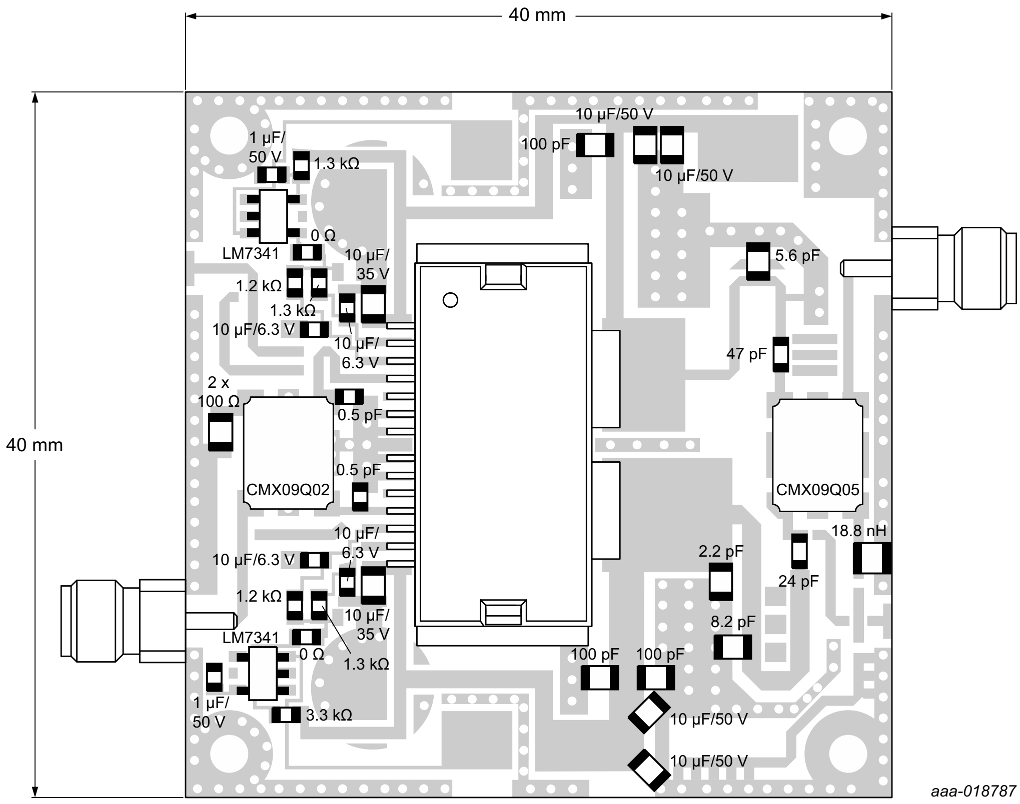


Fig 3. Component layout

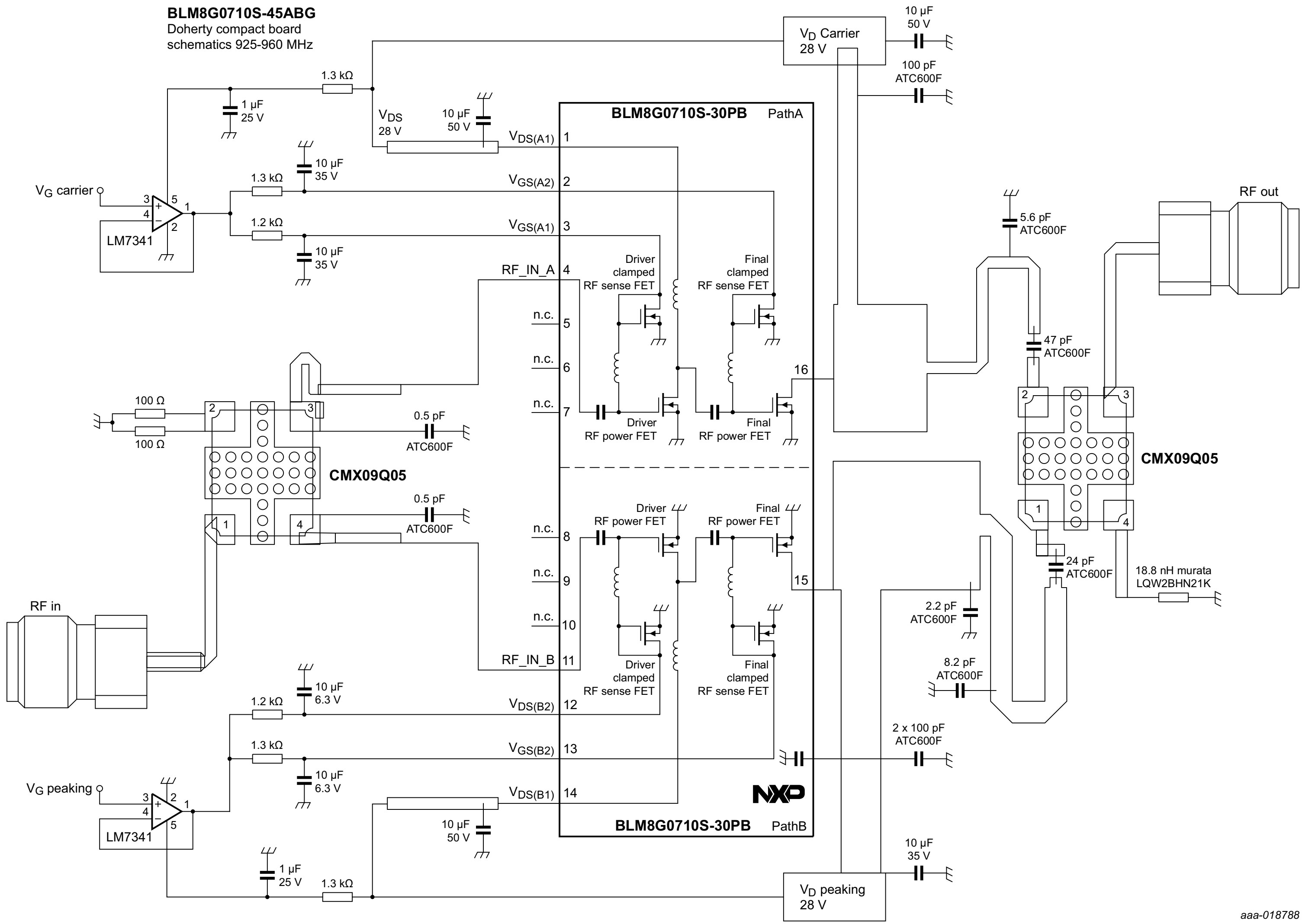


Fig 4. Electrical schematic

8.1 Possible circuit topologies

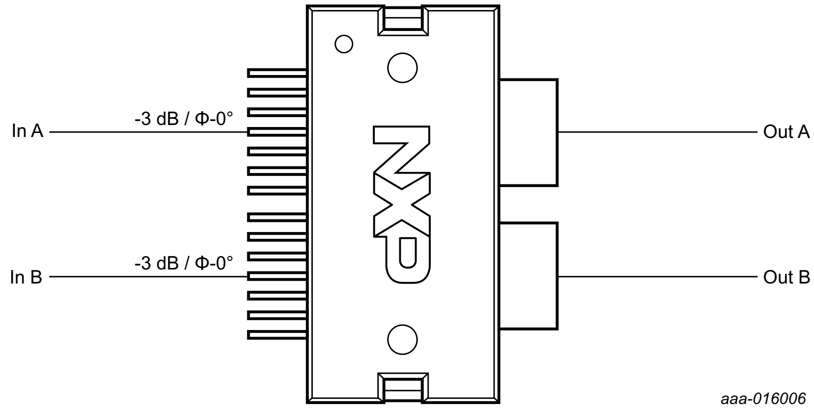


Fig 5. Dual section

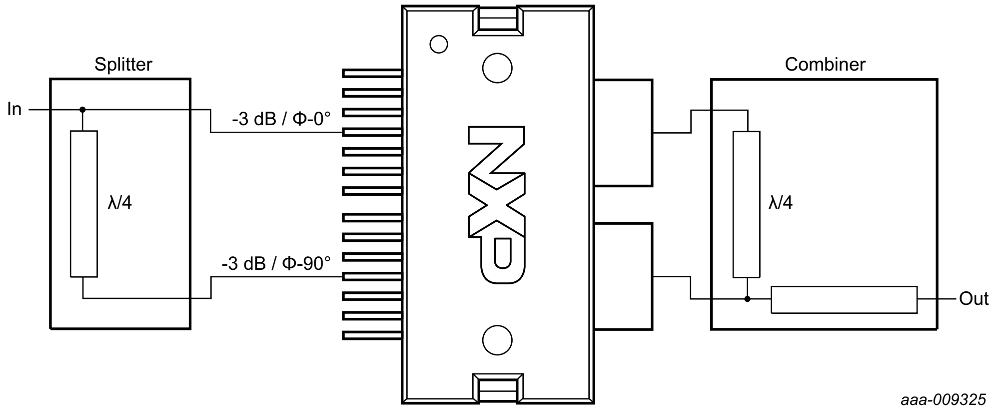


Fig 6. Doherty

8.2 Ruggedness in class-AB operation

The BLM8G0710S-45AB and BLM8G0710S-45ABG are capable of withstanding a load mismatch corresponding to VSWR = 10 : 1 through all phases under the following conditions: f = <tbd> MHz; V_{DS} = 32 V; I_{Dq1} = <tbd> mA (carrier section, driver stage); I_{Dq2} = <tbd> mA (carrier section, final stage); I_{Dq1} = <tbd> mA (peaking section, driver stage); I_{Dq2} = <tbd> mA (peaking section, final stage); P_i = <tbd> dBm (carrier section); P_i = <tbd> dBm (peaking section). P_i is measured at CW and corresponding to $P_{L(3dB)}$ under Z_S = 50 Ω load.

8.3 Impedance information

Table 9. Typical impedance

Measured load-pull data at 3 dB gain compression point; test signal: pulsed CW; T_{case} = 25 °C; V_{DS} = 28 V; t_p = 100 μs; δ = 10 %; Z_S = 50 Ω; I_{Dq1} = 30 mA (carrier section, driver stage); I_{Dq2} = 120 mA (carrier section, final stage); I_{Dq1} = 60 mA (peaking section, driver stage); I_{Dq2} = 240 mA (peaking section, final stage). Typical values unless otherwise specified.

f	tuned for maximum output power					tuned for maximum power added efficiency				
	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)	(W)	(%)	(deg)	(Ω)	(dB)	(W)	(%)	(deg)
Carrier section										
BLM8G0710S-45AB										
680	6.4 + j4.3	34	44.9	59.4	–9.2	9.3 + j8.4	35.3	43.6	68.1	–11.1
700	6.2 + j3.6	33.9	44.8	56.4	–8.5	9.2 + j8.5	35.5	43.5	67.3	–10.7
720	6.2 + j3.7	34	44.8	56.8	–8	8.8 + j9.6	35.7	43	67	–11
740	6.3 + j3.6	33.9	44.8	57.2	–7.2	8.5 + j8.7	35.4	43.3	66.7	–9.7
760	6.3 + j3.5	33.8	44.8	57.4	–6.1	9.4 + j8.4	35.3	43.3	66.7	–7.3
780	6.2 + j3.5	33.6	44.8	57.7	–6.2	8.4 + j8.5	35.1	43.2	66.1	–8.2
800	6.2 + j2.8	33.4	44.9	56.3	–5	9.2 + j8.5	35.1	43.2	65.4	–6.1
820	6.3 + j2.9	33.3	44.8	56.8	–5.7	8.7 + j6.8	34.6	43.7	65.1	–6.3
840	6.8 + j2.2	33.1	44.9	56.5	–4.1	7.9 + j6.9	34.6	43.7	65.1	–6.2
860	7.4 + j1.7	33.1	44.8	56.2	–4	7.9 + j6.8	34.5	43.7	64.5	–6.2
880	7.4 + j1.7	33.1	44.8	56.2	–3.3	7.8 + j6.8	34.5	43.6	64	–5.3
900	7.2 + j0.9	32.9	44.8	54.3	–3.4	7.8 + j6.8	34.6	43.5	63.8	–5.2
920	7.3 + j0.9	32.9	44.7	54.2	–2.7	8.1 + j7.8	34.8	43.1	63.1	–3.9
940	8.1 + j0.7	33.2	44.7	55.2	–2	8.3 + j5.9	34.6	43.7	62.4	–2.8
960	7.2 + j0.9	33.2	44.6	53.4	–2.4	8.7 + j6.7	34.8	43.3	61.8	–1.9
980	8.0 + j0.8	33.4	44.7	55.1	–2	8.6 + j6.8	34.8	43.3	62.1	–1.5
1000	8.1 + j0.9	33.4	44.6	55.1	–2.2	7.1 + j6.8	34.9	43.1	61.6	–3.2
BLM8G0710S-45ABG										
700	6.4 + j3.1	34.4	44.4	55.3	–8.8	8.5 + j8.5	36.1	42.9	65.8	–12.7
720	6.3 + j3.4	34.6	44.4	56.6	–8.3	8.9 + j8.8	36.1	42.8	66.8	–11
740	6.5 + j2.6	34.4	44.5	55.5	–7.6	8.3 + j8.2	36	42.9	65.4	–10.9
760	7.4 + j1.8	34.2	44.5	55.9	–6	8.8 + j8.7	35.9	42.6	65.1	–9.2
780	6.5 + j1.6	33.6	44.5	53.1	–5.5	7.3 + j8.1	35.5	42.7	64.2	–10.2
800	7.1 + j1.3	33.6	44.7	55.7	–4.8	7.1 + j8.0	35.5	42.8	64.9	–9.7
820	6.4 + j1.2	33.3	44.7	54.2	–4.8	8.3 + j8.2	35.3	42.6	64	–6.9
840	7.0 + j0.8	33.3	44.7	55	–4.7	8.1 + j8.1	35.3	42.5	63.5	–7
860	7.5 + j0.5	33.3	44.6	54.7	–4.4	8.4 + j7.1	35.1	42.9	63.4	–6
880	7.4 + j0.7	33.4	44.5	54.6	–4.3	8.2 + j7.4	35.3	42.7	62.3	–6
900	8.2 + j0.3	33.6	44.4	54.8	–2.9	8.0 + j7.2	35.4	42.6	62.1	–4.9
920	7.4 + j0.1	33.4	44.5	53.8	–2.8	7.3 + j6.3	35.3	42.9	61.8	–5.4
940	8.0 + j0.1	33.5	44.4	53.9	–2.4	6.8 + j6.5	35.4	42.6	60.9	–5.7

Table 9. Typical impedance *…continued*

Measured load-pull data at 3 dB gain compression point; test signal: pulsed CW; T_{case} = 25 °C; V_{DS} = 28 V; t_p = 100 µs; δ = 10 %; Z_S = 50 Ω; I_{Dq1} = 30 mA (carrier section, driver stage); I_{Dq2} = 120 mA (carrier section, final stage); I_{Dq1} = 60 mA (peaking section, driver stage); I_{Dq2} = 240 mA (peaking section, final stage). Typical values unless otherwise specified.

f	tuned for maximum output power					tuned for maximum power added efficiency				
	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)	(W)	(%)	(deg)	(Ω)	(dB)	(W)	(%)	(deg)
960	7.9 – j0.6	33.5	44.3	52.4	–2	7.0 + j6.9	35.8	42.4	60.5	–4.2
980	7.7 – j0.5	33.7	44.4	53	–1.6	7.1 + j6.3	35.5	42.6	61.3	–3
1000	7.2 – j0.4	33.5	44.3	52.7	–2.3	7.0 + j6.0	35.2	42.7	61.1	–3.2
Peaking section										
BLM8G0710S-45AB										
680	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
700	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
720	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
740	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
760	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
780	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
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840	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
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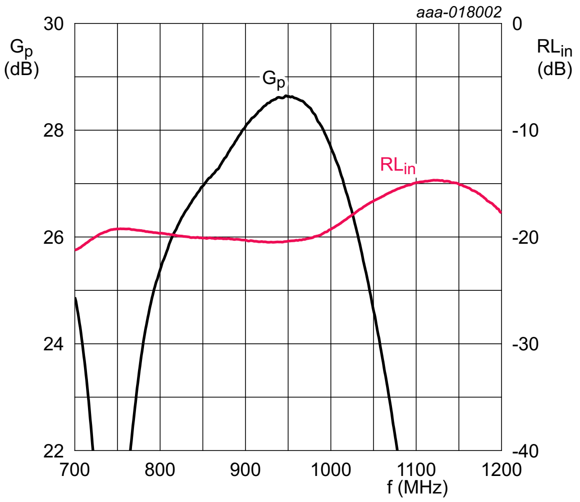
880	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
900	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
920	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
940	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
960	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
980	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
1000	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>	<tbd>
BLM8G0710S-45ABG										
700	3.7 + j0.7	35.1	47.4	58	–3.2	4.5 + j4.1	36.4	45.5	65.8	–7.2
720	3.2 + j0.1	34.1	47.5	53.4	–2.2	4.1 + j3.6	35.6	46	66.2	–6.4
740	3.2 + j0.7	34.8	47.5	55.9	–3.6	4.2 + j3.1	36.2	46.2	65.3	–6.8
760	3.7 + j0.2	35	47.5	57.3	–2.1	4.7 + j3.6	36.4	45.7	64.7	–5.1
780	3.7 – j0.4	34.3	47.6	54.8	–1.8	4.5 + j3.0	35.8	46	64.1	–5.2
800	3.1 + j0.1	34.1	47.6	54.5	–3.1	4.0 + j3.5	35.8	45.5	64.2	–7.4
820	3.1 – j0.2	34.2	47.5	53.6	–2.9	4.1 + j2.2	35.7	46.4	63.9	–5.4
840	3.7 – j0.8	34.1	47.5	54	–2.6	3.8 + j2.0	35.5	46.5	63.5	–6.3
860	3.5 – j0.5	34.2	47.5	55.1	–3.3	4.4 + j2.8	35.8	45.7	63.3	–5.7
880	3.8 – j1.1	34	47.4	53.1	–3	3.7 + j2.6	35.6	45.6	62.4	–7.2
900	3.2 – j0.8	33.8	47.4	53.2	–4.4	4.1 + j2.6	35.7	45.7	62.8	–6.5
920	3.2 – j1.0	33.9	47.4	52.5	–5.2	3.2 + j2.6	35.9	45.3	62.6	–9.7

Table 9. Typical impedance *…continued*

Measured load-pull data at 3 dB gain compression point; test signal: pulsed CW; T_{case} = 25 °C; V_{DS} = 28 V; t_p = 100 μs; δ = 10 %; Z_S = 50 Ω; I_{Dq1} = 30 mA (carrier section, driver stage); I_{Dq2} = 120 mA (carrier section, final stage); I_{Dq1} = 60 mA (peaking section, driver stage); I_{Dq2} = 240 mA (peaking section, final stage). Typical values unless otherwise specified.

f	tuned for maximum output power					tuned for maximum power added efficiency				
	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)	(W)	(%)	(deg)	(Ω)	(dB)	(W)	(%)	(deg)
940	3.9 – j1.5	34.1	47.3	52.7	–5.5	3.9 + j2.2	36.1	45.7	62.4	–7.7
960	3.9 – j1.3	34.5	47.3	54.6	–6.4	3.8 + j1.5	36	46.1	62.5	–7.6
980	3.4 – j1.7	33.9	47.3	51.2	–8	3.3 + j2.0	36.1	45.5	62.5	–9.7
1000	3.4 – j1.0	34.2	47.3	56.1	–8.7	3.4 + j1.7	35.6	45.7	62.3	–9.2

8.4 Graphs

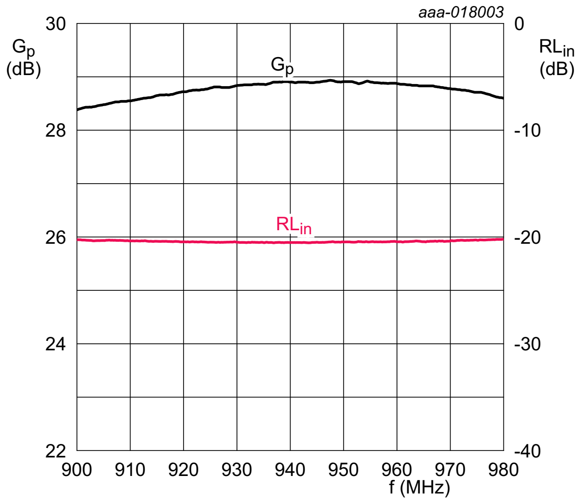


T_{case} = 25 °C; V_{DS} = 28 V; I_{Dq} = 130 mA (carrier section); I_{Dq} = 4 mA (peaking section); P_L = 1.25 W.

(1) magnitude of G_p

(2) magnitude of RL_{in}

Fig 7. Wideband power gain and input return loss as function of frequency; typical values

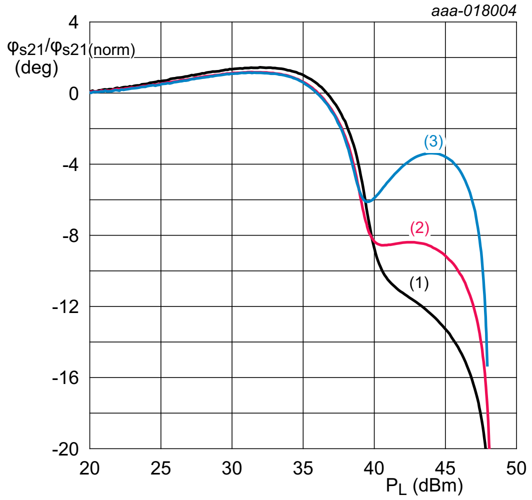


T_{case} = 25 °C; V_{DS} = 28 V; I_{Dq} = 130 mA (carrier section); I_{Dq} = 4 mA (peaking section); P_L = 1.25 W.

(1) magnitude of G_p

(2) magnitude of RL_{in}

Fig 8. In-band power gain and input return loss as function of frequency; typical values



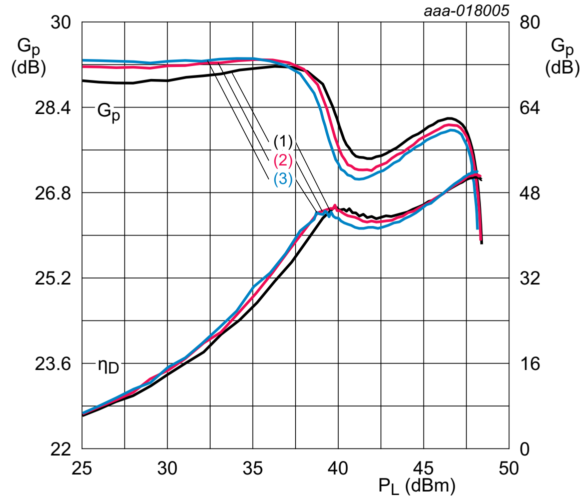
T_{case} = 25 °C; V_{DS} = 28 V; I_{Dq} = 130 mA (carrier section); I_{Dq} = 4 mA (peaking section).

(1) f = 925 MHz

(2) f = 942.5 MHz

(3) f = 960 MHz

Fig 9. Normalized phase response as a function of output power; typical values



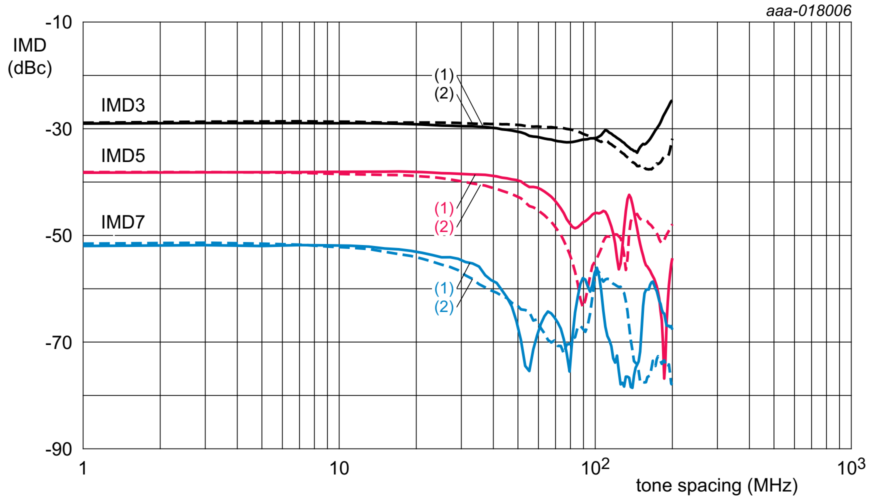
T_{case} = 25 °C; V_{DS} = 28 V; I_{Dq} = 130 mA (carrier section); I_{Dq} = 4 mA (peaking section).

(1) f = 925 MHz

(2) f = 942.5 MHz

(3) f = 960 MHz

Fig 10. Power gain and drain efficiency as function of output power; typical values

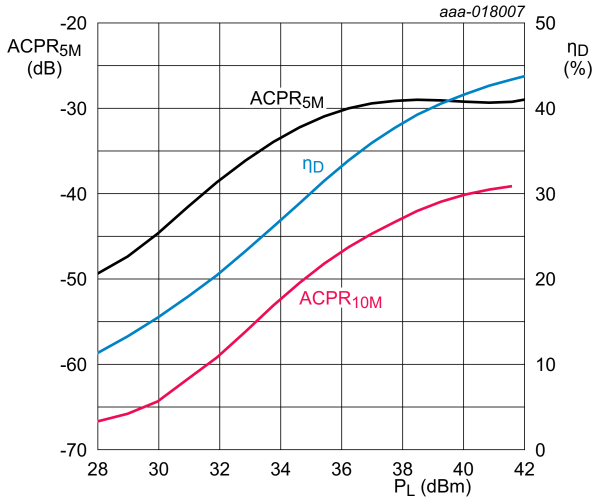


T_{case} = 25 °C; V_{DS} = 28 V; I_{Dq} = 130 mA (carrier section); I_{Dq} = 4 mA (peaking section).

(1) IMD low

(2) IMD high

Fig 11. Intermodulation distortion as a function of tone spacing; typical values

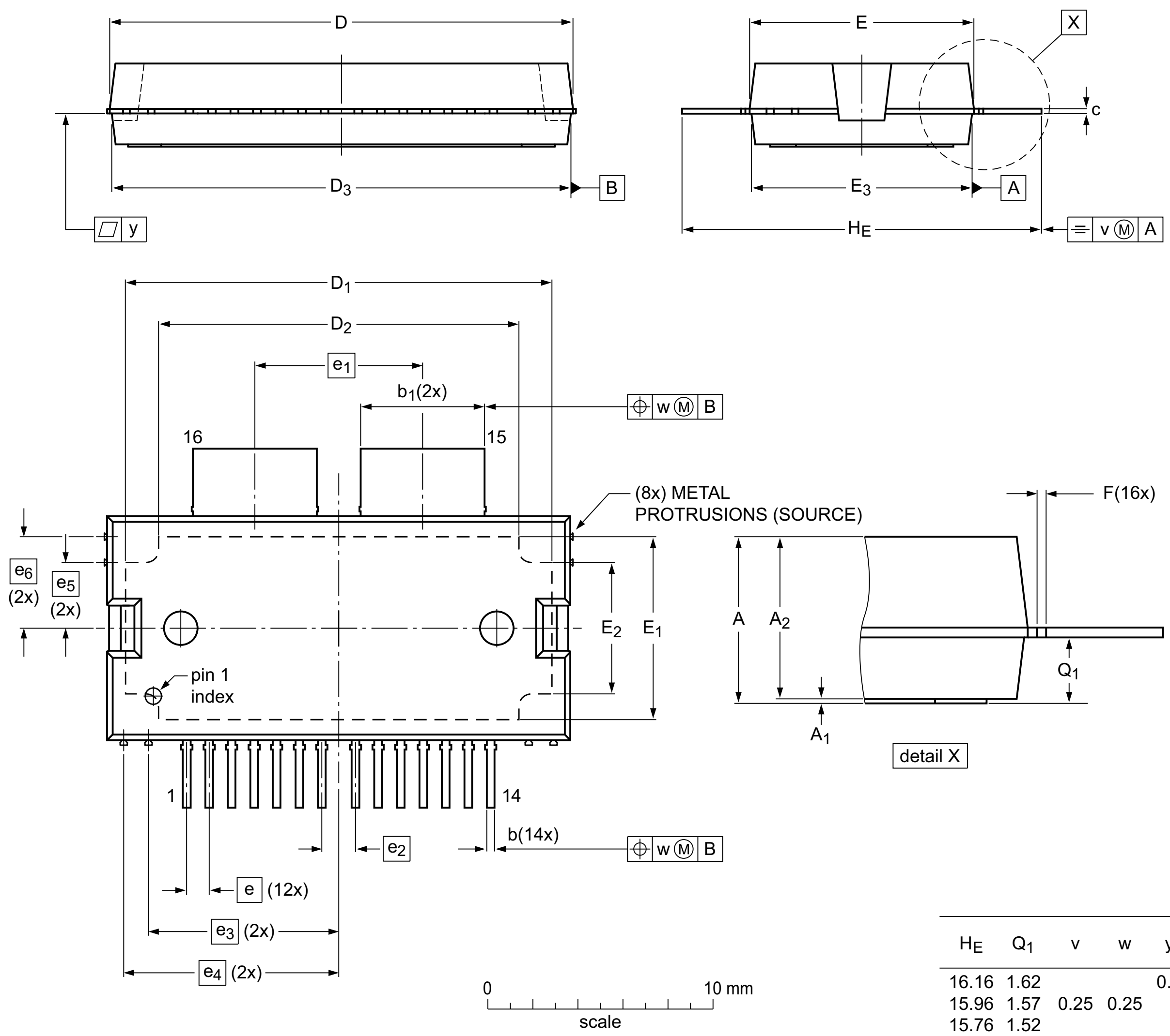


T_{case} = 25 °C; V_{DS} = 28 V; I_{Dq} = 130 mA (carrier section); I_{Dq} = 4 mA (peaking section).

Fig 12. Adjacent channel power ratio and drain efficiency as function of output power; typical values

9. Package outline

HSOP16F: plastic, heatsink small outline package; 16 leads(flat) **SOT1211-2**



H_E	Q_1	v	w	y
16.16	1.62			0.1
15.96	1.57	0.25	0.25	
15.76	1.52			

Dimensions (mm are the original dimensions)

Unit		A	A_1	A_2	b	b_1	c	D(1)	D_1	D_2	D_3	E(1)	E_1	E_2	E_3	e	e_1	e_2	e_3	e_4	e_5	e_6	F
	max	3.9	0.2	3.65	0.40	5.55	0.27	20.62	19.00	16.05	20.44	10.01	8.18	5.89	9.83								
mm	nom		0.1	3.60	0.35	5.50	0.22	20.57	18.95	16.00	20.39	9.96	8.13	5.84	9.78	1.0	7.45	1.5	8.45	9.55	2.97	4.07	0.2
	min		0	3.55	0.30	5.45	0.17	20.52	18.90	15.95	20.34	9.91	8.08	5.79	9.73								

Note

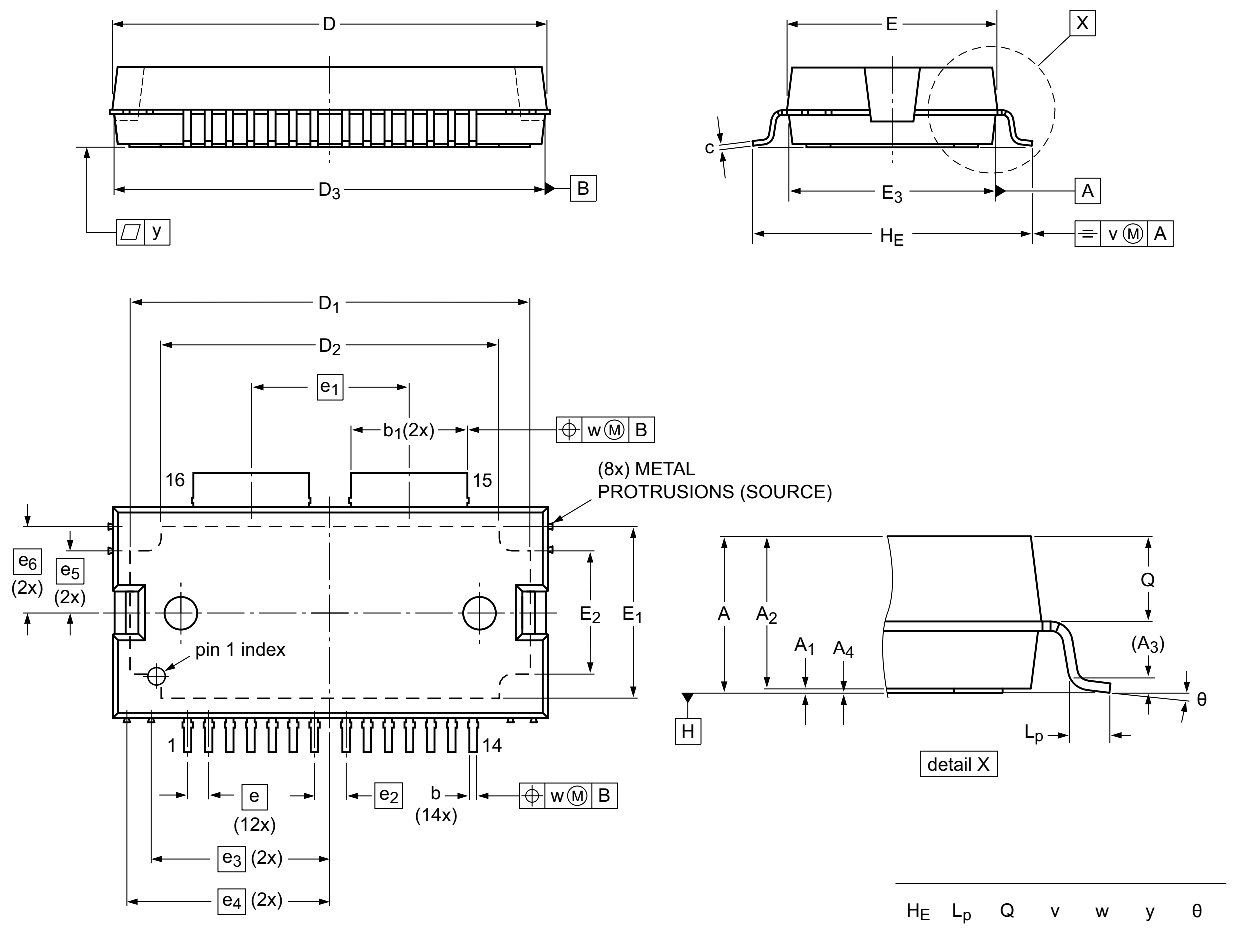
1. Package body dimensions “D and “E do not include mold and metal protrusions. Allowable protrusion is 0.25 mm per side.
2. Lead width dimensions “b and “ b_1 do not include dambar protrusions. Allowable dambar protrusion is 0.25 mm in total per lead.

sot1211-2_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOT1211-2						~~15-01-12~~ 15-06-09

Fig 13. Package outline SOT1211-2 (HSOP16F)

HSOP16: plastic, heatsink small outline package; 16 leads **SOT1212-2**



0 10 mm
scale

H_E	L_p	Q	v	w	y	θ
13.5	1.10	2.07			0.1	7°
13.2	0.95	2.02	0.25	0.25		3°
12.9	0.80	1.97				0°

Dimensions (mm are the original dimensions)

Unit		A	A_1	A_2	A_3	A_4	b	b_1	c	D(1)	D_1	D_2	D_3	E(1)	E_1	E_2	E_3	e	e_1	e_2	e_3	e_4	e_5	e_6
mm	max	3.9	0.2	3.65		0.06	0.40	5.55	0.27	20.62	19.00	16.05	20.44	10.01	8.18	5.89	9.83							
	nom		0.1	3.60	0.35	0	0.35	5.50	0.22	20.57	18.95	16.00	20.39	9.96	8.13	5.84	9.78	1.0	7.45	1.5	8.45	9.55	2.97	4.07
	min		0	3.55		-0.02	0.30	5.45	0.17	20.52	18.90	15.95	20.34	9.91	8.08	5.79	9.73							

Note

1. Package body dimensions “D" and `E" do not include mold and metal protrusions. Allowable protrusion is 0.25 mm per side.
2. Lead width dimensions `b" and `b1" do not include dambar protrusions. Allowable dambar protrusion is 0.25 mm in total per lead.
3. Dimension A_4 is measured with respect to bottom of the heatsink DATUM H. Positive value means that the bottom of the heatsink is higher than the bottom of the lead.

sot1212-2_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOT1212-2						~~15-01-14~~ 15-06-09

Fig 14. Package outline SOT1212-2 (HSOP16)

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.

11. Abbreviations

Table 10. 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
VSWR	Voltage Standing-Wave Ratio
W-CDMA	Wideband Code Division Multiple Access

12. Revision history

Table 11. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BLM8G0710S-45AB_S-45ABG v.1	20150820	Objective 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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