BLP9H10S-850AVT

Power LDMOS transistor

Rev. 1 — 25 May 2022

AMPLEON

Product data sheet

1. Product profile

1.1 General description

850 W LDMOS packaged asymmetric Doherty power transistor for base station applications at frequencies from 617 MHz to 960 MHz.

Table 1. Typical performance 942 MHz

Typical RF performance at T_{case} = 25 °C in an asymmetrical Doherty test circuit. V_{DS} = 50 V; I_{Dq} = 700 mA (main); $V_{GS(amp)peak}$ = 0.083 V, unless otherwise specified.

Test signal	f	V_{DS}	$P_{L(AV)}$	G_p	η_D	ACPR
	(MHz)	(V)	(dBm)	(dB)	(%)	(dBc)
1-carrier W-CDMA	925 to 960	50	50.8	17.5	51.7	–35.6 [1]

[1] Test signal: 1-carrier W-CDMA; 3GPP test model 1; 64 DPCH; PAR = 9.6 dB at 0.01 % probability on CCDF.

Table 2. Typical performance 806 MHz

Typical RF performance at T_{case} = 25 °C in an asymmetrical Doherty test circuit. V_{DS} = 48 V; I_{Dq} = 820 mA (main); $V_{GS(amp)peak}$ = 0.25 V, unless otherwise specified.

Test signal	f	V_{DS}	$P_{L(AV)}$	G_p	η_D	ACPR
	(MHz)	(V)	(dBm)	(dB)	(%)	(dBc)
1-carrier W-CDMA	791 to 821	48	50.8	18.6	52.7	–32.6 [1]

[1] Test signal: 1-carrier W-CDMA; 3GPP test model 1; 64 DPCH; PAR = 9.6 dB at 0.01 % probability on CCDF.

Table 3. Typical performance 698 MHz

Typical RF performance at T_{case} = 25 °C in an asymmetrical Doherty test circuit. V_{DS} = 48 V; I_{Dq} = 720 mA (main); $V_{GS(amp)peak}$ = 0.25 V, unless otherwise specified.

Test signal	f	V_{DS}	$P_{L(AV)}$	G_p	η_D	ACPR
	(MHz)	(V)	(dBm)	(dB)	(%)	(dBc)
1-carrier W-CDMA	616 to 746	48	49.5	18.5	48.5	–36.9 [1]

[1] Test signal: 1-carrier W-CDMA; 3GPP test model 1; 64 DPCH; PAR = 9.6 dB at 0.01 % probability on CCDF.

Table 4. Typical performance 859 MHz

Typical RF performance at T_{case} = 25 °C in an asymmetrical Doherty test circuit. V_{DS} = 48 V; I_{Dq} = 740 mA (main); $V_{GS(amp)peak}$ = 0.4 V, unless otherwise specified.

Test signal	f	V_{DS}	$P_{L(AV)}$	G_p	η_D	ACPR
	(MHz)	(V)	(dBm)	(dB)	(%)	(dBc)
1-carrier W-CDMA	758 to 960	48	49.6	18.3	45.2	–38.4 [1]

[1] Test signal: 1-carrier W-CDMA; 3GPP test model 1; 64 DPCH; PAR = 9.6 dB at 0.01 % probability on CCDF.

1.2 Features and benefits

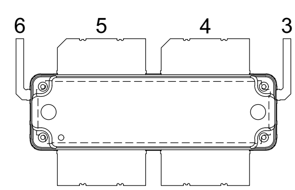
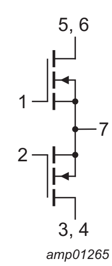
- Excellent ruggedness
- High efficiency
- Low thermal resistance providing excellent thermal stability
- Lower output capacitance for improved performance in Doherty applications
- Designed for low memory effects providing excellent digital pre-distortion capability
- Internally matched for ease of use
- Integrated ESD protection
- For RoHS compliance see the product details on the Ampleon website

1.3 Applications

- RF power amplifiers for base stations and multi carrier applications in the 617 MHz to 960 MHz frequency range

2. Pinning information

Table 5. Pinning

Pin	Description	Simplified outline	Graphic symbol
1	gate1		
2	gate2		
3	video decoupling		
4	drain2		
5	drain1		
6	video decoupling		
7	source [1]		

[1] Connected to flange.

3. Ordering information

Table 6. Ordering information

Type number	Package		
	Name	Description	Version
BLP9H10S-850AVT	-	overmolded plastic earless flanged package; 6 leads	OMP-1230-6F-1

4. Limiting values

Table 7. Limiting values

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

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	drain-source voltage		-	105	V
$V_{GS(amp)main}$	main amplifier gate-source voltage		–6	+11	V
$V_{GS(amp)peak}$	peak amplifier gate-source voltage		–6	+11	V

Table 7. Limiting values *...continued*

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

Symbol	Parameter	Conditions	Min	Max	Unit
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature	[1]	-	225	°C
T_{case}	case temperature	[1]	–40	+125	°C

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

5. Thermal characteristics

Table 8. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-c)}$	thermal resistance from junction to case	V_{DS} = 48 V; I_{Dq} = 720 mA (main); $V_{GS(amp)peak}$ = 0.25 V; T_{case} = 80 °C		
		P_L = 89 W	0.35	K/W
		P_L = 112 W	0.32	K/W

6. Characteristics

Table 9. DC characteristics

T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Main device						
$V_{(BR)DSS}$	drain-source breakdown voltage	V_{GS} = 0 V; I_D = 2 mA	108	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	V_{DS} = 10 V; I_D = 200 mA	1.5	2.0	2.5	V
V_{GSq}	gate-source quiescent voltage	V_{DS} = 48 V; I_D = 820 mA	-	2.2	-	V
I_{DSS}	drain leakage current	V_{GS} = 0 V; V_{DS} = 50 V	-	-	2.8	μA
I_{DSX}	drain cut-off current	V_{GS} = $V_{GS(th)}$ + 3.75 V; V_{DS} = 10 V	-	33	-	A
I_{GSS}	gate leakage current	V_{GS} = 11 V; V_{DS} = 0 V	-	-	280	nA
g_{fs}	forward transconductance	V_{DS} = 10 V; I_D = 10 A	-	13.2	-	S
$R_{DS(on)}$	drain-source on-state resistance	V_{GS} = $V_{GS(th)}$ + 3.75 V; I_D = 7.0 A	-	114	155	mΩ
Peak device						
$V_{(BR)DSS}$	drain-source breakdown voltage	V_{GS} = 0 V; I_D = 3 mA	108	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	V_{DS} = 10 V; I_D = 300 mA	1.5	2.0	2.5	V
V_{GSq}	gate-source quiescent voltage	V_{DS} = 48 V; I_D = 1600 mA	-	2.2	-	V
I_{DSS}	drain leakage current	V_{GS} = 0 V; V_{DS} = 50 V	-	-	2.8	μA
I_{DSX}	drain cut-off current	V_{GS} = $V_{GS(th)}$ + 3.75 V; V_{DS} = 10 V	-	48	-	A
I_{GSS}	gate leakage current	V_{GS} = 11 V; V_{DS} = 0 V	-	-	280	nA
g_{fs}	forward transconductance	V_{DS} = 10 V; I_D = 15 A	-	19.6	-	S
$R_{DS(on)}$	drain-source on-state resistance	V_{GS} = $V_{GS(th)}$ + 3.75 V; I_D = 10.5 A	-	80	107	mΩ

Table 10. RF characteristics

Test signal: 1-carrier W-CDMA; PAR = 9.6 dB at 0.01 % probability on the CCDF; 3GPP test model 1; 1 to 64 DPCH; f_1 = 793.5 MHz; f_2 = 818.5 MHz; RF performance at V_{DS} = 48 V; I_{Dq} = 820 mA (main); $V_{GS(amp)peak}$ = 0.30 V; T_{case} = 25 °C; unless otherwise specified in an asymmetrical Doherty test circuit at frequencies from 791 MHz to 821 MHz.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	$P_{L(AV)}$ = 120 W	16.8	17.8	-	dB
RL_{in}	input return loss	$P_{L(AV)}$ = 120 W	-	–14	–9	dB
η_D	drain efficiency	$P_{L(AV)}$ = 120 W	46	51	-	%
ACPR	adjacent channel power ratio	$P_{L(AV)}$ = 120 W	-	–33	–28	dBc

Table 11. RF characteristics

Test signal: pulsed CW; δ = 10 %; t_p = 100 μs; f = 793.5 MHz; RF performance at V_{DS} = 48 V; I_{Dq} = 820 mA (main); $V_{GS(amp)peak}$ = 0.30 V; T_{case} = 25 °C; unless otherwise specified in an asymmetrical Doherty test circuit at frequencies from 791 MHz to 821 MHz.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$P_{L(3dB)}$	output power at 3 dB gain compression	-	675	800	-	W

7. Test information

7.1 Ruggedness in Doherty operation

The BLP9H10S-850AVT is capable of withstanding a load mismatch corresponding to VSWR = 10 : 1 through all phases under the following conditions: V_{DS} = 50 V; I_{Dq} = 820 mA; $V_{GS(amp)peak}$ = 0.25 V; f = 821 MHz; P_L = 310 W (5 dB OBO); 1-carrier W-CDMA, 100 % clipping.

7.2 Impedance information

Table 12. Typical impedance of main device

Measured load-pull data of main device; I_{Dq} = 1000 mA (main); V_{DS} = 50 V; pulsed CW (t_p = 100 μs; δ = 10 %).

f	Z_S	Z_L	P_L	η_D	G_p
(MHz)	(Ω)	(Ω)	(W)	(%)	(dB)
Maximum power load					
617	4.5 + j2.0	3.4 – j1.2	457.8	64.8	17.7
652	4.0 + j1.5	3.3 – j0.9	445.1	64.6	18.6
698	2.8 + j1.3	2.6 – j0.0	426.6	63.4	18.7
720	3.1 + j1.6	3.1 + j0.2	416.6	61.9	18.5
746	3.0 + j1.8	2.8 – j0.7	461.7	62.6	18.1
757	3.0 + j1.9	2.8 – j0.5	469.4	64.2	18.2
769	2.9 + j2.1	3.1 – j0.7	465.9	66.2	18.6
790	2.8 + j2.3	2.6 – j0.3	467.4	65.7	18.5
805	2.4 + j2.3	2.3 – j0.1	455.9	70.0	19.1
820	2.4 + j2.4	2.2 – j1.0	469.6	63.3	18.1
869	2.6 + j3.0	2.4 – j1.3	462.4	64.1	17.9
894	2.7 + j3.3	2.1 – j0.5	457.0	70.6	18.6

Table 12. Typical impedance of main device *...continued*

Measured load-pull data of main device; I_{Dq} = 1000 mA (main); V_{DS} = 50 V; pulsed CW (t_p = 100 μs; δ = 10 %).

f	Z_S	Z_L	P_L	η_D	G_p
(MHz)	(Ω)	(Ω)	(W)	(%)	(dB)
925	3.0 + j3.7	1.9 – j1.1	468.1	65.3	17.8
942	3.2 + j3.9	2.1 – j1.4	462.7	64.0	17.6
960	3.5 + j4.2	2.0 – j1.0	459.3	66.7	17.8
Maximum drain efficiency load					
617	4.3 + j2.0	6.5 – j1.0	329.6	71.9	19.7
652	3.8 + j1.6	5.7 + j0.2	332.5	71.3	20.4
698	2.7 + j1.4	5.0 – j0.2	325.6	68.3	20.0
720	3.0 + j1.7	5.6 + j1.6	313.1	71.1	20.4
746	2.8 + j2.0	5.2 + j3.1	271.0	75.1	21.2
757	2.8 + j2.1	5.1 + j2.0	313.6	75.9	20.7
769	2.7 + j2.2	4.0 + j2.5	303.0	76.5	21.1
790	2.7 + j2.4	3.8 + j2.1	310.3	76.8	20.9
805	2.3 + j2.4	3.6 + j2.0	263.2	75.2	21.4
820	2.3 + j2.5	2.7 + j1.9	263.3	77.2	21.9
869	2.5 + j3.0	2.3 + j0.8	345.4	77.3	20.0
894	2.6 + j3.3	2.1 + j0.7	339.0	77.3	20.0
925	2.9 + j3.7	1.9 + j0.6	306.5	75.3	20.6
942	3.2 + j4.0	2.0 + j0.5	315.7	75.1	20.3
960	3.5 + j4.2	1.7 + j0.5	288.8	74.8	20.2

Table 13. Typical impedance of peak device

Measured load–pull data of peak device; I_{Dq} = 1400 mA (peak); V_{DS} = 50 V; pulsed CW (t_p = 100 μs; δ = 10 %).

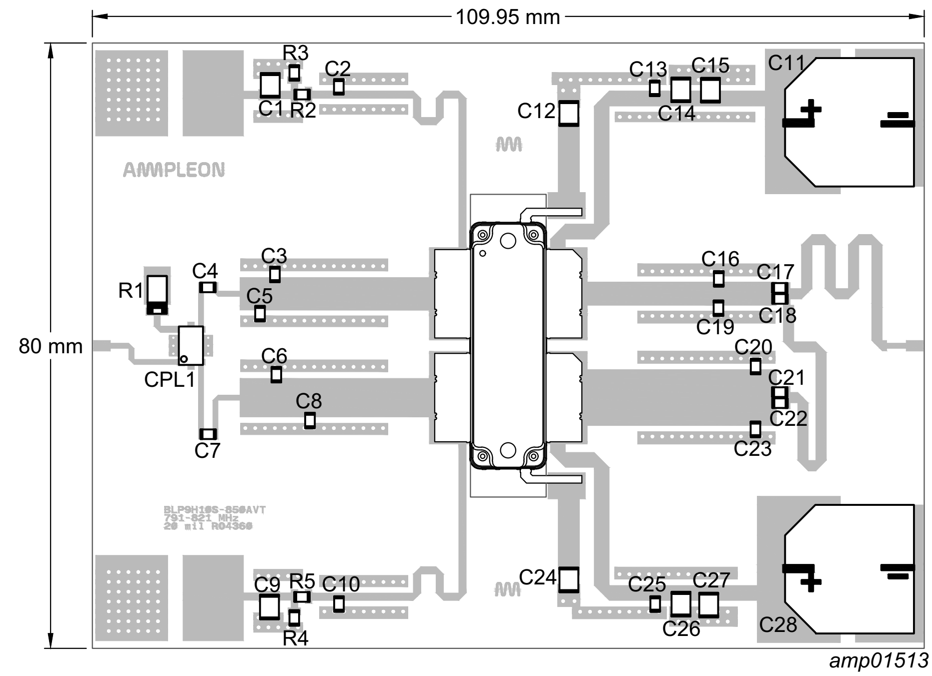
f	Z_S	Z_L	P_L	η_D	G_p
(MHz)	(Ω)	(Ω)	(W)	(%)	(dB)
Maximum power load					
617	3.2 – j0.8	2.1 – j1.0	666.4	63.7	18.6
652	2.0 – j0.6	1.7 – j0.9	653.2	61.7	19.4
698	1.8 – j0.9	1.5 – j0.8	669.6	62.5	19.1
720	1.7 – j1.1	1.7 – j0.8	678.5	65.1	19.4
746	1.7 – j1.3	1.4 – j0.8	669.1	62.1	19.0
757	1.7 – j1.4	1.7 – j0.7	666.1	68.4	19.7
769	1.7 – j1.5	1.6 – j0.7	665.0	68.1	19.8
790	1.8 – j1.6	1.5 – j0.8	663.3	68.5	19.7
805	1.9 – j1.7	1.5 – j0.9	629.8	69.2	19.8
820	2.0 – j1.8	1.5 – j1.2	658.9	65.8	19.3
869	2.4 – j2.2	1.5 – j1.2	637.7	68.3	19.5
894	2.7 – j2.3	1.3 – j1.3	642.1	68.0	19.2
925	3.3 – j2.4	1.4 – j1.8	639.0	63.0	18.6

Table 13. Typical impedance of peak device *…continued*

Measured load–pull data of peak device; I_{Dq} = 1400 mA (peak); V_{DS} = 50 V; pulsed CW (t_p = 100 μs; δ = 10 %).

f (MHz)	Z_S (Ω)	Z_L (Ω)	P_L (W)	η_D (%)	G_p (dB)
942	3.6 – j2.4	1.3 – j1.6	639.6	64.8	18.7
960	4.1 – j2.3	1.1 – j1.7	629.8	62.7	18.3
Maximum drain efficiency load					
617	3.0 + j0.8	4.1 + j0.0	481.0	73.3	20.8
652	1.9 + j0.7	3.2 + j0.2	460.2	71.8	21.8
698	1.8 + j1.0	2.9 + j0.0	511.3	73.3	21.2
720	1.7 + j1.1	2.6 + j0.0	523.6	73.4	21.2
746	1.7 + j1.3	2.8 + j0.1	485.3	73.8	21.3
757	1.7 + j1.4	2.5 + j0.3	477.5	74.6	21.4
769	1.7 + j1.5	2.4 + j0.2	477.2	74.5	21.5
790	1.8 + j1.7	2.3 + j0.2	477.8	75.1	21.4
805	1.9 + j1.7	1.9 + j0.0	452.1	73.9	21.4
820	1.9 + j1.8	2.0 – j0.3	496.0	74.3	21.1
869	2.4 + j2.1	1.6 – j0.3	451.5	74.6	21.2
894	2.7 + j2.3	1.4 – j0.2	409.1	74.5	21.3
925	3.3 + j2.3	1.2 – j0.4	404.1	73.7	21.2
942	3.7 + j2.3	1.4 – j0.6	449.0	73.0	20.8
960	4.1 + j2.0	1.3 – j0.6	426.6	72.1	20.7

7.3 Test circuit



Printed-Circuit Board (PCB): RO4360: ε_r = 6.15; thickness = 0.508 mm; thickness copper plating = 35 μm. See Table 14 for a list of components.

Fig 1. Component layout

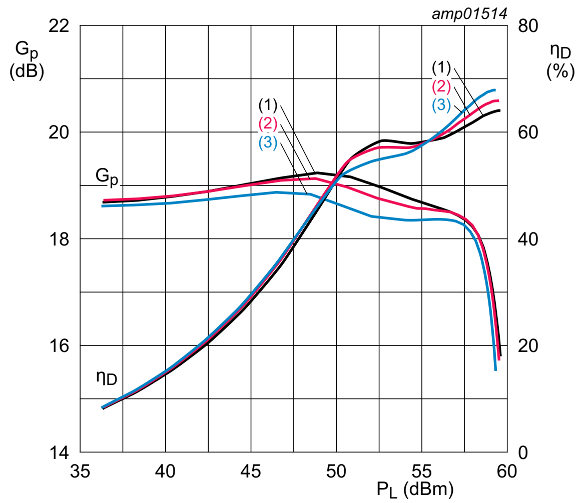
Table 14. List of components

See Figure 1 for component layout.

Component	Description	Value	Remarks
C1, C9, C12, C14, C15, C24, C26, C27	multilayer ceramic chip capacitor	4.7 μF, 100 V	Murata: GCM32DC72A475KE02L
C2, C4, C7, C10, C13, C25	multilayer ceramic chip capacitor	68 pF	Murata: HiQ GQM21 0805
C3, C5	multilayer ceramic chip capacitor	1.5 pF	Murata: HiQ GQM21 0805
C6	multilayer ceramic chip capacitor	3 pF	Murata: HiQ GQM21 0805
C8, C16, C19	multilayer ceramic chip capacitor	2.2 pF	Murata: HiQ GQM21 0805
C11, C28	electrolytic capacitor	470 μF, 63 V	radial leaded
C17, C18	multilayer ceramic chip capacitor	4.3 pF	Murata: HiQ GQM21 0805
C20	multilayer ceramic chip capacitor	2.7 pF	Murata: HiQ GQM21 0805
C21, C22	multilayer ceramic chip capacitor	33 pF	Murata: HiQ GQM21 0805
C23	multilayer ceramic chip capacitor	1.6 pF	Murata: HiQ GQM21 0805
R1	resistor	50 Ω, 16 W	Anaren: C16A50Z4
R2, R5	resistor	4.7 Ω, 1 %	SMD 0805
R3, R4	resistor	10 kΩ, 1 %	SMD 0805
CPL1	hybrid coupler	2 dB, 90°	Anaren: X3C07F1-02S

7.4 Graphical data

7.4.1 Pulsed CW



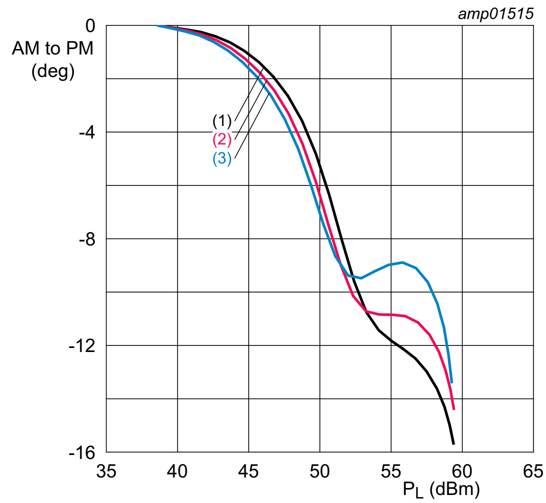
V_{DS} = 48 V; I_{Dq} = 820 mA; $V_{GS(amp)peak}$ = 0.25 V;
t_p = 100 μs; δ = 10 %.

(1) f = 791 MHz

(2) f = 805 MHz

(3) f = 821 MHz

Fig 2. Power gain and drain efficiency as function of output power; typical values



V_{DS} = 48 V; I_{Dq} = 820 mA; $V_{GS(amp)peak}$ = 0.25 V;
t_p = 100 μs; δ = 10 %.

(1) f = 791 MHz

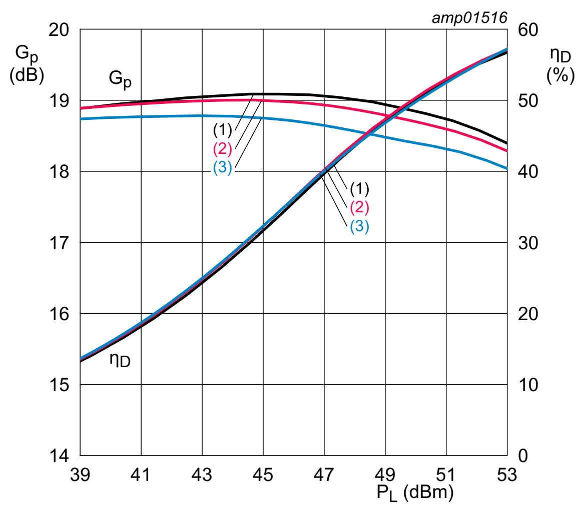
(2) f = 805 MHz

(3) f = 821 MHz

Fig 3. Normalized AM to PM as a function of output power; typical values

7.4.2 1-Carrier W-CDMA

Test signal: 3GPP test model 1; 1 to 64 DPCH (100 % clipping); PAR = 9.9 dB at 0.01 % probability on CCDF per carrier.



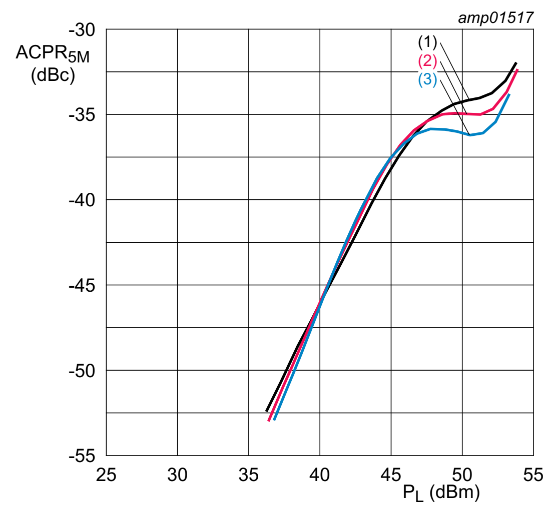
V_{DS} = 48 V; I_{Dq} = 820 mA; $V_{GS(amp)peak}$ = 0.25 V.

(1) f = 791 MHz

(2) f = 805 MHz

(3) f = 821 MHz

Fig 4. Power gain and drain efficiency as function of output power; typical values



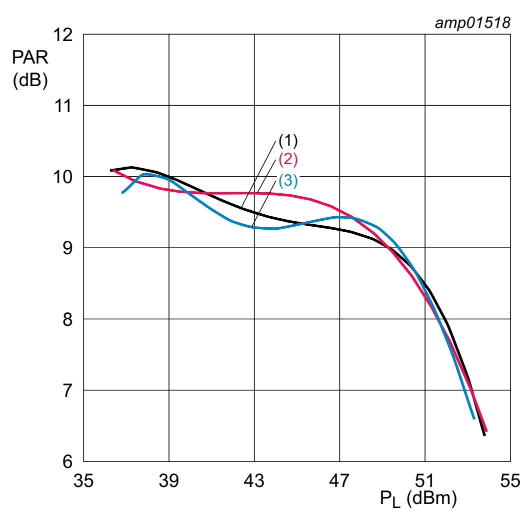
V_{DS} = 48 V; I_{Dq} = 820 mA; $V_{GS(amp)peak}$ = 0.25 V.

(1) f = 791 MHz

(2) f = 805 MHz

(3) f = 821 MHz

Fig 5. Adjacent channel power ratio (5 MHz) as a function of output power; typical values



V_{DS} = 48 V; I_{Dq} = 820 mA; $V_{GS(amp)peak}$ = 0.25 V.

(1) f = 791 MHz

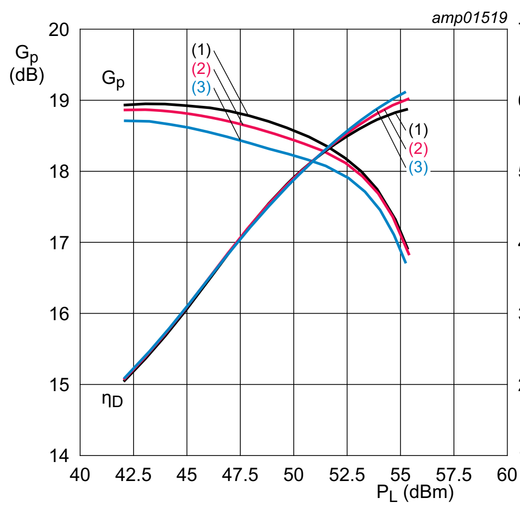
(2) f = 805 MHz

(3) f = 821 MHz

Fig 6. Peak-to-average power ratio as a function of output power; typical values

7.4.3 2-Carrier W-CDMA

Test signal: 3GPP test model 1; 1 to 64 DPCH (46 % clipping); PAR = 9.9 dB at 0.01 % probability on CCDF per carrier.



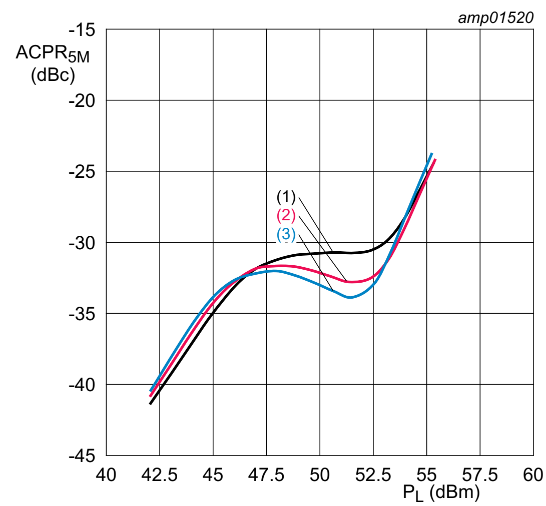
V_{DS} = 48 V; I_{Dq} = 820 mA; $V_{GS(amp)peak}$ = 0.25 V.

(1) f = 791 MHz

(2) f = 805 MHz

(3) f = 821 MHz

Fig 7. Power gain and drain efficiency as function of output power; typical values



V_{DS} = 48 V; I_{Dq} = 820 mA; $V_{GS(amp)peak}$ = 0.25 V.

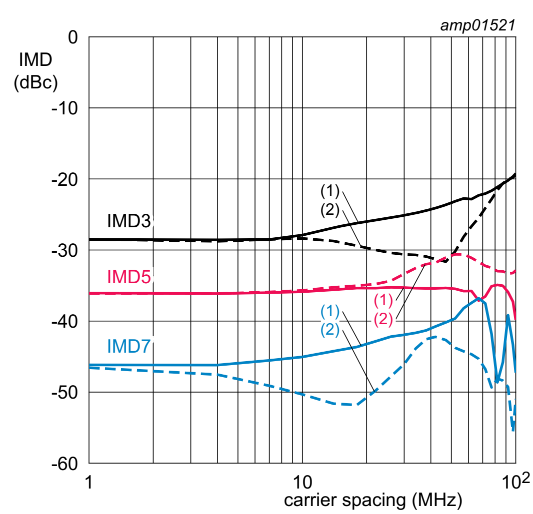
(1) f = 791 MHz

(2) f = 805 MHz

(3) f = 821 MHz

Fig 8. Adjacent channel power ratio (5 MHz) as a function of output power; typical values

7.4.4 2-Tone VBW



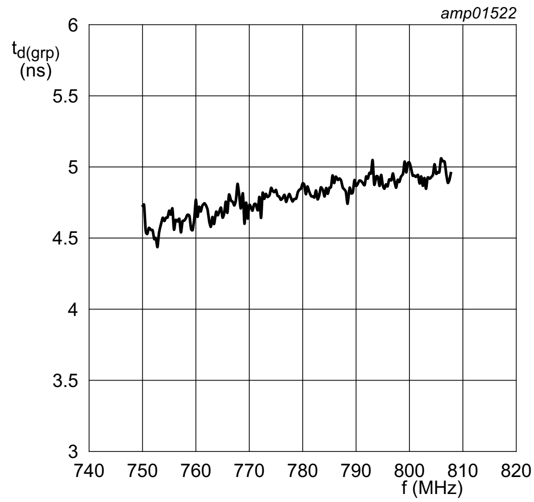
V_{DS} = 48 V; I_{Dq} = 820 mA; $V_{GS(amp)peak}$ = 0.25 V.

(1) IMD low

(2) IMD high

Fig 9. VBW capability

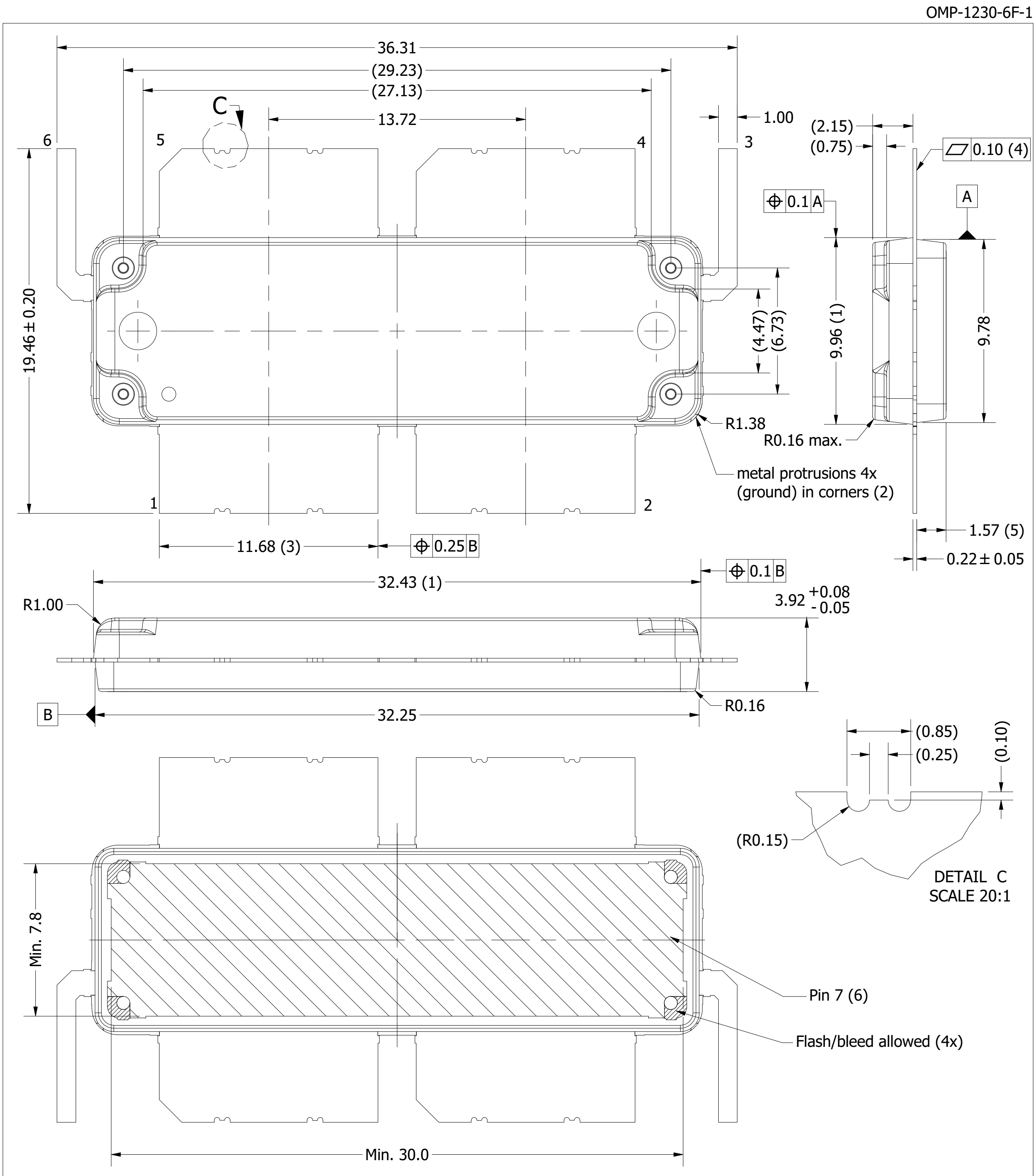
7.4.5 Group delay



V_{DS} = 48 V; I_{Dq} = 820 mA; $V_{GS(amp)peak}$ = 0.25 V.

Fig 10. Group delay time as a function of frequency; typical values

8. Package outline

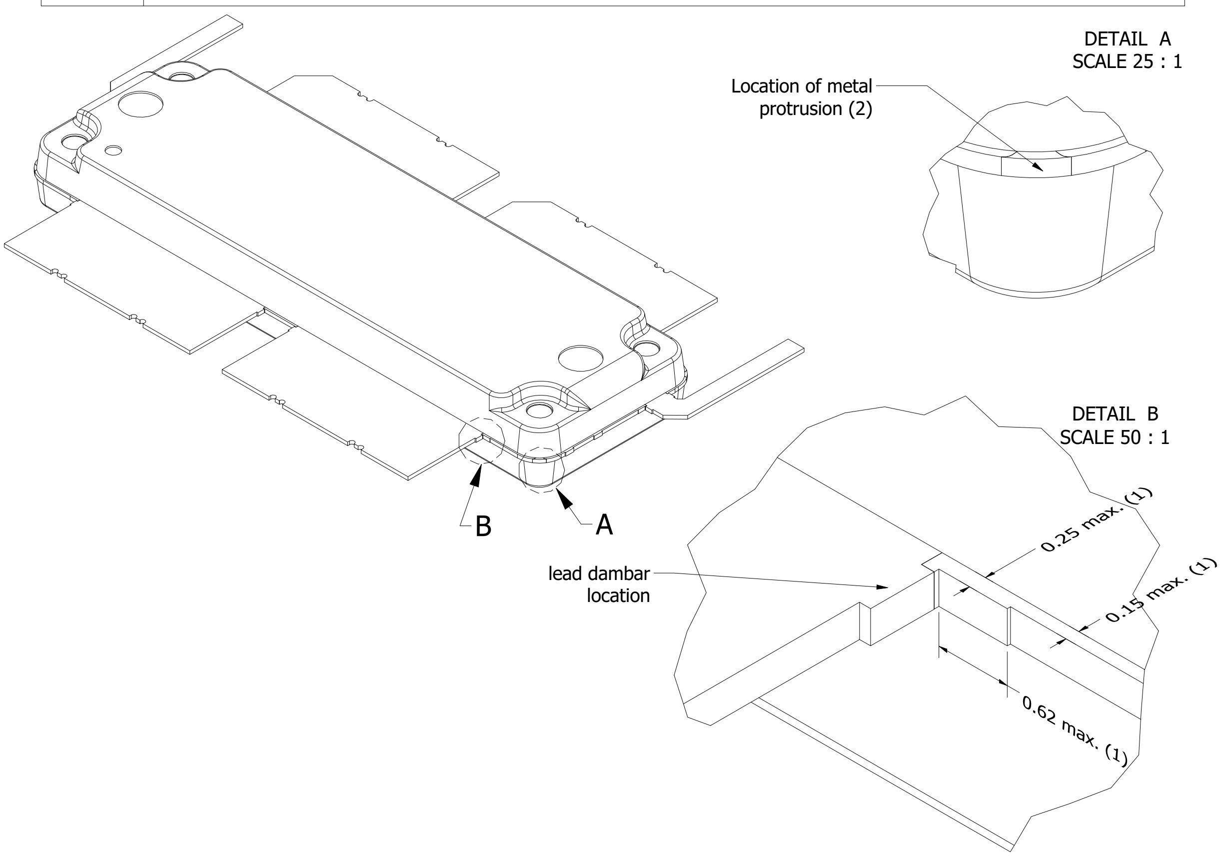


Package outline drawing:	units in mm.	Tolerances unless otherwise stated: Dimension: ± 0.05 Angle: ± 1°	Revision: 0 Revision date: 7/2/2019
OMP-1230-6F-1		Third angle projection	Sheet 1 of 2

Fig 11. Package outline OMP-1230-6F-1 (sheet 1 of 2)

OMP-1230-6F-1

Drawing Notes	
Items	Description
(1)	Dimensions are excluding mold protrusion. All areas located adjacent to the leads have a maximum mold protrusion of 0.25 mm (per side) and max. 0.62 mm in length. 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 from bottom of lead to bottom of plastic package. Dimension is measured 0.5 mm from the edge of the 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: OMP-1230-6F-1	units in mm.	Tolerances unless otherwise stated: Dimension: ± 0.05 Angle: ± 1°	Revision: 0 Revision date: 7/2/2019
		Third angle projection	Sheet 2 of 2

Fig 12. Package outline OMP-1230-6F-1 (sheet 2 of 2)

9. 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 15. ESD sensitivity

ESD model	Class
Charged Device Model (CDM); According to ANSI/ESDA/JEDEC standard JS-002	C3 [1]
Human Body Model (HBM); According to ANSI/ESDA/JEDEC standard JS-001	2 [2]

[1] CDM classification C3 is granted to any part that passes after exposure to an ESD pulse of 1000 V.

[2] HBM classification 2 is granted to any part that passes after exposure to an ESD pulse of 2000 V.

10. Abbreviations

Table 16. Abbreviations

Acronym	Description
3GPP	3rd Generation Partnership Project
AM	Amplitude Modulation
CCDF	Complementary Cumulative Distribution Function
CW	Continuous Wave
DPCH	Dedicated Physical CHannel
ESD	ElectroStatic Discharge
LDMOS	Laterally Diffused Metal-Oxide Semiconductor
MTF	Median Time to Failure
OBO	Output Back Off
PAR	Peak-to-Average Ratio
PM	Phase Modulation
RoHS	Restriction of Hazardous Substances
SMD	Surface Mounted Device
VBW	Video BandWidth
VSWR	Voltage Standing Wave Ratio
W-CDMA	Wideband Code Division Multiple Access

11. Revision history

Table 17. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BLP9H10S-850AVT v.1	20220525	Product data sheet	-	-

12. Legal information

12.1 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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14. Contents

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Date of release: 25 May 2022

Document identifier: BLP9H10S-850AVT