BLS6G2933P-200

LDMOS S-Band radar pallet amplifier

Rev. 01 — 28 May 2010 Objective data sheet

1. Product profile

1.1 General description

200 W LDMOS amplifier pallet intended for radar applications in the 2.9 GHz to 3.3 GHz range.

Table 1. Typical performance

RF performance at T_{case} = 25 °C in a common source class-AB test circuit.

Mode of operation	f	V_{DS}	$P_{L(1dB)}$	G_p	η_D	I_{Dq}
	(GHz)	(V)	(W)	(dB)	(%)	(mA)
class-AB; t_p = 300 μs; δ = 10 %	2.9 to 3.3	32	220	11	45	100

CAUTION

This device is sensitive to ElectroStatic Discharge (ESD). Therefore care should be taken during transport and handling.

1.2 Features and benefits

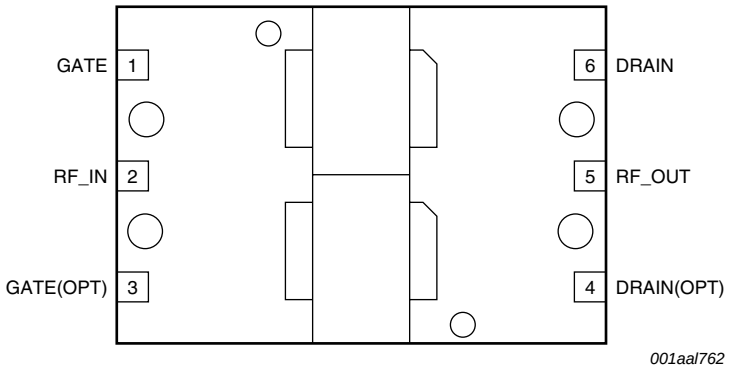
- Easy power control
- Integrated ESD protection
- Excellent ruggedness
- Excellent thermal stability
- Designed for broadband operation (2.9 GHz to 3.3 GHz)
- Matched to 50 Ω for ease of use
- Extreme low weight pallet (environmental friendly and easy to use)

1.3 Applications

- General S-Band radar applications

2. Pinning information

2.1 Pinning



Top view.

Fig 1. Preliminary pin configuration

2.2 Pin description

Table 2. Pin description[1]

Symbol	Pin	Description
GATE	1	gate
RF_IN	2	RF input
GATE(OPT)	3	optional gate
DRAIN(OPT)	4	optional drain
RF_OUT	5	RF output
DRAIN	6	drain

[1] The case is a source/ground connection.

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BLS6G2933P-200	-	<tbd>	<tbd>

4. 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		-	60	V
V_{GS}	gate-source voltage		-	±11	V
I_D	drain current		-	66	A
T_{stg}	storage temperature		−40	+125	°C
T_j	junction temperature		-	200	°C

5. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions		Typ	Unit
$Z_{th(j-h)}$	transient thermal impedance from junction to heatsink	T_h = 25 °C; P_L = 200 W			
		t_p = 300 μs; δ = 10 %	[1]	<tbd>	K/W
		t_p = 200 μs; δ = 10 %	[1]	<tbd>	K/W
		t_p = 100 μs; δ = 10 %	[1]	<tbd>	K/W

[1] Measured from junction to heatsink of the pallet.

6. Characteristics

Table 6. Characteristics per section

T_j = 25 °C; unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{(BR)DSS}$	drain-source breakdown voltage	V_{GS} = 0 V; I_D = 1 mA	60	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	V_{DS} = 10 V; I_D = 360 mA	1.4	1.8	2.3	V
I_{DSS}	drain leakage current	V_{GS} = 0 V; V_{DS} = 28 V	-	-	10	μA
I_{GSS}	gate leakage current	V_{GS} = ±11 V; V_{DS} = 0 V	-	-	900	nA
g_{fs}	forward transconductance	V_{DS} = 10 V; I_D = 10 A	-	13	-	S

7. Application information

Table 7. Application information

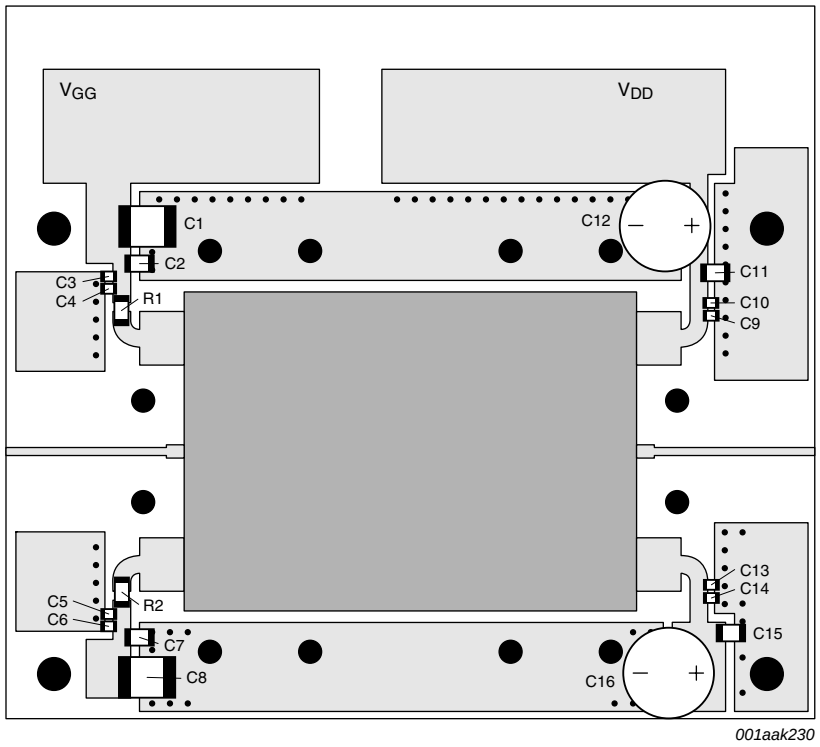
RF performance in common source class-AB circuit; T_h = 25 °C; t_p = 300 μs; δ = 10 %; I_{Dq} = 100 mA; P_L = 215 W; Z_{th} = <tbd> K/W; unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
f	frequency		2.9	-	3.3	GHz
V_{CC}	supply voltage		-	-	32	V
t_p	pulse duration		-	-	300	μs
δ	duty cycle		-	10	-	%
$P_{L(1dB)}$	output power at 1 dB gain compression		-	220	-	W
G_p	power gain		10	11	-	dB
η_D	drain efficiency		40	45	-	%
$P_{droop(pulse)}$	pulse droop power		-	0.1	0.3	dB
Z_i	input impedance		-	50	-	Ω
Z_o	output impedance		-	50	-	Ω
IRL	input return loss		-	−10	-	dB

7.1 Ruggedness in class-AB operation

The BLS6G2933P-200 is capable of withstanding a load mismatch corresponding to VSWR = 5 : 1 through all phases under the following conditions: V_{DS} = 32 V; I_{Dq} = 100 mA; P_L = 215 W pulsed; t_p = 300 μs; δ = 10 %.

8. Test information



The striplines are on a Rogers RO6006 Printed-Circuit Board (PCB) with thickness = 0.635 mm. See Table 8 for list of components. The drawing is not to scale.

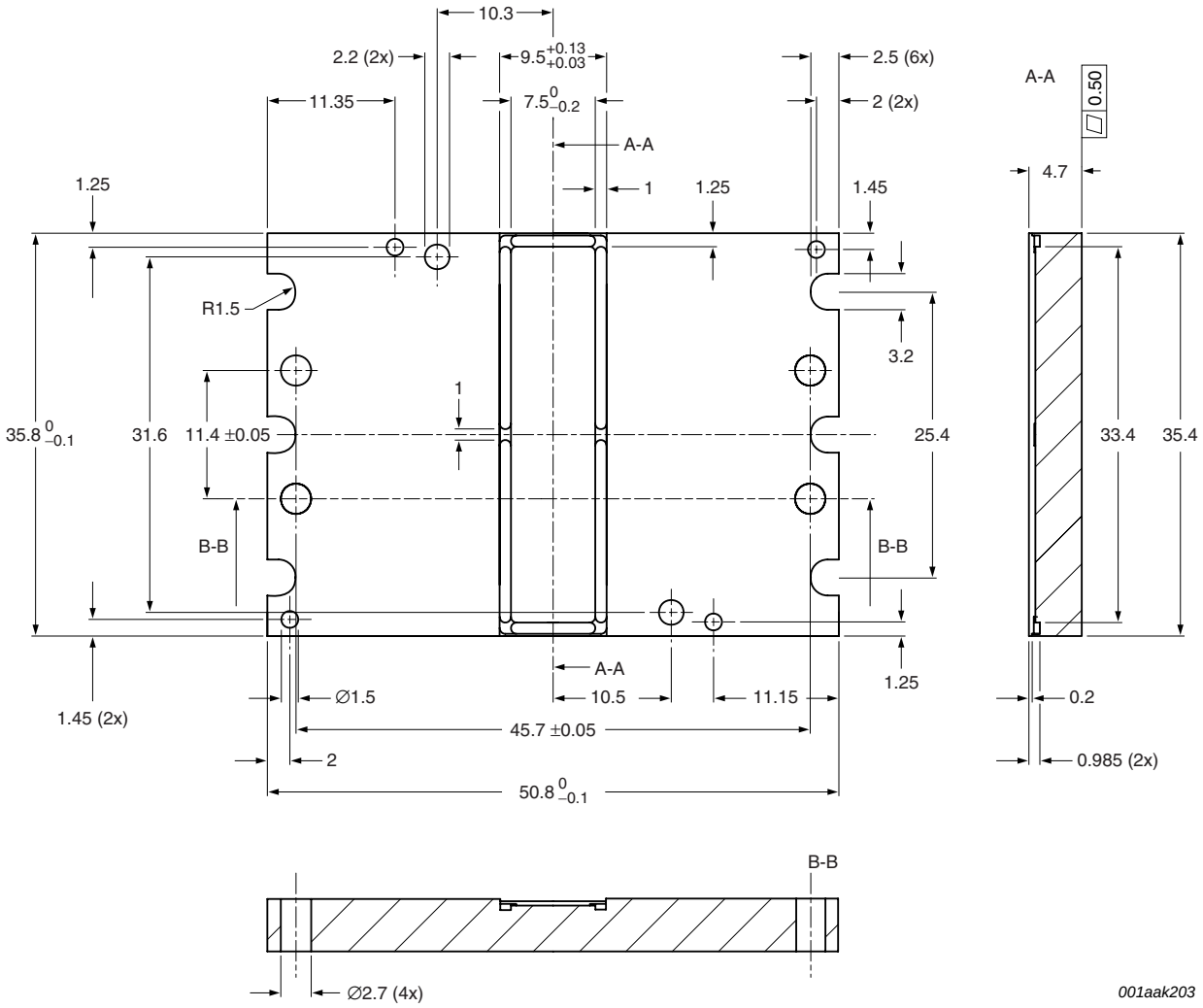
Fig 2. Component layout

Table 8. List of components

See Figure 2 for component layout.

Component	Description	Value	Remarks
C1, C8	multilayer ceramic chip capacitor	47 μF	TDK
C2, C7, C11, C15	multilayer ceramic chip capacitor	100 pF	ATC100B
C3, C4, C5, C6, C9, C10, C13, C14	multilayer ceramic chip capacitor	33 pF	ATC100A
C12	electrolytic capacitor	680 μF	
C16	electrolytic capacitor	68 μF	
R1, R2	SMD resistor	33 Ω	thin film

9. Package information



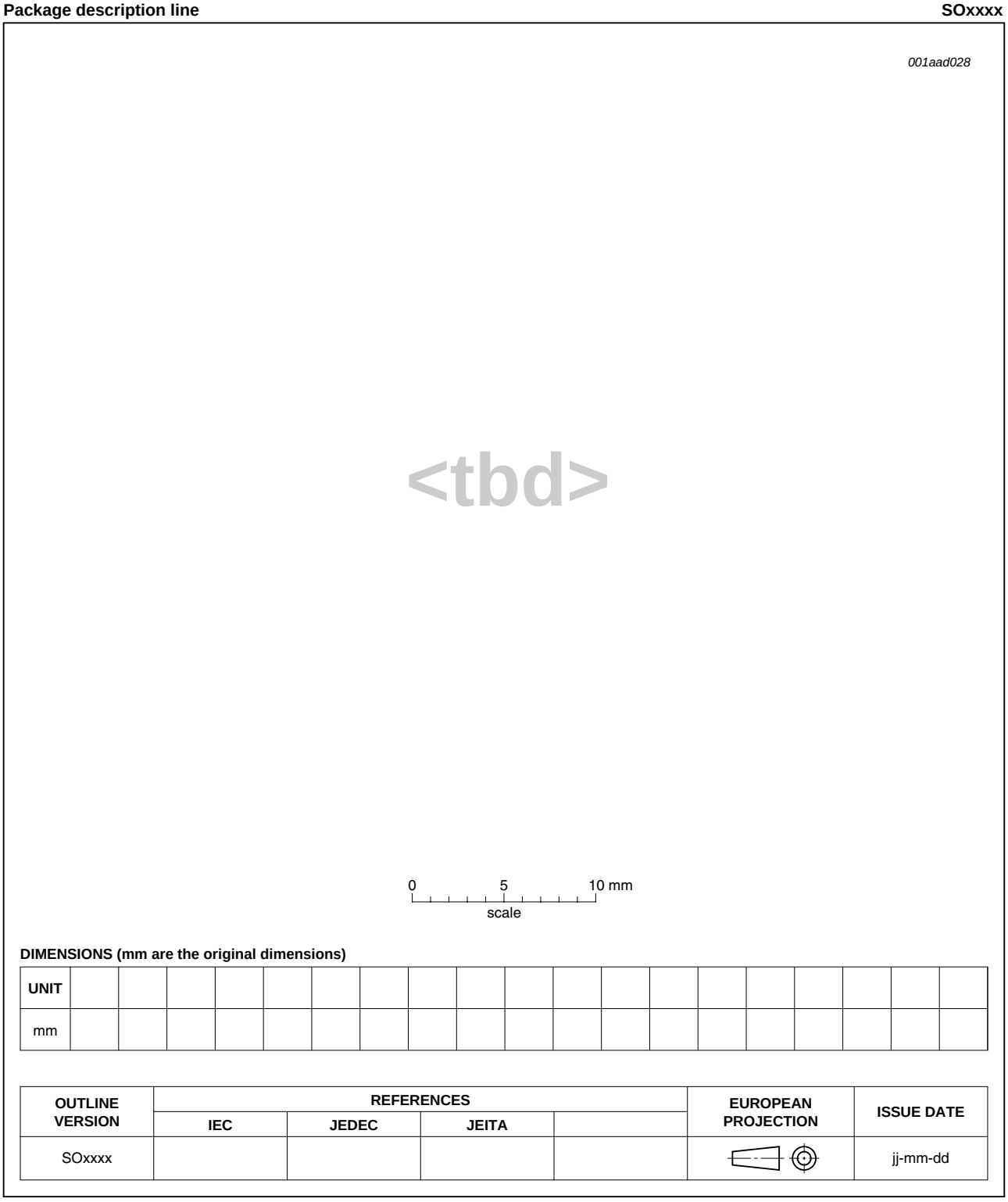
Printed-Circuit Board (PCB) thickness is 0.64 mm.

Sweat bonding is approximately 25 μm.

Fig 3. Preliminary package outline

10. Package outline

Package description line **SOxxxx**



DIMENSIONS (mm are the original dimensions)

UNIT																			
mm																			

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOxxxx						jj-mm-dd

Fig 4. Package outline

11. Abbreviations

Table 9. Abbreviations

Acronym	Description
LDMOS	Laterally Diffused Metal Oxide Semiconductor
RF	Radio Frequency
S-Band	Short wave Band
SMD	Surface Mounted Device
VSWR	Voltage Standing-Wave Ratio

12. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BLS6G2933P-200 v.1	20100528	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".

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15. Contents

1 Product profile 1
1.1 General description 1
1.2 Features and benefits 1
1.3 Applications 1
2 Pinning information 2
2.1 Pinning 2
2.2 Pin description 2
3 Ordering information 2
4 Limiting values 3
5 Thermal characteristics 3
6 Characteristics 3
7 Application information 4
7.1 Ruggedness in class-AB operation 4
8 Test information 5
9 Package information 6
10 Package outline 7
11 Abbreviations 8
12 Revision history 8
13 Legal information 9
13.1 Data sheet status 9
13.2 Definitions 9
13.3 Disclaimers 9
13.4 Trademarks 10
14 Contact information 10
15 Contents 11

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