

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 $T_{case} = 25\text{ °C}$ in a common source class-AB test circuit.

Mode of operation	f (GHz)	V _{DS} (V)	P _{L(1dB)} (W)	G _p (dB)	η _D (%)	I _{DQ} (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)

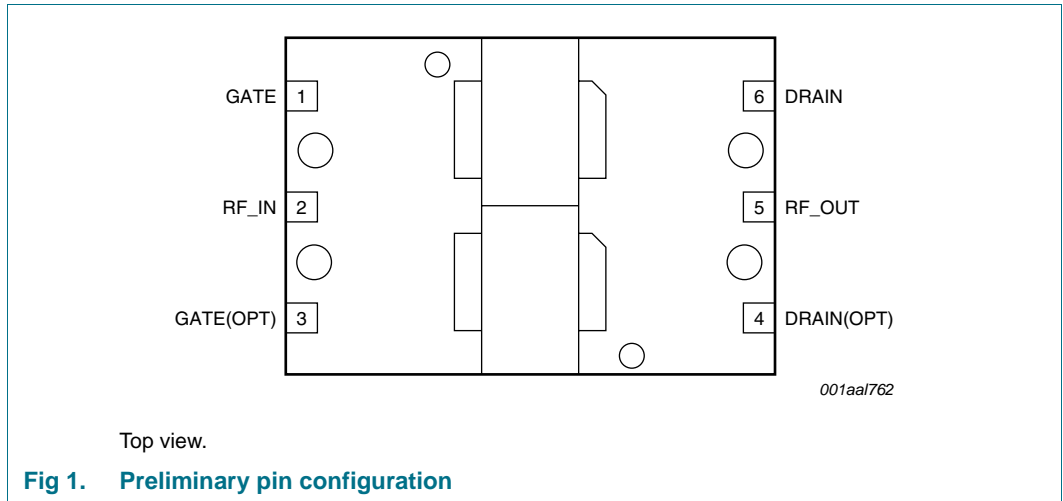
1.3 Applications

- General S-Band radar applications



2. Pinning information

2.1 Pinning



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		Version
	Name	Description	
BLS6G2933P-200	-	<td>	<td>

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	$^{\circ}\text{C}$
T_j	junction temperature		-	200	$^{\circ}\text{C}$

5. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$Z_{th(j-h)}$	transient thermal impedance from junction to heatsink	$T_h = 25\text{ }^{\circ}\text{C}; P_L = 200\text{ W}$		
		$t_p = 300\text{ }\mu\text{s}; \delta = 10\%$	[1] <td>	K/W
		$t_p = 200\text{ }\mu\text{s}; \delta = 10\%$	[1] <td>	K/W
		$t_p = 100\text{ }\mu\text{s}; \delta = 10\%$	[1] <td>	K/W

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

6. Characteristics

Table 6. Characteristics per section

$T_j = 25\text{ }^{\circ}\text{C}$; unless otherwise specified.

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

7. Application information

Table 7. Application information

RF performance in common source class-AB circuit; $T_h = 25\text{ °C}$; $t_p = 300\text{ }\mu\text{s}$; $\delta = 10\text{ }\%$; $I_{DQ} = 100\text{ mA}$; $P_L = 215\text{ W}$; $Z_{th} = <td> K/W$; 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 ; $\delta = 10\text{ }\%$.

8. Test information

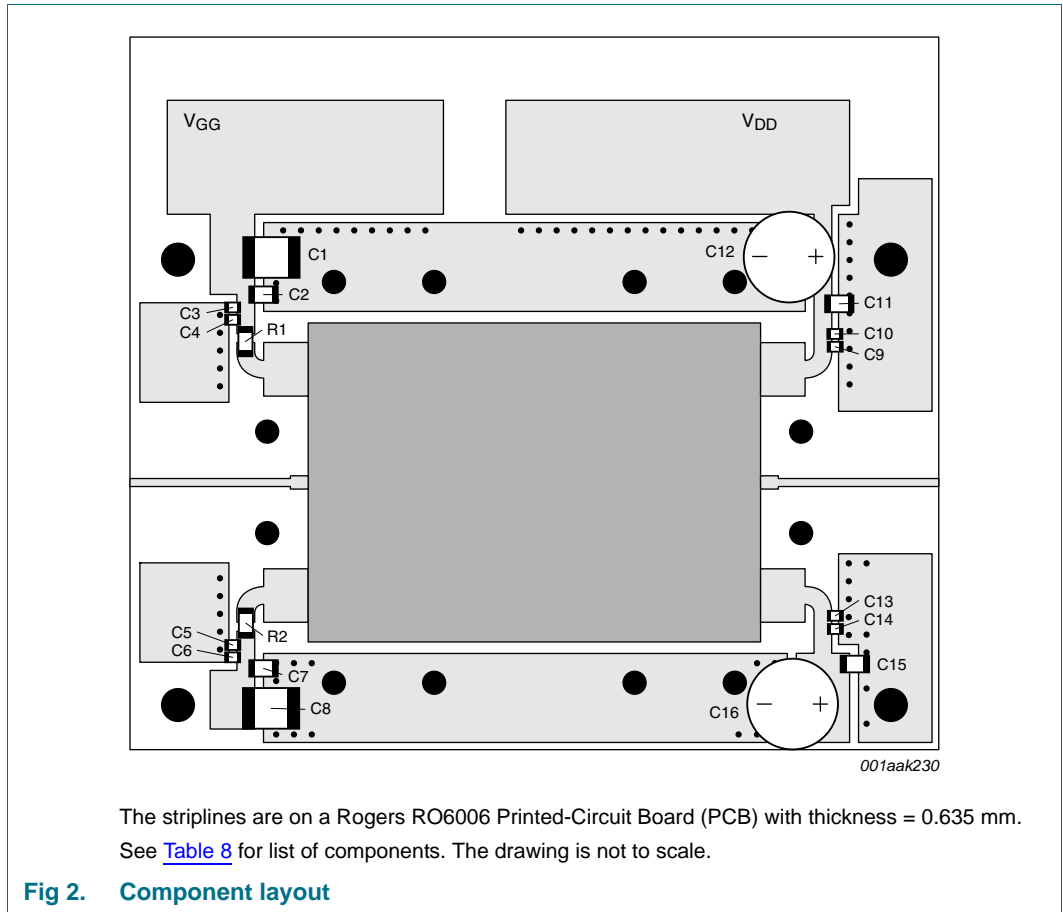


Table 8. List of components

See [Figure 2](#) for component layout.

Component	Description	Value	Remarks
C1, C8	multilayer ceramic chip capacitor	47 μ F	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 μ F	
C16	electrolytic capacitor	68 μ F	
R1, R2	SMD resistor	33 Ω	thin film

9. Package information

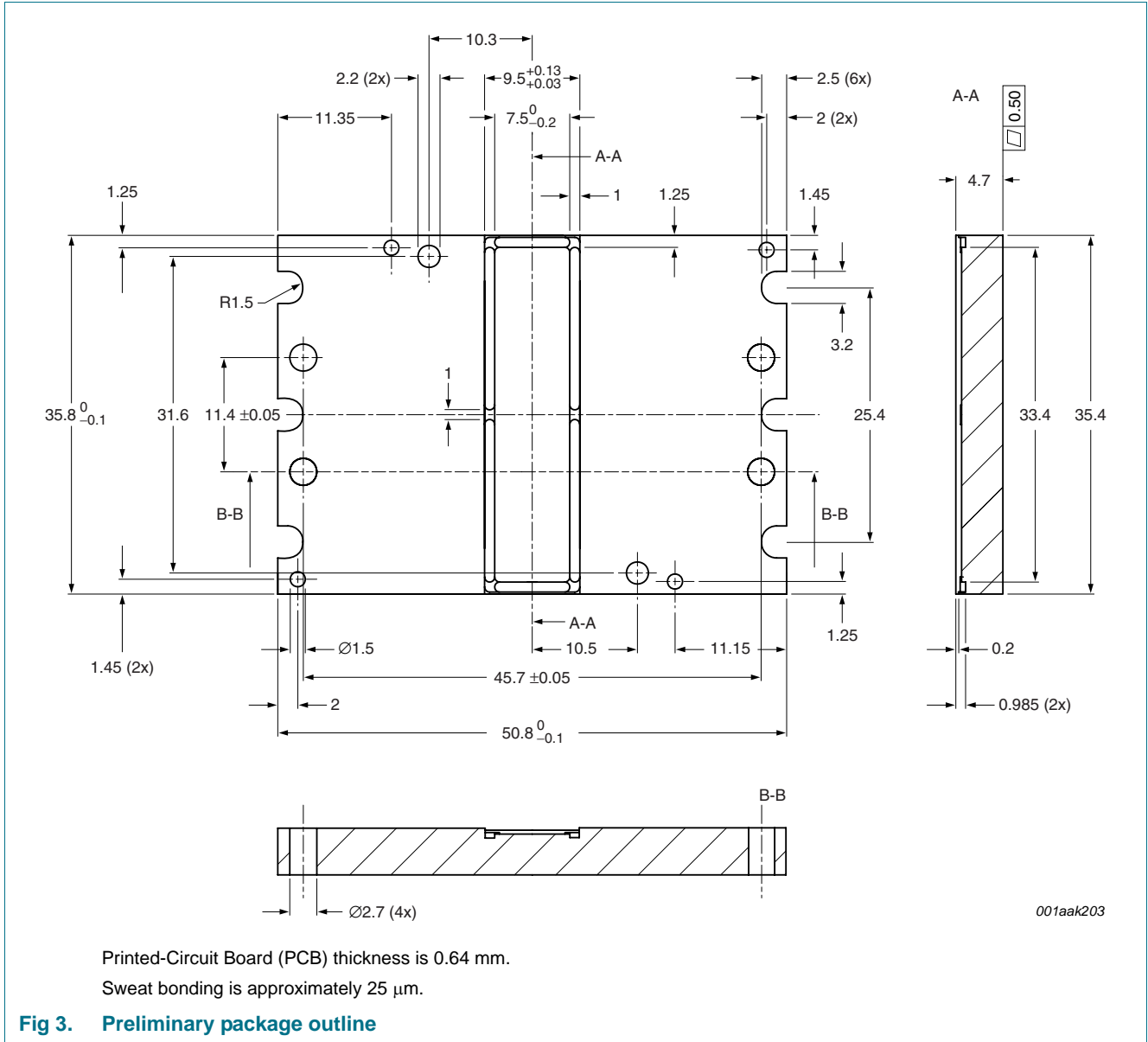


Fig 3. Preliminary package outline

10. Package outline

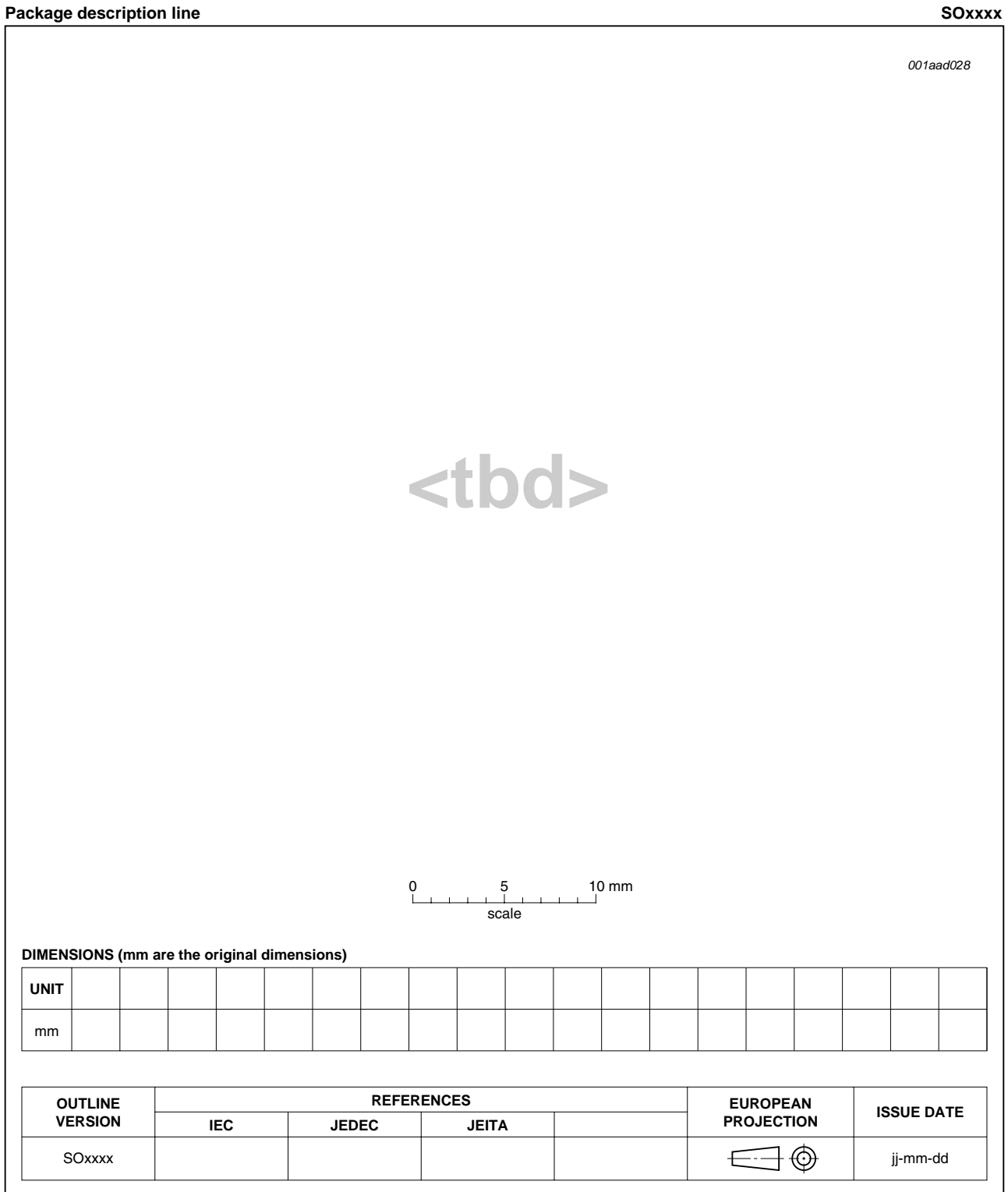


Fig 4. Package outline

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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