

BLF6G13L-250P; BLF6G13LS-250P

Power LDMOS transistor

Rev. 1 — 2 November 2010

Objective data sheet

1. Product profile

1.1 General description

250 W LDMOS power transistor intended for CW applications at a frequency of 1.3 GHz.

Table 1. Test information

Typical RF performance at $T_{case} = 25\text{ }^{\circ}\text{C}$; $I_{Dq} = 100\text{ mA}$; in a class-AB production test circuit.

Mode of operation	f (GHz)	V _{DS} (V)	P _{L(1dB)} (W)	G _p (dB)	η _D (%)
CW	1.3	50	250	15	50

1.2 Features and benefits

- Typical CW performance at a frequency of 1.3 GHz, a supply voltage of 50 V, an I_{Dq} of 100 mA:
 - ◆ Output power = 250 W
 - ◆ Power gain = 15 dB
 - ◆ Efficiency = 50 %
- Easy power control
- Integrated ESD protection
- Excellent ruggedness
- High efficiency
- Excellent thermal stability
- Internally matched for ease of use
- Compliant to Directive 2002/95/EC, regarding Restriction of Hazardous Substances (RoHS)

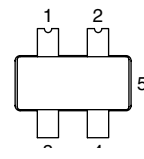
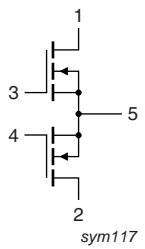
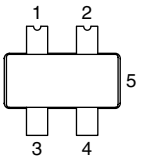
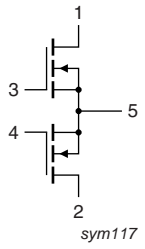
1.3 Applications

- Industrial, scientific and medical applications



2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Graphic symbol
BLF6G13L-250P (SOT1121A)			
1	drain1		 sym117
2	drain2		
3	gate1		
4	gate2		
5	source		
BLF6G13LS-250P (SOT1121B)			
1	drain1		 sym117
2	drain2		
3	gate1		
4	gate2		
5	source		

[1] Connected to flange.

3. Ordering information

Table 3. Ordering information

Type number	Package		Version
	Name	Description	
BLF6G13L-250P	-	flanged LDMOST ceramic package; 2 mounting holes; 4 leads	SOT1121A
BLF6G13LS-250P	-	earless flanged LDMOST ceramic package; 4 leads	SOT1121B

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		-	100	V
V_{GS}	gate-source voltage		-0.5	+13	V
I_D	drain current		-	42	A
T_{stg}	storage temperature		-65	+150	°C
T_j	junction temperature		-	200	°C

5. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-c)}$	thermal resistance from junction to case	$T_{case} = 85\text{ °C}; P_L = 250\text{ W}$	0.44	K/W

6. Characteristics

Table 6. DC characteristics

$T_j = 25\text{ °C}$; per section unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0\text{ V}; I_D = 1.4\text{ mA}$	100	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	$V_{DS} = 10\text{ V}; I_D = 235\text{ mA}$	1.3	1.8	2.25	V
I_{DSS}	drain leakage current	$V_{GS} = 0\text{ V}; V_{DS} = 50\text{ V}$	-	-	0.7	μA
I_{DSX}	drain cut-off current	$V_{GS} = V_{GS(th)} + 3.75\text{ V};$ $V_{DS} = 10\text{ V}$	16	21	-	A
I_{GSS}	gate leakage current	$V_{GS} = 11\text{ V}; V_{DS} = 0\text{ V}$	-	-	70	nA
g_{fs}	forward transconductance	$V_{DS} = 10\text{ V}; I_D = 235\text{ mA}$	<td>	<td>	-	S
$R_{DS(on)}$	drain-source on-state resistance	$V_{GS} = V_{GS(th)} + 3.75\text{ V};$ $I_D = 4.75\text{ A}$	-	200	340	$\text{m}\Omega$

Table 7. RF characteristics

Mode of operation: CW; $f = 1.3\text{ GHz}$; RF performance at $V_{DS} = 50\text{ V}; I_{Dq} = 100\text{ mA}; T_{case} = 25\text{ °C}$; unless otherwise specified, in a class-AB production test circuit.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
P_L	output power		250	-	-	W
V_{DS}	drain-source voltage	$P_L = 250\text{ W}$	-	-	50	V
G_p	power gain	$P_L = 250\text{ W}$	13.5	15	-	dB
RL_{in}	input return loss	$P_L = 250\text{ W}$	-	10	-	dB
η_D	drain efficiency	$P_L = 250\text{ W}$	45	50	-	%

6.1 Ruggedness in class-AB operation

The BLF6G13L-250P and BLF6G13LS-250P are capable of withstanding a load mismatch corresponding to $VSWR = 5 : 1$ through all phases under the following conditions: $V_{DS} = 50\text{ V}; I_{Dq} = 100\text{ mA}; P_L = 250\text{ W}; f = 1.3\text{ GHz}$.

7. Package outline

Flanged LDMOST ceramic package; 2 mounting holes; 4 leads

SOT1121A

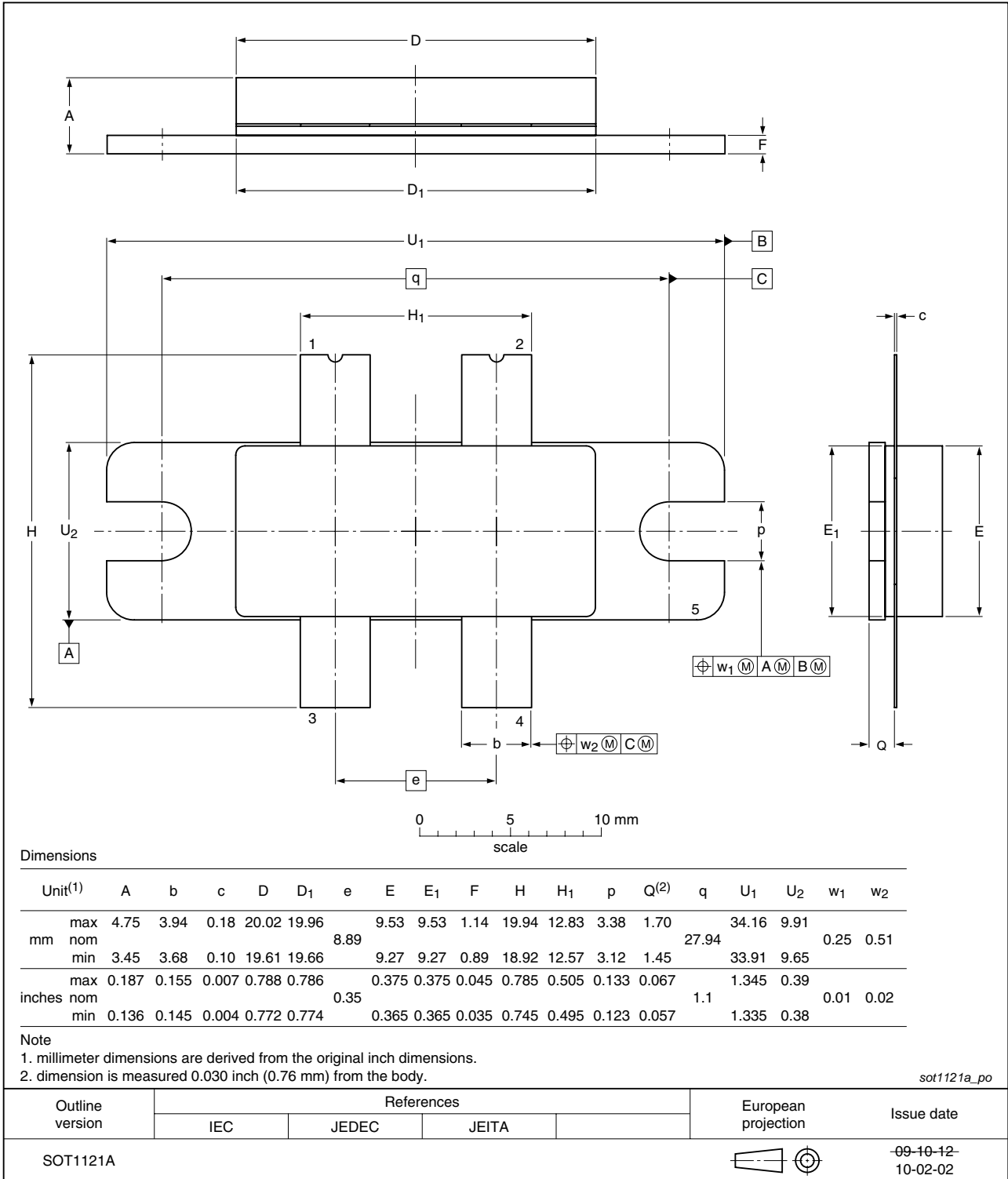


Fig 1. Package outline SOT1121A

Earless flanged LDMOST ceramic package; 4 leads

SOT1121B

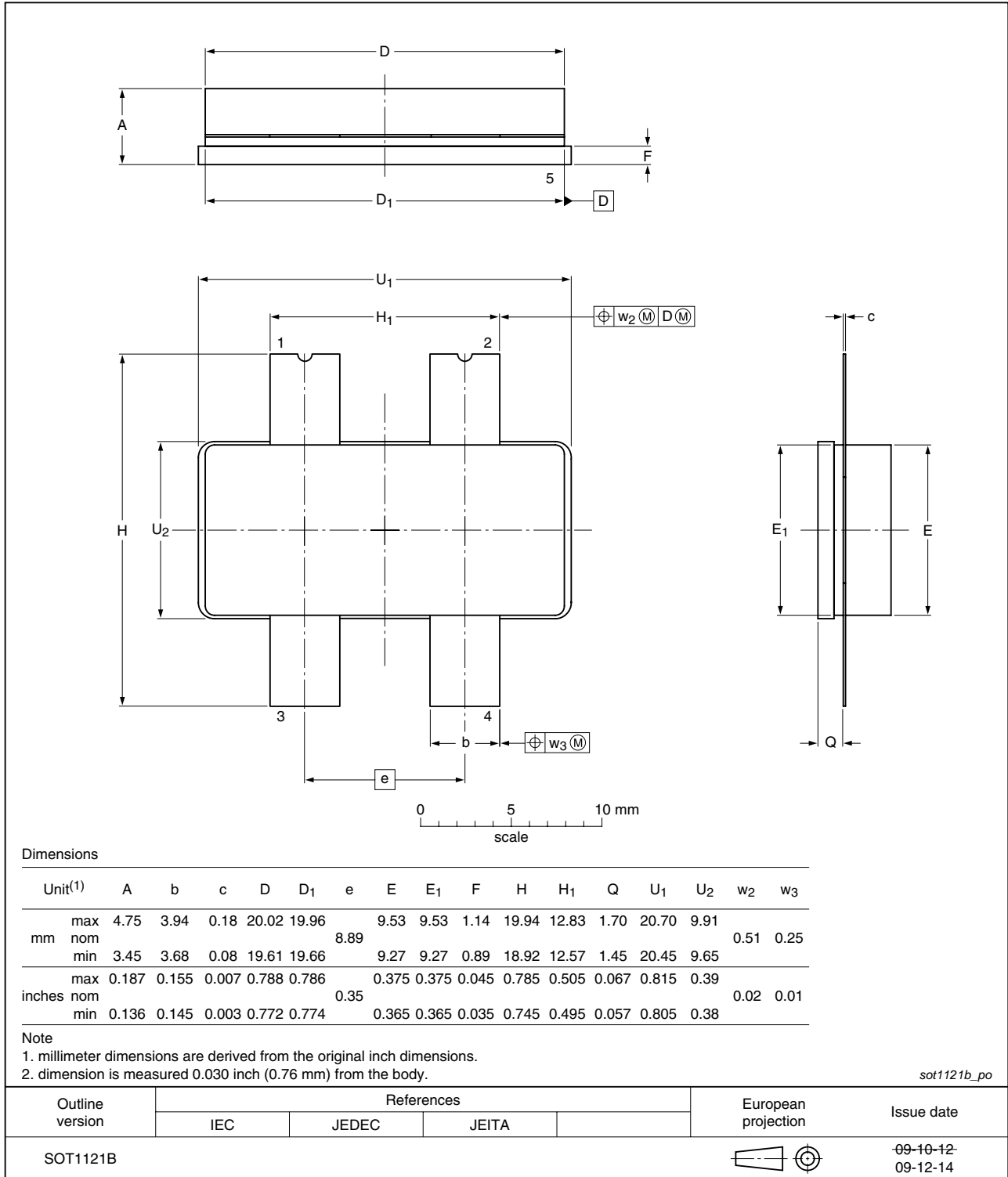


Fig 2. Package outline SOT1121B

8. 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.

9. Abbreviations

Table 8. Abbreviations

Acronym	Description
CW	Continuous Wave
LDMOS	Laterally Diffused Metal-Oxide Semiconductor
LDMOST	Laterally Diffused Metal-Oxide Semiconductor Transistor
RF	Radio Frequency
VSWR	Voltage Standing-Wave Ratio

10. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BLF6G13L-250P_6G13LS-250P v.1	20101102	Objective data sheet	-	-

11. Legal information

11.1 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.

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[2] The term 'short data sheet' is explained in section "Definitions".

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