

# BLF8G24LS-100V; BLF8G24LS-100GV

Power LDMOS transistor

Rev. 1 — 4 November 2013

Objective data sheet

## 1. Product profile

### 1.1 General description

100 W LDMOS power transistor with improved video bandwidth for base station applications at frequencies from 2300 MHz to 2400 MHz.

**Table 1. Typical performance**

Typical RF performance at  $T_{case} = 25\text{ }^{\circ}\text{C}$  in a common source class-AB production test circuit.

Test signal	f (MHz)	$I_{Dq}$ (mA)	$V_{DS}$ (V)	$P_{L(AV)}$ (W)	$G_p$ (dB)	$\eta_D$ (%)	ACPR <sub>5M</sub> (dBc)
2-carrier W-CDMA	2300 to 2400	900	28	25	17	28	-32 <a href="#">[1]</a>

[1] Test signal: 3GPP test model 1; 64 DPCH; PAR = 8.4 dB at 0.01 % probability on CCDF per carrier; 5 MHz carrier spacing.

### 1.2 Features and benefits

- Excellent ruggedness
- High efficiency
- Low thermal resistance providing excellent thermal stability
- Decoupling leads to enable improved video bandwidth (110 MHz typical)
- Designed for broadband operation (2300 MHz to 2400 MHz)
- Lower output capacitance for improved performance in Doherty applications
- Designed for low memory effects providing excellent pre-distortability
- Internally matched for ease of use
- Integrated ESD protection
- Compliant to Directive 2002/95/EC, regarding Restriction of Hazardous Substances (RoHS)

### 1.3 Applications

- RF power amplifiers for W-CDMA base stations and multi carrier applications in the 2300 MHz to 2400 MHz frequency range



## 2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Graphic symbol
<b>BLF8G24LS-100V (SOT1244B)</b>			
1	drain		
2	gate		
3	source <a href="#">[1]</a>		
4	decoupling lead		
5	decoupling lead		
6	n.c.		
7	n.c.		
<b>BLF8G24LS-100GV (SOT1244C)</b>			
1	drain		
2	gate		
3	source <a href="#">[1]</a>		
4	decoupling lead		
5	decoupling lead		
6	n.c.		
7	n.c.		

[1] Connected to flange.

## 3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BLF8G24LS-100V	-	earless flanged ceramic package; 6 leads	SOT1244B
BLF8G24LS-100GV	-	earless flanged ceramic package; 6 leads	SOT1244C

## 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		-	65	V
$V_{GS}$	gate-source voltage		-0.5	+13	V
$T_{stg}$	storage temperature		-65	+150	°C
$T_j$	junction temperature		<a href="#">[1]</a> -	225	°C

[1] Continuous use at maximum temperature will affect reliability.

## 5. Thermal characteristics

**Table 5. Thermal characteristics**

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-c)}$	thermal resistance from junction to case	$T_{case} = 80\text{ }^{\circ}\text{C}$ ; $P_L = 48\text{ W}$	0.29	K/W

## 6. Characteristics

**Table 6. DC characteristics**

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0\text{ V}$ ; $I_D = 1\text{ mA}$	65	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	$V_{DS} = 10\text{ V}$ ; $I_D = 153\text{ mA}$	1.5	1.9	2.3	V
$I_{DSS}$	drain leakage current	$V_{GS} = 0\text{ V}$ ; $V_{DS} = 28\text{ V}$	-	-	4.2	$\mu\text{A}$
$I_{DSX}$	drain cut-off current	$V_{GS} = V_{GS(th)} + 3.75\text{ V}$ ; $V_{DS} = 10\text{ V}$	-	29	-	A
$I_{GSS}$	gate leakage current	$V_{GS} = 11\text{ V}$ ; $V_{DS} = 0\text{ V}$	-	-	420	nA
$g_{fs}$	forward transconductance	$V_{DS} = 10\text{ V}$ ; $I_D = 153\text{ mA}$	-	1.27	-	S
$R_{DS(on)}$	drain-source on-state resistance	$V_{GS} = V_{GS(th)} + 3.75\text{ V}$ ; $I_D = 5.35\text{ A}$	-	0.1	-	$\Omega$

**Table 7. RF characteristics**

Test signal: 2-carrier W-CDMA, 3GPP test model 1; 64 DPCH; PAR = 7.2 dB at 0.01 % probability on the CCDF;  $f_1 = 2302.5\text{ MHz}$ ;  $f_2 = 2307.5\text{ MHz}$ ;  $f_3 = 2392.5\text{ MHz}$ ;  $f_4 = 2397.5\text{ MHz}$ ;  
RF performance at  $V_{DS} = 28\text{ V}$ ;  $I_{Dq} = 900\text{ mA}$ ;  $T_{case} = 25\text{ }^{\circ}\text{C}$ ; unless otherwise specified; in a class-AB production test circuit.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$G_p$	power gain	$P_{L(AV)} = 25\text{ W}$	<td>	17	-	dB
$\eta_D$	drain efficiency	$P_{L(AV)} = 25\text{ W}$	<td>	28	-	%
$RL_{in}$	input return loss	$P_{L(AV)} = 25\text{ W}$	-	-10	-	dB
$ACPR_{5M}$	adjacent channel power ratio (5 MHz)	$P_{L(AV)} = 25\text{ W}$	-	-32	<td>	dBc

## 7. Test information

### 7.1 Ruggedness in class-AB operation

The BLF8G24LS-100V and BLF8G24LS-100GV are capable of withstanding a load mismatch corresponding to  $VSWR = 10 : 1$  through all phases under the following conditions:  $V_{DS} = 28\text{ V}$ ;  $I_{Dq} = 900\text{ mA}$ ;  $P_L = 100\text{ W}$ ;  $f = 2300\text{ MHz}$ .

### 8. Package outline

Earless flanged ceramic package; 6 leads

SOT1244B

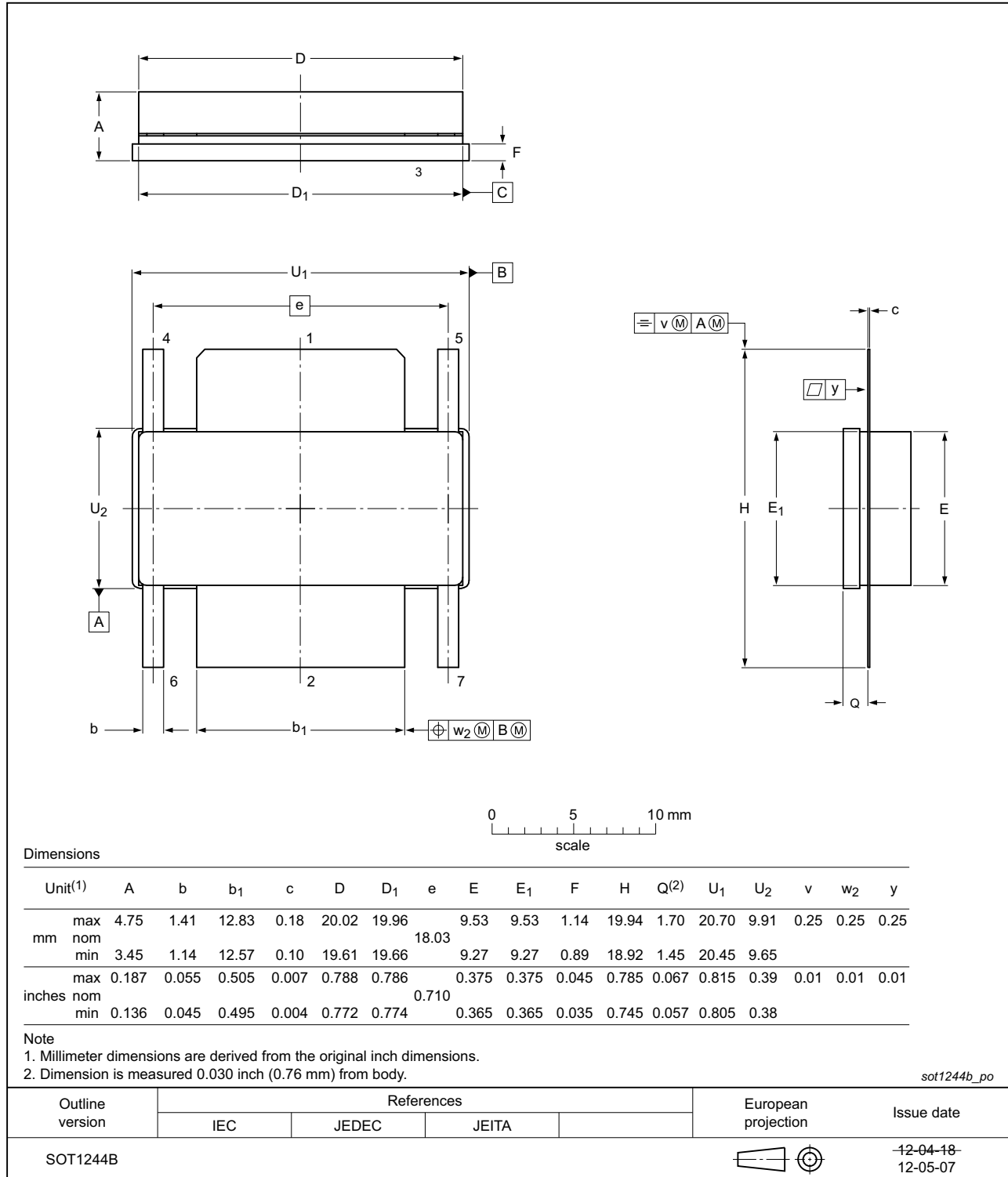


Fig 1. Package outline SOT1244B

Earless flanged ceramic package; 6 leads

SOT1244C

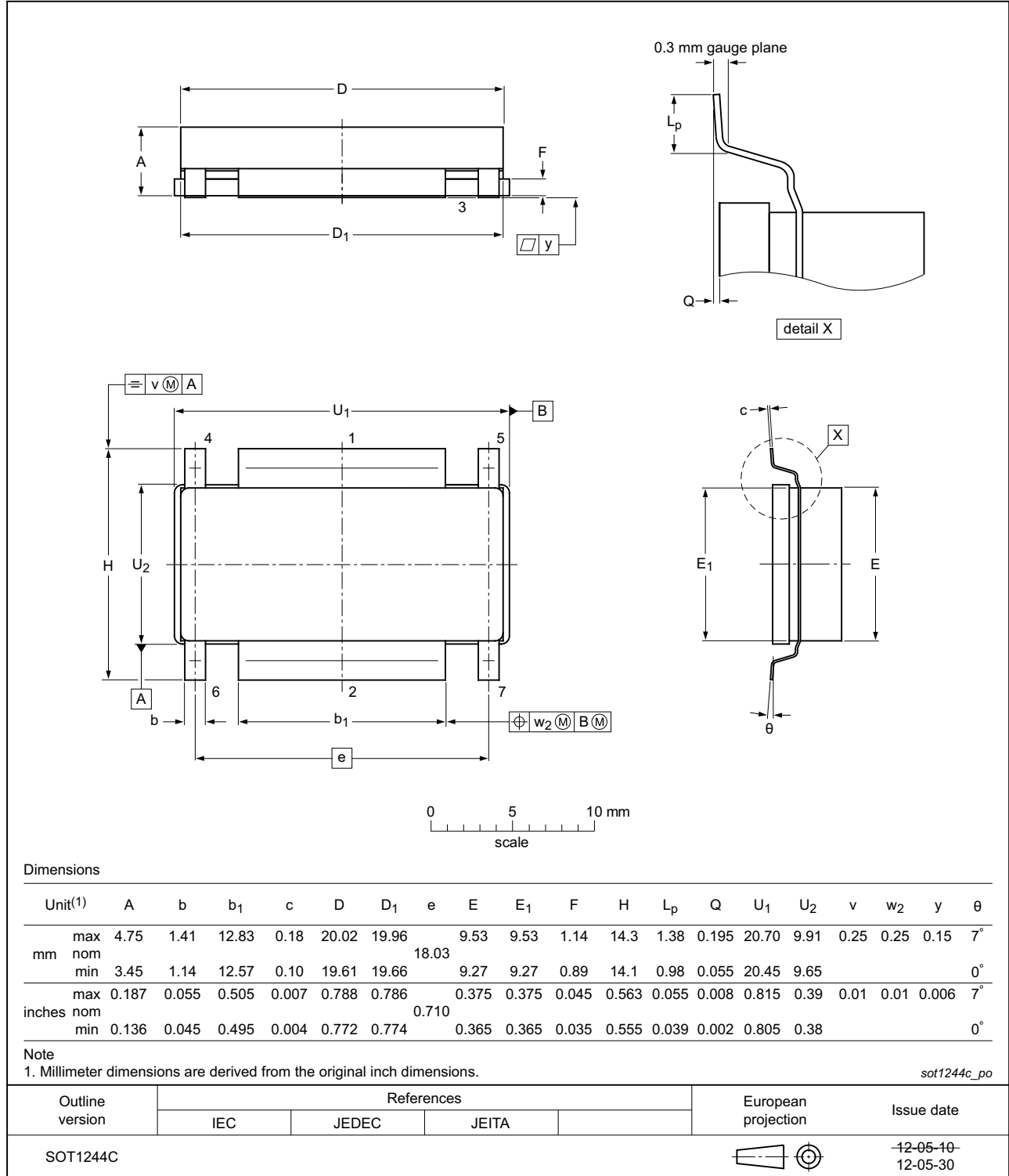


Fig 2. Package outline SOT1244C

## 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.

## 10. Abbreviations

**Table 8. Abbreviations**

Acronym	Description
3GPP	3rd Generation Partnership Project
CCDF	Complementary Cumulative Distribution Function
CW	Continuous Wave
DPCH	Dedicated Physical CHannel
ESD	ElectroStatic Discharge
LDMOS	Laterally Diffused Metal Oxide Semiconductor
PAR	Peak-to-Average Ratio
VSWR	Voltage Standing Wave Ratio
W-CDMA	Wideband Code Division Multiple Access

## 11. Revision history

**Table 9. Revision history**

Document ID	Release date	Data sheet status	Change notice	Supersedes
BLF8G24LS-100V_24LS-100GV v.1	20131104	Objective data sheet	-	-

## 12. Legal information

### 12.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
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