

BLF8G20LS-210V; BLF8G20LS-210GV

Power LDMOS transistor

Rev. 1 — 25 February 2014

Objective data sheet

1. Product profile

1.1 General description

210 W LDMOS power transistor with improved video bandwidth for base station applications at frequencies from 1805 MHz to 1990 MHz.

Table 1. Typical performance

Typical RF performance at $T_{case} = 25\text{ °C}$ 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)	η_D (%)	ACPR _{5M} (dBc)
2-carrier W-CDMA	1805 to 1880	1600	28	50	18.5	25	-30 [1]

[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 (<td>)
- Designed for broadband operation (1805 MHz to 1990 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 1805 MHz to 1990 MHz frequency range



2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Graphic symbol
BLF8G20LS-210V (SOT1244B)			
1	drain		 aaa-003619
2	gate		
3	source [1]		
4	decoupling lead		
5	decoupling lead		
6	n.c.		
7	n.c.		
BLF8G20LS-210GV (SOT1244C)			
1	drain		 aaa-003619
2	gate		
3	source [1]		
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
BLF8G20LS-210V	-	earless flanged ceramic package; 6 leads	SOT1244B
BLF8G20LS-210GV	-	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	[1]	-	225	°C

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

5. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-c)}$	thermal resistance from junction to case	$T_{case} = 80\text{ °C}; P_L = 50\text{ W}$	<td>	K/W

6. Characteristics

Table 6. DC characteristics

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0\text{ V}; I_D = 3\text{ mA}$	65	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	$V_{DS} = 10\text{ V}; I_D = 300\text{ mA}$	1.5	1.9	2.3	V
V_{GSq}	gate-source quiescent voltage	$V_{DS} = 28\text{ V}; I_D = 1600\text{ mA}$	1.6	2	2.4	V
I_{DSS}	drain leakage current	$V_{GS} = 0\text{ V}; V_{DS} = 28\text{ V}$	-	-	2.8	μA
I_{DSX}	drain cut-off current	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; V_{DS} = 10\text{ V}$	-	53	-	A
I_{GSS}	gate leakage current	$V_{GS} = 11\text{ V}; V_{DS} = 0\text{ V}$	-	-	280	nA
g_{fs}	forward transconductance	$V_{DS} = 10\text{ V}; I_D = 153\text{ mA}$	-	<td>	-	S
$R_{DS(on)}$	drain-source on-state resistance	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; I_D = 10.5\text{ A}$	-	0.05	-	Ω

Table 7. RF characteristics

Test signal: 2-carrier W-CDMA, 3GPP test model 1 with 64 DPCH; PAR = 8.4 dB at 0.01 % probability on the CCDF; $f_1 = 1807.5\text{ MHz}; f_2 = 1812.5\text{ MHz}; f_3 = 1872.5\text{ MHz}; f_4 = 1877.5\text{ MHz}$; RF performance at $V_{DS} = 28\text{ V}; I_{Dq} = 1600\text{ mA}; T_{case} = 25\text{ °C}$; unless otherwise specified; in a water cooled AB test circuit.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	$P_{L(AV)} = 50\text{ W}$	<td>	18.5	-	dB
η_D	drain efficiency	$P_{L(AV)} = 50\text{ W}$	<td>	25	-	%
RL_{in}	input return loss	$P_{L(AV)} = 50\text{ W}$	-	-10	<td>	dB
$ACPR_{5M}$	adjacent channel power ratio (5 MHz)	$P_{L(AV)} = 50\text{ W}$	-	-30	<td>	dBc

7. Test information

7.1 Ruggedness in class-AB operation

The BLF8G20LS-210V and BLF8G20LS-210GV are capable of withstanding a load mismatch corresponding to $VSWR = <td> : 1$ through all phases under the following conditions: $V_{DS} = 28\text{ V}; I_{Dq} = 1600\text{ mA}; P_L = 210\text{ W (CW)}; f = 1800\text{ MHz}$.

8. Package outline

Earless flanged ceramic package; 6 leads

SOT1244B

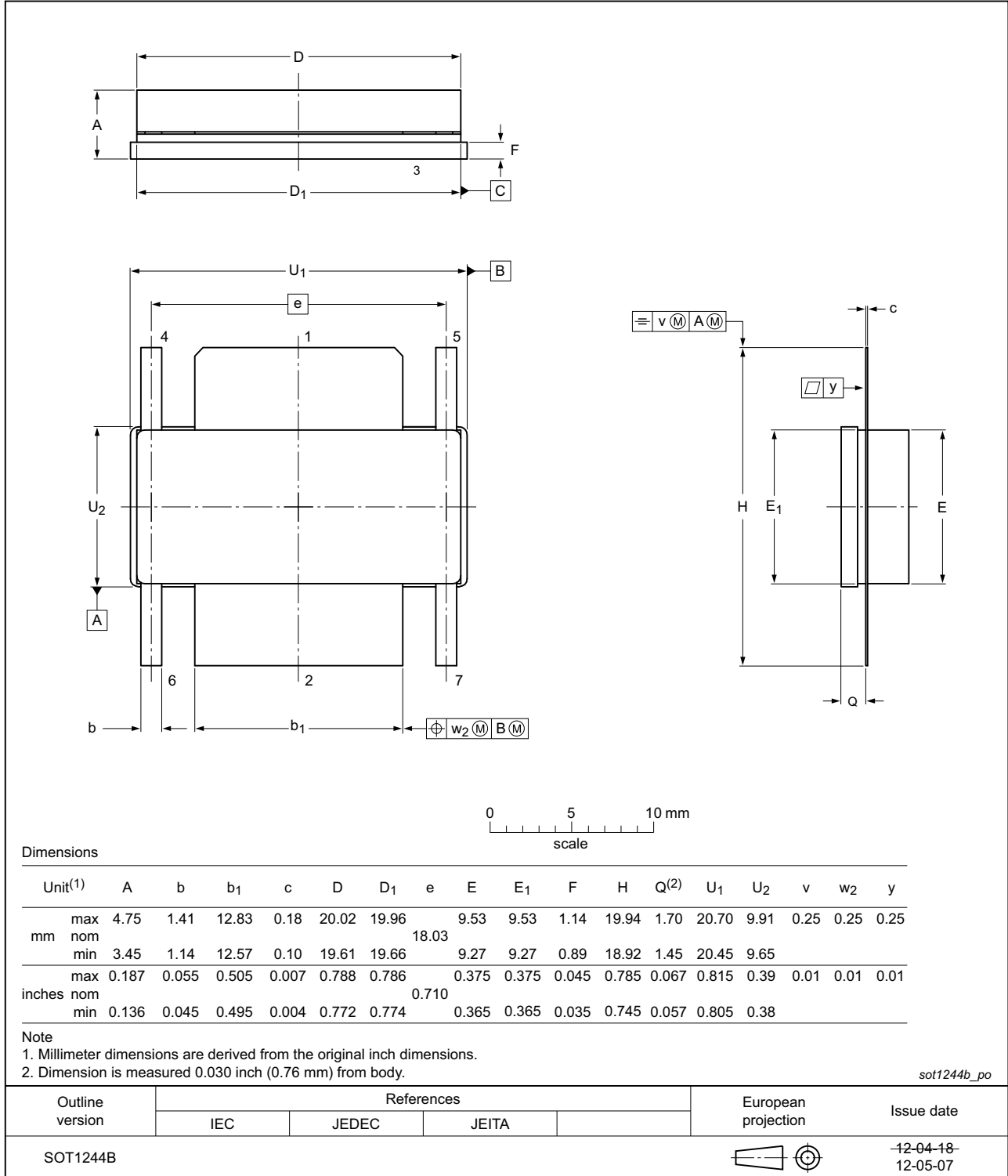


Fig 1. Package outline SOT1244B

Earless flanged ceramic package; 6 leads

SOT1244C

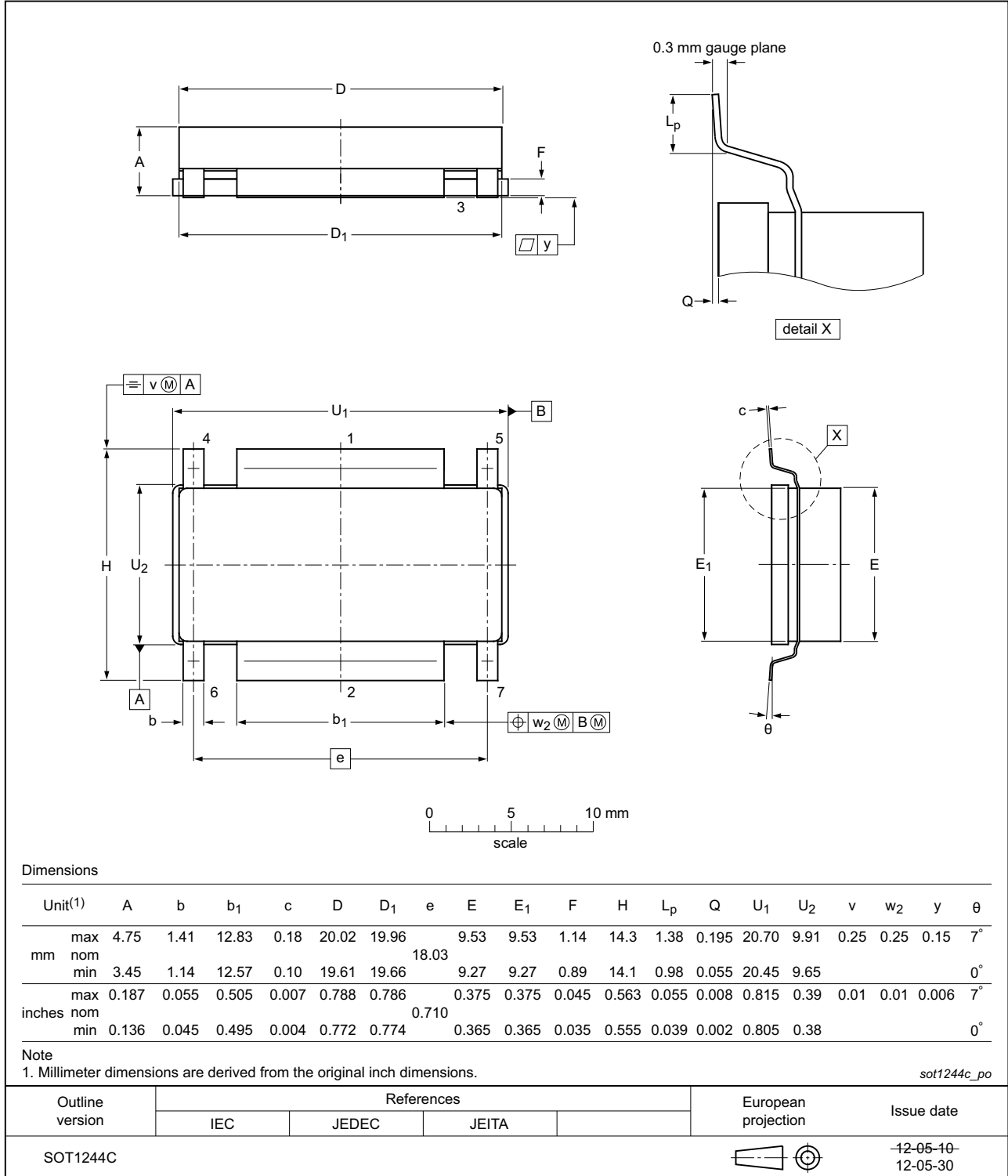


Fig 2. Package outline SOT1244C

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
MTF	Median Time to Failure
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
BLF8G20LS-210V_20LS-210GV v.1	20140225	Objective 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.

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