

BLC8G24LS-240AV

Power LDMOS transistor

Rev. 1 — 26 September 2013

Objective data sheet

1. Product profile

1.1 General description

240 W LDMOS packaged asymmetric Doherty power transistor for base station applications at frequencies from 2300 MHz to 2400 MHz.

Table 1. Typical performance

Typical RF performance at $T_{case} = 25\text{ °C}$ in an asymmetrical Doherty production test circuit. $V_{DS} = 30\text{ V}$; $I_{Dq} = 800\text{ mA}$ (main); $V_{GS(amp)peak} = 0.80\text{ V}$, unless otherwise specified.

Test signal	f (MHz)	V_{DS} (V)	$P_{L(AV)}$ (W)	G_p (dB)	η_D (%)	ACPR (dBc)
1-carrier W-CDMA	2300 to 2400	30	63	15	45	-29 [1]

[1] Test signal: 3GPP test model 1; 64 DPCH; PAR = 7.2 dB at 0.01% probability on CCDF per carrier.

1.2 Features and benefits

- Excellent ruggedness
- High-efficiency
- Low R_{th} providing excellent thermal stability
- Designed for broadband operation (2300 MHz to 2400 MHz)
- Asymmetric design to achieve optimum efficiency across the band
- Lower output capacitance for improved performance in Doherty applications
- Designed for low memory effects providing excellent digital pre-distortion capability
- 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 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
1	drain2 (peak)		
2	drain1 (main)		
3	gate1 (main)		
4	gate2 (peak)		
5	source		
6	video decoupling (main)		
7	n.c.		
8	n.c.		
9	video decoupling (peak)		

[1] Connected to flange.

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BLC8G24LS-240AV	-	plastic earless flanged cavity package; 8 leads	SOT1252-1

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
$V_{GS(amp)main}$	main amplifier gate-source voltage		-0.5	+13	V
$V_{GS(amp)peak}$	peak amplifier 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 reliability.

5. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-c)}$	thermal resistance from junction to case	$V_{DS} = 30\text{ V}$; $I_{Dq} = 800\text{ mA}$ (main); $V_{GS(amp)peak} = 0.80\text{ V}$; $T_{case} = 80\text{ °C}$; $P_L = 63\text{ W}$	<td>	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
Main device						
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0\text{ V}; I_D = 1.44\text{ mA}$	65	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	$V_{DS} = 10\text{ V}; I_D = 144\text{ mA}$	1.5	1.9	2.3	V
V_{GSq}	gate-source quiescent voltage	$V_{DS} = 30\text{ V}; I_D = 800\text{ mA}$	<td>	<td>	<td>	V
I_{DSS}	drain leakage current	$V_{GS} = 0\text{ V}; V_{DS} = 30\text{ V}$	-	-	<td>	μA
I_{DSX}	drain cut-off current	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; V_{DS} = 10\text{ V}$	-	<td>	-	A
I_{GSS}	gate leakage current	$V_{GS} = 11\text{ V}; V_{DS} = 0\text{ V}$	-	-	<td>	nA
g_{fs}	forward transconductance	$V_{DS} = 10\text{ V}; I_D = 5.04\text{ A}$	-	<td>	-	S
$R_{DS(on)}$	drain-source on-state resistance	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; I_D = 5.04\text{ A}$	-	<td>	<td>	$\text{m}\Omega$
Peak device						
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0\text{ V}; I_D = 2.2\text{ mA}$	65	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	$V_{DS} = 10\text{ V}; I_D = 220\text{ mA}$	1.5	1.9	2.3	V
V_{GSq}	gate-source quiescent voltage	$V_{DS} = 30\text{ V}; I_D = 1200\text{ mA}$	<td>	<td>	<td>	V
I_{DSS}	drain leakage current	$V_{GS} = 0\text{ V}; V_{DS} = 30\text{ V}$	-	-	<td>	μA
I_{DSX}	drain cut-off current	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; V_{DS} = 10\text{ V}$	-	<td>	-	A
I_{GSS}	gate leakage current	$V_{GS} = 11\text{ V}; V_{DS} = 0\text{ V}$	-	-	<td>	nA
g_{fs}	forward transconductance	$V_{DS} = 10\text{ V}; I_D = 7.70\text{ A}$	-	<td>	-	S
$R_{DS(on)}$	drain-source on-state resistance	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; I_D = 7.7\text{ A}$	-	<td>	<td>	$\text{m}\Omega$

Table 7. RF characteristics

Test signal: 1-carrier W-CDMA; PAR = 7.2 dB at 0.01 % probability on the CCDF; 3GPP test model 1; 1 - 64 DPCH; $f_1 = 2300\text{ MHz}; f_2 = 2400\text{ MHz}$; RF performance at $V_{DS} = 30\text{ V}; I_{Dq} = 800\text{ mA}$ (main); $V_{GS(amp)peak} = 0.80\text{ V}; T_{case} = 25\text{ }^\circ\text{C}$; unless otherwise specified; in an asymmetrical Doherty production test circuit in 2300 MHz to 2400 MHz.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	$P_{L(AV)} = 63\text{ W}$	<td>	15	-	dB
RL_{in}	input return loss	$P_{L(AV)} = 63\text{ W}$	-	-10	<td>	dB
η_D	drain efficiency	$P_{L(AV)} = 63\text{ W}$	<td>	45	-	%
ACPR	adjacent channel power ratio	$P_{L(AV)} = 63\text{ W}$	-	-29	<td>	dBc

7. Package outline

Plastic earless flanged cavity package; 8 leads

SOT1252-1

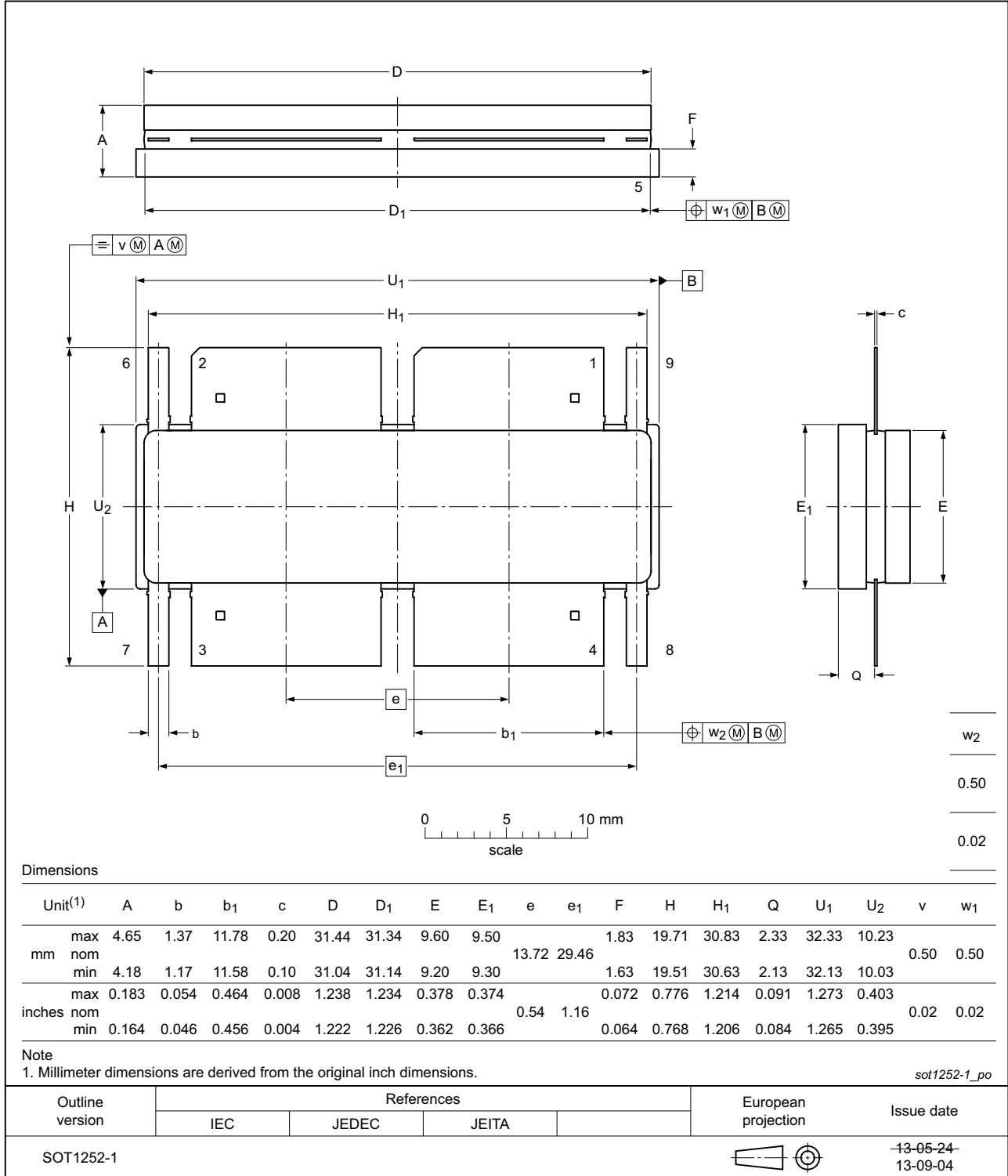


Fig 1. Package outline SOT1252-1

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
3GPP	Third 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

10. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BLC8G24LS-240AV v.1	20130926	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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