

# BLC8G27LS-240AV

Power LDMOS transistor

Rev. 1 — 4 November 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 2500 MHz to 2700 MHz.

**Table 1. Typical performance**

Typical RF performance at  $T_{case} = 25\text{ °C}$  in an asymmetrical Doherty production test circuit.  $V_{DS} = 28\text{ V}$ ;  $I_{Dq} = 800\text{ mA}$  (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)	$\eta_D$ (%)	ACPR (dBc)
1-carrier W-CDMA	2500 to 2700	28	56	15.5	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 thermal resistance providing excellent thermal stability
- Designed for broadband operation (2500 MHz to 2700 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)

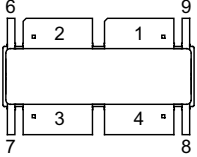
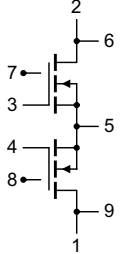
### 1.3 Applications

- RF power amplifiers for base stations and multi carrier applications in the 2500 MHz to 2700 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 <a href="#">[1]</a>		
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
BLC8G27LS-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	<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	$V_{DS} = 28\text{ V}$ ; $I_{Dq} = 800\text{ mA}$ (main); $V_{GS(amp)peak} = 0.80\text{ V}$ ; $T_{case} = 80\text{ °C}$ ; $P_L = 56\text{ W}$	<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
<b>Main device</b>						
$V_{(BR)DSS}$	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	$V_{DS} = 28\text{ V}; I_D = 800\text{ mA}$	-	2.1	-	V
$I_{DSS}$	drain leakage current	$V_{GS} = 0\text{ V}; V_{DS} = 28\text{ V}$	-	-	5	$\mu\text{A}$
$I_{DSX}$	drain cut-off current	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; V_{DS} = 10\text{ V}$	-	26	-	A
$I_{GSS}$	gate leakage current	$V_{GS} = 11\text{ V}; V_{DS} = 0\text{ V}$	-	-	500	nA
$g_{fs}$	forward transconductance	$V_{DS} = 10\text{ V}; I_D = 5.04\text{ A}$	-	30	-	S
$R_{DS(on)}$	drain-source on-state resistance	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; I_D = 5.04\text{ A}$	-	100	-	$\text{m}\Omega$
<b>Peak device</b>						
$V_{(BR)DSS}$	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	$V_{DS} = 28\text{ V}; I_D = 1200\text{ mA}$	-	2.1	-	V
$I_{DSS}$	drain leakage current	$V_{GS} = 0\text{ V}; V_{DS} = 28\text{ V}$	-	-	5	$\mu\text{A}$
$I_{DSX}$	drain cut-off current	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; V_{DS} = 10\text{ V}$	-	45	-	A
$I_{GSS}$	gate leakage current	$V_{GS} = 11\text{ V}; V_{DS} = 0\text{ V}$	-	-	500	nA
$g_{fs}$	forward transconductance	$V_{DS} = 10\text{ V}; I_D = 7.70\text{ A}$	-	54	-	S
$R_{DS(on)}$	drain-source on-state resistance	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; I_D = 7.7\text{ A}$	-	55	-	$\text{m}\Omega$

**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;  $f_1 = 2500\text{ MHz}$ ;  $f_2 = 2700\text{ MHz}$ ; RF performance at  $V_{DS} = 28\text{ V}$ ;  $I_{Dq} = 800\text{ mA}$  (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 2500 MHz to 2700 MHz.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$G_p$	power gain	$P_{L(AV)} = 56\text{ W}$	-	15.5	-	dB
$RL_{in}$	input return loss	$P_{L(AV)} = 56\text{ W}$	-	-10	-	dB
$\eta_D$	drain efficiency	$P_{L(AV)} = 56\text{ W}$	-	45	-	%
ACPR	adjacent channel power ratio	$P_{L(AV)} = 56\text{ W}$	-	-29	-	dBc

7. Package outline

Plastic earless flanged cavity package; 8 leads

SOT1252-1

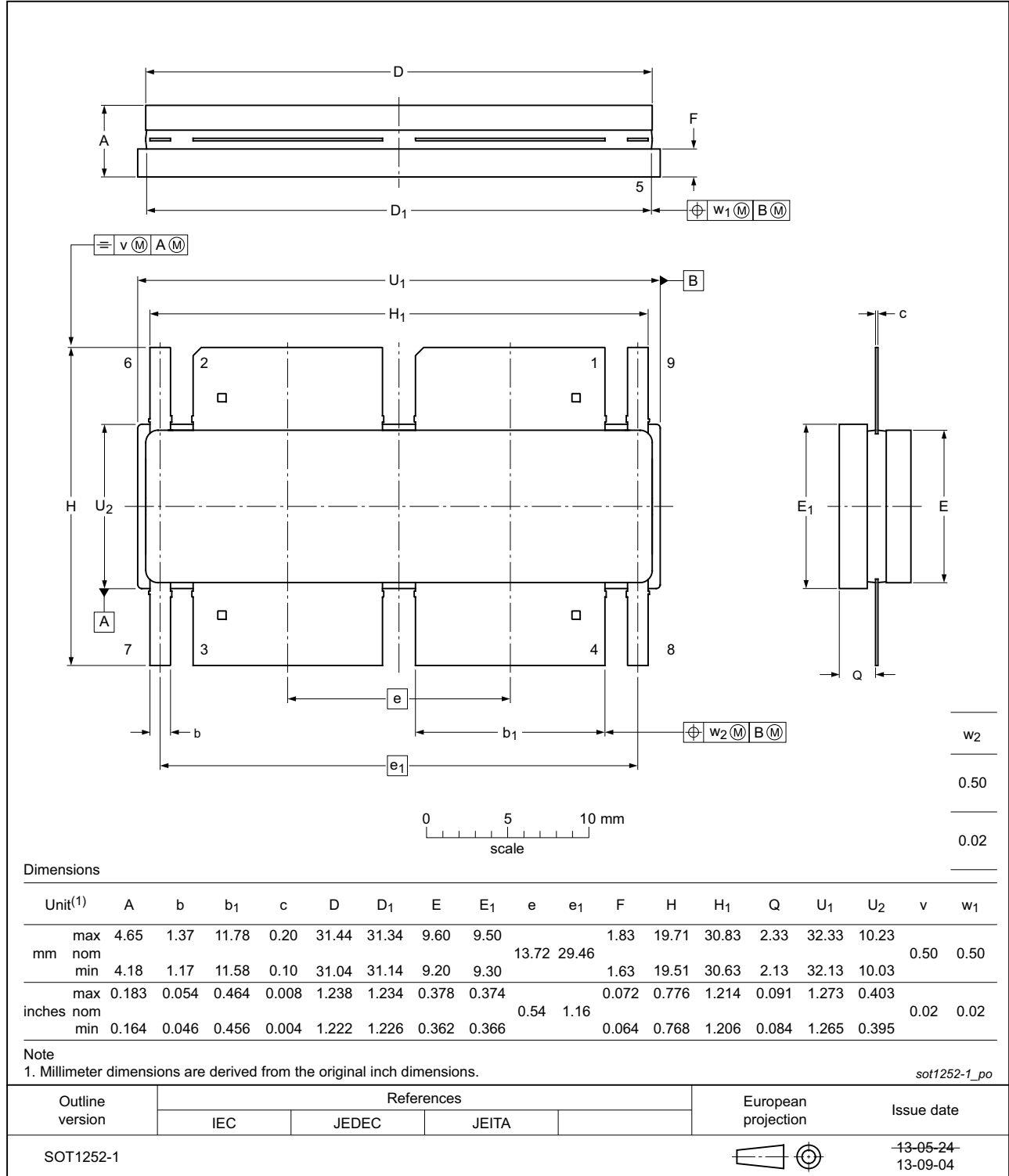


Fig 1. Package outline SOT1252-1

## 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	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
W-CDMA	Wideband Code Division Multiple Access

## 10. Revision history

**Table 9. Revision history**

Document ID	Release date	Data sheet status	Change notice	Supersedes
BLC8G27LS-240AV v.1	20131104	Objective data sheet	-	-

## 11. Legal information

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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.
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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