

BLP10H610

Broadband LDMOS driver transistor

Rev. 1 — 20 January 2014

Objective data sheet

1. Product profile

1.1 General description

A 10 W plastic LDMOS power transistor for broadcast transmitter and ISM applications at frequencies from HF to 1400 MHz.

Table 1. Application performance

Test signal	f (MHz)	V _{DS} (V)	P _L (W)	G _p (dB)	η _D (%)
CW	860	50	10	18	58

1.2 Features and benefits

- Easy power control
- Integrated ESD protection
- Excellent ruggedness
- High efficiency
- Excellent thermal stability
- Designed for broadband operation (HF to 1400 MHz)
- Compliant to Directive 2002/95/EC, regarding Restriction of Hazardous Substances (RoHS)

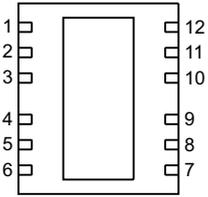
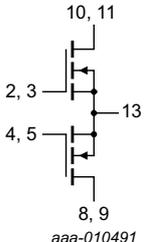
1.3 Applications

- Industrial, scientific and medical applications
- Broadcast transmitter applications



2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Graphic symbol
1, 6, 7, 12	n.c.	 <p>Transparent top view</p>	 <p>aaa-010491</p>
2, 3	gate1		
4, 5	gate2		
8, 9	drain2		
10, 11	drain1		
13	source [1]		

[1] Connected to flange.

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BLP10H610	HVSON12	plastic thermal enhanced very thin small outline package; no leads; 12 terminals; body 5 × 6 × 0.85 mm	SOT1352-1

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		-	104	V
V_{GS}	gate-source voltage		-6	+11	V
T_{stg}	storage temperature		-65	+150	°C
T_j	junction temperature		-	150	°C

5. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-c)}$	thermal resistance from junction to case	$T_{case} = < tbd > \text{ }^\circ\text{C};$ $P_L = < tbd > \text{ W}$	[1] < tbd >	K/W

[1] $R_{th(j-c)}$ is measured under RF conditions

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	$V_{GS} = 0\text{ V}$; $I_D = 0.06\text{ mA}$	104	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	$V_{DS} = 10\text{ V}$; $I_D = 6\text{ mA}$	<td>	1.8	<td>	V
V_{GSq}	gate-source quiescent voltage	$V_{DS} = 50\text{ V}$; $I_D = \text{<td> mA}$	<td>	<td>	<td>	V
I_{DSS}	drain leakage current	$V_{GS} = 0\text{ V}$; $V_{DS} = 50\text{ V}$	-	-	1.2	μA
I_{DSX}	drain cut-off current	$V_{GS} = V_{GS(th)} + 3.75\text{ V}$; $V_{DS} = 10\text{ V}$	-	1.0	-	A
I_{GSS}	gate leakage current	$V_{GS} = 11\text{ V}$; $V_{DS} = 0\text{ V}$	-	-	120	nA
$R_{DS(on)}$	drain-source on-state resistance	$V_{GS} = V_{GS(th)} + 3.75\text{ V}$; $I_D = \text{<td> mA}$	-	4.28	-	$\text{m}\Omega$

Table 7. AC characteristics

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
C_{rs}	feedback capacitance	$V_{GS} = 0\text{ V}$; $V_{DS} = 50\text{ V}$; $f = 1\text{ MHz}$	-	<td>	-	pF
C_{iss}	input capacitance	$V_{GS} = 0\text{ V}$; $V_{DS} = 50\text{ V}$; $f = 1\text{ MHz}$	-	<td>	-	pF
C_{oss}	output capacitance	$V_{GS} = 0\text{ V}$; $V_{DS} = 50\text{ V}$; $f = 1\text{ MHz}$	-	<td>	-	pF

Table 8. RF characteristics

Test signal: CW; $f = 860\text{ MHz}$; RF performance at $V_{DS} = 50\text{ V}$; $I_{Dq} = 60\text{ mA}$; $T_{case} = 25\text{ }^\circ\text{C}$; unless otherwise specified, in a class-AB production test circuit.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	$P_L = 10\text{ W}$	<td>	<td>	<td>	dB
η_D	drain efficiency	$P_L = 10\text{ W}$	<td>	<td>	-	%
RL_{in}	input return loss	$P_L = 10\text{ W}$	-	<td>	<td>	dB

7. Test information

7.1 Ruggedness in class-AB operation

The BLP10H610 is capable of withstanding a load mismatch corresponding to $VSWR = \text{<td>}$ through all phases under the following conditions: $V_{DS} = 50\text{ V}$; $I_{Dq} = 60\text{ mA}$; $P_L = 10\text{ W}$; $f = 860\text{ MHz}$.

8. Package outline

HVSON12: plastic thermal enhanced very thin small outline package; no leads; 12 terminals; body 5 x 6 x 0.85 mm

SOT1352-1

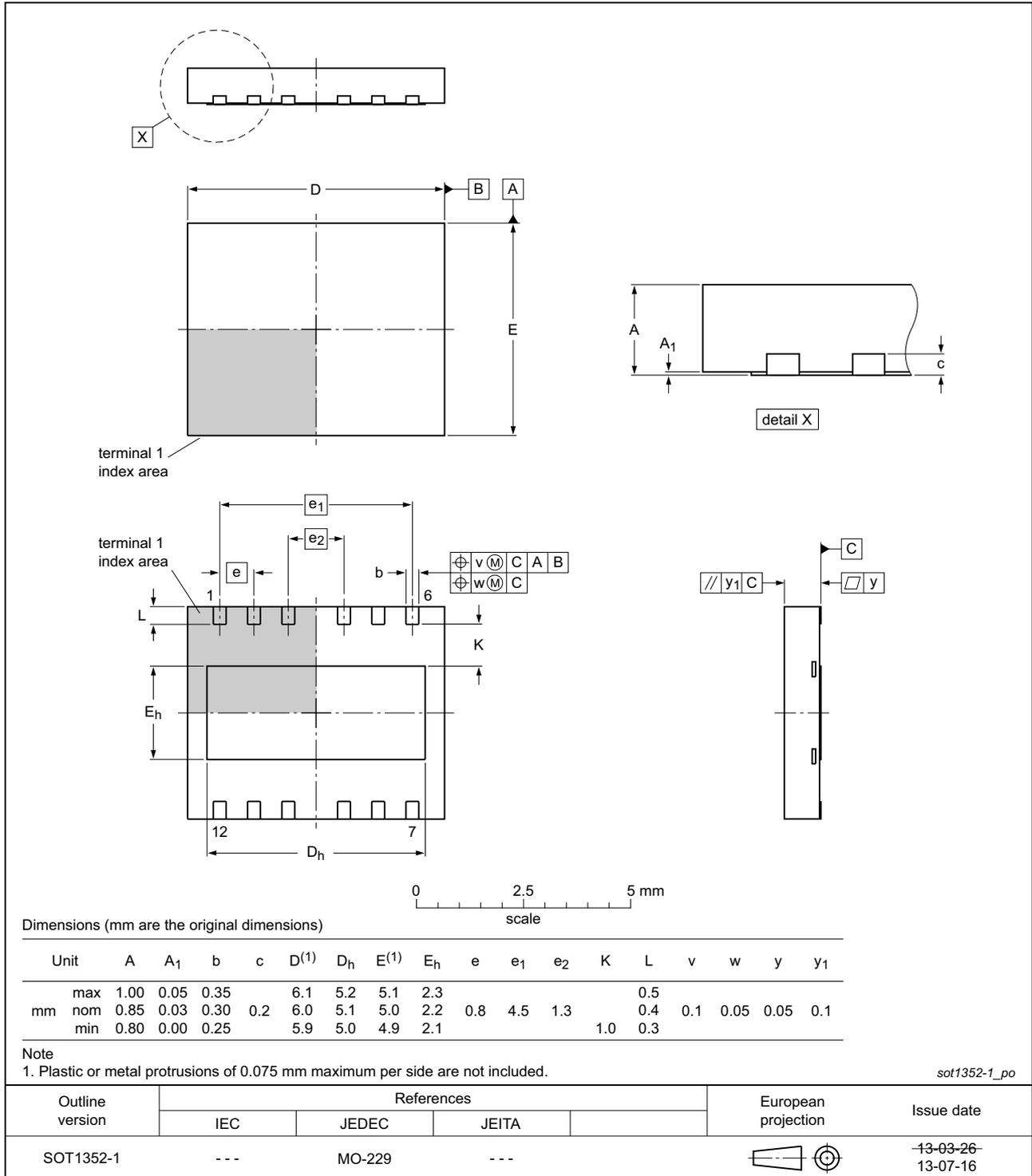


Fig 1. Package outline SOT1352-1 (HVSON12)

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 9. Abbreviations

Acronym	Description
CW	Continuous Wave
ESD	ElectroStatic Discharge
LDMOS	Laterally Diffused Metal-Oxide Semiconductor
HF	High Frequency
ISM	Industrial, Scientific and Medical
VSWR	Voltage Standing-Wave Ratio

11. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BLP10H610 v.1	20140120	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.

[1] Please consult the most recently issued document before initiating or completing a design.

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

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