BLP25M710

Broadband LDMOS driver transistor

Rev. 2 — 1 September 2015

AMPLEON

Product data sheet

1. Product profile

1.1 General description

A 10 W LDMOS power transistor for broadcast and industrial applications in the HF to 2500 MHz band.

Table 1. Application information

Test signal	f (MHz)	I_{Dq} (mA)	V_{DS} (V)	P_L (W)	G_p (dB)	η_D (%)	IMD_{shldr} (dBc)	PAR (dB)
DVB-T	858	110	28	1	20.9	17.1	–47.5 [1]	9.5 [2]
Pulsed RF [3]	2450	80	28	10	16.2	64.5	-	-

[1] Measured [dBc] with delta marker at 4.3 MHz from center frequency.

[2] PAR (of output signal) at 0.01 % probability on CCDF; PAR of input signal = 9.5 dB at 0.01 % probability on CCDF.

[3] Measured at δ = 10 %, t_p = 12 μs.

1.2 Features and benefits

- Easy power control
- Integrated ESD protection
- Excellent ruggedness
- High efficiency
- Excellent thermal stability
- Designed for broadband operation (HF to 2500 MHz)
- Compliant to Directive 2002/95/EC, regarding Restriction of Hazardous Substances (RoHS)

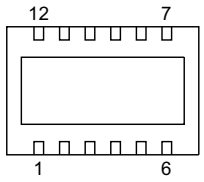
1.3 Applications

- Industrial, scientific and medical applications
- Broadcast transmitter applications

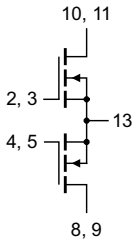
2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Graphic symbol
1, 6, 7, 12	n.c.		
2, 3	gate1		
4, 5	gate2		
8, 9	drain2		
10, 11	drain1		
13	source [1]		



Transparent top view



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[1] Connected to flange.

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BLP25M710	HVSON12	plastic thermal enhanced very thin small outline package; no leads; 12 terminals; body 6 × 4 × 0.85 mm	SOT1179-2

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		-	150	°C

5. Recommended operating conditions

See application note *AN11198* for more details.

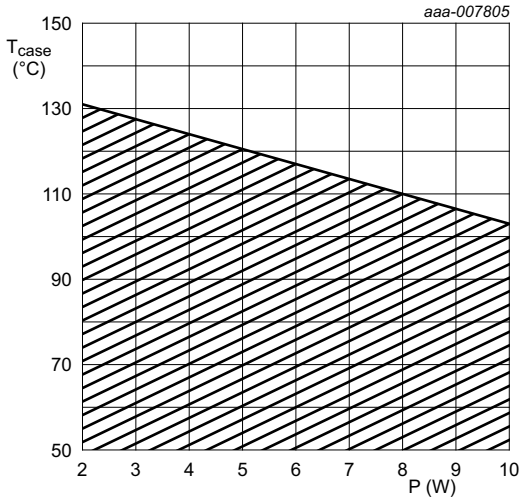


Fig 1. Recommended operating area; case temperature as a function of power dissipation

6. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-c)}$	thermal resistance from junction to case	T_{case} = 70 °C; P_L = 2 W	3.2	K/W

7. Characteristics

Table 6. DC characteristics

T_j = 25 °C; unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{(BR)DSS}$	drain-source breakdown voltage	V_{GS} = 0 V; I_D = 0.18 mA	65	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	V_{DS} = 10 V; I_D = 18 mA	1.5	1.9	2.3	V
I_{DSS}	drain leakage current	V_{GS} = 0 V; V_{DS} = 28 V	−1.4	-	+1.4	μA
I_{DSX}	drain cut-off current	V_{GS} = $V_{GS(th)}$ + 3.75 V	-	3.2	-	A
I_{GSS}	gate leakage current	V_{GS} = 11 V; V_{DS} = 0 V	-	-	140	nA
g_{fs}	forward transconductance	V_{DS} = 10 V; I_D = 18 mA	-	160	-	mS
$R_{DS(on)}$	drain-source on-state resistance	V_{GS} = $V_{GS(th)}$ + 3.75 V; V_{DS} = 10 V; I_D = 630 mA	-	1000	-	mΩ

Table 7. RF characteristics

Test signal: 1-tone pulsed; t_p = 50 μs; δ = 10 %; f = 2140 MHz; RF performance at V_{DS} = 28 V; I_{Dq} = 110 mA; T_{case} = 25 °C; unless otherwise specified, in a production circuit.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	$P_{L(AV)}$ = 2 W	15	16	-	dB
η_D	drain efficiency	$P_{L(AV)}$ = 2 W	20	23	-	%
$P_{L(1dB)}$	output power at 1 dB gain compression		11	-	-	W
RL_{in}	input return loss	$P_{L(AV)}$ = 2 W	-	−16	−12	dB

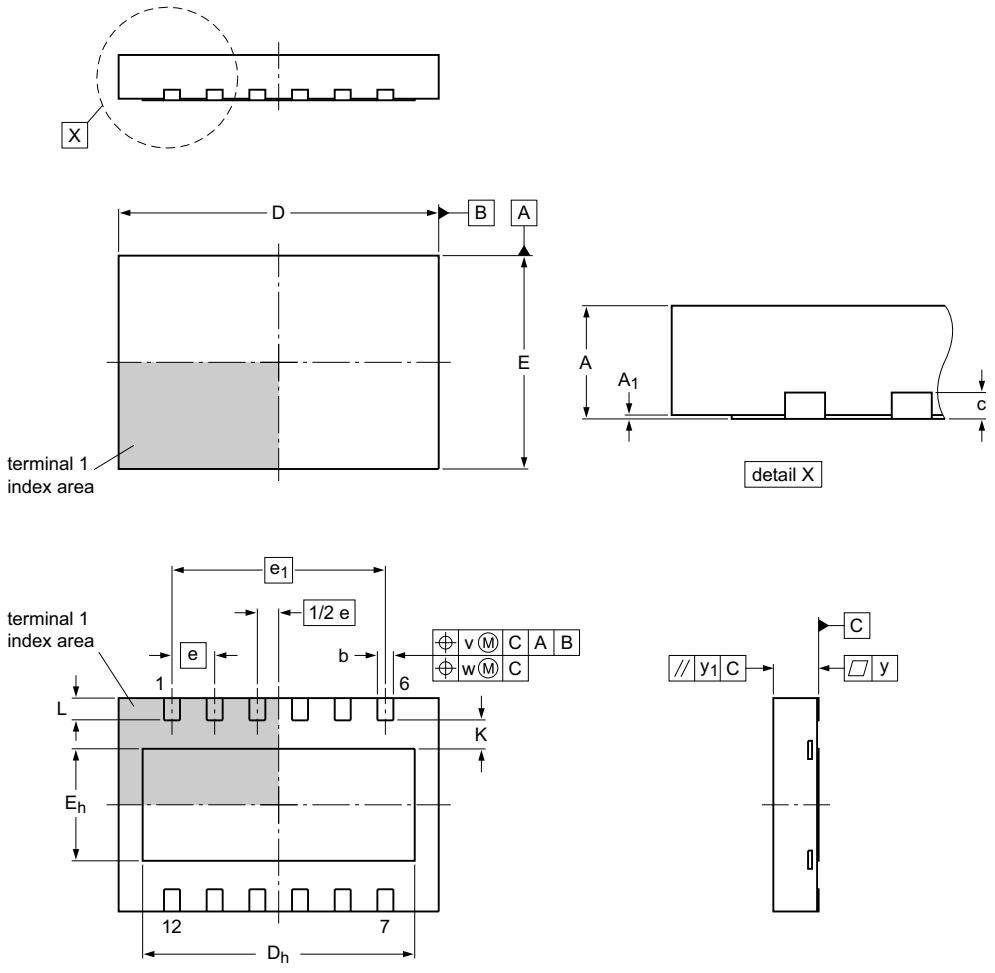
8. Test information

8.1 Ruggedness in class-AB operation

The BLP25M710 is capable of withstanding a load mismatch corresponding to VSWR = 10 : 1 through all phases under the following conditions: V_{DS} = 28 V; I_{Dq} = 110 mA; P_L = 10 W (CW).

9. Package outline

HVSON12: plastic thermal enhanced very thin small outline package; no leads; 12 terminals; body 4 x 6 x 0.85 mm **SOT1179-2**



Dimensions (mm are the original dimensions)

Unit		A	A_1	b	c	$D^{(1)}$	D_h	$E^{(1)}$	E_h	e	e_1	K	L	v	w	y	y_1
	max	1.00	0.05	0.35		6.1	5.2	4.1	2.2				0.5				
mm	nom	0.85	0.03	0.30	0.2	6.0	5.1	4.0	2.1	0.8	4		0.4	0.1	0.05	0.05	0.1
	min	0.80	0.00	0.25		5.9	5.0	3.9	2.0			0.5	0.3				

Note
1. Plastic or metal protrusions of 0.075 mm maximum per side are not included.

sot1179-2_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOT1179-2	- - -	MO-229	- - -			~~13-02-26~~ 13-07-16

Fig 2. Package outline SOT1179-2 (HVSON12)

10. 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.

11. Abbreviations

Table 8. Abbreviations

Acronym	Description
CCDF	Complementary Cumulative Distribution Function
CW	Continuous Wave
DVB-T	Digital Video Broadcast - Terrestrial
ESD	ElectroStatic Discharge
HF	High Frequency
LDMOS	Laterally Diffused Metal-Oxide Semiconductor
PAR	Peak-to-Average Ratio
VSWR	Voltage Standing-Wave Ratio

12. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BLP25M710#2	20150901	Product data sheet		BLP25M710 v.1
Modifications:	• The format of this document has been redesigned to comply with the new identity guidelines of Ampleon. • Legal texts have been adapted to the new company name where appropriate.			
BLP25M710 v.1	20130829	Product data sheet	-	-

13. Legal information

13.1 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".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.ampleon.com.

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