

BLP05M7200

Power LDMOS transistor

Rev. 1 — 6 September 2012

Objective data sheet

1. Product profile

1.1 General description

200 W LDMOS power transistor for various applications such as ISM and RF plasma lighting at frequencies from 425 MHz to 450 MHz.

Table 1. Typical performance

RF performance at $T_{case} = 25\text{ °C}$ in a common source class-AB production test circuit.

Test signal	f (MHz)	V_{DS} (V)	$P_{L(AV)}$ (W)	G_p (dB)	η_D (%)
CW	440	28	200	21	78

1.2 Features and benefits

- Easy power control
- Integrated ESD protection
- Excellent ruggedness
- High efficiency
- Excellent thermal stability
- Designed for ISM operation (425 MHz to 450 MHz)
- Input integration for simple board design
- Compliant to Directive 2002/95/EC, regarding Restriction of Hazardous Substances (RoHS)

1.3 Applications

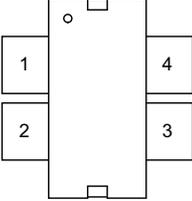
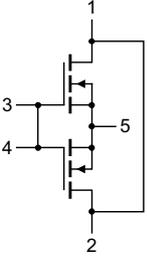
- RF power amplifiers for CW applications in the 425 MHz to 450 MHz frequency range such as ISM and RF plasma lighting.



2. Pinning information

Table 2. Pinning

All pins must be connected for correct operation and to prevent damage to the device.

Pin	Description	Simplified outline	Graphic symbol
1, 2	drain		
3, 4	gate		
5	source		

aaa-001924

[1] Connected to flange.

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BLP05M7200	HSOP4F	plastic, heatsink small outline package; 4 leads (flat)	SOT1138-1

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}	gate-source voltage		-0.5	+13	V
T_{stg}	storage temperature		-65	+150	°C
T_{case}	case temperature		-	150	°C
T_j	junction temperature		-	225	°C

5. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-case)}$	thermal resistance from junction to case	$T_{case} = 80\text{ °C}; P_L = 200\text{ W}$	0.5	K/W

6. Characteristics

Table 6. DC characteristics

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0\text{ V}; I_D = 3.2\text{ mA}$	65	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	$V_{DS} = 10\text{ V}; I_D = 320\text{ mA}$	<td>	1.9	<td>	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	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; V_{DS} = 10\text{ V}$	-	<td>	-	A
I_{GSS}	gate leakage current	$V_{GS} = 11\text{ V}; V_{DS} = 0\text{ V}$	-	-	300	nA
g_{fs}	forward transconductance	$V_{DS} = 10\text{ V}; I_D = 16\text{ A}$	-	<td>	-	S
$R_{DS(on)}$	drain-source on-state resistance	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; I_D = 11.2\text{ A}$	-	0.07	-	Ω

Table 7. RF characteristics

Test signal: CW at 440 MHz; RF performance at $V_{DS} = 28\text{ V}; I_{Dq} = 20\text{ mA}; T_{case} = 25\text{ °C}$; unless otherwise specified; in a class-AB production test circuit.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	$P_L = 200\text{ W}$	<td>	21	-	dB
RL_{in}	input return loss	$P_L = 200\text{ W}$	-	-20	<td>	dB
η_D	drain efficiency	$P_L = 200\text{ W}$	<td>	78	-	%

7. Test information

7.1 Ruggedness in class-AB operation

The BLP05M7200 is capable of withstanding a load mismatch corresponding to $VSWR = 10 : 1$ through all phases under the following conditions: $V_{DS} = 28\text{ V}; I_{Dq} = 20\text{ mA}; P_L = 200\text{ W}$ (CW); $f = 440\text{ MHz}$.

7.2 Impedance information

Table 8. Typical impedance

Measured load-pull data. Typical values unless otherwise specified. $I_{Dq} = 20\text{ mA}; V_{DS} = 28\text{ V}$. Z_S and Z_L defined in [Figure 1](#).

f (MHz)	Z_S (Ω)	Z_L (Ω)
440	$1.5 + j0.7$	$1.1 + j0.14$

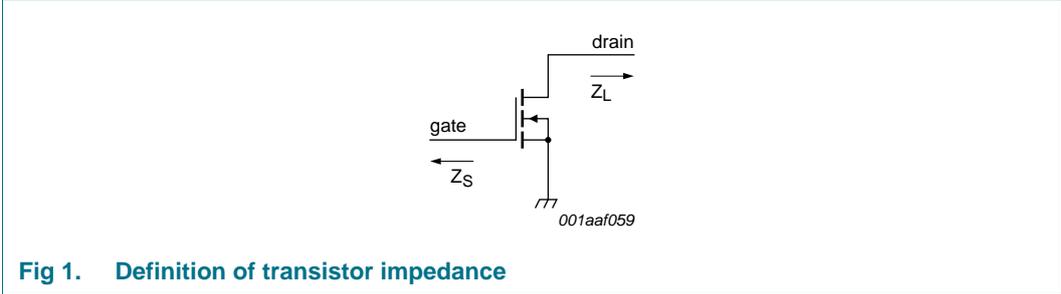


Fig 1. Definition of transistor impedance

8. Package outline

HSOP4F: plastic, heatsink small outline package; 4 leads(flat)

SOT1138-1

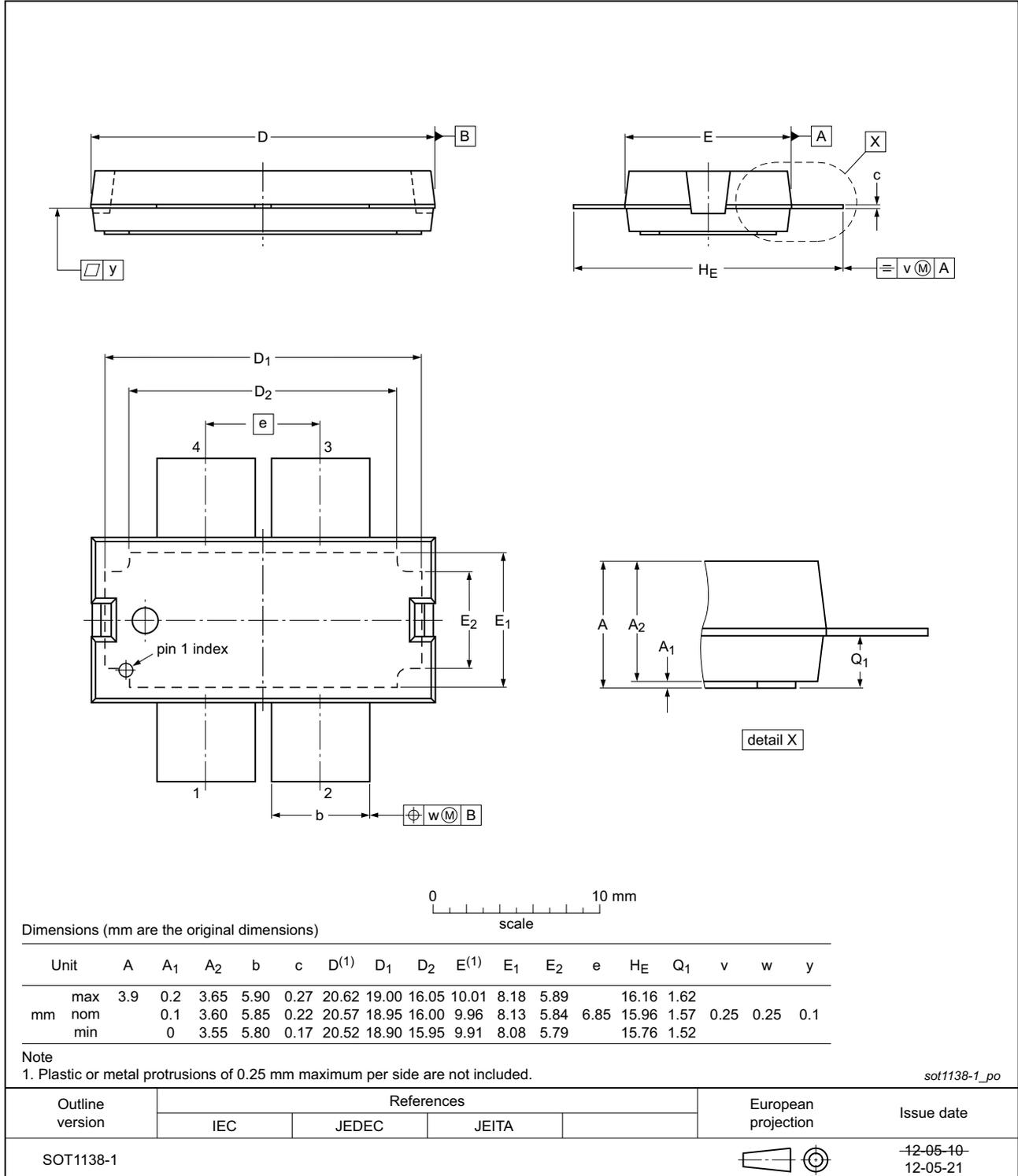


Fig 2. Package outline SOT1138-1 (HSOP4F)

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
ISM	Industrial, Scientific and Medical
LDMOS	Laterally Diffused Metal-Oxide Semiconductor
VSWR	Voltage Standing-Wave Ratio

11. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BLP05M7200 v.1	20120906	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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