

BLF6G24-12

Power LDMOS transistor

Rev. 1 — 24 February 2011

Objective data sheet

1. Product profile

1.1 General description

12 W LDMOS power transistor for various applications such as ISM and industrial heating at frequencies from 2400 MHz to 2500 MHz.

Table 1. Typical performance

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

Mode of operation	f (MHz)	V_{DS} (V)	$P_{L(AV)}$ (W)	G_p (dB)	η_D (%)
CW	2450	28	12	19	63

CAUTION



This device is sensitive to ElectroStatic Discharge (ESD). Therefore care should be taken during transport and handling.

1.2 Features and benefits

- Typical CW performance at a frequency of 2450 MHz, a supply voltage of 28 V and an I_{Dq} of 10 mA:
 - ◆ Average output power = 12 W
 - ◆ Power gain = 19 dB (typ)
 - ◆ Efficiency = 63 % (typ)
- Easy power control
- Integrated ESD protection
- Excellent ruggedness
- High efficiency
- Excellent thermal stability
- Designed for broadband operation (2400 MHz to 2500 MHz)
- Internally matched for ease of use
- Qualified for a supply voltage of up to 32 V
- Compliant to Directive 2002/95/EC, regarding Restriction of Hazardous Substances (RoHS)

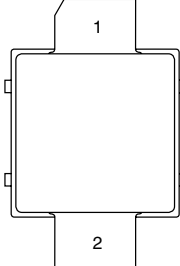
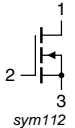
1.3 Applications

- RF power amplifiers for CW applications in the 2400 MHz to 2500 MHz frequency range such as ISM and industrial heating.



2. Pinning information

Table 2. Pinning

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

[1] Connected to flange.

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BLF6G24-12	-	earless flanged ceramic package; 2 leads	SOT975B

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		-	225	°C

5. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-case)}$	thermal resistance from junction to case	$T_{case} = 80\text{ °C}; P_L = 12\text{ W}$	4.0	K/W

6. Characteristics

Table 6. Characteristics

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0\text{ V}; I_D = 0.5\text{ mA}$	65	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	$V_{DS} = 10\text{ V}; I_D = 144\text{ mA}$	1.4	1.9	2.4	V
I_{DSS}	drain leakage current	$V_{GS} = 0\text{ V}; V_{DS} = 28\text{ V}$	-	-	1.4	μA
I_{DSX}	drain cut-off current	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; V_{DS} = 10\text{ V}$	2.7	-	-	A
I_{GSS}	gate leakage current	$V_{GS} = 11\text{ V}; V_{DS} = 0\text{ V}$	-	-	140	nA
g_{fs}	forward transconductance	$V_{DS} = 10\text{ V}; I_D = 0.9\text{ A}$	-	0.8	-	S
$R_{DS(on)}$	drain-source on-state resistance	$V_{GS} = V_{GS(th)} + 3.75\text{ V}; I_D = 0.6\text{ A}$	328	-	1256	$\text{m}\Omega$

7. Application information

Table 7. Application information

Mode of operation: CW at 2450 MHz; RF performance at $V_{DS} = 28\text{ V}; I_{Dq} = 10\text{ mA}; T_{case} = 25\text{ }^\circ\text{C}$; unless otherwise specified; in a class-AB production test circuit.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	$P_L = 12\text{ W}$	18	19	-	dB
RL_{in}	input return loss	$P_L = 12\text{ W}$	-	-13	-10	dB
η_D	drain efficiency	$P_L = 12\text{ W}$	58	63	-	%

7.1 Ruggedness in class-AB operation

The BLF6G24-12 is capable of withstanding a load mismatch corresponding to $V_{SWR} = 10 : 1$ through all phases under the following conditions: $V_{DS} = 28\text{ V}; I_{Dq} = 10\text{ mA}; P_L = 12\text{ W}$ (CW); $f = 2450\text{ MHz}$.

8. Package outline

Earless flanged ceramic package; 2 leads

SOT975B

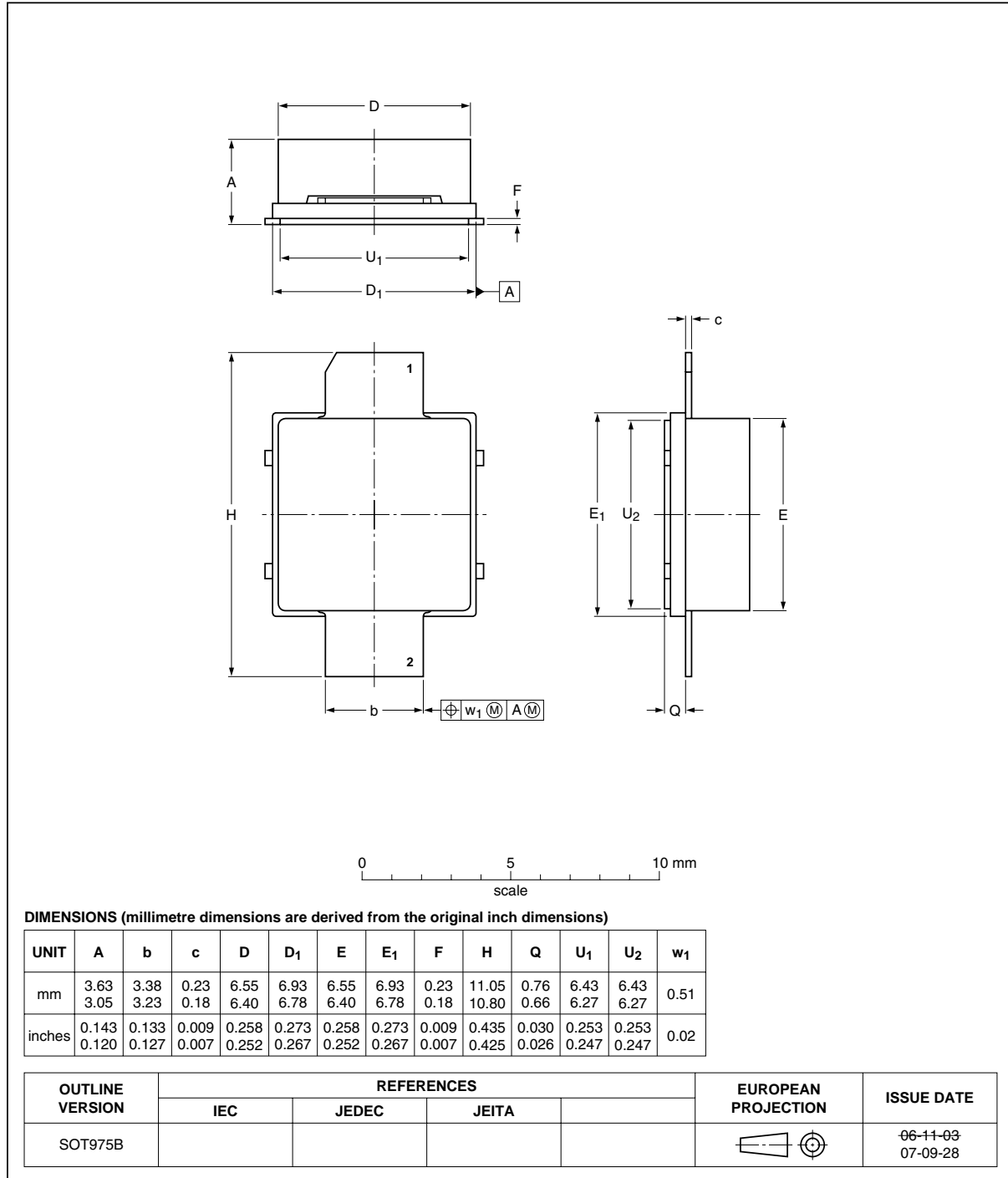


Fig 1. Package outline SOT975B

9. Abbreviations

Table 8. Abbreviations

Acronym	Description
CW	Continuous Wave
ISM	Industrial, Scientific and Medical
LDMOS	Laterally Diffused Metal-Oxide Semiconductor
RF	Radio Frequency
VSWR	Voltage Standing-Wave Ratio

10. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BLF6G24-12 v.1	20110224	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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