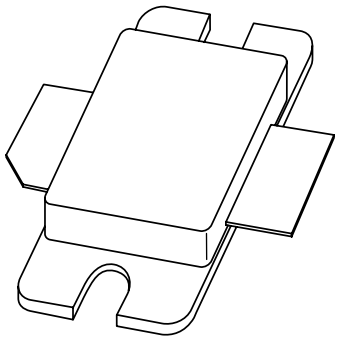
DATA SHEET



BLF2022-125
UHF power LDMOS transistor

Objective specification
Supersedes data of 2002 April 02

2003 Mar 07

Philips
Semiconductors

UHF power LDMOS transistor BLF2022-125

FEATURES

- Typical W-CDMA performance at a supply voltage of 28 V and I_{DQ} of 1 A
  - Output power = 20 W (AV)
  - Gain = 12 dB
  - Efficiency = 19%
  - ACPR = –42 dBc at 3.84 MHz
- Easy power control
- Excellent ruggedness
- High power gain
- Excellent thermal stability
- Designed for broadband operation (2000 to 2200 MHz)
- Internally matched for ease of use.

APPLICATIONS

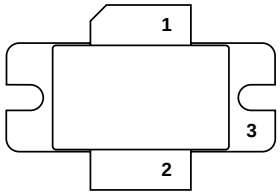
- RF power amplifiers for W-CDMA base stations and multicarrier applications in the 2000 to 2200 MHz frequency range

DESCRIPTION

125 W LDMOS power transistor for base station applications at frequencies from 2000 to 2200 MHz.

PINNING - SOT634A

PIN	DESCRIPTION
1	drain
2	gate
3	source, connected to flange



Top view MBL367

Fig.1 Simplified outline.

QUICK REFERENCE DATA

RF performance at T_h = 25 °C in a common source test circuit; single-carrier W-CDMA test model 1, 64 channels, 3.84 MHz channel bandwidth; Peak/Average = 9.8 dB at 0.01% probability on CCDF.

MODE OF OPERATION	f (MHz)	V_{DS} (V)	$P_{L\ avg}$ (W)	G_p (dB)	η_D (%)	d_{im} (dBc)
single carrier W-CDMA	2110 to 2170	28	30	typ 12	typ 19	typ –42

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage	–	65	V
V_{GS}	gate-source voltage	–	±15	V
I_D	drain current (DC)	–	tbd	A
T_{stg}	storage temperature	–65	+150	°C
T_j	junction temperature	–	200	°C

CAUTION
This product is supplied in anti-static packing to prevent damage caused by electrostatic discharge during transport and handling. For further information, refer to Philips specs.: SNW-EQ-608, SNW-FQ-302A and SNW-FQ-302B.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}c}$	thermal resistance from junction to case	note 1	0.55	K/W

Note

1. Thermal resistance is determined under specified RF operating conditions.

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; I_D = 2.5 mA	65	–	–	V
V_{GSth}	gate-source threshold voltage	V_{DS} = 10 V; I_D = 240 mA	4.5	–	5.5	V
I_{DSS}	drain-source leakage current	V_{GS} = 0; V_{DS} = 26 V	–	–	10	μA
I_{GSS}	gate leakage current	V_{GS} = ±15 V; V_{DS} = 0	–	–	40	nA
g_{fs}	forward transconductance	V_{DS} = 10 V; I_D = 16 A	–	9.5	–	S
R_{DSon}	drain-source on-state resistance	V_{GS} = V_{GSth} + 9 V; I_D = 8 A	–	0.07	–	Ω
C_{rss}	feedback capacitance	V_{GS} = 0; V_{DS} = 26 V; f = 1 MHz	–	tbd	–	pF

APPLICATION INFORMATION

RF performance at T_h = 25 °C in a common source test circuit; single-carrier W-CDMA test model 1, 64 channels, with 68% clipping, 3.84 MHz channel bandwidth; Peak/Average = 8.5 dB at 0.01% probability on CCDF.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
G_p	common-source power gain	V_D = 28 V; P_{out} = 20 W (AV), single carrier W-CDMA; I_{DQ} = 1000 mA; f = 2.11 to 2.17 GHz	11	12	–	dB
η_D	drain efficiency	V_D = 28 V; P_{out} = 20 W (AV), single carrier W-CDMA; I_{DQ} = 1000 mA; f = 2.11 to 2.17 GHz	17	19	–	%
ACPR	adjacent channel power ratio	V_D = 28 V; P_{out} = 20 W (AV), single carrier W-CDMA; I_{DQ} = 1000 mA; f = 2.11 to 2.17 GHz	–	–49	–39	dBc
I_{RL}	input return loss	V_D = 28 V; P_{out} = 20 W (AV), single carrier W-CDMA; I_{DQ} = 1000 mA; f = 2.11 to 2.17 GHz	–	–10	–6	dB
ψ	output mismatch	V_D = 28 V; P_{out} = 20 W (AV) single carrier W-CDMA;VSWR = 5:1 through all phases	no degradation in RF performance before and after test			

RF performance at T_h = 25 °C in a common source test circuit; two-carrier W-CDMA signals, 3GPP test mode 1 64 channels, with 68% clipping, 3.84 MHz channel bandwidth; Peak/Average = 8.5 dB at 0.01% probability on CCDF per channel frequency range is 2.11 GHz to 2.17 GHz; carrier spacing is 10 MHz.

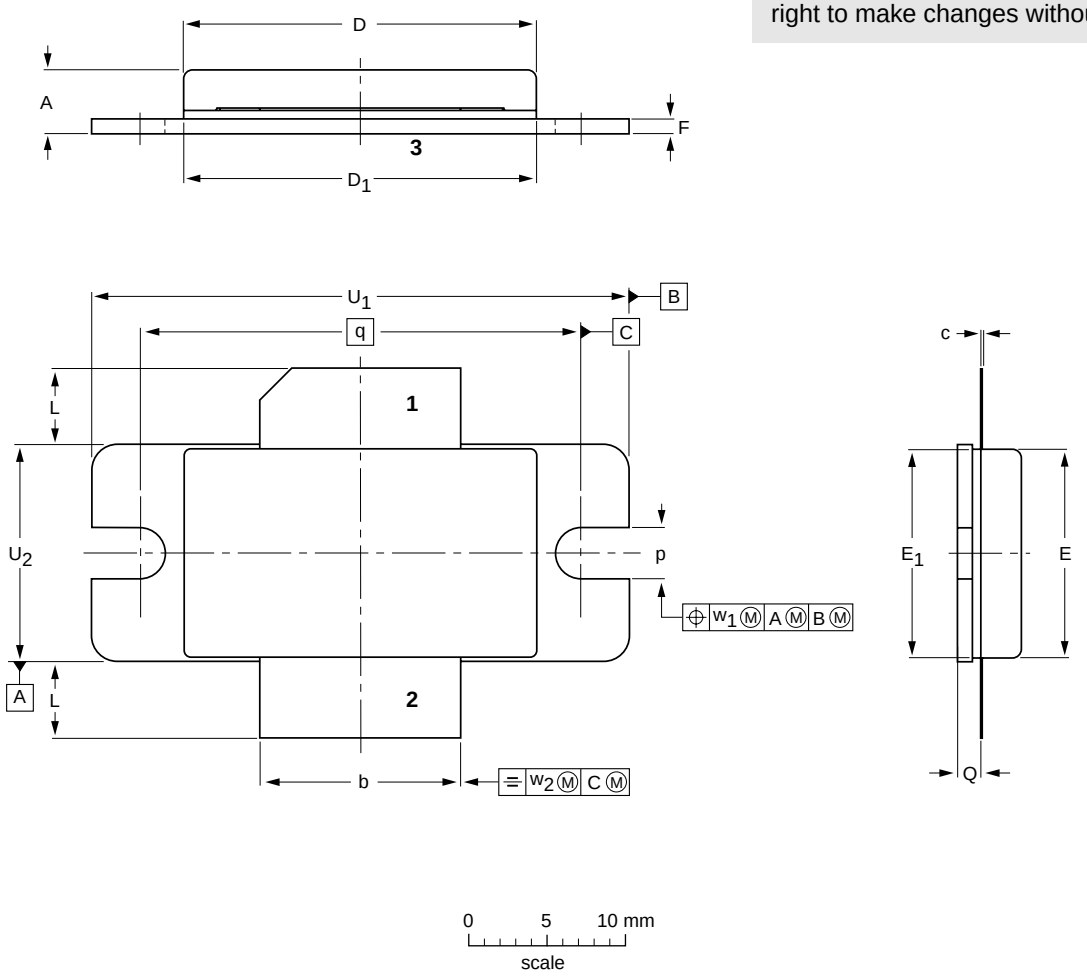
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
G_p	common-source power gain	V_D = 28 V; P_{out} = 20 W (AV); I_{DQ} = 1000 mA	–	12	–	dB
η_D	drain efficiency	V_D = 28 V; P_{out} = 20 W (AV); I_{DQ} = 1000 mA	–	19	–	%
ACPR	adjacent channel power ratio	V_D = 28 V; P_{out} = 20 W (AV); I_{DQ} = 1000 mA; ACPR is measured at f_1 = –5 MHz and f_2 = +5 MHz	–	–40	–	dBc
d_3	third order intermodulation distortion	V_D = 28 V; P_{out} = 20 W (AV); I_{DQ} = 1000 mA; ACPR is measured at f_1 = –10 MHz and f_2 = +10 MHz	–	–36	–	dB
I_{RL}	input return loss	V_D = 28 V; P_{out} = 20 W (AV); I_{DQ} = 1000 mA	–	–10	–	dB

PACKAGE OUTLINE

Flanged ceramic package; 2 mounting holes; 2 leads **SOT634A**

Package under development

Philips Semiconductors reserves the right to make changes without notice.



DIMENSIONS (millimetre dimensions are derived from the original inch dimensions)

UNIT	A	b	c	D	D_1	E	E_1	F	L	p	Q	q	U_1	U_2	w_1	w_2
mm	4.83 3.68	12.82 12.57	0.15 0.08	22.58 22.12	22.56 22.15	13.34 13.08	13.34 13.08	1.14 0.89	5.33 4.32	3.38 3.12	1.70 1.45	27.94	34.16 33.91	13.84 13.59	0.25	0.51
inches	0.190 0.145	0.505 0.495	0.006 0.003	0.889 0.871	0.888 0.872	0.525 0.515	0.525 0.515	0.045 0.035	0.210 0.170	0.133 0.123	0.067 0.057	1.100	1.345 1.335	0.545 0.535	0.010	0.020

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT634A						01-11-27

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS(1)	PRODUCT STATUS(2)(3)	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
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DEFINITIONS

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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