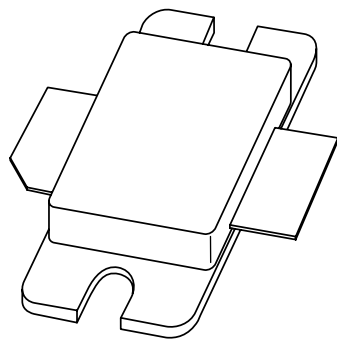


# DATA SHEET



## **BLF2022-125** UHF power LDMOS transistor

Objective specification  
Supersedes data of 2002 April 02

2003 Mar 07

**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.

**QUICK REFERENCE DATA**

RF performance at  $T_h = 25\text{ }^\circ\text{C}$  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)	$P_{L\text{ avg}}$ (W)	$G_p$ (dB)	$\eta_D$ (%)	$d_{im}$ (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).

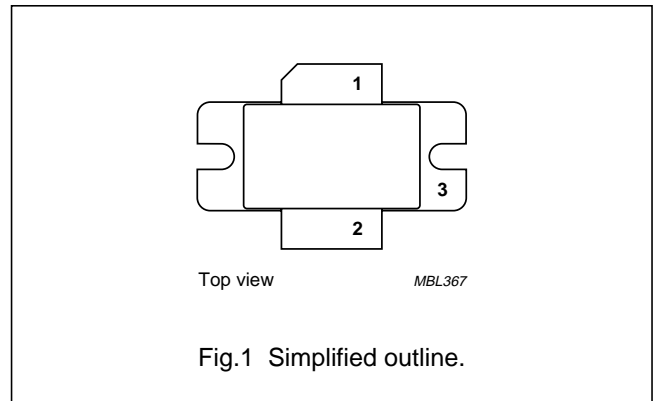
SYMBOL	PARAMETER	MIN.	MAX.	UNIT
$V_{DS}$	drain-source voltage	–	65	V
$V_{GS}$	gate-source voltage	–	$\pm 15$	V
$I_D$	drain current (DC)	–	tbd	A
$T_{stg}$	storage temperature	-65	+150	$^\circ\text{C}$
$T_j$	junction temperature	–	200	$^\circ\text{C}$

**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.

**PINNING - SOT634A**

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



## UHF power LDMOS transistor

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## THERMAL CHARACTERISTICS

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

## Note

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

## CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0$ ; $I_D = 2.5\text{ mA}$	65	–	–	V
$V_{GSth}$	gate-source threshold voltage	$V_{DS} = 10\text{ V}$ ; $I_D = 240\text{ mA}$	4.5	–	5.5	V
$I_{DSS}$	drain-source leakage current	$V_{GS} = 0$ ; $V_{DS} = 26\text{ V}$	–	–	10	$\mu\text{A}$
$I_{GSS}$	gate leakage current	$V_{GS} = \pm 15\text{ V}$ ; $V_{DS} = 0$	–	–	40	nA
$g_{fs}$	forward transconductance	$V_{DS} = 10\text{ V}$ ; $I_D = 16\text{ A}$	–	9.5	–	S
$R_{DSon}$	drain-source on-state resistance	$V_{GS} = V_{GSth} + 9\text{ V}$ ; $I_D = 8\text{ A}$	–	0.07	–	$\Omega$
$C_{rss}$	feedback capacitance	$V_{GS} = 0$ ; $V_{DS} = 26\text{ V}$ ; $f = 1\text{ MHz}$	–	tbd	–	pF

## UHF power LDMOS transistor

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**APPLICATION INFORMATION**

RF performance at  $T_h = 25\text{ °C}$  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	$V_D = 28\text{ V}$ ; $P_{out} = 20\text{ W (AV)}$ , single carrier W-CDMA; $I_{DQ} = 1000\text{ mA}$ ; $f = 2.11\text{ to }2.17\text{ GHz}$	11	12	–	dB
$\eta_D$	drain efficiency	$V_D = 28\text{ V}$ ; $P_{out} = 20\text{ W (AV)}$ , single carrier W-CDMA; $I_{DQ} = 1000\text{ mA}$ ; $f = 2.11\text{ to }2.17\text{ GHz}$	17	19	–	%
ACPR	adjacent channel power ratio	$V_D = 28\text{ V}$ ; $P_{out} = 20\text{ W (AV)}$ , single carrier W-CDMA; $I_{DQ} = 1000\text{ mA}$ ; $f = 2.11\text{ to }2.17\text{ GHz}$	–	–49	–39	dBc
$ r_{RL}$	input return loss	$V_D = 28\text{ V}$ ; $P_{out} = 20\text{ W (AV)}$ , single carrier W-CDMA; $I_{DQ} = 1000\text{ mA}$ ; $f = 2.11\text{ to }2.17\text{ GHz}$	–	–10	–6	dB
$\psi$	output mismatch	$V_D = 28\text{ V}$ ; $P_{out} = 20\text{ W (AV)}$ single carrier W-CDMA; VSWR = 5:1 through all phases	no degradation in RF performance before and after test			

RF performance at  $T_h = 25\text{ °C}$  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	$V_D = 28\text{ V}$ ; $P_{out} = 20\text{ W (AV)}$ ; $I_{DQ} = 1000\text{ mA}$	–	12	–	dB
$\eta_D$	drain efficiency	$V_D = 28\text{ V}$ ; $P_{out} = 20\text{ W (AV)}$ ; $I_{DQ} = 1000\text{ mA}$	–	19	–	%
ACPR	adjacent channel power ratio	$V_D = 28\text{ V}$ ; $P_{out} = 20\text{ W (AV)}$ ; $I_{DQ} = 1000\text{ mA}$ ; ACPR is measured at $f_1 = -5\text{ MHz}$ and $f_2 = +5\text{ MHz}$	–	–40	–	dBc
$d_3$	third order intermodulation distortion	$V_D = 28\text{ V}$ ; $P_{out} = 20\text{ W (AV)}$ ; $I_{DQ} = 1000\text{ mA}$ ; ACPR is measured at $f_1 = -10\text{ MHz}$ and $f_2 = +10\text{ MHz}$	–	–36	–	dB
$ r_{RL}$	input return loss	$V_D = 28\text{ V}$ ; $P_{out} = 20\text{ W (AV)}$ ; $I_{DQ} = 1000\text{ mA}$	–	–10	–	dB

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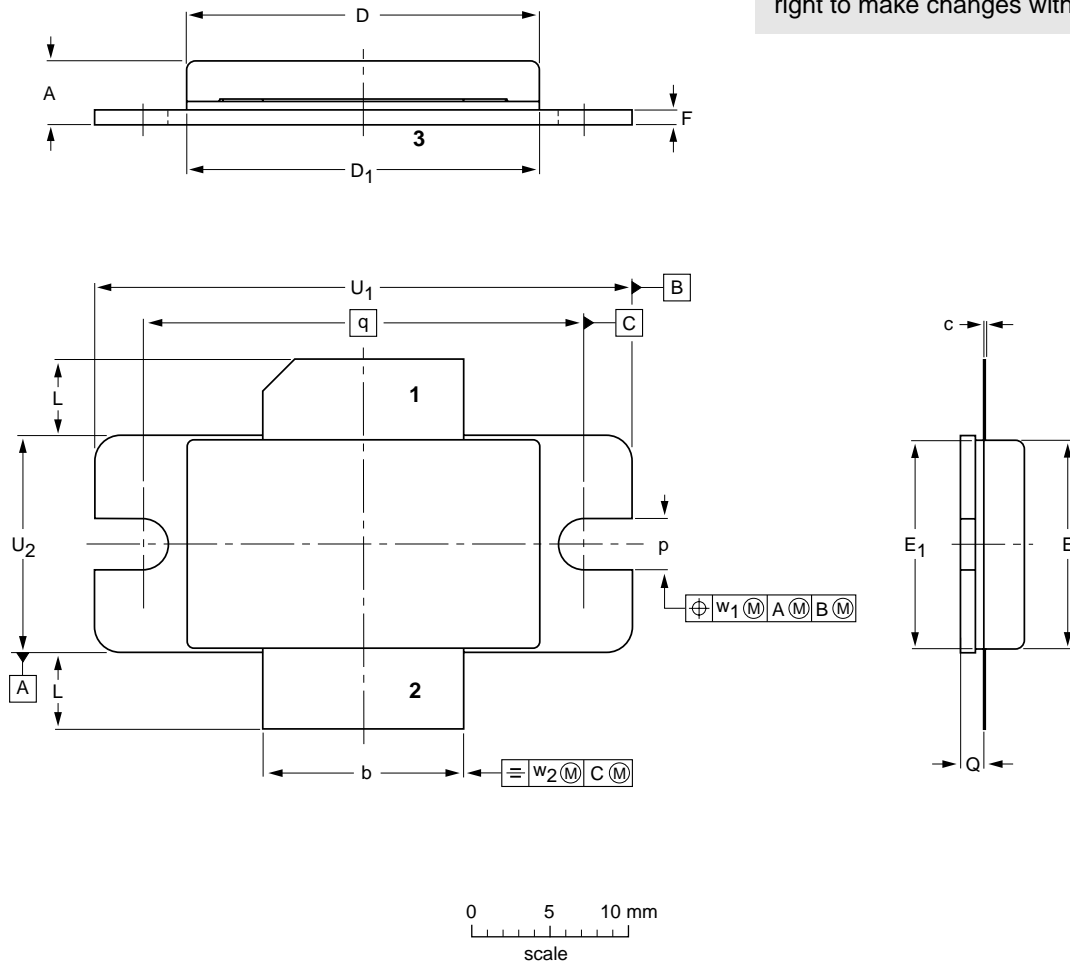
PACKAGE OUTLINE

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 <sub>1</sub>	E	E <sub>1</sub>	F	L	p	Q	q	U <sub>1</sub>	U <sub>2</sub>	w <sub>1</sub>	w <sub>2</sub>
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

## UHF power LDMOS transistor

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## DATA SHEET STATUS

LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)(3)</sup>	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.
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3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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**NOTES**

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