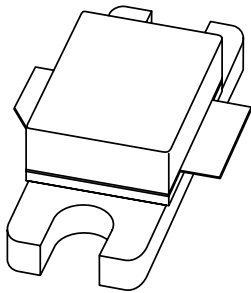


# DATA SHEET



## **BLF2022-40** UHF power LDMOS transistor

Preliminary specification

2001 April 05

# UHF power LDMOS transistor

# BLF2022-40

## FEATURES

- High power gain
- Easy power control
- Excellent ruggedness
- Designed for broadband operation (2.0 to 2.2 GHz)
- Internal input and output matching for high gain and efficiency
- Improved linearity at backoff levels.

## APPLICATIONS

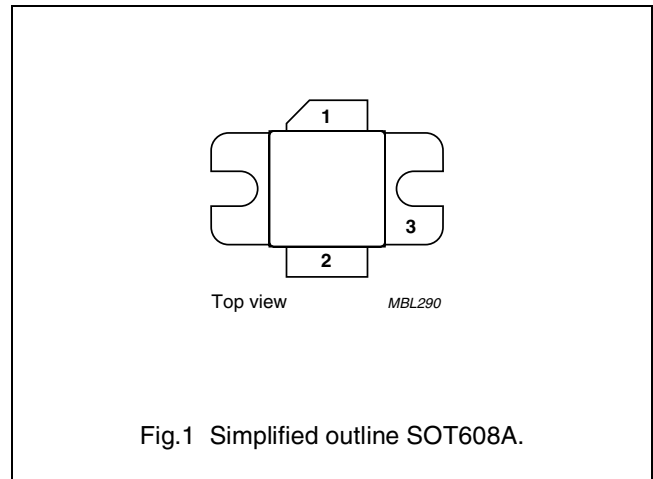
- Common source class-AB operation for PCN and PCS applications in the 2000 to 2200 MHz frequency range
- Suitable for GSM, Edge, CDMA and WCDMA applications.

## DESCRIPTION

Silicon N-channel enhancement mode lateral D-MOS transistors encapsulated in a 2-lead SOT608A flange package with a ceramic cap. The common source is connected to the mounting flange.

## PINNING

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



## QUICK REFERENCE DATA

RF performance at  $T_h = 25\text{ }^\circ\text{C}$  in a common source test circuit.

MODE OF OPERATION	f (MHz)	$V_{DS}$ (V)	PL (W)	$G_p$ (dB)	$\eta_D$ (%)	$d_{im}$ (dBc)
Two-tone, class-AB	$f_1 = 2170; f_2 = 2170.1$	28	40 (PEP)	>10.5	>30	$\leq -25$

## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
$V_{DS}$	drain-source voltage	-	65	V
$V_{GS}$	gate-source voltage	-	$\pm 15$	V
$I_D$	DC drain current	-	5	A
$T_{stg}$	storage temperature	-65	+150	$^\circ\text{C}$
$T_j$	junction temperature	-	200	$^\circ\text{C}$

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## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-h}$	thermal resistance from junction to heatsink	$T_h = 25\text{ °C}$ , $P_{tot} = 152\text{ W}$ , note 1	2.3	K/W

## Note

1. 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	$V_{GS} = 0$ ; $I_D = 0.8\text{ mA}$	65	–	–	V
$V_{GSth}$	gate-source threshold voltage	$V_{DS} = 10\text{ V}$ ; $I_D = 80\text{ mA}$	–	5	–	V
$I_{DSS}$	drain-source leakage current	$V_{GS} = 0$ ; $V_{DS} = 26\text{ V}$	–	–	6	$\mu\text{A}$
$I_{DSX}$	on-state drain current	$V_{GS} = V_{GS\ th} + 9\text{ V}$ ; $V_{DS} = 10\text{ V}$	11	–	–	A
$I_{GSS}$	gate leakage current	$V_{GS} = \pm 15\text{ V}$ ; $V_{DS} = 0$	–	–	14	nA
$g_{fs}$	forward transconductance	$V_{DS} = 10\text{ V}$ ; $I_D = 2.9\text{ A}$	–	2.3	–	S
$R_{DSon}$	drain-source on-state resistance	$V_{GS} = V_{GS\ th} + 9\text{ V}$ ; $I_D = 2.9\text{ A}$	–	0.26	–	$\Omega$
$C_{rSS}$	feedback capacitance	$V_{GS} = 0$ ; $V_{DS} = 26\text{ V}$ ; $f = 1\text{ MHz}$	–	1.7	–	pF

## APPLICATION INFORMATION

RF performance in a common source class-AB circuit.  $T_h = 25\text{ °C}$ ;  $R_{th\ j-h} = 1.15\text{ K/W}$ , unless otherwise specified.

MODE OF OPERATION	f (MHz)	$V_{DS}$ (V)	$I_{DQ}$ (mA)	$P_L$ (W)	$G_p$ (dB)	$\eta_D$ (%)	$d_{im}$ (dBc)
Two-tone, class-AB	$f_1 = 2170$ ; $f_2 = 2170.1$	28	340	40 (PEP)	>10.5	>30	$\leq -25$

## Ruggedness in class-AB operation

The BLF2022-40 is capable of withstanding a load mismatch corresponding to  $VSWR = 10 : 1$  through all phases under the following conditions:  $V_{DS} = 28\text{ V}$ ;  $I_{DQ} = 340\text{ mA}$ ;  $P_L = 40\text{ W}$ ;  $f = 2170\text{ MHz}$ .

UHF power LDMOS transistor

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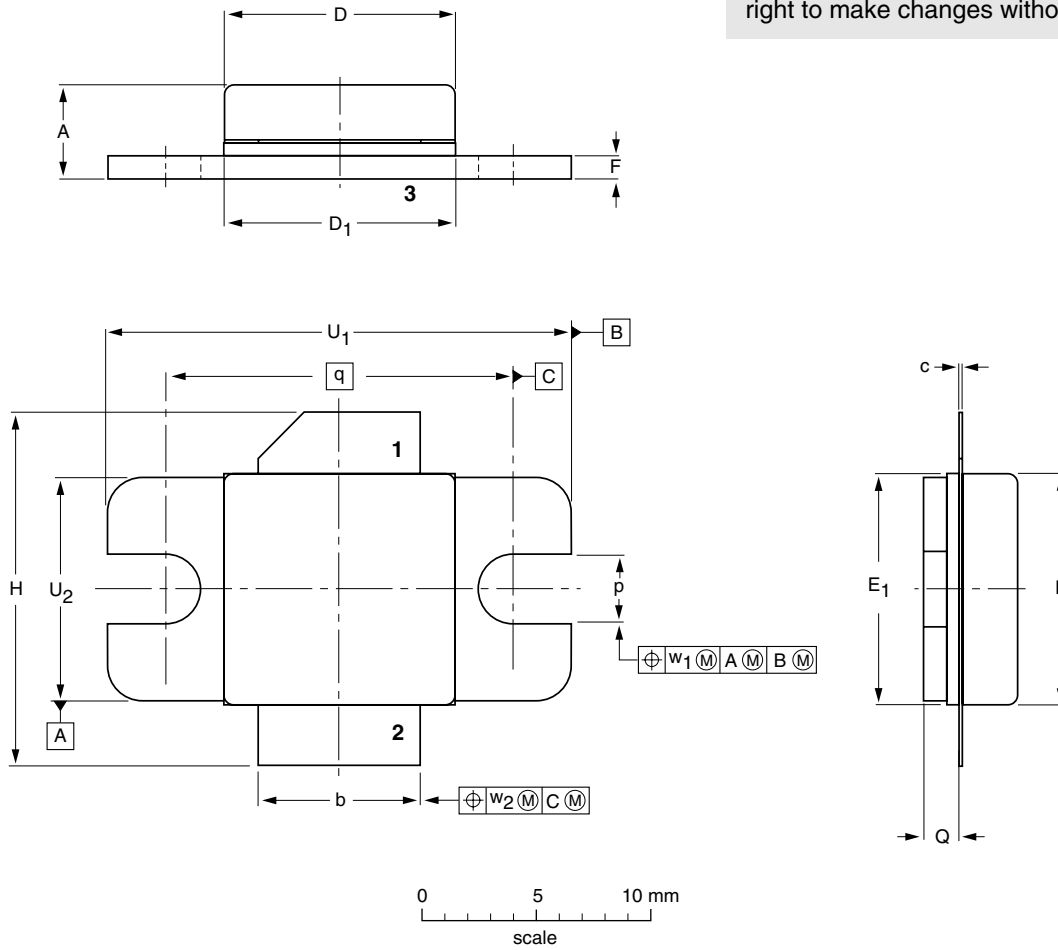
PACKAGE OUTLINE

Flanged ceramic package; 2 mounting holes; 2 leads

SOT608A

**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	H	p	Q	q	U <sub>1</sub>	U <sub>2</sub>	w <sub>1</sub>	w <sub>2</sub>
mm	4.75 3.73	7.24 6.99	0.15 0.10	10.29 9.98	10.29 10.03	10.29 9.98	10.29 10.03	1.14 0.89	15.75 14.73	3.43 3.18	1.70 1.35	15.24	20.45 20.19	9.91 9.65	0.25	0.51
inches	0.187 0.147	0.285 0.275	0.006 0.004	0.405 0.393	0.405 0.395	0.405 0.393	0.405 0.395	0.045 0.035	0.620 0.580	0.125 0.115	0.067 0.053	0.600	0.805 0.795	0.390 0.380	0.010	0.020

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT608A						01-02-02- 01-02-22

## UHF power LDMOS transistor

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## DATA SHEET STATUS

DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITIONS
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.
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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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.

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Printed in The Netherlands

125002/02/pp6

Date of release: 2001 April 05

Document order number: 9397 750 08218

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