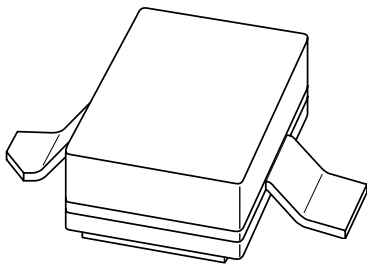


# DATA SHEET



**BLF1043**

**UHF power LDMOS transistor**

Objective specification  
Supersedes data of 2000 Feb 17

2000 Feb 23

# UHF power LDMOS transistor

# BLF1043

### FEATURES

- High power gain
- Easy power control
- Excellent ruggedness
- Source on mounting base eliminates DC isolators, reducing common mode inductance
- Designed for broadband operation (HF to 1 GHz).

### APPLICATIONS

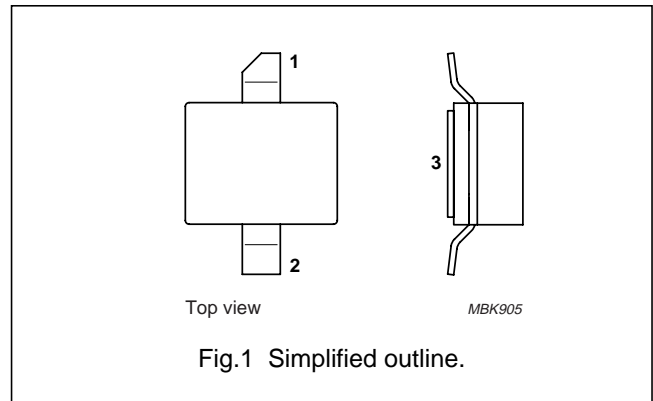
- Communication transmitter applications in the UHF frequency range.

### DESCRIPTION

Silicon N-channel enhancement mode lateral D-MOS transistor encapsulated in a 2-lead flangeless package (SOT538A) with a ceramic cap. The common source is connected to the mounting base.

### PINNING - SOT538A

PIN	DESCRIPTION
1	drain
2	gate
3	source



### 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)	$P_L$ (W)	$G_p$ (dB)	$\eta_D$ (%)	$d_{im}$ (dBc)
CW, class-AB (2-tone)	$f_1 = 960; f_2 = 960.1$	26	10 (PEP)	>16	>35	$\leq -30$
CW, class-AB (1-tone)	960	26	10	>16	>45	-

### 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.

## UHF power LDMOS transistor

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**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{DS}$	drain-source voltage		–	75	V
$V_{GS}$	gate-source voltage		–	$\pm 15$	V
$I_D$	drain current (DC)		–	2.2	A
$P_{tot}$	total power dissipation	$T_{mb} \leq 25\text{ }^\circ\text{C}$	–	tbf	W
$T_{stg}$	storage temperature		–65	+150	$^\circ\text{C}$
$T_j$	junction temperature		–	200	$^\circ\text{C}$

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-mb}$	thermal resistance from junction to mounting base	$T_{mb} = 25\text{ }^\circ\text{C}$ ; note 1	4.6	K/W
$R_{th\ mb-h}$	thermal resistance from mounting base to heatsink		0.4	K/W

**Note**

1. Thermal resistance is determined under RF operating conditions.

**CHARACTERISTICS** $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0$ ; $I_D = 0.2\text{ mA}$	75	–	–	V
$V_{GSth}$	gate-source threshold voltage	$V_{DS} = 10\text{ V}$ ; $I_D = 20\text{ mA}$	4	–	5	V
$I_{DSS}$	drain-source leakage current	$V_{GS} = 0$ ; $V_{DS} = 26\text{ V}$	–	–	0.15	$\mu\text{A}$
$I_{DSX}$	on-state drain current	$V_{GS} = V_{GSth} + 9\text{ V}$ ; $V_{DS} = 10\text{ V}$	3	–	–	A
$I_{GSS}$	gate leakage current	$V_{GS} = \pm 15\text{ V}$ ; $V_{DS} = 0$	–	–	1	$\mu\text{A}$
$g_{fs}$	forward transconductance	$V_{DS} = 10\text{ V}$ ; $I_D = 0.75\text{ A}$	–	0.5	–	S
$R_{DSon}$	drain-source on-state resistance	$V_{GS} = 10\text{ V}$ ; $I_D = 0.75\text{ A}$	–	1.2	–	$\Omega$
$C_{is}$	input capacitance	$V_{GS} = 0$ ; $V_{DS} = 26\text{ V}$ ; $f = 1\text{ MHz}$	–	11	–	pF
$C_{os}$	output capacitance	$V_{GS} = 0$ ; $V_{DS} = 26\text{ V}$ ; $f = 1\text{ MHz}$	–	9	–	pF
$C_{rs}$	feedback capacitance	$V_{GS} = 0$ ; $V_{DS} = 26\text{ V}$ ; $f = 1\text{ MHz}$	–	0.6	–	pF

UHF power LDMOS transistor

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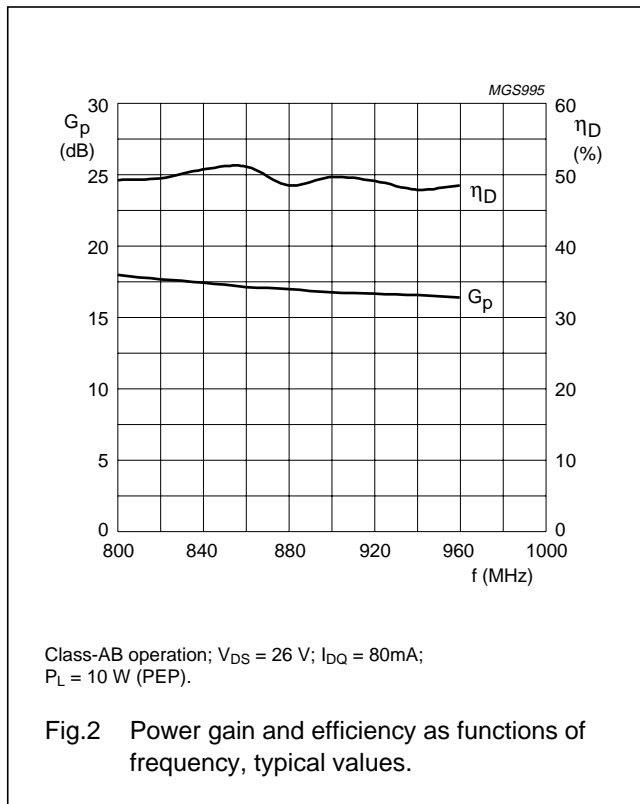
**APPLICATION INFORMATION**

RF performance in a common source class-AB circuit.  $T_h = 25\text{ }^\circ\text{C}$ ;  $R_{th\ mb-h} = 0.4\text{ K/W}$  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)
CW, class-AB (2-tone)	$f_1 = 960; f_2 = 960.1$	26	25	10 (PEP)	>16	>35	$\leq -30$
CW, class-AB (1-tone)	960	26	25	10	>16	>45	-

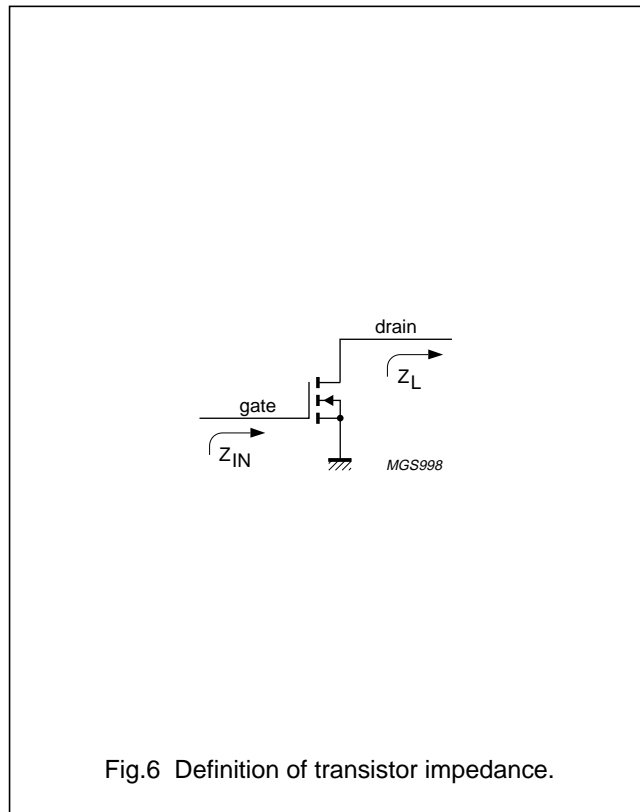
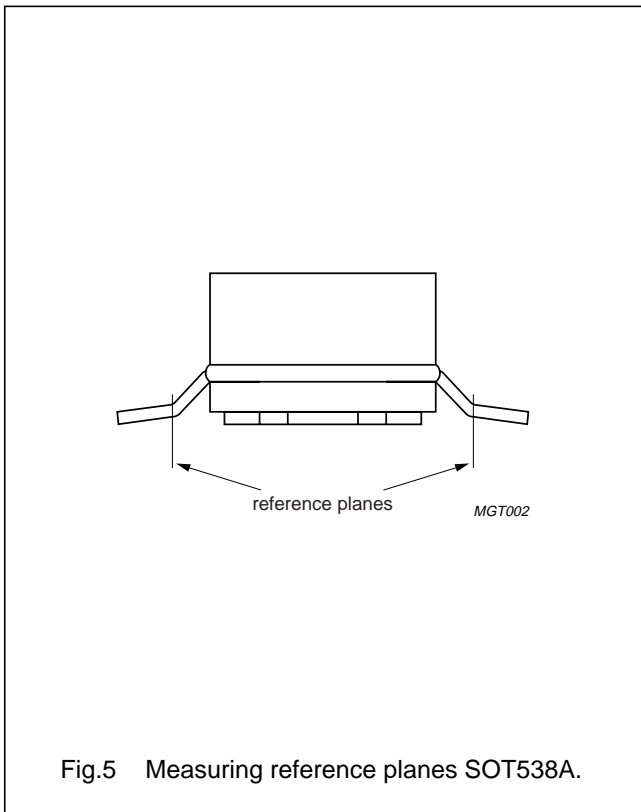
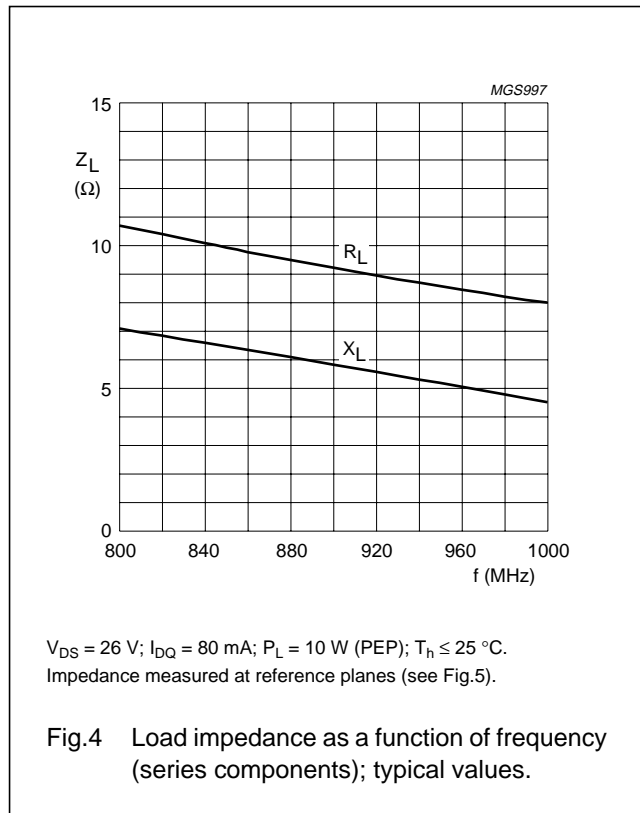
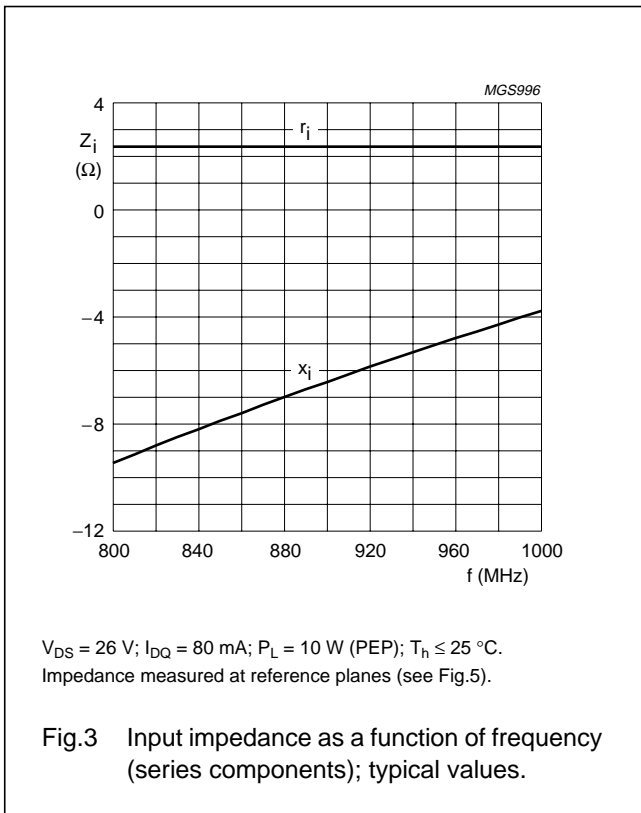
**Ruggedness in class-AB operation**

The BLF1043 is capable of withstanding a load mismatch corresponding to  $V_{SWR} = 10 : 1$  through all phases under the following conditions:  $V_{DS} = 26\text{ V}$ ;  $f = 960\text{ MHz}$  at rated load power.



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UHF power LDMOS transistor

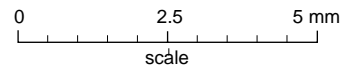
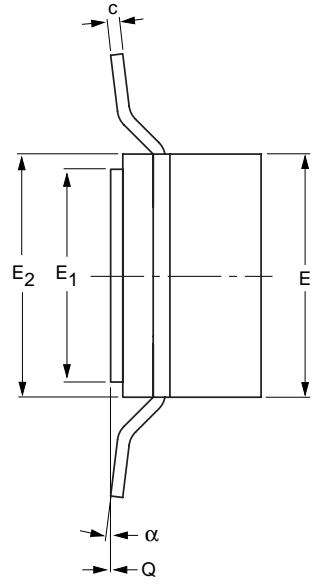
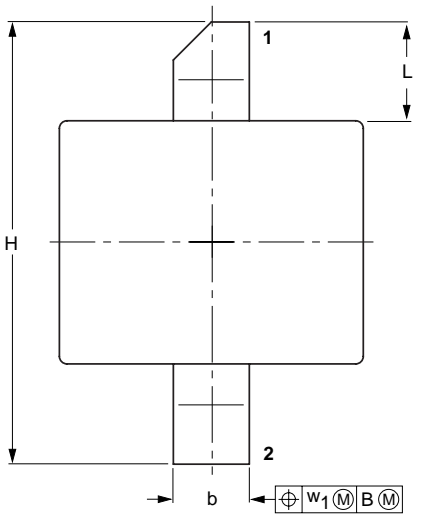
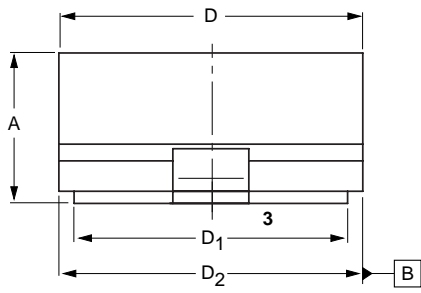
BLF1043

PACKAGE OUTLINE

Ceramic surface mounted package; 2 leads

SOT538A

**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>	D <sub>2</sub>	E	E <sub>1</sub>	E <sub>2</sub>	H	L	Q	w <sub>1</sub>	α
mm	2.95 2.29	1.35 1.19	0.23 0.18	5.16 5.00	4.65 4.50	5.41 5.00	4.14 3.99	3.63 3.48	4.14 3.99	7.49 7.24	2.03 1.27	0.10 0.00	0.25	7° 0°
inches	0.116 0.090	0.053 0.047	0.009 0.007	0.203 0.197	0.183 0.177	0.213 0.197	0.163 0.157	0.143 0.137	0.163 0.157	0.295 0.285	0.080 0.050	0.004 0.000	0.010	7° 0°

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT538A						99-03-30

## UHF power LDMOS transistor

BLF1043

**DEFINITIONS**

<b>Data Sheet Status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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Printed in The Netherlands

603516/02/pp8

Date of release: 2000 Feb 23

Document order number: 9397 750 06908

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