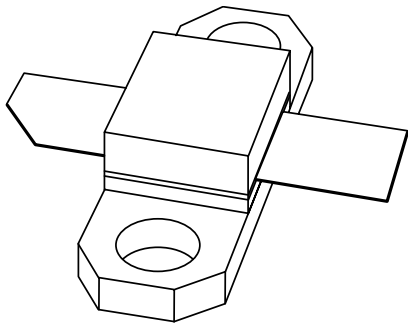


# DATA SHEET



## **BLF1046** UHF power LDMOS transistor

Preliminary specification

1999 Jul 12

# UHF power LDMOS transistor

# BLF1046

### FEATURES

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

### APPLICATIONS

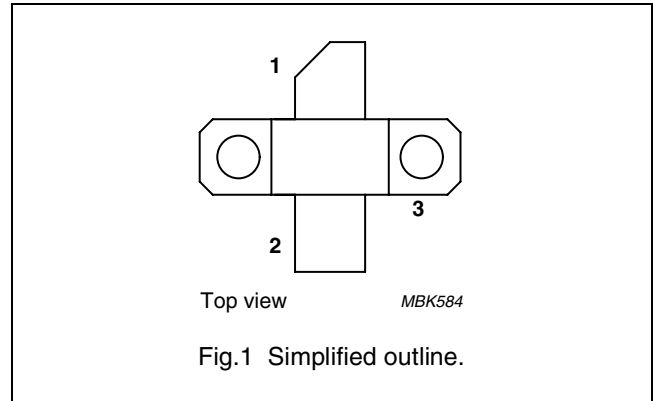
- Communication transmitter applications in the UHF frequency range.

### DESCRIPTION

Silicon N-channel enhancement mode lateral D-MOS transistor encapsulated in a 2-lead flange package (SOT467A) with a ceramic cap. The common source is connected to the mounting flange.

### PINNING - SOT467A

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 <sub>DS</sub> (V)	P <sub>L</sub> (W)	G <sub>p</sub> (dB)	$\eta_D$ (%)	d <sub>im</sub> (dBc)
CW, class-AB (2-tone)	$f_1 = 960; f_2 = 960.1$	26	45 (PEP)	>14	>35	$\leq -28$
CW, class-AB (1-tone)	960	26	45	>14	>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

BLF1046

## LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{DS}$	drain-source voltage		–	65	V
$V_{GS}$	gate-source voltage		–	$\pm 20$	V
$I_D$	drain current (DC)		–	4.5	A
$T_{stg}$	storage temperature		–65	150	°C
$T_j$	junction temperature		–	200	°C

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-h}$	thermal resistance from junction to heatsink	$T_h = 25\text{ °C}$ , $P_{dis} = 97\text{ W}$ ; note 1	1.2	K/W
$R_{th\ mb-h}$	thermal resistance from mounting base to heatsink		0.6	K/W

## Note

1. Determined under specified RF operating conditions, based on maximum peak junction temperature.

## CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0$ ; $I_D = 0.7\text{ mA}$	65	–	–	V
$V_{GSth}$	gate-source threshold voltage	$V_{DS} = 10\text{ V}$ ; $I_D = 70\text{ mA}$	4	–	5	V
$I_{DSS}$	drain-source leakage current	$V_{GS} = 0$ ; $V_{DS} = 28\text{ V}$	–	–	–	$\mu\text{A}$
$I_{DSX}$	drain cut-off current	$V_{GS} = V_{GSth} + 9\text{ V}$ ; $V_{DS} = 10\text{ V}$	12.5	–	–	A
$I_{GSS}$	gate leakage current	$V_{GS} = \pm 20\text{ V}$ ; $V_{DS} = 0$	–	–	125	nA
$g_{fs}$	forward transconductance	$V_{DS} = 10\text{ V}$ ; $I_D = 3.5\text{ A}$	–	2	–	S
$R_{DSon}$	drain-source on-state resistance	$V_{GS} = V_{GSth} + 9\text{ V}$ ; $I_D = 3.5\text{ A}$	–	300	–	m $\Omega$
$C_{is}$	input capacitance	$V_{GS} = 0$ ; $V_{DS} = 26\text{ V}$ ; $f = 1\text{ MHz}$	–	46	–	pF
$C_{os}$	output capacitance	$V_{GS} = 0$ ; $V_{DS} = 26\text{ V}$ ; $f = 1\text{ MHz}$	–	37	–	pF
$C_{rs}$	feedback capacitance	$V_{GS} = 0$ ; $V_{DS} = 26\text{ V}$ ; $f = 1\text{ MHz}$	–	1.5	–	pF

## APPLICATION INFORMATION

RF performance in a common source class-AB circuit.  $T_h = 25\text{ °C}$ ;  $R_{th\ mb-h} = 0.6\text{ K/W}$ , unless otherwise specified.

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	45 (PEP)	>14	>35	$\leq -28$
CW, class-AB (1-tone)	960	26	45	>14	>45	–

## Ruggedness in class-AB operation

The BLF1046 is capable of withstanding a load mismatch corresponding to VSWR = 10 : 1 through all phases under the following conditions:  $V_{DS} = 26\text{ V}$ ;  $f = 960\text{ MHz}$  at rated load power.

UHF power LDMOS transistor

BLF1046

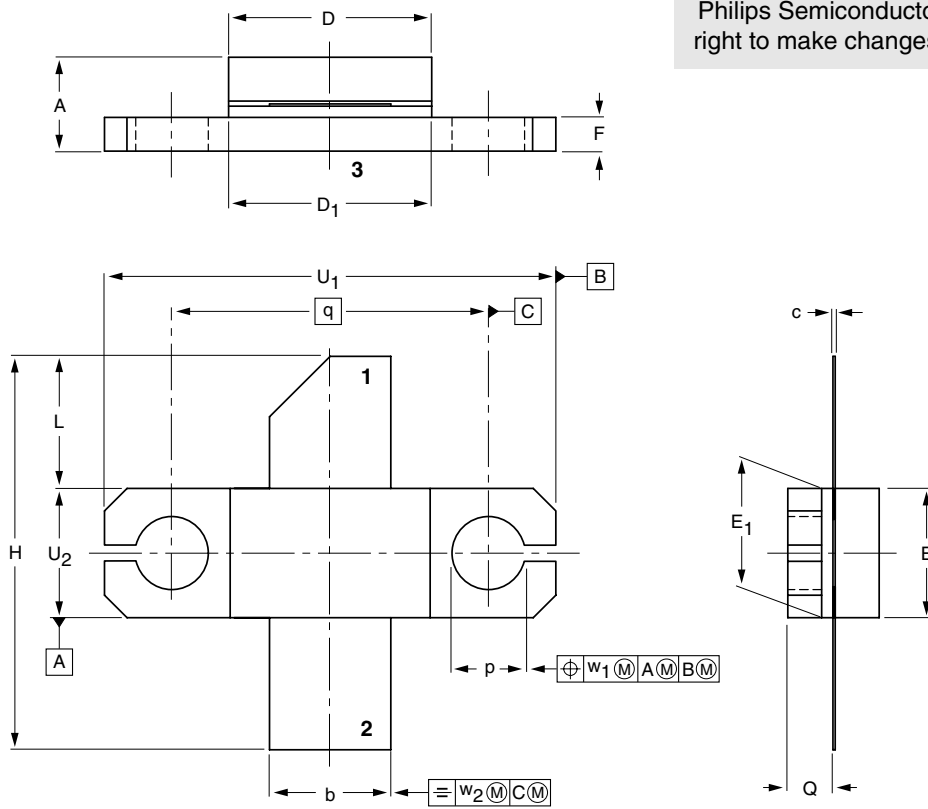
PACKAGE OUTLINE

Flanged LDMOST package; 2 mounting holes; 2 leads

SOT467A

**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	L	p	Q	q	U <sub>1</sub>	U <sub>2</sub>	w <sub>1</sub>	w <sub>2</sub>
mm	4.67 3.94	5.59 5.33	0.15 0.10	9.25 9.04	9.27 9.02	5.92 5.77	5.97 5.72	1.65 1.40	18.29 17.27	6.22 5.71	3.43 3.18	2.21 1.96	14.27	20.45 20.19	5.97 5.72	0.25	0.51
inch	0.184 0.155	0.220 0.210	0.006 0.004	0.364 0.356	0.365 0.355	0.233 0.227	0.235 0.225	0.065 0.055	0.72 0.68	0.135 0.125	0.245 0.225	0.087 0.077	0.562	0.805 0.795	0.235 0.225	0.010	0.020

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT467A						99-03-31

## UHF power LDMOS transistor

BLF1046

**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.	

**LIFE SUPPORT APPLICATIONS**

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