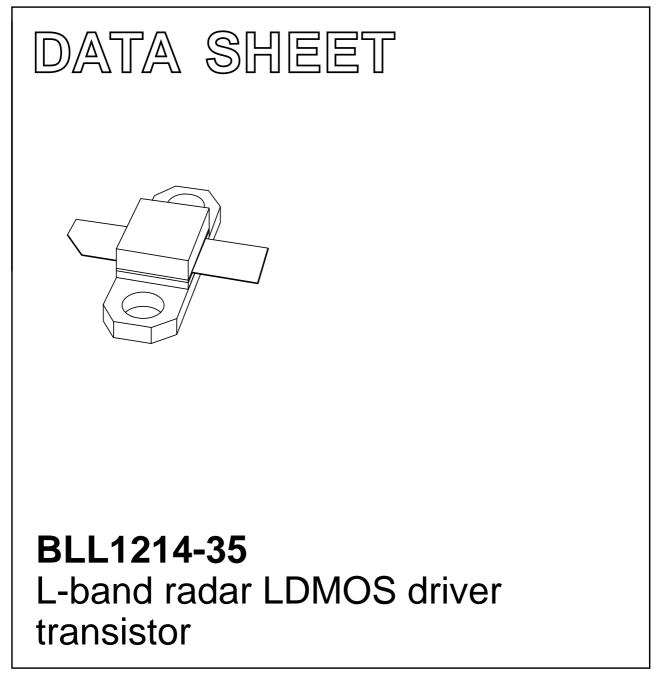
DISCRETE SEMICONDUCTORS



Product specification

2002 Sep 27



FEATURES

- · High power gain
- · Easy power control
- Excellent ruggedness
- Source on mounting base eliminates DC isolators, reducing common mode inductance.

APPLICATIONS

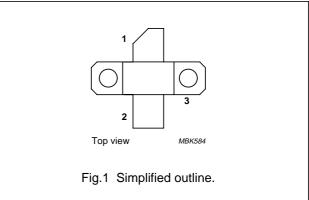
· L-band radar applications in the 1200 to 1400 MHz frequency range.

DESCRIPTION

Silicon N-channel enhancement mode lateral D-MOS transistor encapsulated in a 2-lead flange package (SOT467C) with a ceramic cap. The common source is connected to the flange.

PINNING - SOT467C

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



QUICK REFERENCE DATA

RF performance at $T_h = 25$ °C in a common source test circuit.

MODE OF OPERATION	f	V _{DS}	P _L	G _p	ղը
	(MHz)	(V)	(W)	(dB)	(%)
Pulsed class-AB; t = 1 ms; δ = 10 %	1200 to 1400	36	35	>13	>43

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{DS}	drain-source voltage		-	75	V
V _{GS}	gate-source voltage		-	±15	V
P _{tot}	total power dissipation	under RF conditions; $T_h \le 25 \ ^{\circ}C$	_	110	W
T _{stg}	storage temperature		-65	+150	°C
Tj	junction temperature		_	200	°C

BLL1214-35

BLL1214-35

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
Z _{th j-h}	thermal impedance from junction to heatsink	T _h = 25 °C; note 1	1.1	K/W

Note

1. Thermal resistance is determined under RF operating conditions; $t_p = 1 \text{ ms}, \delta = 10 \%$.

CHARACTERISTICS

 $T_i = 25 \ ^{\circ}C$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _{(BR)DSS}	drain-source breakdown voltage	$V_{GS} = 0; I_D = 0.7 \text{ mA}$	75	-	_	V
V _{GSth}	gate-source threshold voltage	V _{DS} = 10 V; I _D = 70 mA	4.5	-	5.5	V
I _{DSS}	drain-source leakage current	V _{GS} = 0; V _{DS} = 36 V	-	-	10	μA
I _{DSX}	on-state drain current	$V_{GS} = V_{GSth} + 9 V; V_{DS} = 10 V$	10	-	_	А
I _{GSS}	gate leakage current	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0$	-	-	125	nA
g fs	forward transconductance	V _{DS} = 10 V; I _D = 2.5 A	-	2	-	S
R _{DSon}	drain-source on-state resistance	V _{GS} = 10 V; I _D = 2.5 A	-	300	_	mΩ

APPLICATION INFORMATION

RF performance in a common source class-AB circuit. T_h = 25 °C; $Z_{th mb-h}$ = 0.65 K/W, unless otherwise specified.

MODE OF OPERATION	f	V _{DS}	I _{DQ}	P _L	G _p	η _D
	(MHz)	(V)	(mA)	(W)	(dB)	(%)
Pulsed class-AB; t = 1 ms; δ = 10 %	1200 to 1400	36	50	35	>13	>43

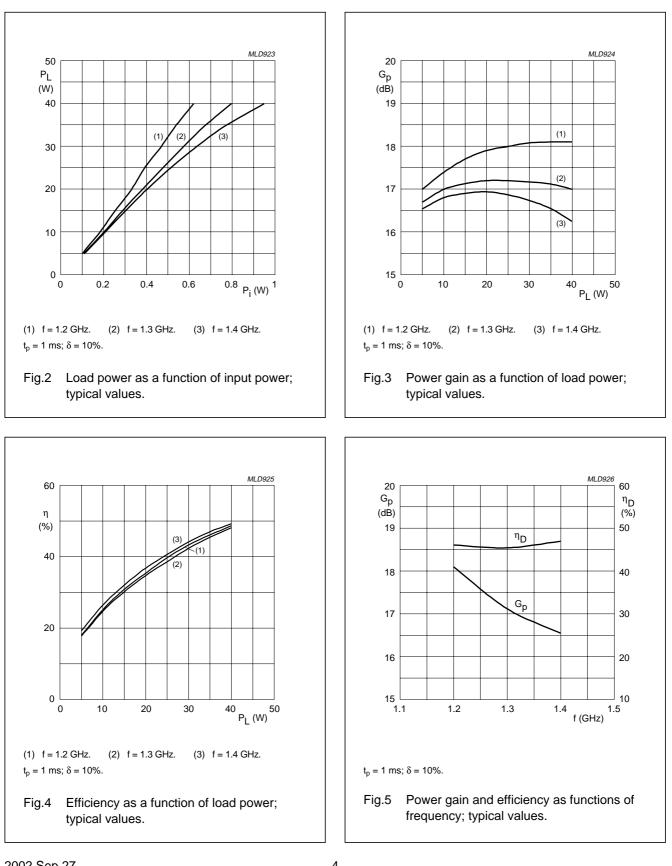
Ruggedness in class-AB operation

The BLL1214-35 is capable of withstanding a load mismatch corresponding to VSWR = 5 : 1 through all phases under the following conditions: V_{DS} = 36 V; frequency from 1200 MHz to 1400 MHz at rated load power.

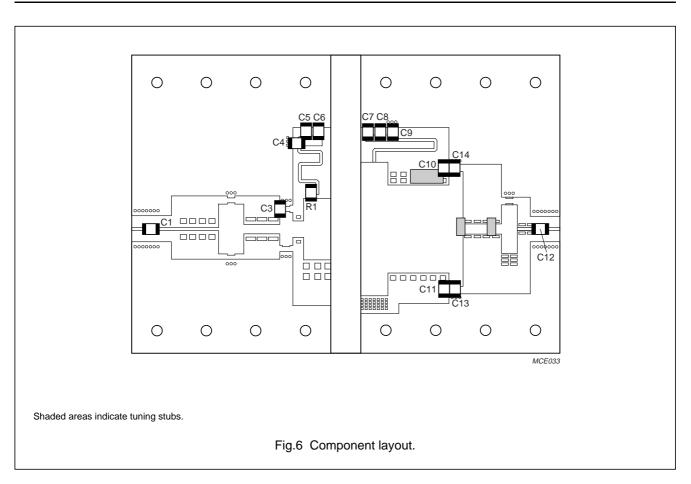
Typical impedance

FREQUENCY (GHZ)	Z _S (Ω)	Z _L (Ω)
1.20	6.48 – j 3.9	1.95 + j 3.27
1.25	3.88 – j 3.2	1.90 + j 2.57
1.30	3.28 – j 2.4	2.01 + j 2.27
1.35	2.55 – j 1.48	2.20 + j 2.26
1.40	1.69 – j 0.51	1.72 + j 2.35

BLL1214-35



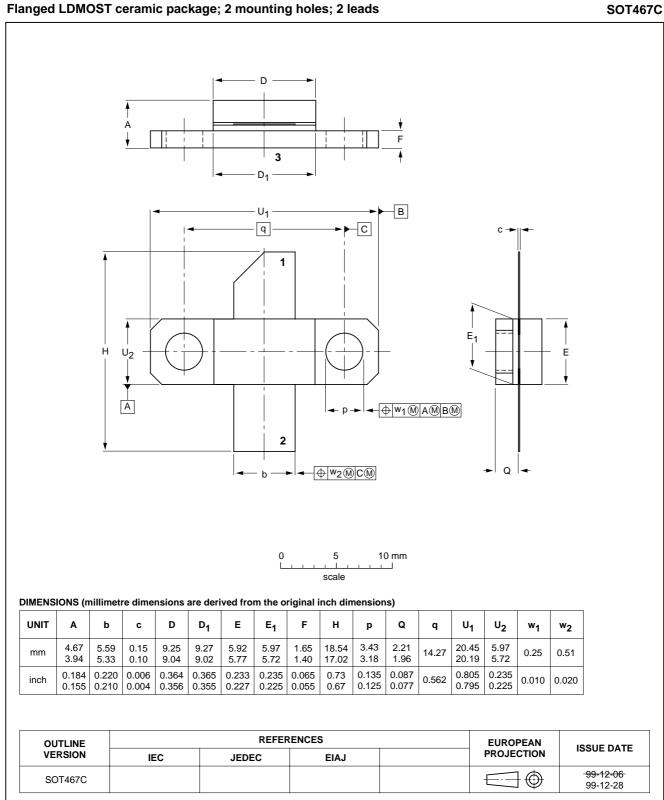
BLL1214-35



List of components (see Fig.6)

COMPONENT	DESCRIPTION	VALUE	CATALOGUE NO.
C1, C12	capacitor	51 pF	ATC100A
C3	capacitor	6.8 pF	ATC100A
C4, C9	capacitor	47 pF	ATC100A
C6, C7	capacitor	4.7 μF/50 V	475 50k 952
C5, C8	capacitor	2.3 nF	ATC100B
C10	capacitor	2.7 pF	ATC100A
C11	capacitor	1.0 pF	ATC100A
C13, C14	capacitor	1.5 pF	ATC100A
R1	chip resistor	82 Ω	

PACKAGE OUTLINE



BLL1214-35

DATA SHEET STATUS

DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	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.
Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Changes will be communicated according to the Customer Product/Process Change Notification (CPCN) procedure SNW-SQ-650A.

Notes

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- 2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.

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Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

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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.

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Contact information

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