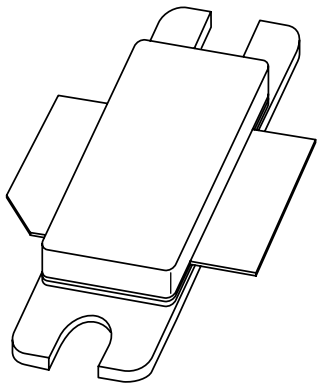


DATA SHEET



BLA1011-200 Avionics LDMOS transistor

Preliminary specification

2000 Aug 02

Avionics LDMOS transistor

BLA1011-200

FEATURES

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

APPLICATIONS

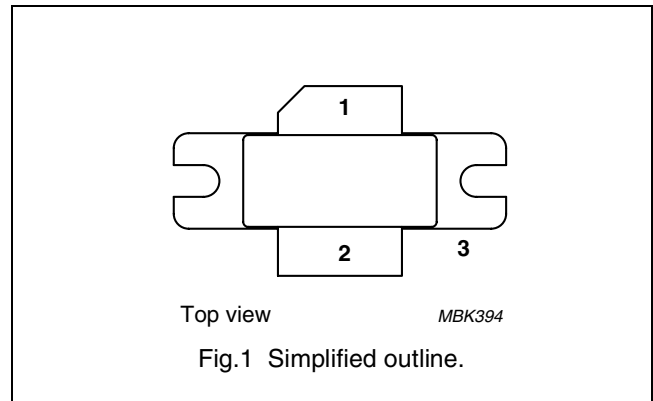
- Avionics transmitter applications in the 1030 to 1090 MHz frequency range.

DESCRIPTION

Silicon N-channel enhancement mode lateral D-MOS transistor encapsulated in a 2-lead flang package (SOT502A) with a ceramic cap. The common source is connected to the flange.

PINNING - SOT502A

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



QUICK REFERENCE DATA

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

MODE OF OPERATION	f (MHz)	V_{DS} (V)	P_L (W)	G_p (dB)	η_D (%)
Pulsed class-AB; $t_p = 50\text{ }\mu\text{s}$; $\delta = 2\%$	1030 - 1090	36	200	>13	>45

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		–	± 20	V
I_D	drain current (DC)		–	tbd	A
P_{tot}	total power dissipation	$T_h \leq 25\text{ °C}$	–	700	W
T_{stg}	storage temperature		–65	150	°C
T_j	junction temperature		–	200	°C

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$Z_{th\ j-h}$	thermal impedance from junction to heatsink	$T_h = 25\text{ °C}$, note 1	0.15	K/W

Note

1. Thermal resistance is determined under RF operating conditions; $t_p = 50\ \mu\text{s}$, $\delta = 10\ \%$.

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0$; $I_D = 3\text{ mA}$	75	–	–	V
V_{GSth}	gate-source threshold voltage	$V_{DS} = 10\text{ V}$; $I_D = 300\text{ mA}$	4	–	5	V
I_{DSS}	drain-source leakage current	$V_{GS} = 0$; $V_{DS} = 36\text{ V}$	–	–	1	mA
I_{DSX}	on-state drain current	$V_{GS} = V_{GS(th)} + 9\text{ V}$; $V_{DS} = 10\text{ V}$	45	–	–	A
I_{GSS}	gate leakage current	$V_{GS} = \pm 20\text{ V}$; $V_{DS} = 0$	–	–	1	μA
g_{fs}	forward transconductance	$V_{DS} = 10\text{ V}$; $I_D = 10\text{ A}$	–	9	–	S
R_{DSon}	drain-source on-state resistance	$V_{GS} = 9\text{ V}$; $I_D = 10\text{ A}$	–	60	–	$\text{m}\Omega$

APPLICATION INFORMATION

RF performance in a common source class-AB circuit. $T_h = 25\text{ °C}$; $Z_{th\ mb-h} = 0.15\text{ K/W}$, unless otherwise specified.

MODE OF OPERATION	f (MHz)	V_{DS} (V)	I_{DQ} (mA)	P_L (W)	G_p (dB)	η_D (%)
Pulsed class-AB; $t_p = 50\ \mu\text{s}$; $\delta = 2\ \%$	1030 - 1090	36	150	200	>13	>45

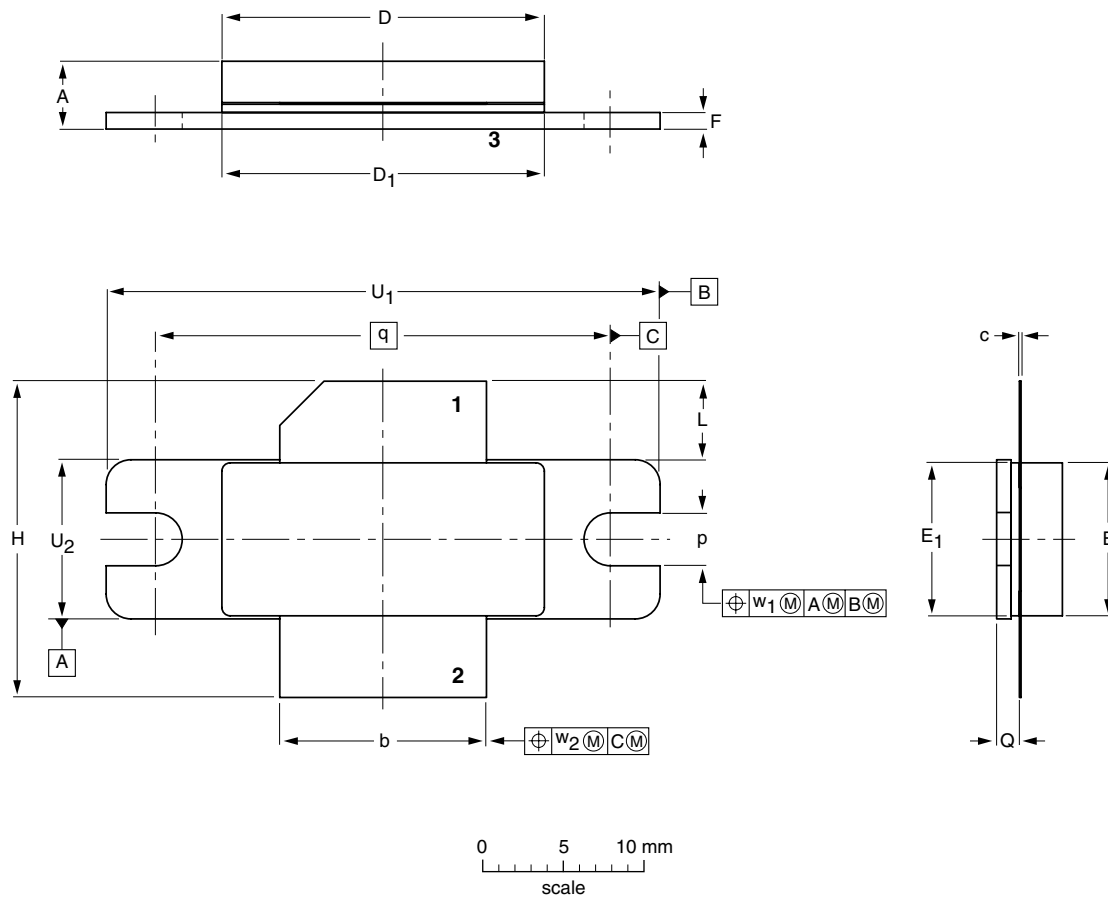
Avionics LDMOS transistor

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PACKAGE OUTLINE

Flanged LDMOST ceramic package; 2 mounting holes; 2 leads

SOT502A



DIMENSIONS (millimetre dimensions are derived from the original inch dimensions)

UNIT	A	b	c	D	D ₁	E	E ₁	F	H	L	p	Q	q	U ₁	U ₂	w ₁	w ₂
mm	4.72 3.99	12.83 12.57	0.15 0.08	20.02 19.61	19.96 19.66	9.50 9.30	9.53 9.25	1.14 0.89	19.94 18.92	5.33 4.32	3.38 3.12	1.70 1.45	27.94	34.16 33.91	9.91 9.65	0.25	0.51
inches	0.186 0.157	0.505 0.495	0.006 0.003	0.788 0.772	0.786 0.774	0.374 0.366	0.375 0.364	0.045 0.035	0.785 0.745	0.210 0.170	0.133 0.123	0.067 0.057	1.100	1.345 1.335	0.390 0.380	0.01	0.02

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT502A						99-10-13 99-12-28

Avionics LDMOS transistor

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DATA SHEET STATUS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS ⁽¹⁾
Objective specification	Development	This data sheet contains the design target or goal specifications for product development. Specification may change in any manner without notice.
Preliminary specification	Qualification	This data sheet contains preliminary data, and supplementary data will be published at a later date. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

Note

1. Please consult the most recently issued data sheet before initiating or completing a design.

DEFINITIONS

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.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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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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