DATA SHEET

BLV904
UHF power transistor

Preliminary specification
File under Discrete Semiconductors, SC08b

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Philips
Semiconductors

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UHF power transistor BLV904

FEATURES

- Emitter ballasting resistors for optimum temperature profile
- Gold metallization ensures excellent reliability
- Internal input matching to achieve high power gain and easy design of wideband circuits.

DESCRIPTION

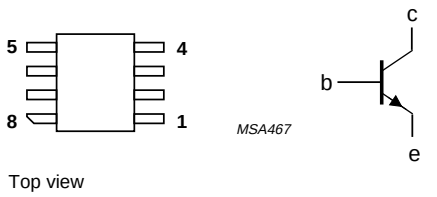
NPN silicon planar epitaxial transistor encapsulated in a 8-lead SOT409B SMD package with a ceramic cap. All leads are isolated from the mounting base.

PINNING - SOT409B

PIN	SYMBOL	DESCRIPTION
1, 4, 5, 8	e	emitter
2, 3	b	base
6, 7	c	collector

APPLICATIONS

- Common emitter class-AB operation in base stations in the 820 to 960 MHz frequency range.



Top view

Fig.1 Simplified outline and symbol.

QUICK REFERENCE DATA

RF performance at T_{mb} = 25 °C in a common emitter test circuit.

MODE OF OPERATION	f (MHz)	V_{CE} (V)	P_L (W)	G_p (dB)	η_C (%)
CW, class-AB	960	26	5	≥11	≥50

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	60	V
V_{CEO}	collector-emitter voltage	open base	–	28	V
V_{EBO}	emitter-base voltage	open collector	–	4	V
I_C	collector current (DC)		–	1.2	A
$I_{C(AV)}$	average collector current		–	1.2	A
P_{tot}	total power dissipation	T_{mb} = 60 °C; note 1	–	14	W
T_{stg}	storage temperature		–65	+150	°C
T_j	operating junction temperature		–	200	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}mb}$	thermal resistance from junction to mounting base	P_{tot} = 14 W; T_{mb} = 60 °C; note 1	10	K/W

Note to the “Limiting values” and “Thermal characteristics”

1. Transistor with metallized ground plane mounted on a printed-circuit board, see *“This handbook, Section Mounting and soldering”*.

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)CBO}$	collector-base breakdown voltage	open emitter; I_C = 5 mA	60	–	–	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	open base; I_C = 10 mA	28	–	–	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	open collector; I_E = 0.5 mA	4	–	–	V
I_{CES}	collector leakage current	V_{CE} = 28 V; V_{BE} = 0	–	–	3	mA
h_{FE}	DC current gain	V_{CE} = 20 V; I_C = 600 mA	30	–	120	
C_c	collector capacitance	V_{CB} = 26 V; $I_E = i_e$ = 0; f = 1 MHz	–	6	–	pF
C_{re}	feedback capacitance	V_{CE} = 26 V; I_C = 0; f = 1 MHz	–	2.5	–	pF

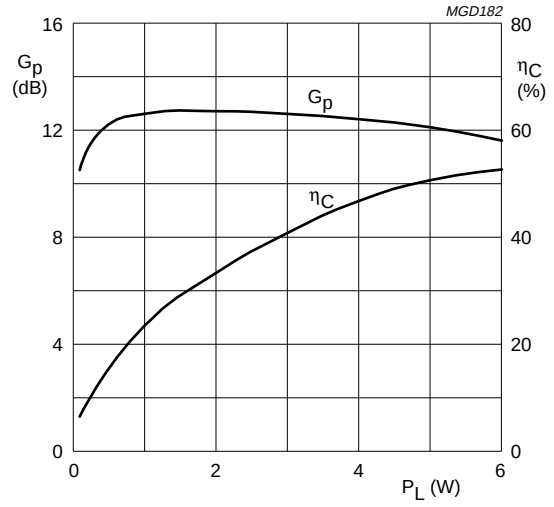
APPLICATION INFORMATION

RF performance at T_{mb} = 25 °C in a common emitter test circuit.

MODE OF OPERATION	f (MHz)	V_{CE} (V)	I_{CQ} (mA)	P_L (W)	G_p (dB)	η_C (%)
CW, class-AB	960	26	15	5	≥11 typ. 12	≥50

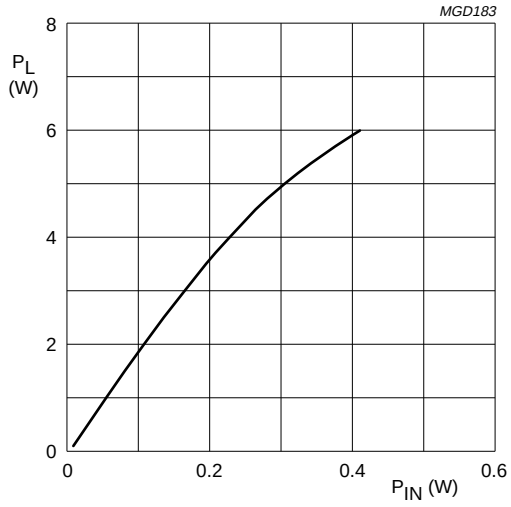
Ruggedness in class-AB operation

The BLV904 is capable of withstanding a load mismatch corresponding to VSWR = 20 : 1 through all phases under the following conditions: f = 960 MHz; V_{CE} = 26 V; I_{CQ} = 15 mA; P_L = 5 W; T_{mb} = 25 °C.



CW, class-AB; f = 960 MHz; V_{CE} = 26 V; I_{CQ} = 15 mA; T_{mb} = 25 °C.

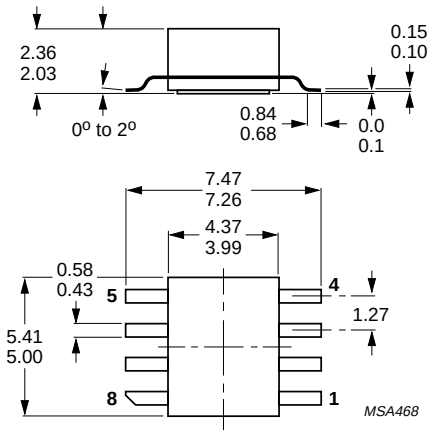
Fig.2 Power gain and collector efficiency as functions of load power; typical values.



CW, class-AB; f = 960 MHz; V_{CE} = 26 V; I_{CQ} = 15 mA; T_{mb} = 25 °C.

Fig.3 Load power as a function of input power; typical values.

PACKAGE OUTLINE



Dimensions in mm.

Fig.4 SOT409B.

DEFINITIONS

Data Sheet Status	
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.
Limiting values	
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.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

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