DATA SHEET

BLT71/8
UHF power transistor

Preliminary specification
File under Discrete Semiconductors, SC08b

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Philips
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UHF power transistor BLT71/8

FEATURES

- High efficiency
- Very high gain
- Internal pre-matched input
- Low supply voltage.

APPLICATIONS

- Hand-held radio equipment in common emitter class-AB operation for 900 MHz communication band.

PINNING - SOT96-1

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

DESCRIPTION

NPN silicon planar epitaxial transistor encapsulated in a plastic SOT96-1 (SO8) SMD package.

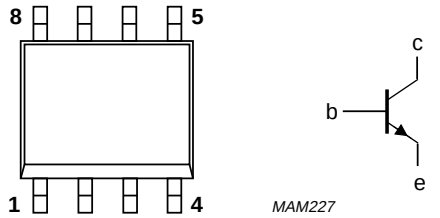


Fig.1 Simplified outline and symbol.

QUICK REFERENCE DATA

RF performance at $T_s \leq 60$ °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	900	4.8	1.2	≥11 typ. 13	≥55 typ. 63

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	–	16	V
V_{CEO}	collector-emitter voltage	open base	–	8	V
V_{EBO}	emitter-base voltage	open collector	–	2.5	V
I_C	collector current (DC)		–	500	mA
P_{tot}	total power dissipation	T_s = 60 °C; note 1	–	2.9	W
T_{stg}	storage temperature		–65	+150	°C
T_j	operating junction temperature		–	175	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point	P_{tot} = 2.9 W; T_s = 60 °C; note 1	40	K/W

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

1. T_s is the temperature at the soldering point of the collector pin.

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{(BR)CBO}$	collector-base breakdown voltage	open emitter; I_C = 0.5 mA	16	–	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	open base; I_C = 10 mA	8	–	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	open collector; I_E = 0.1 mA	2.5	–	V
I_{CES}	collector leakage current	V_{CE} = 8 V; V_{BE} = 0	–	0.1	mA
h_{FE}	DC current gain	V_{CE} = 5 V; I_C = 100 mA	25	–	
C_c	collector capacitance	V_{CB} = 4.8 V; $I_E = i_e$ = 0; f = 1 MHz	–	7	pF
C_{re}	feedback capacitance	V_{CE} = 4.8 V; I_C = 0; f = 1 MHz	–	5	pF

APPLICATION INFORMATION

RF performance at $T_s \leq 60$ °C in a common emitter test circuit (note 1).

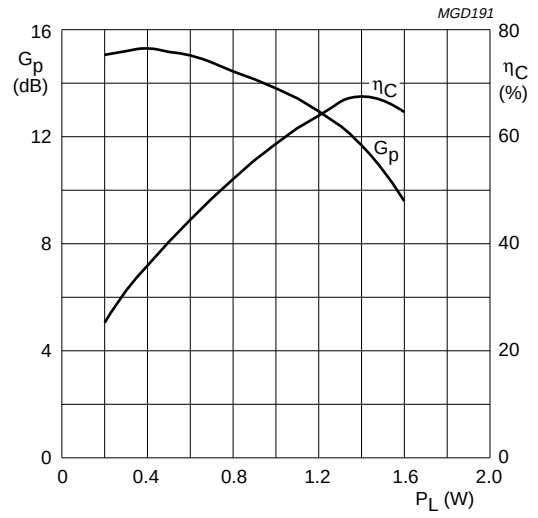
MODE OF OPERATION	f (MHz)	V_{CE} (V)	I_{CQ} (mA)	P_L (W)	G_p (dB)	η_C (%)
CW, class-AB	900	4.8	3	1.2	≥11 typ. 13	≥55 typ. 63

Note

1. T_s is the temperature at the soldering point of the collector pin.

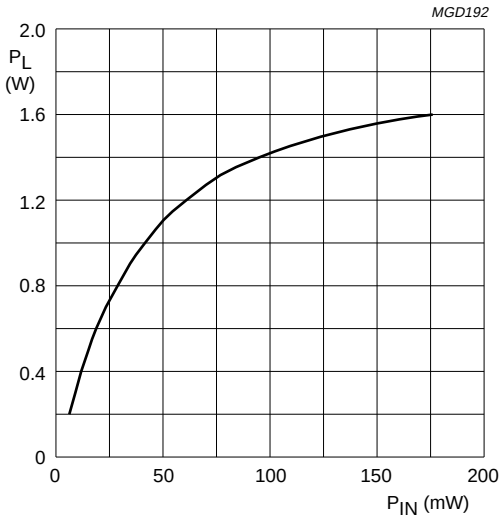
Ruggedness in class-AB operation

The BLT71/8 is capable of withstanding a load mismatch corresponding to VSWR = 6 : 1 through all phases under the following conditions: f = 900 MHz; V_{CE} = 6.5 V; I_{CQ} = 3 mA; P_L = 1.2 W; $T_s \leq 60$ °C.



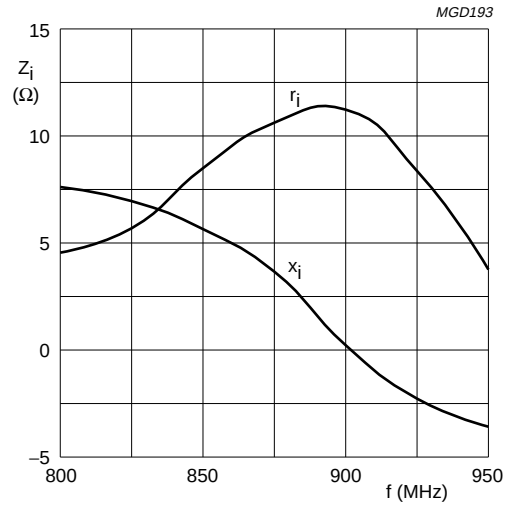
f = 900 MHz; V_{CE} = 4.8 V; I_{CQ} = 3 mA; $T_s \leq 60$ °C.

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



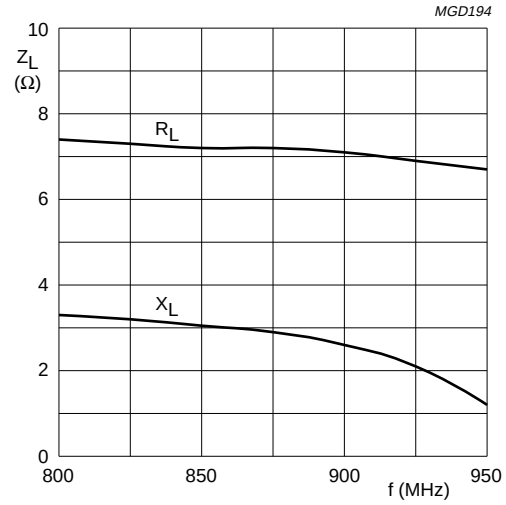
f = 900 MHz; V_{CE} = 4.8 V; I_{CQ} = 3 mA; $T_s \leq 60$ °C.

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



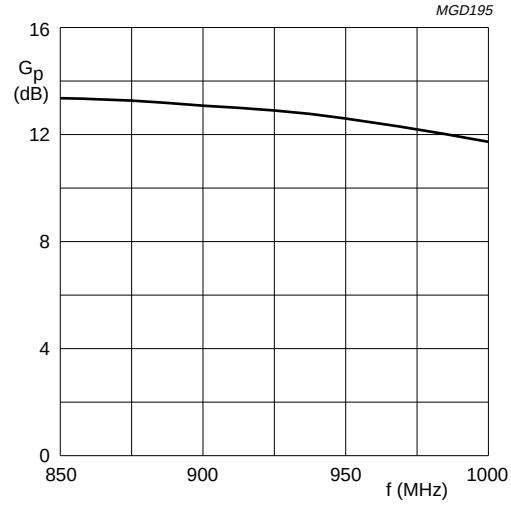
V_{CE} = 4.8 V; I_{CQ} = 3 mA; P_L = 1.2 W; T_{amb} = 25 °C.

Fig.4 Input impedance as a function of frequency (series components); typical values.



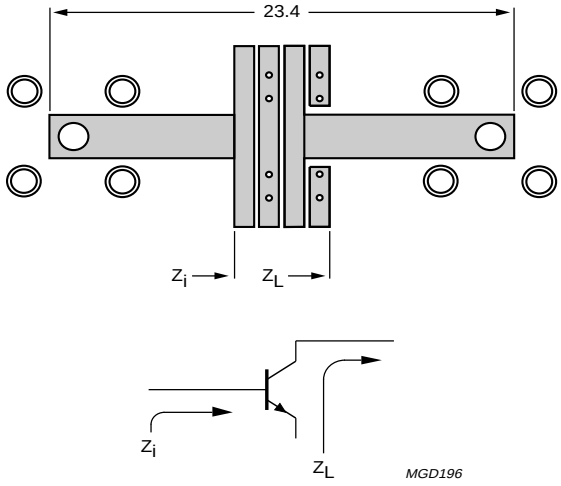
V_{CE} = 4.8 V; I_{CQ} = 3 mA; P_L = 1.2 W; T_{amb} = 25 °C.

Fig.5 Load impedance as a function of frequency (series components); typical values.



V_{CE} = 4.8 V; I_{CQ} = 3 mA; P_L = 1.2 W; T_{amb} = 25 °C.

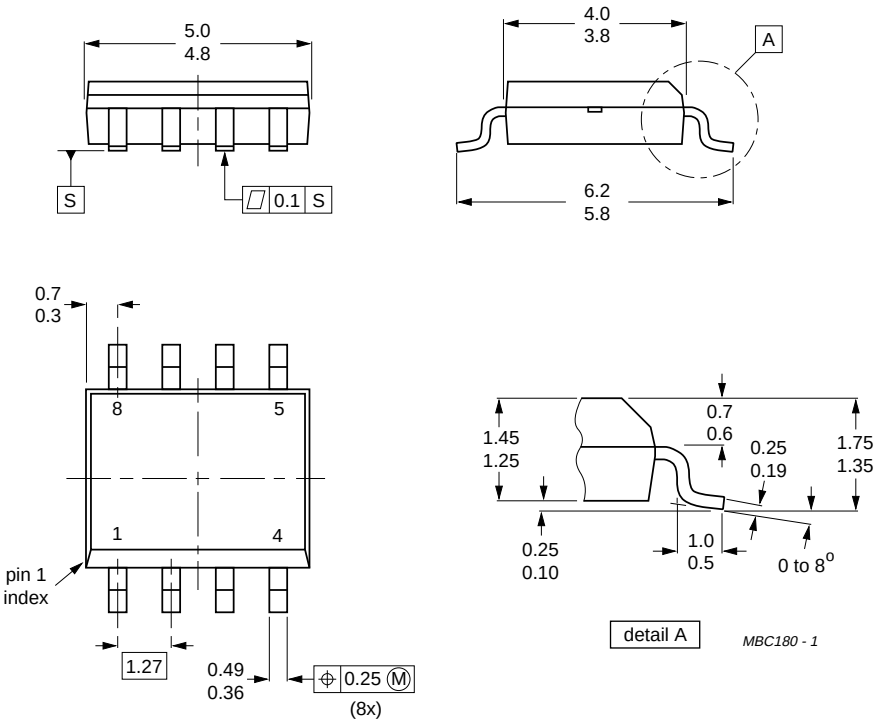
Fig.6 Power gain as a function of frequency (series components); typical values.



Dimensions in mm.

Fig.7 RF test print and definition of transistor impedance.

PACKAGE OUTLINE



Dimensions in mm.

Fig.8 SOT96-1.

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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