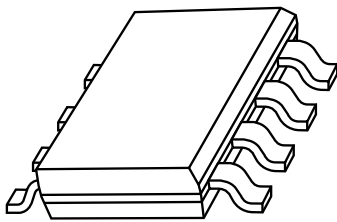


# DATA SHEET



## **BLT61** UHF power transistor

Preliminary specification  
Supersedes data of 1996 Feb 05

1998 Jan 28

# UHF power transistor

# BLT61

### FEATURES

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

### APPLICATIONS

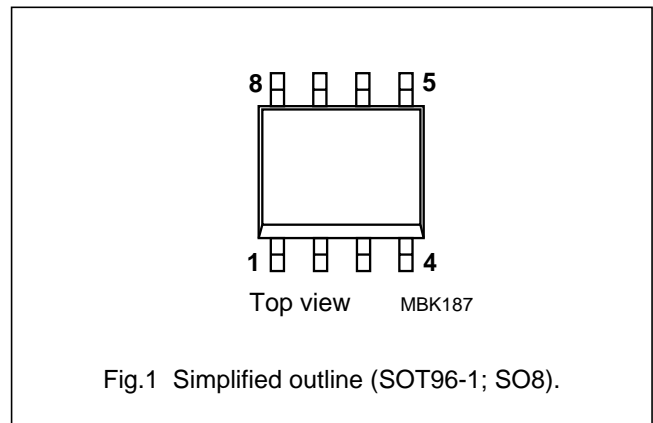
- Hand-held radio equipment in common emitter class-AB operation for 900 MHz communication systems.

### DESCRIPTION

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

### PINNING

PIN	DESCRIPTION
1, 8	base
2, 4, 5, 7	emitter
3, 6	collector



### QUICK REFERENCE DATA

RF performance at  $T_s \leq 60\text{ }^\circ\text{C}$  in a common emitter test circuit.

MODE OF OPERATION	f (MHz)	$V_{CE}$ (V)	$P_L$ (W)	$G_p$ (dB)	$\eta_c$ (%)
CW, class-AB	900	3.6	1.2	$\geq 10$ typ. 11.5	$\geq 50$ 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	–	14	V
$V_{CEO}$	collector-emitter voltage	open base	–	7	V
$V_{EBO}$	emitter-base voltage	open collector	–	3	V
$I_C$	collector current		–	0.8	A
$P_{tot}$	total power dissipation	$T_s = 60\text{ }^\circ\text{C}$ ; note 1	–	4	W
$T_{stg}$	storage temperature		–65	+150	$^\circ\text{C}$
$T_j$	operating junction temperature		–	175	$^\circ\text{C}$

### Note

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

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**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
$R_{th\ j-s}$	thermal resistance from junction to soldering point	$P_{tot} = 4\text{ W}; T_s = 60\text{ }^\circ\text{C}; \text{note 1}$	29	K/W

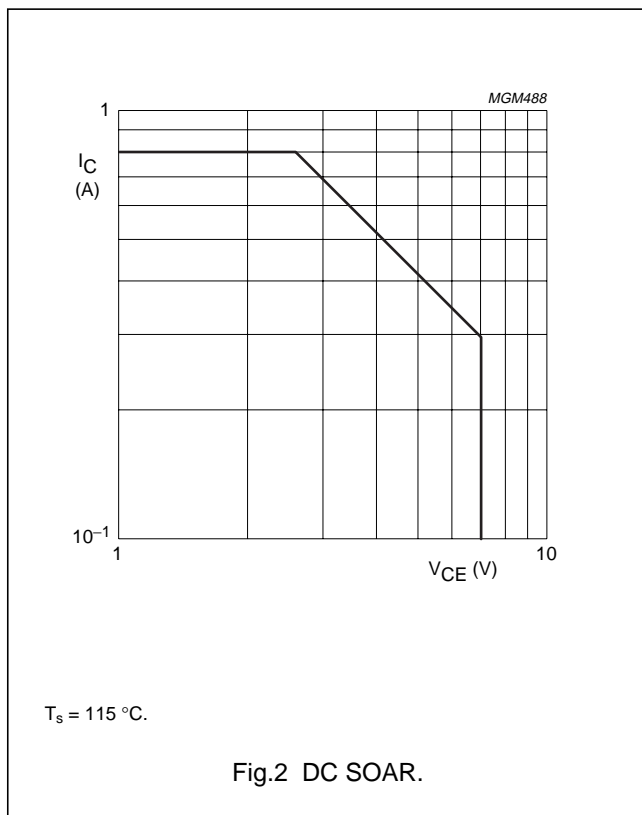
**Note**

- $T_s$  is the temperature at the soldering point of the collector pin.

**CHARACTERISTICS**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{(BR)CBO}$	collector-base breakdown voltage	open emitter; $I_C = 5\text{ mA}$	14	–	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	open base; $I_C = 10\text{ mA}$	7	–	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	open collector; $I_E = 1\text{ mA}$	3	–	V
$I_{CES}$	collector leakage current	$V_{BE} = 0; V_{CE} = 5\text{ V}$	–	0.01	mA
$h_{FE}$	DC current gain	$I_C = 0.2\text{ A}; V_{CE} = 5\text{ V}$	45	130	
$C_c$	collector capacitance	$I_E = i_e = 0; V_{CB} = 3.6\text{ V}; f = 1\text{ MHz}$	–	tbF	pF
$C_{re}$	feedback capacitance	$I_C = 0; V_{CE} = 3.6\text{ V}; f = 1\text{ MHz}$	–	tbF	pF



# UHF power transistor

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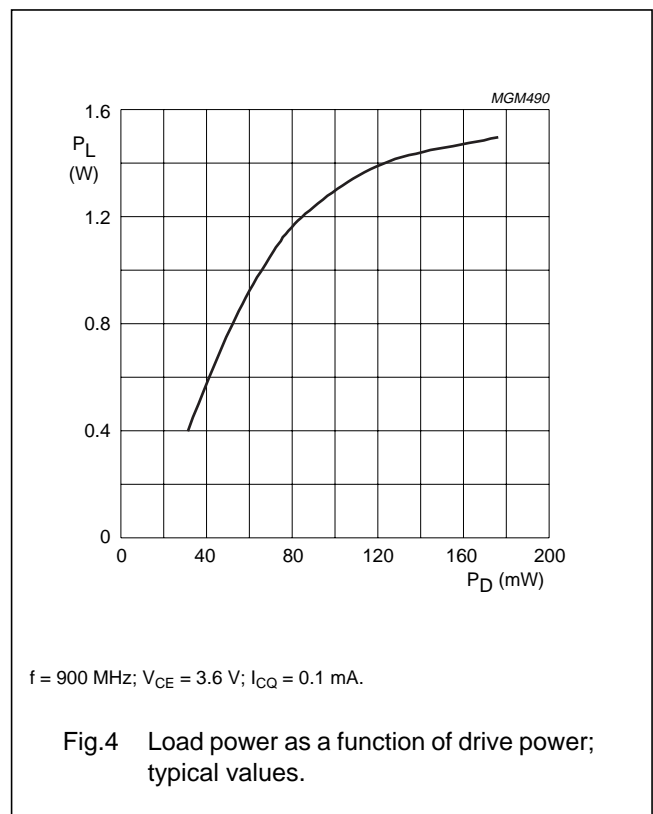
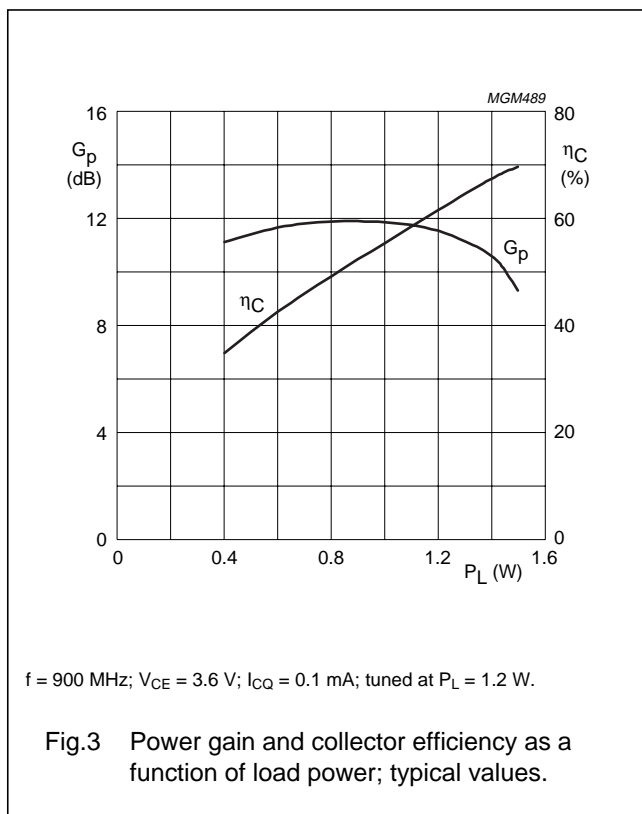
## APPLICATION INFORMATION

RF performance at  $T_s \leq 60^\circ\text{C}$  in a common-emitter test circuit.

MODE OF OPERATION	f (MHz)	V <sub>CE</sub> (V)	I <sub>CQ</sub> (mA)	P <sub>L</sub> (W)	G <sub>p</sub> (dB)	$\eta_c$ (%)
CW, class-AB	900	3.6	0.1	1.2	$\geq 10$ typ. 11.5	$\geq 50$ typ. 63

### Ruggedness in class-AB operation

The BLT61 is capable of withstanding a load mismatch corresponding to VSWR = 10 : 1 through all phases at f = 900 MHz; V<sub>CE</sub> = 5 V; I<sub>CQ</sub> = 0.1 mA; P<sub>L</sub> = 1.45 W; and T<sub>s</sub> = 60 °C.



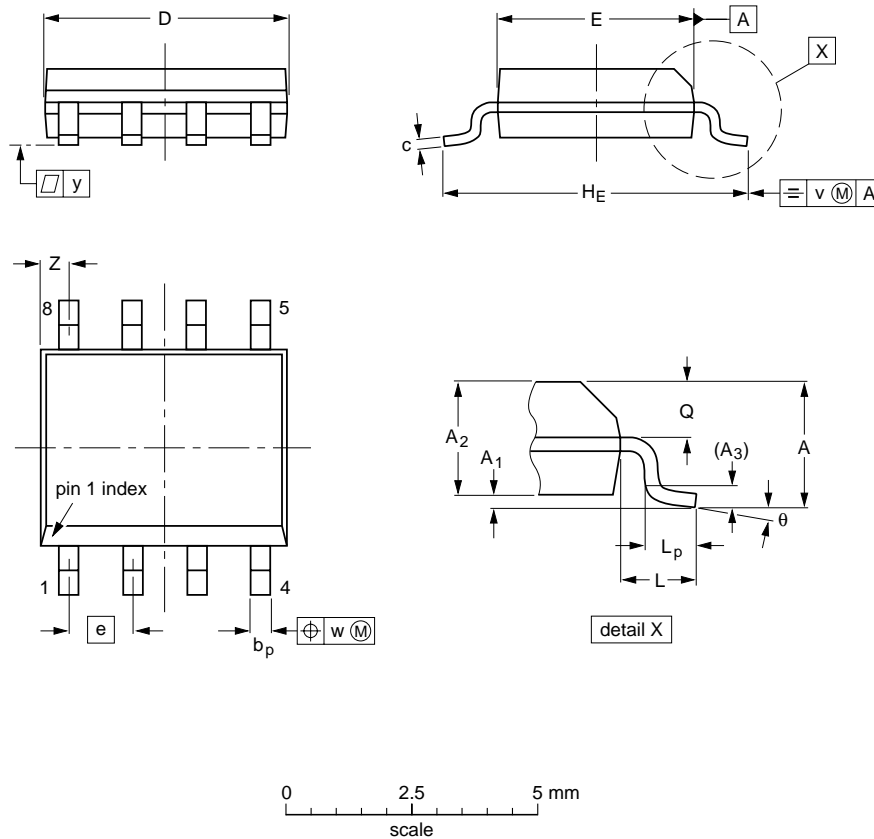
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PACKAGE OUTLINE

SO8: plastic small outline package; 8 leads; body width 3.9 mm

SOT96-1



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

UNIT	A max.	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	b <sub>p</sub>	c	D <sup>(1)</sup>	E <sup>(2)</sup>	e	H <sub>E</sub>	L	L <sub>p</sub>	Q	v	w	y	z <sup>(1)</sup>	θ
mm	1.75	0.25 0.10	1.45 1.25	0.25	0.49 0.36	0.25 0.19	5.0 4.8	4.0 3.8	1.27	6.2 5.8	1.05	1.0 0.4	0.7 0.6	0.25	0.25	0.1	0.7 0.3	8° 0°
inches	0.069	0.010 0.004	0.057 0.049	0.01	0.019 0.014	0.0100 0.0075	0.20 0.19	0.16 0.15	0.050	0.244 0.228	0.041	0.039 0.016	0.028 0.024	0.01	0.01	0.004	0.028 0.012	

Notes

1. Plastic or metal protrusions of 0.15 mm maximum per side are not included.
2. Plastic or metal protrusions of 0.25 mm maximum per side are not included.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT96-1	076E03S	MS-012AA				95-02-04 97-05-22

## UHF power transistor

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**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.	

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