

Silicon NPN Transistor

BLT61

UHF Power Transistor

20V / 650mA

DATASHEET

OEM – Philips

Source: Philips Data Handbook SC09

RF Power Modules and Transistors for Mobile Phones 1996

UHF power transistor**BLT61****FEATURES**

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

APPLICATIONS

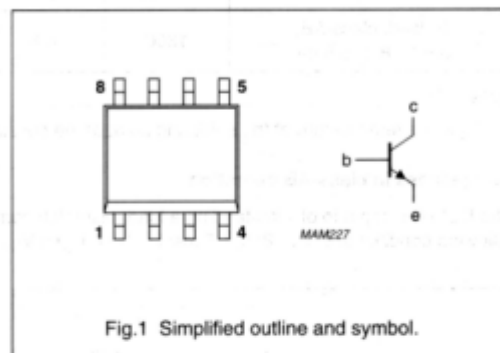
- Hand-held radio equipment in common emitter class-AB operation for 900 MHz communication systems.

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.

**QUICK REFERENCE DATA**

RF performance at $T_s \leq 60^\circ\text{C}$ 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	3.6	1.2	typ. 13	typ. 63

Philips Semiconductors

Preliminary specification

UHF power transistor

BLT61

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	–	20	V
V_{CEO}	collector-emitter voltage	open base	–	10	V
V_{EBO}	emitter-base voltage	open collector	–	3.5	V
I_C	collector current (DC)		–	650	mA
P_{tot}	total power dissipation	$T_s = 115\text{ °C}$; note 1	–	2	W
T_{stg}	storage temperature		–65	+150	°C
T_J	operating junction temperature		–	175	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-s)}$	thermal resistance from junction to soldering point	$P_{tot} = 2\text{ W}$; $T_s = 115\text{ °C}$; note 1	35	K/W

Note to the "Limiting values" and "Thermal characteristics"

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

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{(BR)CBO}$	collector-base breakdown voltage	open emitter; $I_C = 5\text{ mA}$	20	–	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	open base; $I_C = 10\text{ mA}$	10	–	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	open collector; $I_E = 1\text{ mA}$	3.5	–	V
I_{CES}	collector leakage current	$V_{CE} = 3.6\text{ V}$; $V_{BE} = 0$	–	0.1	mA
h_{FE}	DC current gain	$V_{CE} = 3.6\text{ V}$; $I_C = 100\text{ mA}$	30	150	
C_c	collector capacitance	$V_{CB} = 3.6\text{ V}$; $I_E = i_b = 0$; $f = 1\text{ MHz}$	–	tbf	pF
C_{re}	feedback capacitance	$V_{CE} = 3.6\text{ V}$; $I_C = 0$; $f = 1\text{ MHz}$	–	tbf	pF

UHF power transistor

BLT61

APPLICATION INFORMATION

RF performance at $T_s \leq 60^\circ\text{C}$ in a common emitter test circuit (note 1).

MODE OF OPERATION	f (MHz)	V_{CE} (V)	I_{CO} (mA)	P_L (W)	G_p (dB)	η_c (%)
CW, class-AB	900	3.6	2	1.2	≥ 10 typ. 13	≥ 50 typ. 63

Note

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

Ruggedness in class-AB operation

The BLT61 is capable of withstanding a load mismatch corresponding to $V_{SWR} = 10 : 1$ through all phases under the following conditions: $f = 900\text{ MHz}$; $V_{CE} = 5\text{ V}$; $I_{CO} = 2\text{ mA}$; $P_L = 1.45\text{ W}$; $T_s \leq 60^\circ\text{C}$.

