

**Extremely Low Noise NPN Silicon
Broadband Transistors**

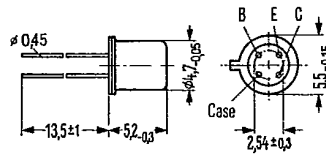
**BFT 66
BFT 67**

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BFT 66 and BFT 67 are epitaxial NPN silicon planar RF transistors in TO 72 case (18 A 4 DIN 41876), intended for input stage applications in extremely low-noise broadband amplifiers up to 1 GHz.

The terminals are electrically insulated from the case.

Type	Ordering code
BFT 66	Q62702-F456
BFT 67	Q62702-F457



Approx. weight 0.4 g Dimensions in mm

Maximum ratings

Collector-emitter voltage
Collector-base voltage
Emitter-base voltage
Collector current
Base current
Junction temperature
Storage temperature range
Total power dissipation ($T_{amb} \leq 60^\circ\text{C}$)

	BFT 66 BFT 67	
V_{CEO}	15	V
V_{CBO}	20	V
V_{EBO}	2.5	V
I_C	30	mA
I_B	4	mA
T_j	200	$^\circ\text{C}$
T_{stg}	-65 to +175	$^\circ\text{C}$
P_{tot}	200	mW

Thermal resistance

Junction to ambient air
Junction to case

R_{thJA}	≤ 700	K/W
R_{thJC}	≤ 400	K/W

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Static characteristics ($T_{amb} = 25^{\circ}\text{C}$)

Collector-emitter breakdown voltage

($I_{CEO} = 500 \mu\text{A}$) $V_{(BR)CEO}$

> 15

> 15

V

Collector-emitter breakdown voltage

($I_{CBO} = 100 \mu\text{A}$) $V_{(BR)CES}$

> 20

> 20

V

Emitter-base breakdown voltage

($I_{EBO} = 100 \mu\text{A}$) $V_{(BR)EBO}$

> 2.5

> 2.5

V

Collector cutoff current

($V_{CBO} = 10 \text{ V}$) I_{CBO}

< 50

< 50

nA

DC current gain

($I_C = 10 \text{ mA}$; $V_{CE} = 6 \text{ V}$) h_{FE} ≥ 30 ≥ 30

—

Dynamic characteristics ($T_{amb} = 25^{\circ}\text{C}$)

Small signal current gain

($I_C = 10 \text{ mA}$; $V_{CE} = 6 \text{ V}$; $f = 1 \text{ kHz}$) h_{fe}

70 (> 30)

70 (> 30)

—

Transition frequency

($I_C = 20 \text{ mA}$; $V_{CE} = 6 \text{ V}$; $f = 200 \text{ MHz}$) f_T

3.8(> 3.6)

3.8(> 3.6)

GHz

Reverse transfer capacitance

($I_C = 1 \text{ mA}$; $V_{CE} = 6 \text{ V}$; $f = 1 \text{ MHz}$) C_{12e}

0.65

0.65

pF

Noise figure

($I_C = 3 \text{ mA}$; $V_{CE} = 6 \text{ V}$; $f = 10 \text{ MHz}$; $R_g = 75 \Omega$)

NF

 ≤ 1 ≤ 1.5

dB

($I_C = 3 \text{ mA}$; $V_{CE} = 6 \text{ V}$; $f = 800 \text{ MHz}$; $R_g = 60 \Omega$)

NF

2.1

2.5

dB

Output voltage¹⁾($I_C = 20 \text{ mA}$; $V_{CE} = 6 \text{ V}$; $R_g = R_L = 75 \Omega$; $d_{IM} = 60 \text{ dB}$) V_O

240

240

mV

S parameter

Operating point: $V_{CE} = 5 \text{ V}$, $I_C = 3 \text{ mA}$, $Z_o = 50 \Omega$

f (GHz)	S ₁₁	φ	S ₂₁	φ	S ₁₂	φ	S ₂₂	φ	G _{max} (dB)
0,1	0,62	— 38	18,0	134	0,03	68	0,90	—15	27,32
0,2	0,62	— 49	16,4	133	0,06	77	0,80	—11	22,94
0,4	0,35	— 87	12,3	102	0,09	70	0,68	—14	15,56
0,6	0,24	—138	9,1	86	0,11	68	0,61	—18	11,38
0,8	0,18	—162	7,2	70	0,13	65	0,60	—27	9,28
1,0	0,05	141	5,5	52	0,18	57	0,65	—35	7,30

μA

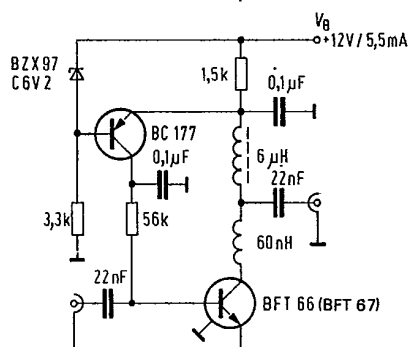
1) Three tone modulation f approx. 800 MHz

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Circuit examples

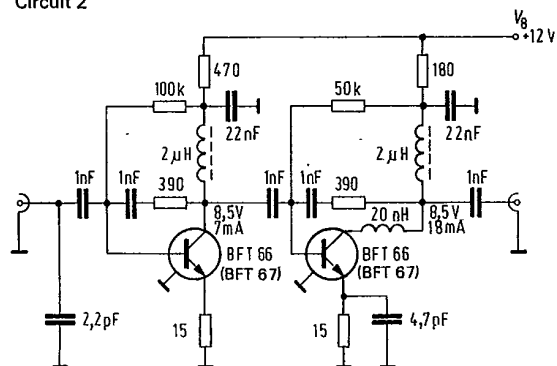
Low-noise preamplifier for the frequency band 1 to 300 MHz

Circuit 1

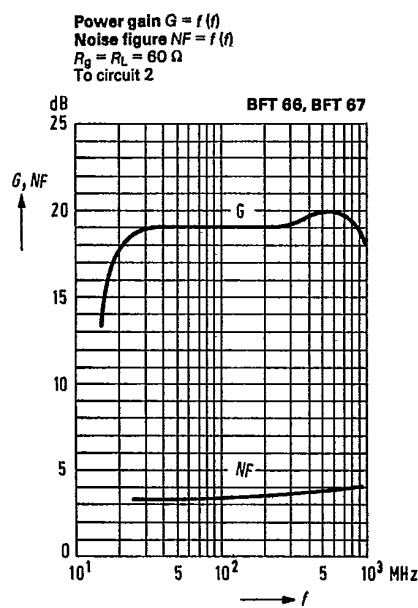
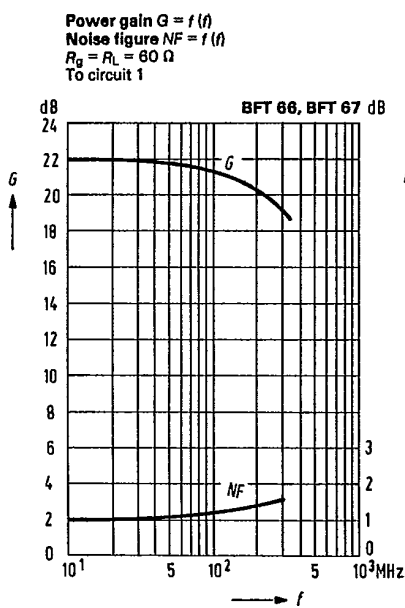
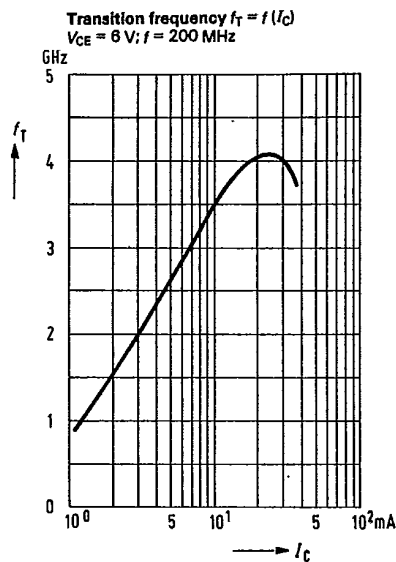
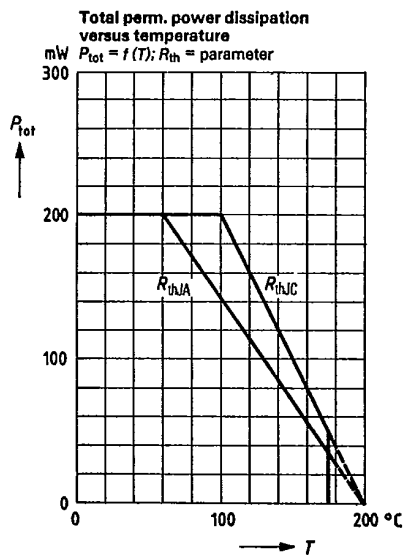


Two-stage broadband amplifier for the frequency band 25 to 1000 MHz

Circuit 2



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