BFQ 85

EPITAXIAL PLANAR NPN

PRELIMINARY DATA

UHF HIGH-GAIN AMPLIFIER

The BFQ 85 is a silicon planar epitaxial NPN transistor in four-leads plastic package intended for common-emitter, high-gain, wide-band application up to 1.5 GHz.
Platinum-Silicide, Titanium Platinum Gold metallization is used for the utmost in performance reliability and uniformity.

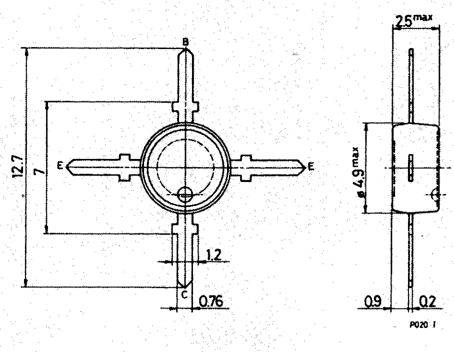
ABSOLUTE MAXIMUM RATINGS

V_{CBO}	Collector-base voltage	20	V
V_{CEO}	Collector-emitter voltage	15	V
V_{EBO}	Emitter-base voltage	3	V
I_C	DC collector current	40	mA
P_{tot}*	Total power dissipation at $T_{amb} \leqslant 60°$	200	mW
T_{stg}, T_j	Storage and junction temperature	-55 to 150	°C

* With device mounted on a fibreglass printed circuit of 40 x 25 x 1 mm

MECHANICAL DATA

Dimensions in mm



BFQ 85

THERMAL DATA

$R_{th\ j\text{-}amb}$	Thermal resistance junction ambient	max	450*	°C/W

* With device mounted on a fibreglass printed circuit of 40 x 25 x 1 mm

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C unless otherwise specified)

Parameter		Test conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current (I_E = 0)	V_{CB} = 10V				100	nA
$V_{(BR)CBO}$	Collector-base breakdown voltage (I_E = 0)	I_C = 100 μA		20			V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage (I_B = 0)	I_C = 5 mA		15			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage (I_C = 0)	I_E = 10 μA		3			V
h_{FE}	DC current gain	I_C = 15 mA I_C = 3 mA	V_{CE} = 10V V_{CE} = 10V	40	80 80	 200	– –
f_T	Transition frequency	I_C = 15 mA f = 500 MHz	V_{CE} = 10V	4	5		GHz
C_{re}	Reverse capacitance	V_{CE} = 10V	f = 1 MHz		0.35		pF
NF	Noise figure	I_C = 3mA f = 200 MHz f = 1 GHz f = 1 GHz	V_{CE} = 10V R_g = 75Ω R_g = opt. R_g = 75Ω		 1.6 2.2 	 3	 dB dB dB
G_{MAX} *	Maximum available power gain	I_C = 15 mA f = 1 GHz f = 0.5 GHz	V_{CE} = 10V	13	 15 21		 dB dB
$\|S_{21e}\|^2$	Forward transmission gain	I_C = 15 mA R_g = R_L = 50Ω f = 1 GHz f = 0.5 GHz	V_{CE} = 10V		 13 19		 dB dB

* $G_{MAX} = \left| \frac{S_{21}}{S_{12}} \right| \left(K \pm \sqrt{K^2 - 1} \right)$

S PARAMETERS ($R_g = R_L = 50\Omega$)

S_{11e} parameters

Frequency (MHz)		200		500		800		1000		1500	
V_{CE} (V)	I_C (mA)	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.
10	5	-5.3	-54	-6.9	-103	-8	-141	-8.2	-164	-7.9	168
	15	-12	-72	-9.9	-142	-9.5	-170	-8.5	174	-7.6	152

S_{21e} parameters

Frequency (MHz)		200		500		800		1000		1500	
V_{CE} (V)	I_C (mA)	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.
10	5	22	138	18	112	14.5	93	12.4	82	9.6	68
	15	26	122	20	100	16	85	13.5	77	10.5	65

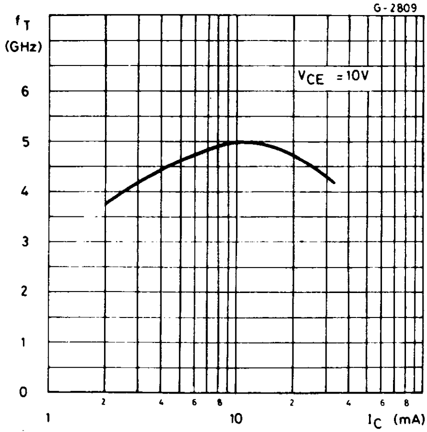
S_{12e} parameters

Frequency (MHz)		200		500		800		1000		1500	
V_{CE} (V)	I_C (mA)	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.
10	5	-31	62	-27	58	-24.5	56	-24	53	-22	56
	15	-32.5	56	-29.5	68	-26	67	-25	67	-22	67

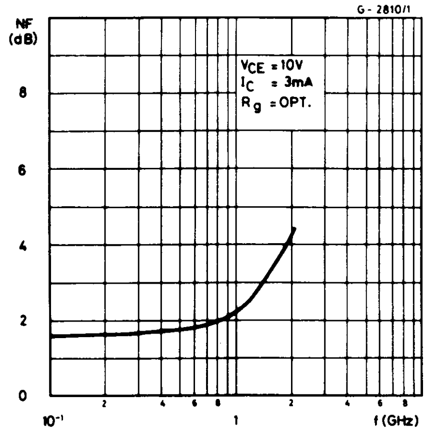
S_{22e} parameters

Frequency (MHz)		200		500		800		1000		1500	
V_{CE} (V)	I_C (mA)	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.
10	5	-1.1	-24	-3.2	-22	-3.5	-20	-4.6	-31	-4.8	-35
	15	-2.8	-29	-4.8	-21	-5	-17	-5.9	-27	-5.8	-32

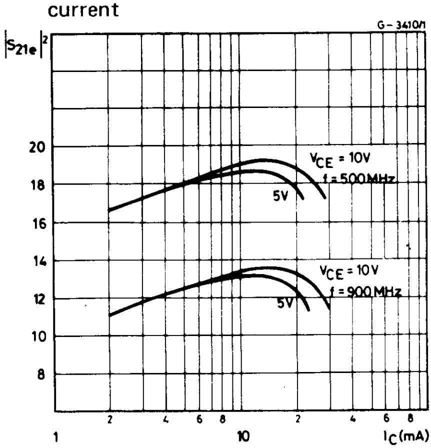
Transition frequency



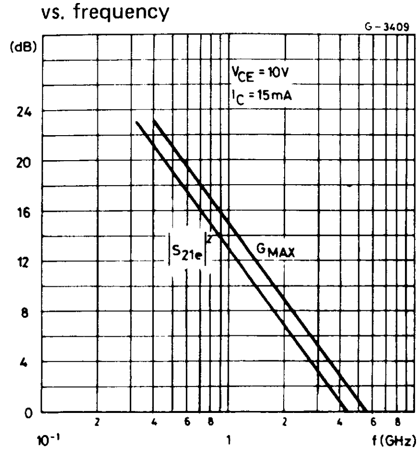
Noise figure vs. frequency



Forward transmission gain vs. collector current

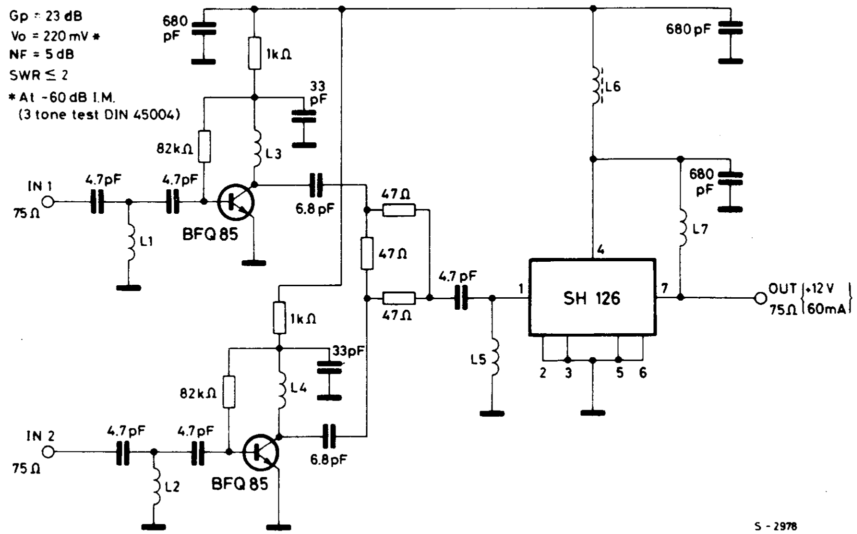


Forward transmission gain and G_{max} vs. frequency



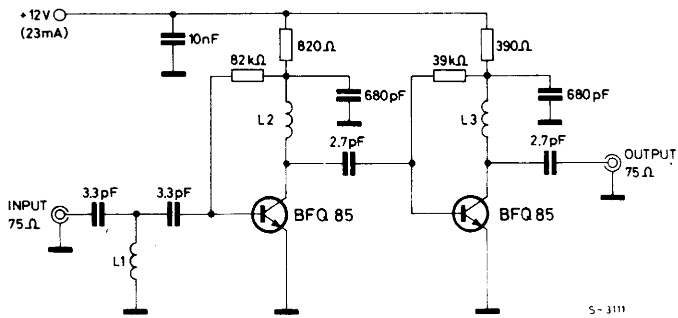
TYPICAL APPLICATION

UHF active antenna combiner



L1 = L2 = } 1.5 TURNS ⌀ = 3.5 mm
L3 = L4 = }
L5 = 1.5 TURNS ⌀ = 3.5mm
L6 = RFC 2μH
L7 = 5 TURNS ⌀ 3.5 mm

High gain 600 to 860 MHz antenna preamplifier



L1 = L2 = L3 = 2 turns ⌀ 3.5 mm
Gp = 26 dB ; Vo = 98 dBμV (3 TONE DIN 45004); NF = 3.5 dB

BFQ 88

EPITAXIAL PLANAR NPN

PRELIMINARY DATA

UHF HIGH-GAIN AMPLIFIER

The BFQ 88 is a silicon planar epitaxial NPN transistor in μX ceramic package intended for high-gain, wide-band application up to 2 GHz.
Platinum-Silicide, Titanium Platinum Gold metallization is used for the utmost in performance reliability and uniformity.

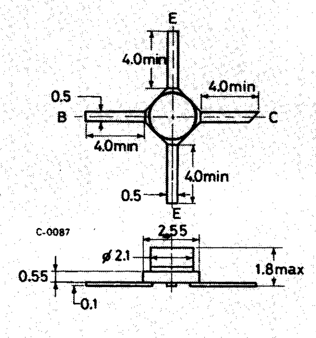
ABSOLUTE MAXIMUM RATINGS

V_{CBO}	Collector-base voltage ($I_E = 0$)	20	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	15	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	3	V
I_C	DC collector current	40	mA
P_{tot}*	Total power dissipation at $T_{amb} \leq 100°C$	250	mW
T_{stg}, T_j	Storage and junction temperature	-65 to 175	°C

* With device mounted on substrate of Alumina (20 x 50 x 0.65 mm)

MECHANICAL DATA

Dimensions in mm



μX

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max	140	°C/W
$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max	300*	°C/W

* With device mounted on substrate of Alumina (20 x 50 x 0.65 mm)

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C unless otherwise specified)

	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current (I_E = 0)	V_{CB} = 10V				100	nA
$V_{(BR)CBO}$	Collector-base breakdown voltage (I_E = 0)	I_C = 100 μA		20			V
$V_{(BR)CEO}$	Collector-emitter break-down voltage (I_B = 0)	I_C = 5 mA		15			V
$V_{(BR)EBO}$	Emitter-base break-down voltage (I_C = 0)	I_E = 10 μA		3			V
h_{FE}	DC current gain	I_C = 15 mA	V_{CE} = 10V	30	80		–
f_T	Transition frequency	I_C = 15 mA f = 500 MHz	V_{CE} = 10V	4	5		GHz
C_{re}	Reverse capacitance	I_C = 0 f = 1 MHz	V_{CE} = 10V		0.35		pF
NF	Noise figure	I_C = 3 mA f = 1 GHz	V_{CE} = 10V R_g = opt.		2.5	3	dB
G_{MAX}*	Maximum available power gain	I_C = 15 mA f = 1 GHz R_L = opt.	V_{CE} = 10V R_g = opt.		15		dB
$\|S_{21e}\|^2$	Forward transmission gain	I_C = 15 mA f = 1 GHz	V_{CE} = 10V $R_g = R_L$ = 50Ω	10	12		dB

* $G_{MAX} = \left|\frac{S_{21}}{S_{12}}\right| \left(K \pm \sqrt{K^2 - 1}\right)$

BFT 66S

EPITAXIAL PLANAR NPN

PRELIMINARY DATA

EXTREMELY LOW-NOISE BROADBAND AMPLIFIER

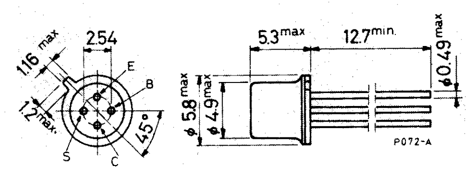
The BFT 66S is a silicon planar epitaxial NPN transistor in TO-72 package, intended for extremely low-noise telecom applications.
Platinum-Silicide, Titanium Platinum Gold metallization is used for the utmost in performance reliability and uniformity.

ABSOLUTE MAXIMUM RATINGS

V_{CBO}	Collector-base voltage ($I_E = 0$)	25	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	18	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	2.5	V
I_C	Collector current	30	mA
P_{tot}	Total power dissipation at $T_{case} \leqslant 70°C$	200	mW
T_{stg}, T_j	Storage and junction temperature	-65 to 150	°C

MECHANICAL DATA

Dimensions in mm



(sim. to **TO-72**)

5/79

BFT 66S

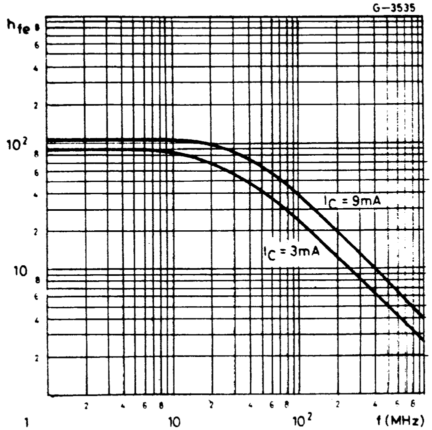
THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max	400	°C/W

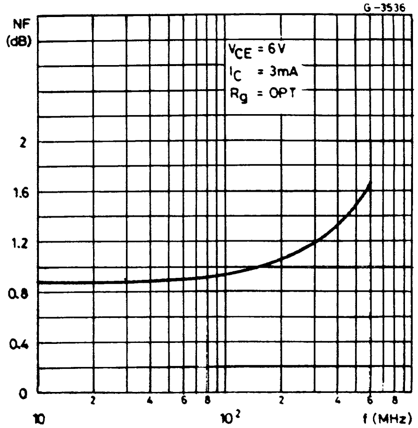
ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C unless otherwise specified)

Parameter		Test conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current (I_E = 0)	V_{CB} = 10V				50	nA
$V_{(BR)CBO}$	Collector-base breakdown voltage (I_E = 0)	I_C = 100 μA		25			V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage (I_E = 0)	I_C = 1 mA		18			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage (I_C = 0)	I_E = 10 μA		2.5			V
h_{FE}	DC current gain	I_C = 10 mA	V_{CE} = 6V	40	80		–
		I_C = 3 mA	V_{CE} = 6V		70		–
C_{re}	Reverse capacitance	I_E = 0 f = 1 MHz	V_{CE} = 6V		0.55		pF
h_{fe}	Small signal current gain	I_C = 6 mA	V_{CE} = 6V				
			f = 20 MHz	60	100		–
			f = 500 MHz	6	8		–
$\|S_{21e}\|^2$	Forward transmission gain	V_{CE} = 6V	f = 140 MHz				
			I_C = 3 mA		18		dB
			I_C = 10 mA		22		dB
		V_{CE} = 6V	f = 500 MHz				
			I_C = 3 mA		12		dB
			I_C = 10 mA		13.5		dB
NF	Noise figure	I_C = 3 mA	V_{CE} = 6V				
		f = 10 kHz	R_g = 100Ω			3	dB
		f = 1 to 30MHz	R_g = 75Ω		0.9		dB
		f = 140 MHz	R_g = opt.		1		dB
		f = 500 MHz	R_g = opt.		1.5		dB

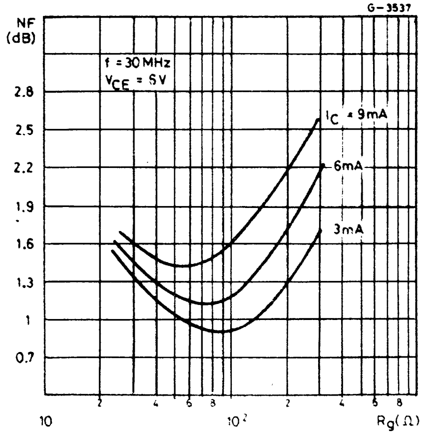
Small signal current gain vs. frequency



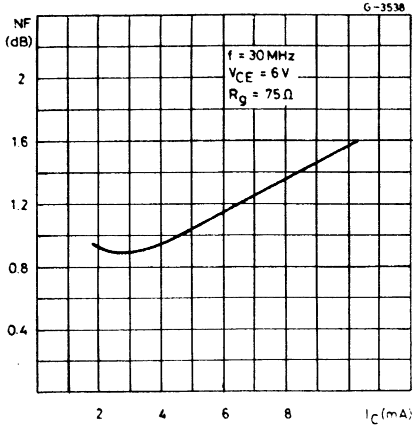
Noise figure vs. frequency



Noise figure vs. source resistance

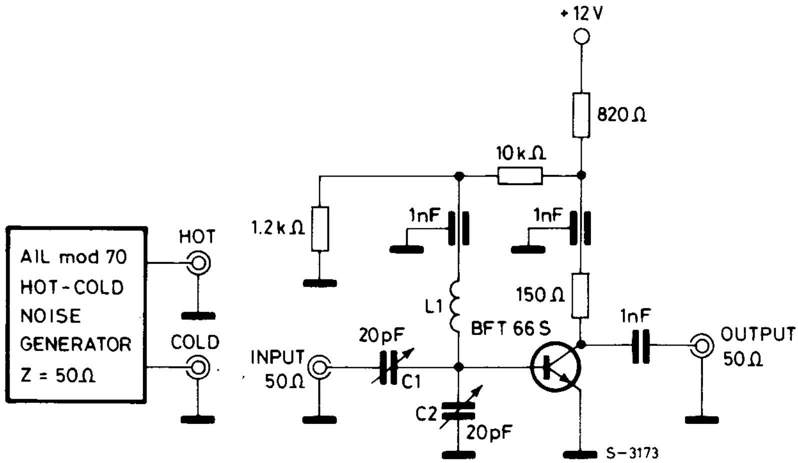


Noise figure vs. collector current



TEST CIRCUIT

140/500 MHz Noise test (V_{CE}= 6V, I_C = 6 mA)



L1, C1, C2 tuned for optimum noise impedance at f_0

BFT 95

EPITAXIAL PLANAR PNP

HIGH-GAIN, LOW-NOISE AMPLIFIER

The BFT 95 is a silicon epitaxial planar PNP transistor in T-plastic package, utilizing Planox® silicon nitride technology to minimize parasitic capacitances.
It is intended for common-emitter **high-gain wide-band** application up to 1.5 GHz.

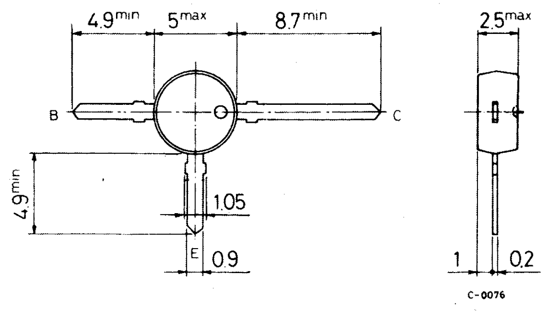
ABSOLUTE MAXIMUM RATINGS

V_{CBO}	Collector-base voltage ($I_E = 0$)	-15	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	-15	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	-3	V
I_C	Collector current	-50	mA
P_{tot}*	Total power dissipation at $T_{amb} \leq 60$ °C	200	mW
T_{stg}, T_j	Storage and junction temperature	-55 to 150	°C

* With device mounted on a fibreglass printed circuit of 40x25x1 mm

MECHANICAL DATA

Dimensions in mm



T-plastic

BFT 95

THERMAL DATA

$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max	450*	°C/W

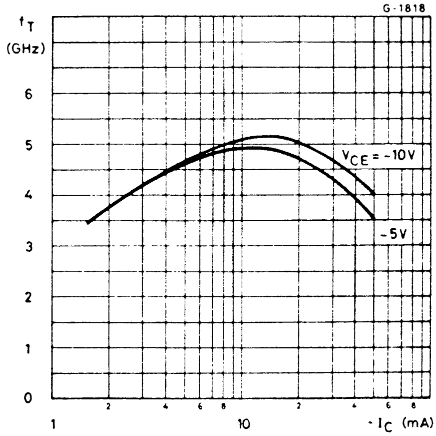
* Obtained with device mounted on a fibreglass printed circuit of 40x25x1 mm

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C unless otherwise specified)

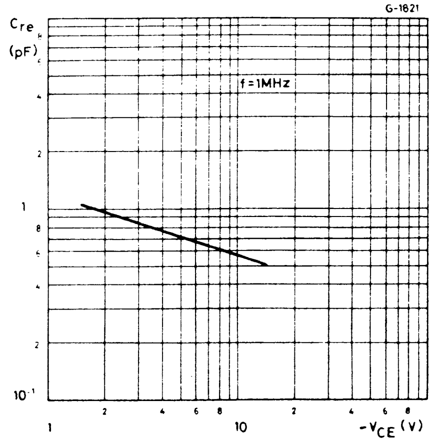
Parameter		Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current (I_E= 0)	V_{CB}= -10V			-100	nA
$V_{(BR)CBO}$	Collector-base breakdown voltage (I_E= 0)	I_C = -100 μA	-15			V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage (I_B= 0)	I_C = -5 mA	-15			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage (I_C= 0)	I_E = -10 μA	-3			V
h_{FE}	DC current gain	I_C = -5 mA V_{CE}= -10V	30	80		–
f_T	Transition frequency	I_C = -15 mA V_{CE}= -10V f = 500 MHz		5		GHz
C_{re}	Reverse capacitance	I_E = 0 V_{CE}= -10V f = 1 MHz		0.6		pF
NF	Noise figure	I_C = -3 mA V_{CE}= -10V R_g= opt. f = 0.5 GHz f = 1 GHz		1.6 2	 2.5	dB dB
$\|S_{21e}\|^2$	Forward transmission gain	I_C = -15 mA V_{CE}= -10V R_g= R_L = 50Ω f = 1 GHz	8.5	10		dB
G_{MAX}*	Maximum available gain	I_C = -15 mA V_{CE}= -10V R_g= opt. R_L = opt. f = 1 GHz		12		dB

* $G_{MAX} = \left|\frac{S_{21}}{S_{12}}\right| (K \pm \sqrt{K^2 - 1})$

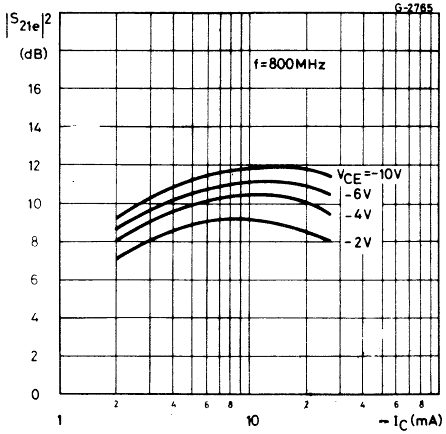
Transition frequency



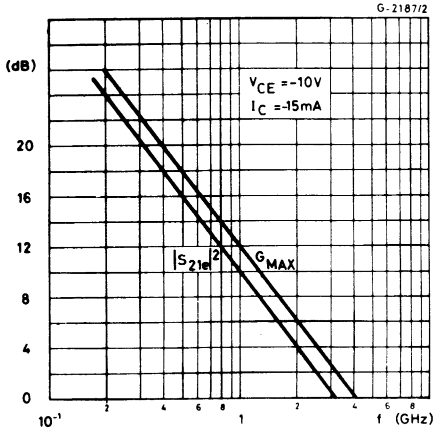
Reverse capacitance



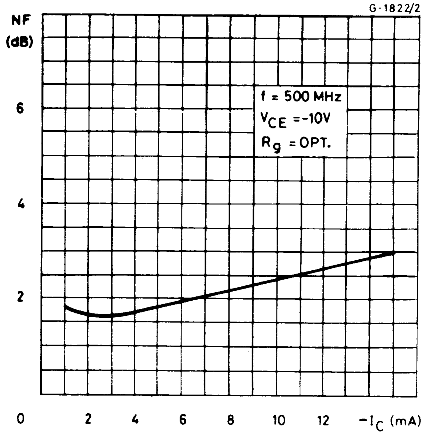
Forward transmission gain vs. collector current at various voltages



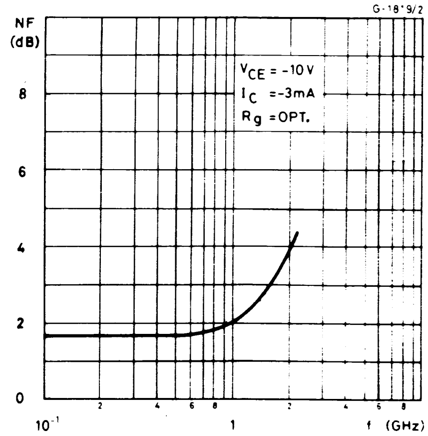
Forward transmission gain and G_{MAX} vs. frequency



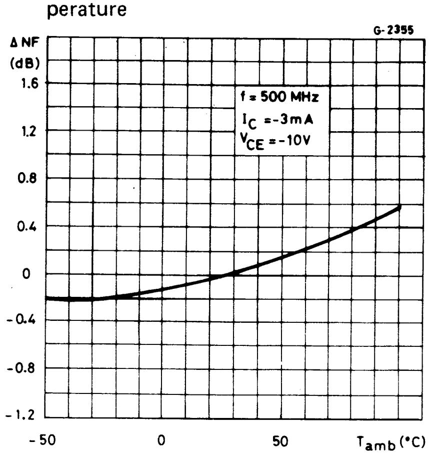
Noise figure vs. collector current



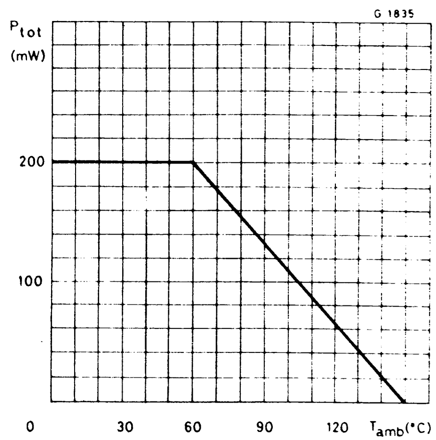
Noise figure vs. frequency



Noise figure variation vs. ambient temperature

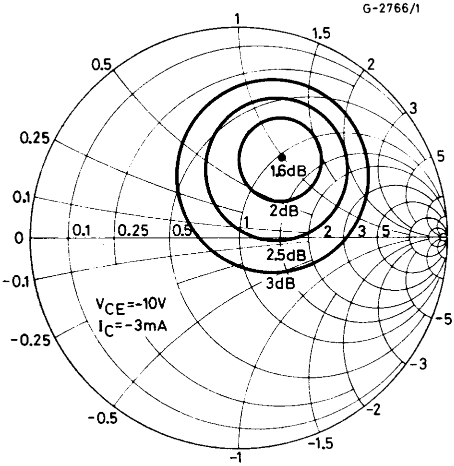


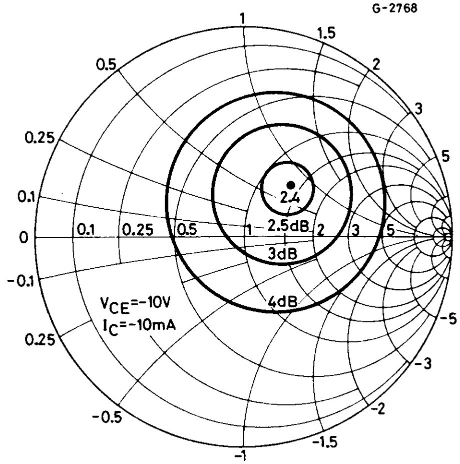
Power rating chart



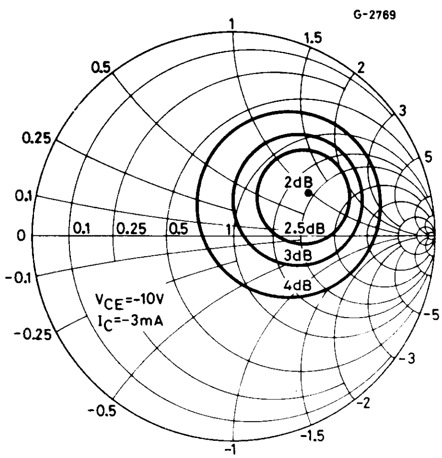
CIRCLES OF NOISÊ FIGURE (normalized 50Ω)

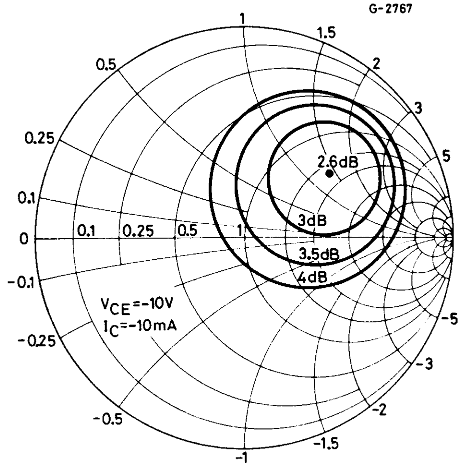
f = 500 MHz





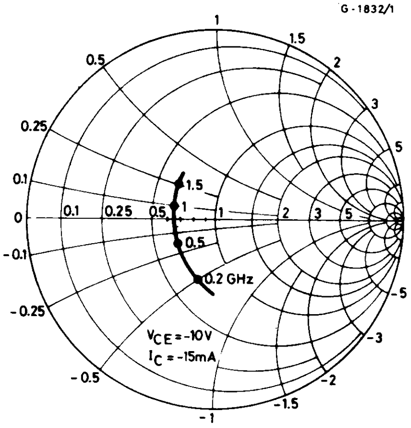
f = 1 GHz



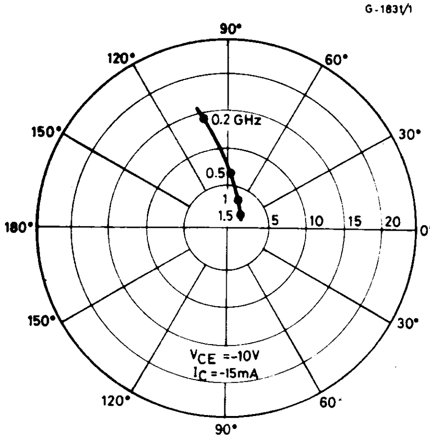


BFT 95

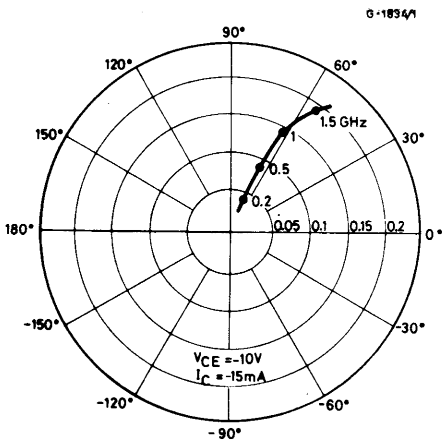
Input impedance S_{11e} (normalized 50Ω)



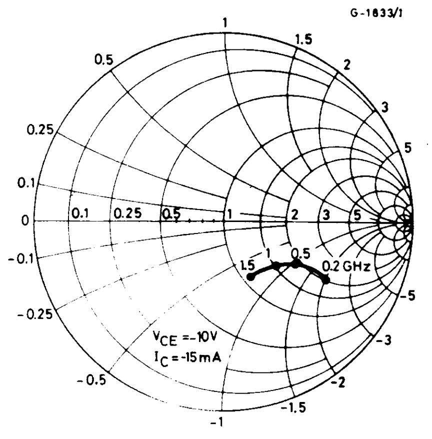
Forward transfer coefficient S_{21e}



Reverse transfer coefficient S_{12e}



Output impedance S_{22e} (normalized 50Ω)



TYPICAL S PARAMETERS ($R_g = R_L = 50\Omega$)

S_{11e} parameters

Frequency (MHz)		200		500		800		1000		1500	
V_{CE} (V)	I_C (mA)	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.
10	3	3	-50	7.3	- 97	10	-132	11	-152	10.5	163
	10	8	-81	12.3	-136	13	-169	13	170	11	145
	15	10	-96	13	-151	13	-179	12.8	167	10.5	140

S_{21e} parameters

Frequency (MHz)		200		500		800		1000		1500	
V_{CE} (V)	I_C (mA)	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.
10	3	17.5	137	13	103	10	82	8.2	72	5.5	50
	10	22	118	15.2	90	11.8	75	9.8	66	6.7	48
	15	22.5	112	15.3	87	11.8	73	10	65	6.8	46

S_{12e} parameters

Frequency (MHz)		200		500		800		1000		1500	
V_{CE} (V)	I_C (mA)	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.
10	3	-25	65	-20	53	-18	50	-16	49	-14	45
	10	-28	63	-22	63	-19	62	-17	60	-14	53
	15	-28	67	-22	67	-19	65	-17	62	-14	55

S_{22e} parameters

Frequency (MHz)		200		500		800		1000		1500	
V_{CE} (V)	I_C (mA)	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.
10	3	1.6	-23	4.2	-35	5.7	-40	6.1	-43	7.2	-51
	10	4.2	-30	7	-33	7.9	-36	8.3	-39	9.3	-49
	15	4.9	-30	7.6	-31	8.3	-34	8.5	-37	9.7	-48

BFT 95

THIRD ORDER INTERMODULATION

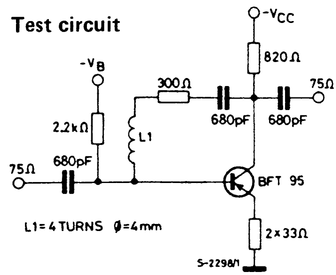
Intermodulation distortion

$T_{amb} = 25°C$ $I_C = -15$ mA
$V_{CE} = -10V$ $R_L = 75\Omega$

$V_p = V_o = 150$ mV at $f_p = 495.25$ MHz
$V_q = V_o$ -6 dB at $f_q = 503.25$ MHz
$V_r = V_o$ -6 dB at $f_r = 505.25$ MHz

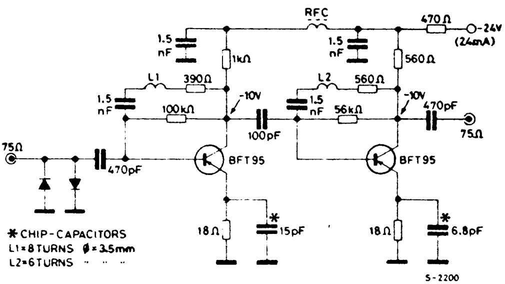
Measured at $f_{(p+q-r)} = 493.25$ MHz $d_{im} = -60$ dB

Test circuit

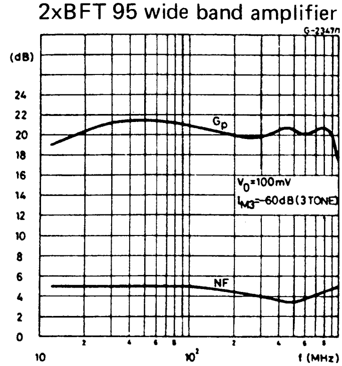


TYPICAL APPLICATIONS

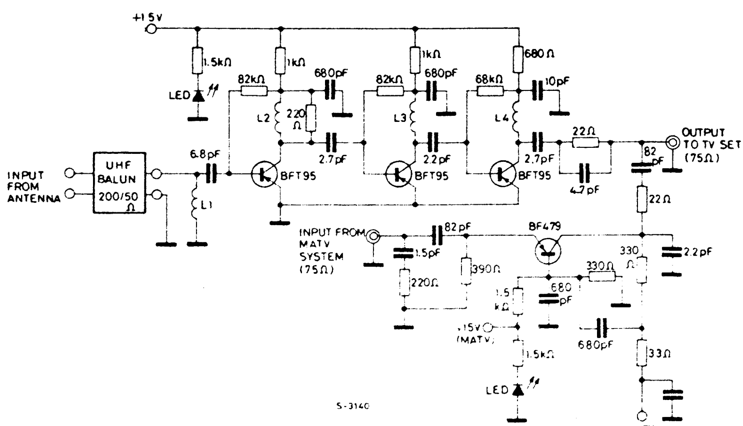
Wide band amplifier (10 to 1000 MHz)



Gain and noise vs. frequency of 2xBFT 95 wide band amplifier



470 to 860 MHz - active TV indoor antenna



BFT 95H

EPITAXIAL PLANAR PNP

HIGH-GAIN UHF AMPLIFIER

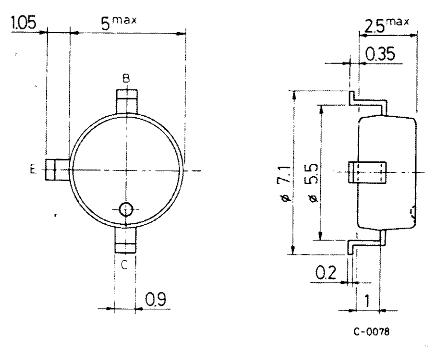
The BFT 95H is a silicon planar epitaxial PNP transistor in plastic package **for thick and thin film** applications, utilizing Planox® silicon nitride technology to minimize parasitic capacitances.
It is intended for common-emitter, high-gain wide-band application up to 1.5 GHz.

ABSOLUTE MAXIMUM RATINGS

V_{CBO}	Collector-base voltage ($I_E = 0$)	-15	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	-15	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	-3	V
I_C	Collector current	-50	mA
P_{tot}	Total power dissipation at $T_{amb} \leqslant 60$ °C	200	mW
T_{stg}, T_j	Storage and junction temperature	-55 to 150	°C

MECHANICAL DATA

Dimensions in mm



BFT 95H

THERMAL DATA

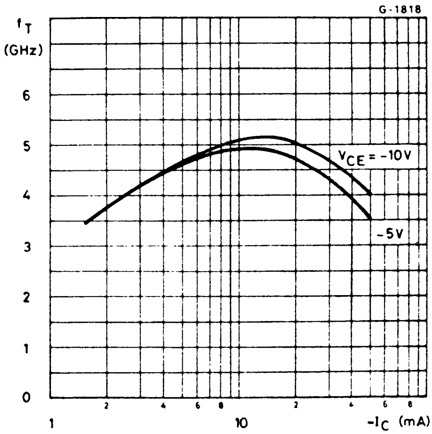
$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max	450	°C/W

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C unless otherwise specified)

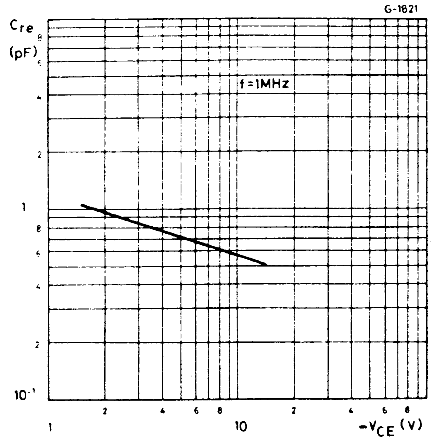
Parameter		Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current ($I_E = 0$)	$V_{CB} = -10V$			-100	nA
$V_{(BR)CBO}$	Collector-base breakdown voltage ($I_E = 0$)	$I_C = -100\ \mu A$	-15			V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage ($I_B = 0$)	$I_C = -5$ mA	-15			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage ($I_C = 0$)	$I_E = -10\ \mu A$	-3			V
h_{FE}	DC current gain	$I_C = -5$ mA $V_{CE} = -10V$		80		–
f_T	Transition frequency	$I_C = -15$ mA $V_{CE} = -10V$ f = 500 MHz		5		GHz
C_{re}	Reverse capacitance	$I_C = 0$ $V_{CE} = -10V$ f = 1 MHz		0.6		pF
NF	Noise figure	$I_C = -3$ mA $V_{CE} = -10V$ R_g = opt. f = 0.5 GHz f = 1 GHz		 1.6 2	 2.5	 dB dB
$\|S_{21e}\|^2$	Forward transmission gain	$I_C = -15$ mA $V_{CE} = -10V$ $R_g = R_L = 50\Omega$ f = 1 GHz	8.5	10		dB
G_{MAX}^*	Maximum available gain	$I_C = -15$ mA $V_{CE} = -10V$ R_g = opt. R_L = opt. f = 1 GHz		12		dB

$* \ G_{MAX} = \left|\frac{S_{21}}{S_{12}}\right| (K \pm \sqrt{K^2 - 1})$

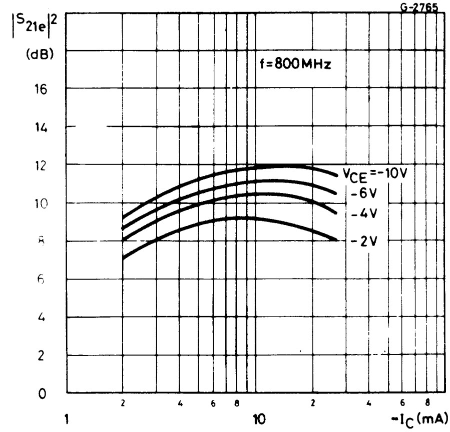
Transition frequency



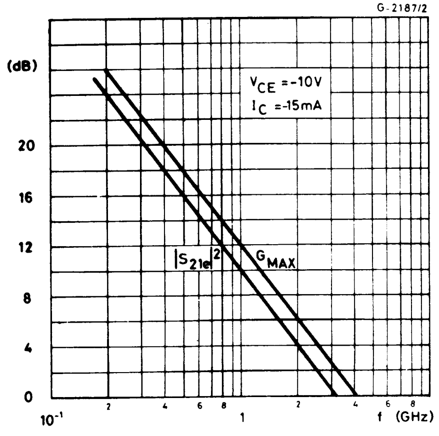
Reverse capacitance



Forward transmission gain vs. collector current at various voltages

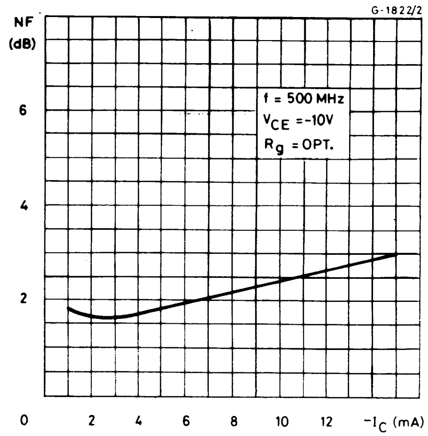


Forward transmission gain and G_{MAX} vs. frequency

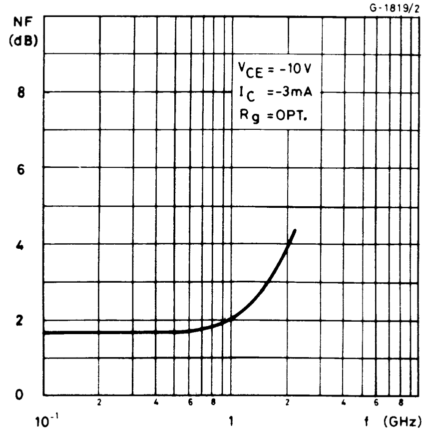


BFT 95H

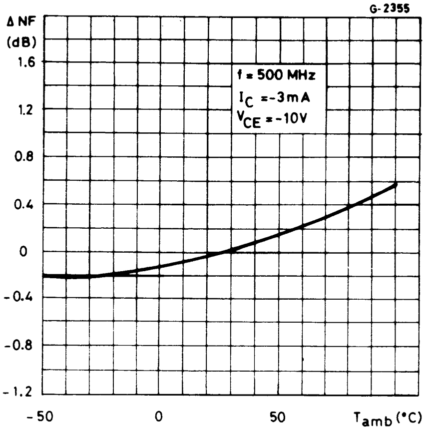
Noise figure vs. collector current



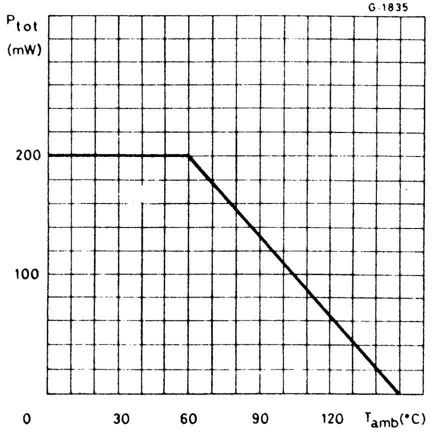
Noise figure vs. frequency



Noise figure variation vs. ambient temperature



Power rating chart



TYPICAL S PARAMETERS ($R_g = R_L = 50\Omega$)

S_{11e} parameters

Frequency (MHz)		200		500		800		1000		1500	
V_{CE} (V)	I_C (mA)	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.
10	3	3	-50	7.3	- 97	10	-132	11	-152	10.5	163
	10	8	-81	12.3	-136	13	-169	13	170	11	145
	15	10	-96	13	-151	13	-179	12.8	167	10.5	140

S_{21e} parameters

Frequency (MHz)		200		500		800		1000		1500	
V_{CE} (V)	I_C (mA)	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.
10	3	17.5	137	13	103	10	82	8.2	72	5.5	50
	10	22	118	15.2	90	11.8	75	9.8	66	6.7	48
	15	22.5	112	15.3	87	11.8	73	10	65	6.8	46

S_{12e} parameters

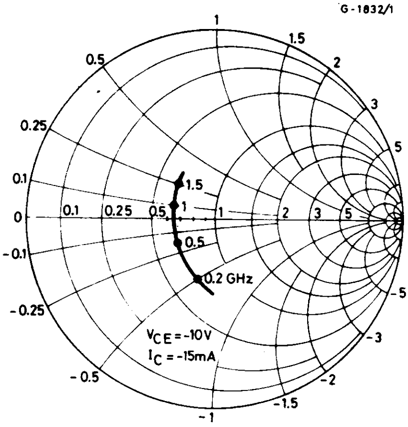
Frequency (MHz)		200		500		800		1000		1500	
V_{CE} (V)	I_C (mA)	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.
10	3	-25	65	-20	53	-18	50	-16	49	-14	45
	10	-28	63	-22	63	-19	62	-17	60	-14	53
	15	-28	67	-22	67	-19	65	-17	62	-14	55

S_{22e} parameters

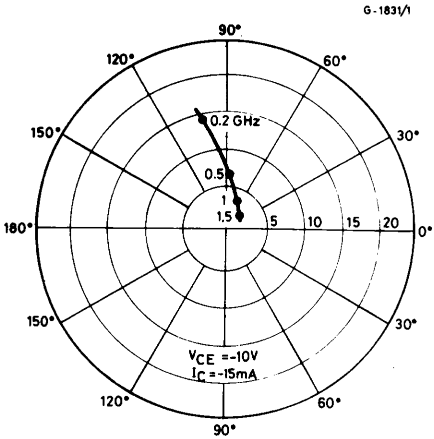
Frequency (MHz)		200		500		800		1000		1500	
V_{CE} (V)	I_C (mA)	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.
10	3	1.6	-23	4.2	-35	5.7	-40	6.1	-43	7.2	-51
	10	4.2	-30	7	-33	7.9	-36	8.3	-39	9.3	-49
	15	4.9	-30	7.6	-31	8.3	-34	8.5	-37	9.7	-48

BFT 95H

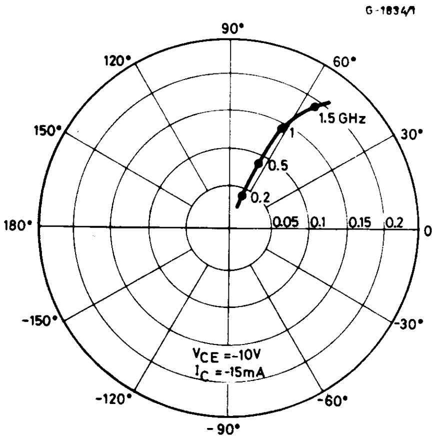
Input impedance S_{11e} (normalized 50Ω)



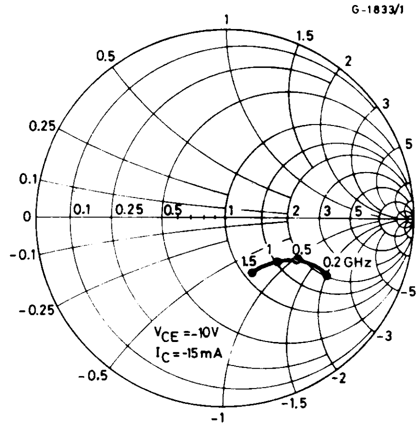
Forward transfer coefficient S_{21e}



Reverse transfer coefficient S_{12e}



Output impedance S_{22e} (normalized 50Ω)



BFW 94

EPITAXIAL PLANAR NPN

ULTRA LINEAR VHF-UHF AMPLIFIER

The BFW 94 is a silicon epitaxial planar NPN transistor in four-leads plastic package, particularly designed for wide-band common-emitter ultralinear amplifier applications up to 1 GHz. It features high f_T, low reverse capacitance and very good intermodulation properties.

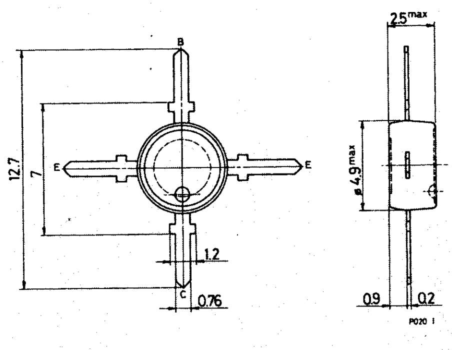
ABSOLUTE MAXIMUM RATINGS

V_{CBO}	Collector-base voltage ($I_E = 0$)	25	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	20	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	3	V
I_C	Collector current	150	mA
I_{CM}	Collector peak current	300	mA
P_{tot}*	Total power dissipation at $T_{amb} \leq 65°C$	700	mW
T_{stg}, T_j	Storage and junction temperature	-55 to 150	°C

* With device mounted on a fibreglass printed circuit of 40 x 35 x 1.5 mm

MECHANICAL DATA

Dimensions in mm



BFW 94

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max	90*	°C/W
$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max	120**	°C/W

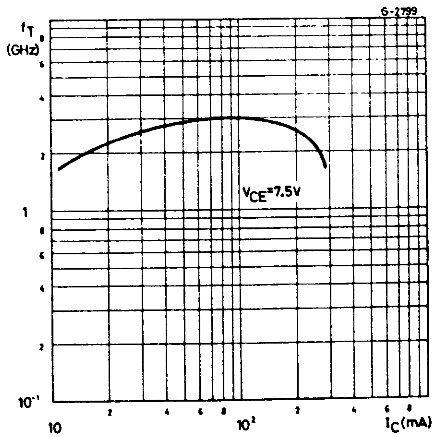
* With infinite heatsink
** Obtained with device mounted on a fibreglass printed circuit of 40x35x1.5 mm

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C unless otherwise specified)

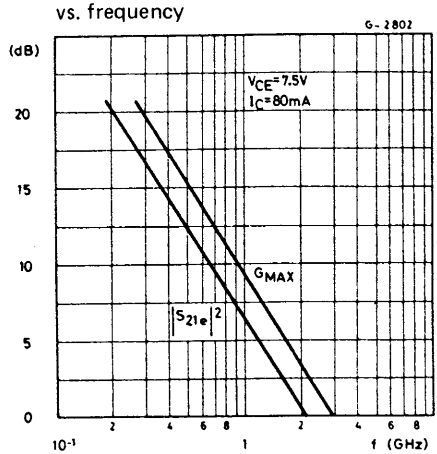
Parameter		Test conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current (I_E = 0)	V_{CB} = 15V				100	nA
$V_{(BR)CBO}$	Collector-base break-down voltage (I_E = 0)	I_C = 100 μA		25			V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage (I_B = 0)	I_C = 5 mA		20			V
$V_{(BR)EBO}$	Emitter-base break-down voltage (I_C = 0)	I_E = 10 μA		3			V
h_{FE}*	DC current gain	I_C = 80 mA	V_{CE} = 5V	30	80		–
f_T*	Transition frequency	I_C = 80 mA f = 500 MHz	V_{CE} = 7.5V		3		GHz
C_{re}	Reverse capacitance	I_E = 0 f = 1 MHz	V_{CE} = 10V		1.5		pF
NF	Noise figure	I_C = 40 mA R_g = 50 Ω	V_{CE} = 10V f = 800 MHz		6		dB
$\|S_{21e}\|^2$	Forward transmission gain	R_g = R_L = 50 Ω f = 800 MHz I_C = 80 mA I_C = 50 mA	 V_{CE} = 7.5V V_{CE} = 10V		 8 8		 dB dB
G_{MAX}	Maximum available gain	I_C = 50 mA R_g = opt. f = 800 MHz	V_{CE} = 10V R_L = opt.		11		dB

* Pulsed: pulse duration = 300 μs, duty cycle = 1%

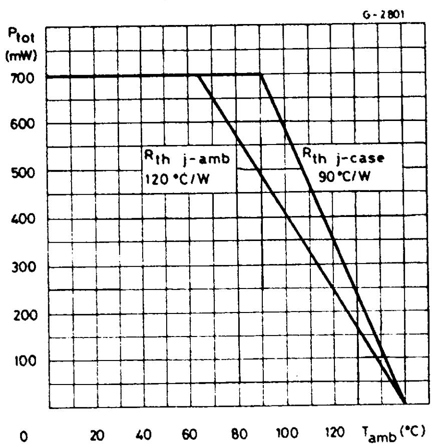
Transition frequency



Forward transmission gain and G_{MAX} vs. frequency



Power rating chart



Typical S parameters ($R_g = R_L = 50\Omega$)

$V_{CE} = 7.5V$ $I_C = 80$ mA

Frequency MHz	S_{21e}		S_{12e}		S_{11e}		S_{22e}	
	dB	Ang.	dB	Ang.	dB	Ang.	dB	Ang.
100	25.5	100	-32.5	135	-4.5	-168	-16	-71
500	11.9	75	-25	70	-4	+174	-19	-83
1000	5.7	59	-20	69	-3.2	+159	-16	-114

BFW 94

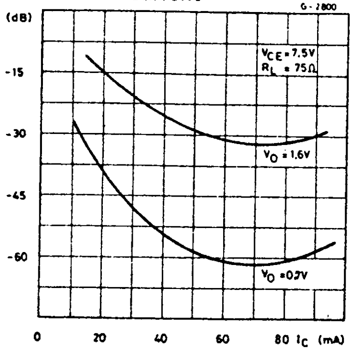
THIRD ORDER INTERMODULATION

Intermodulation distortion

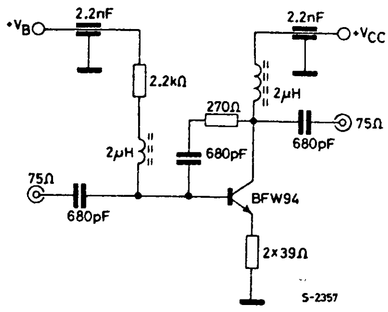
$V_p = V_o$ at $f_p = 495.25$ MHz
$V_q = V_o$ -6 dB at $f_q = 503.25$ MHz
$V_r = V_o$ -6 dB at $f_r = 505.25$ MHz

Measured at $f_{(p+q-r)} = 493.25$ MHz

Intermodulation distortion vs. collector current

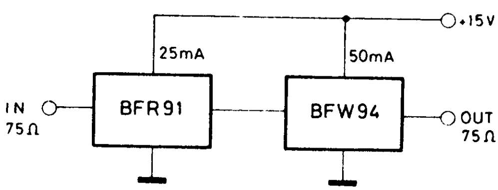


Test circuit



TYPICAL APPLICATION

600 to 860 MHz amplifier



G_p = 20dB, V_O = 0.5V*, NF = 4dB, SWR ≤ 2
*AT -60dB I.M. (3 tone test DIN 45004) S-3113