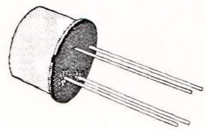
WIDE BAND VHF/UHF AMPLIFIER

- SILICON PLANAR EPITAXAL TRANSISTOR
- TO-72 METAL CASE
- VERY LOW NOISE

APPLICATIONS :

- TELECOMMUNICATIONS
- WIDE BAND UHF AMPLIFIER
- RADIO COMMUNICATIONS

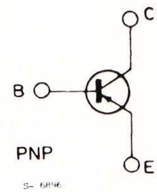


TO-72

DESCRIPTION

The BRF99A is a silicon planar epitaxial PNP transistor produced using interdigitated base emitter geometry. It is particulary designed for use in wide band common-emitter linear amplifiers up to 1GHz. It features very high f_T, low reverse capacitance, excellent cross modulation properties and very low noise performance. The BFR99A is complementary to the BFY90. Typical applications include telecommunication and radio communication equipment.

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector–base Voltage (I_E = 0)	– 25	V
V_{CEO}	Collector–emitter Voltage (I_B = 0)	– 25	V
V_{EBO}	Emitter–base Voltage (I_C = 0)	– 3	V
I_C	Collector Current	– 50	mA
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C	225 360	mW mW
T_{stg}, T_j	Storage and Junction Temperature	– 55 to 200	°C

THERMAL DATA

$R_{th\ j-case}$	Thermal Resistance Junction–case	Max	486	°C/W
$R_{th\ j-amb}$	Thermal Resistance Junction–ambient	Max	777	°C/W

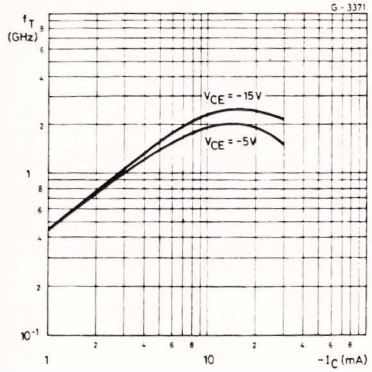
ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = – 15 V			– 100	nA
$V_{(BR)\ CBO}$	Collector–base Breakdown Voltage (I_E = 0)	I_C = – 100 µA	– 25			V
$V_{CEO\ (sus)}$*	Collector–emitter Sustaining Voltage (I_B = 0)	I_C = – 5 mA	– 25			V
$V_{(BR)\ EBO}$	Emitter–base Breakdown Voltage (I_C = 0)	I_E = – 10 µA	– 3			V
V_{CEK}**	Collector–emitter Knee Voltage	I_C = – 20 mA		– 0.8		V
V_{BE}	Base–emitter Voltage	I_C = – 10 mA V_{CE} = – 10 V		– 0.75		V
h_{FE}*	DC Current Gain	I_C = – 1 mA V_{CE} = – 10 V I_C = – 10 mA V_{CE} = – 10 V I_C = – 20 mA V_{CE} = – 10 V	 25 20	75 80		
f_T	Transition Frequency	I_C = – 10 mA V_{CE} = – 15 V f = 100 MHz	1.4	2.3		GHz
C_{re}	Reverse Capacitance	I_C = 0 V_{CE} = – 15 V f = 1 MHz		0.4		pF
NF	Noise Figure	I_C = – 3 mA V_{CE} = – 15 V R_g = 50 Ω f = 200 MHz f = 800 MHz I_C = – 10 mA V_{CE} = – 15 V R_g = 50 Ω f = 200 MHz f = 800 MHz		 2.5 3.5 3 4	 4 5	 dB dB dB dB
G_{pe}	Power Gain	I_C = – 10 mA V_{CE} = – 15 V f = 800 MHz		10		dB
P_o	Output Power	I_C = – 10 mA V_{CE} = – 15 V f = 800 MHz		14		mW
$\|S_{21e}\|^2$	Transcuder Power Gain	I_C = – 10 mA V_{CE} = – 15 V R_g = R_L = 50 Ω f = 800 MHz		8		dB

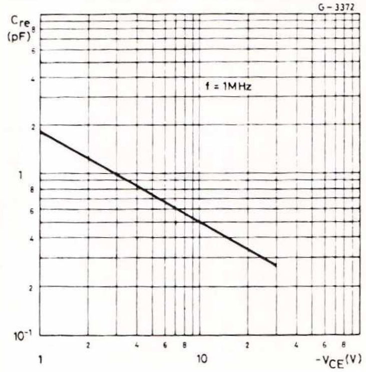
* Pulsed : pulse duration = 300µs, duty cycle = 1%

** I_B = value corresponding to I_C = – 22mA and V_{CE} = – 1V.

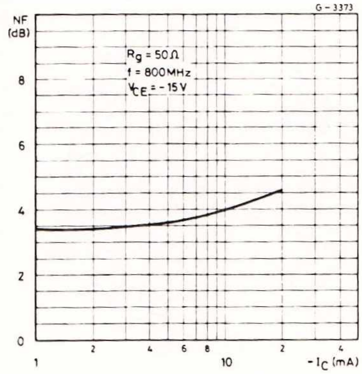
Transition Frequency.



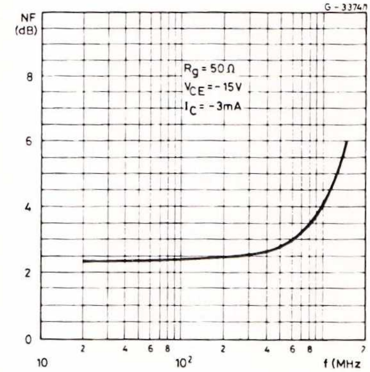
Reverse Capacitance.



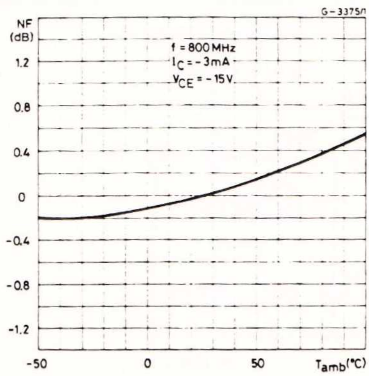
Noise Figure vs. Collector Current.



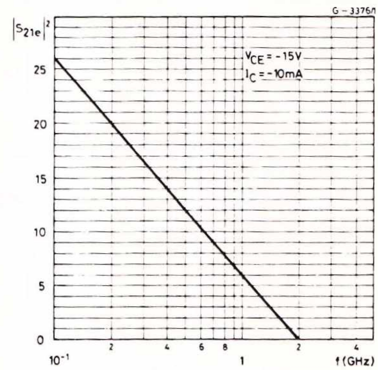
Noise Figure vs. Frequency.



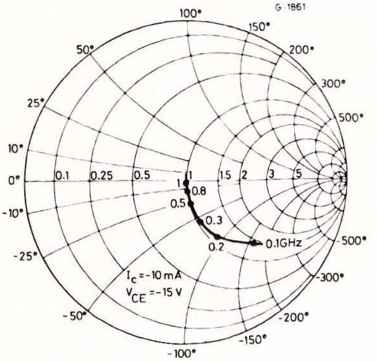
Noise Figure vs. Ambient Temperature.



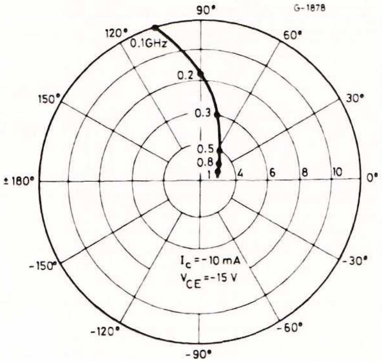
Transducer Power Gain.



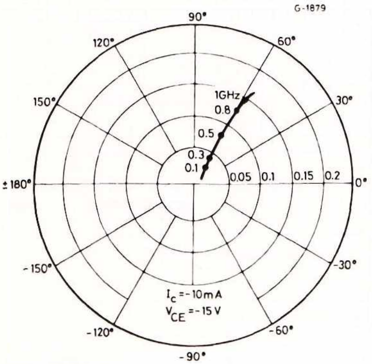
Input Impedance S_{11e} (50Ω normalized).



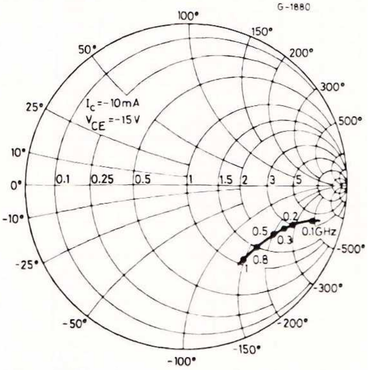
Forward Transfer Coefficient S_{21e}.



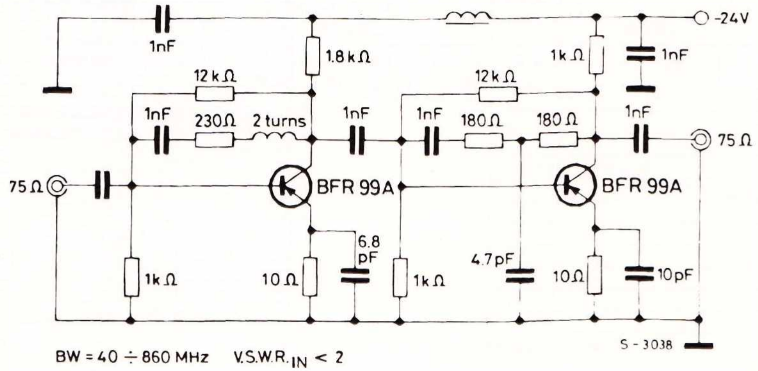
Reverse Transfer Coefficient S_{12e}.



Output Impedance S_{22e} (50Ω normalized).



Wide Band MATV Amplifier.



BW = 40 ÷ 860 MHz
G = 16 dB
NF < 5dB
V.S.W.R.$_{IN}$ < 2
V.S.W.R.$_{OUT}$ < 2
V_{OUT} = 100mV for 1% Crossmodulation

MATV Channel Amplifier.