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BF506

CASE 29-03, STYLE 17
TO-92 (TO-226AA)

VHF TRANSISTOR

PNP SILICON

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	35	Vdc
Collector-Base Voltage	V_{CBO}	40	Vdc
Emitter-Base Voltage	V_{EBO}	4.0	Vdc
Collector Current – Continuous	I_C	50	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	350 2.8	mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	1.0 8.0	Watt mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150	°C

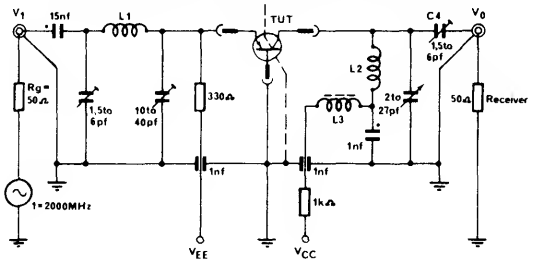
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	125	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JC}$	357	°C/W

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 5.0 mAdc, I_B = 0)	$V_{(BR)CEO}$	35	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	$V_{(BR)CBO}$	40	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)	$V_{(BR)EBO}$	4	—	—	Vdc
Collector Cutoff Current (V_{CB} = 20 V, I_E = 0)	I_{CBO}	—	—	100	nAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 3 mAdc, V_{CE} = 10 Vdc)	h_{FE}	20	—	—	
SMALL SIGNAL CHARACTERISTICS					
Current-Gain – Bandwidth Product (I_C = 1 mAdc, V_{CE} = 10 Vdc, f = 100 MHz)	f_T	400	600	—	MHz
Collector-Base Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)	C_{CBO}	—	0.6	0.9	pF
Feedback Capacitance (Grounded Base) (V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)	C_{rb}	—	0.15	0.25	pF
Noise Figure (I_C = 1 mA, R_S = 50 Ω, f = 200 MHz, V_{CC} = 6 V)	N_F	—	2.5	4	dB
Power Gain (I_C = 3 mA, R_L = 1 KΩ, f = 200 MHz, V_{CC} = 10.8 V)	G_{pb}	14	22	—	dB

200 MHz POWER GAIN NOISE FIGURE TEST CIRCUIT



*Leadless ceramic disc capacitor
L1 – 3 turns 0.0 mm enamel, 4 mm dia
L2 – 2 turns 1 mm enamel, 6.5 mm dia

FIGURE 1 – CURRENT GAIN – BANDWIDTH PRODUCT

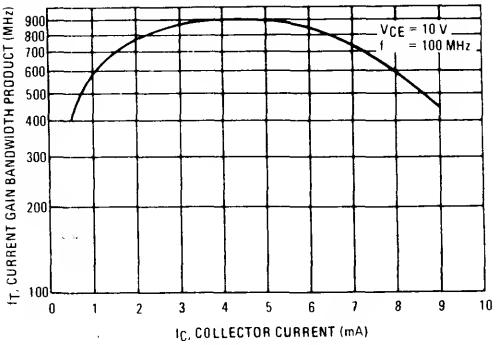


FIGURE 2 – NOISE FIGURE

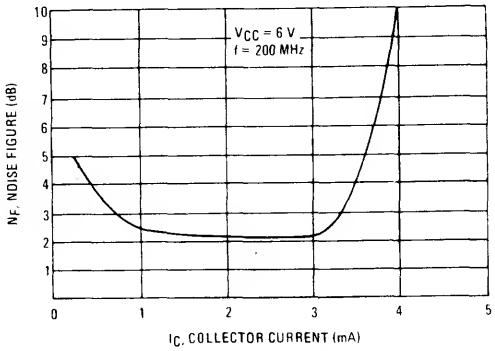


FIGURE 3 – FORWARD TRANSFER ADMITTANCE

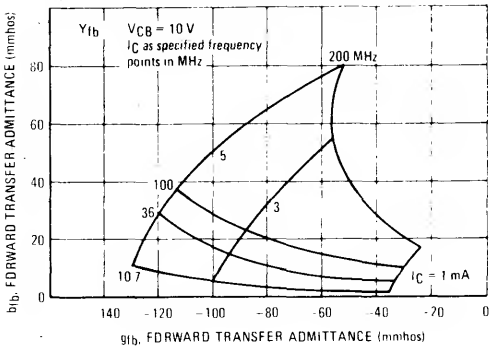


FIGURE 4 – INPUT ADMITTANCE

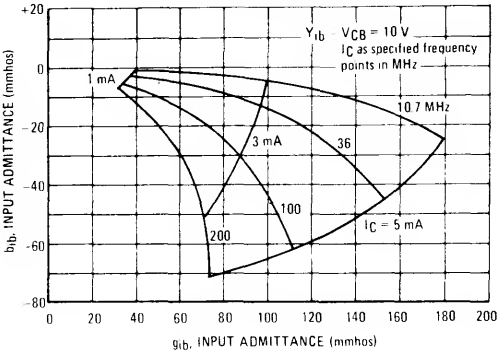


FIGURE 5 – OUTPUT ADMITTANCE