

MAXIMUM RATINGS

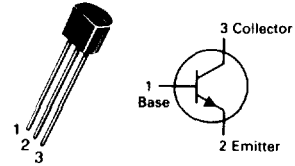
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	30	Vdc
Collector-Base Voltage	V _{CBO}	40	Vdc
Emitter-Base Voltage	V _{EBO}	4.0	Vdc
Collector Current — Continuous	I _C	100	mAdc
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	350 2.81	mW mW/°C
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	1.0 8.0	Watts 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 Ambient	R _{θJA}	357	°C/W
Thermal Resistance, Junction to Case	R _{θJC}	125	°C/W

MPSH20★

CASE 29-04, STYLE 2
TO-92 (TO-226AA)



VHF TRANSISTOR

NPN SILICON

★ This is a Motorola
designated preferred device.

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I _C = 1.0 mAdc, I _B = 0)	V _{(BR)CEO}	30	—	—	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}	4.0	—	—	Vdc
Collector Cutoff Current (V _{CB} = 15 Vdc, I _E = 0)	I _{CBO}	—	—	50	nAdc
ON CHARACTERISTICS					
DC Current Gain (I _C = 4.0 mAdc, V _{CE} = 10 Vdc)	h _{FE}	25	—	—	—
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain — Bandwidth Product (I _C = 4.0 mAdc, V _{CE} = 10 Vdc, f = 100 MHz)	f _T	400	620	—	MHz
Collector-Base Capacitance (V _{CB} = 10 Vdc, I _E = 0, f = 1.0 MHz)	C _{cb}	—	0.5	0.65	pF
Collector Base Time Constant (I _E = 4.0 mAdc, V _{CB} = 10 Vdc, f = 31.8 MHz)	rb'C _c	—	10	—	ps
Conversion Gain (213 to 45 MHz) (I _C = 4.0 mAdc, V _{CE} = 10 Vdc, Oscillator Injection = 200 mVdc)	G _C	18	23	—	dB

CONVERSION GAIN CHARACTERISTICS
(TEST CIRCUIT FIGURE 9)

FIGURE 1 – VARIATION WITH COLLECTOR CURRENT

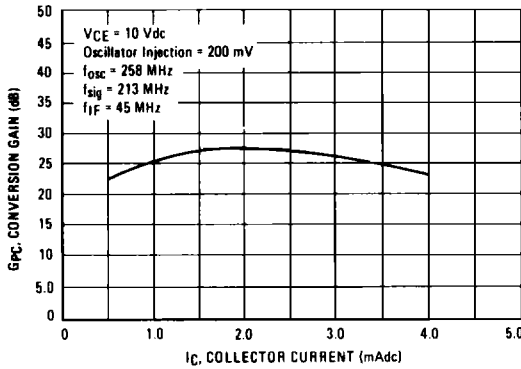
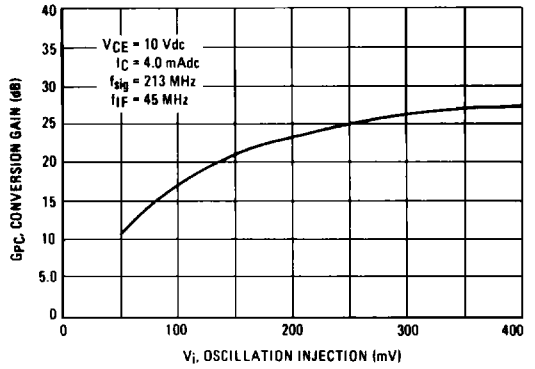


FIGURE 2 – VARIATION WITH INJECTION LEVEL



COMMON-EMITTER y PARAMETERS
($I_C = 4.0$ mA dc, $V_{CE} = 10$ Vdc, $T_A = 25^\circ\text{C}$)

FIGURE 3 – INPUT ADMITTANCE

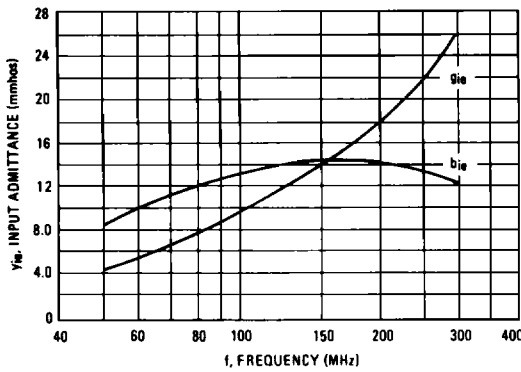
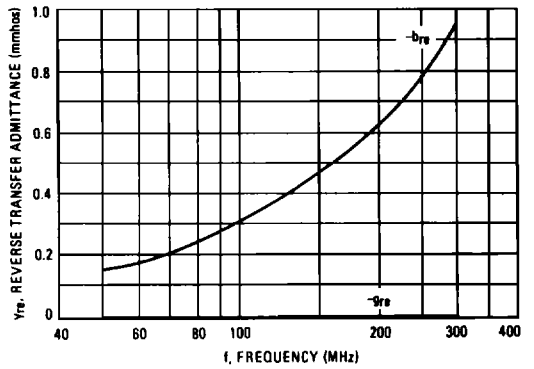


FIGURE 4 – REVERSE TRANSFER ADMITTANCE



COMMON-EMITTER y PARAMETERS
($I_C = 4.0$ mA dc, $V_{CE} = 10$ Vdc, $T_A = 25^\circ\text{C}$)

FIGURE 5 – FORWARD TRANSFER ADMITTANCE

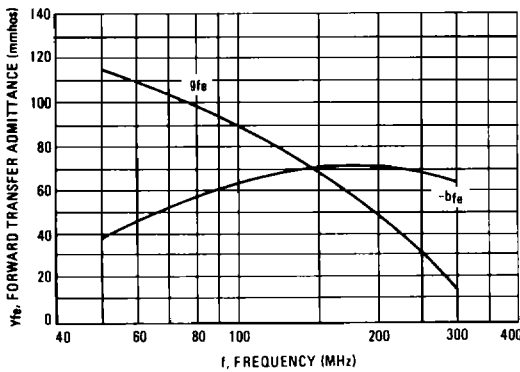


FIGURE 6 – OUTPUT ADMITTANCE

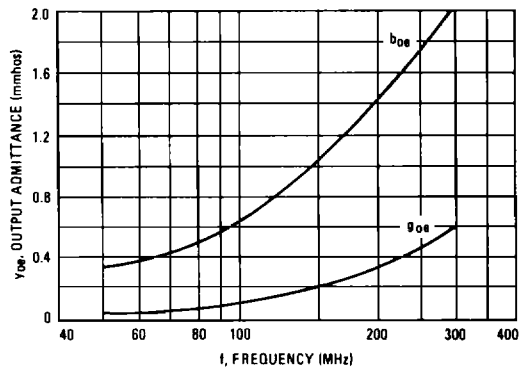


FIGURE 7 - CURRENT-GAIN-BANDWIDTH PRODUCT

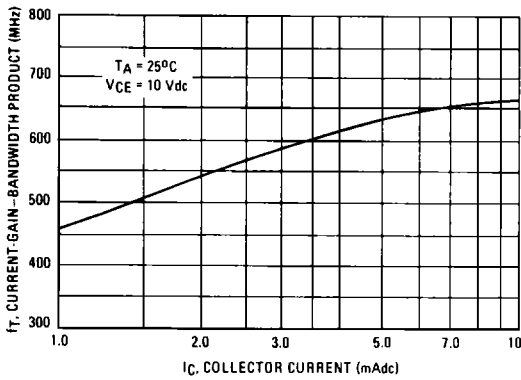


FIGURE 8 - CAPACITANCES

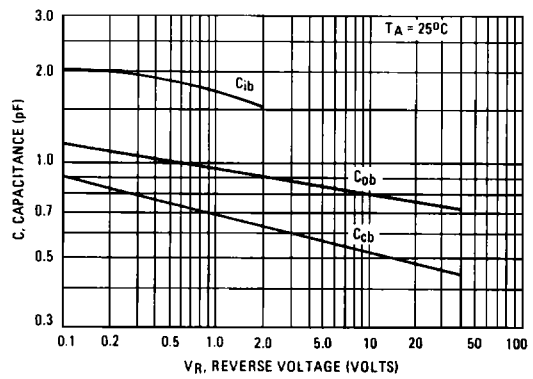
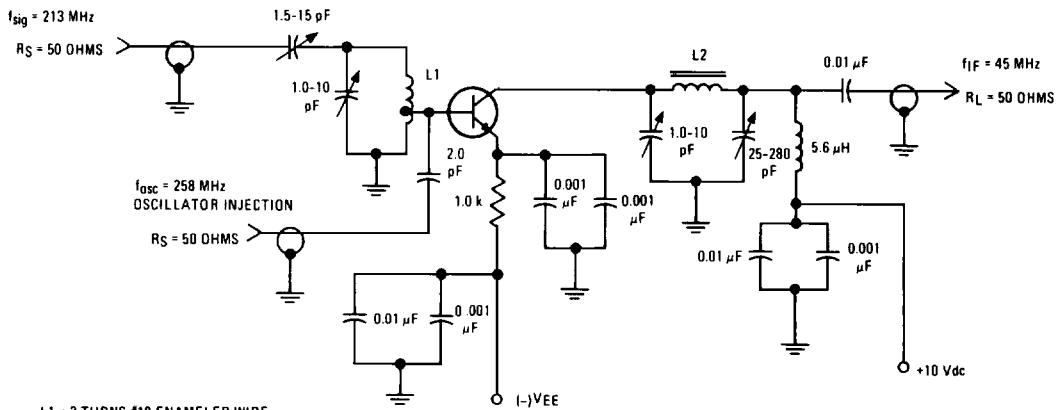


FIGURE 9 - MIXER TEST CIRCUIT



L1 = 3 TURNS #18 ENAMELED WIRE,
1/4" I.D., AIR WOUND, WINDING LENGTH 1/2";
BASE TAPPED 1 TURN FROM GROUND.

L2 = 10 TURNS #26 INSULATED WIRE, WOUND
ON 1/4" I.D. COIL FORM, ARNOLD PART
NO. A1-10 IRON POWDER CORE.