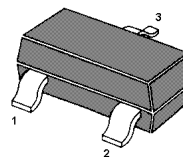


MMBTH10

NPN Silicon VHF/UHF Transistor



1. Base 2. Emitter 3. Collector
SOT-23 Plastic Package

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	30	V
Collector Emitter Voltage	V_{CEO}	25	V
Emitter Base Voltage	V_{EBO}	3	V
Total Device Dissipation FR-5 Board ¹⁾	P_{tot}	200	mW
Derate above 25°C		1.8	mW / $^\circ\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

¹⁾ FR-5 = 1 X 0.75 X 0.062 in.

MMBTH10

Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

	Symbol	Min.	Max.	Unit
DC Current Gain at $V_{CE}=10\text{V}$, $I_C=4\text{mA}$	h_{FE}	60	-	-
Collector Emitter Saturation Voltage at $I_C=4\text{mA}$, $I_B=0.4\text{mA}$	V_{CEsat}	-	0.5	V
Base Emitter On Voltage at $I_C=4\text{mA}$, $V_{CE}=10\text{V}$	V_{BE}	-	0.95	V
Collector Cutoff Current at $V_{CB}=25\text{V}$	I_{CBO}	-	100	nA
Emitter Cutoff Current at $V_{EB}=2\text{V}$	I_{EBO}	-	100	nA
Collector Base Breakdown Voltage at $I_C=100\mu\text{A}$	$V_{(BR)CBO}$	30	-	V
Collector Emitter Breakdown Voltage at $I_C=1\text{mA}$	$V_{(BR)CEO}$	25	-	V
Emitter Base Breakdown Voltage at $I_E=10\mu\text{A}$	$V_{(BR)EBO}$	3.0	-	V
Current Gain Bandwidth Product at $V_{CE}=10\text{V}$, $I_C=4\text{mA}$, $f=100\text{MHz}$	f_T	650	-	MHz
Collector-Base Capacitance at $V_{CB}=10\text{V}$, $I_E=0$, $f=1\text{MHz}$	C_{cb}	-	0.7	pF
Common-Base Feedback Capacitance at $V_{CB}=10\text{V}$, $I_E=0$, $f=1\text{MHz}$	C_{rb}	-	0.65	pF
Collector-Base Time Constant at $V_{CB}=10\text{V}$, $I_C=4.0\text{mA}$, $f=31.8\text{MHz}$	$rb' C_c$	-	9	ps

TYPICAL CHARACTERISTICS

COMMON-BASE y PARAMETERS versus FREQUENCY ($V_{CB}=10V_{dc}$, $I_C=4.0mA_{dc}$, $T_A=25^{\circ}C$)

y_{ib} , INPUT ADMITTANCE

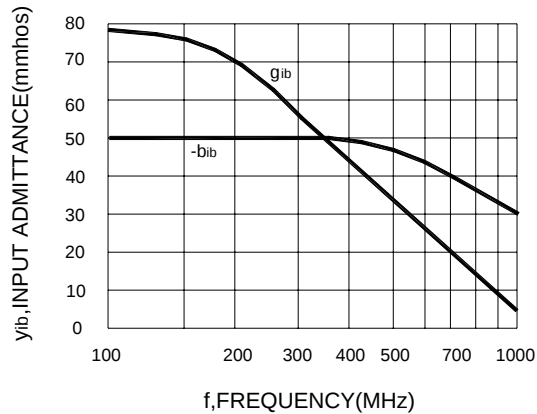


Figure 1. Rectangular Form

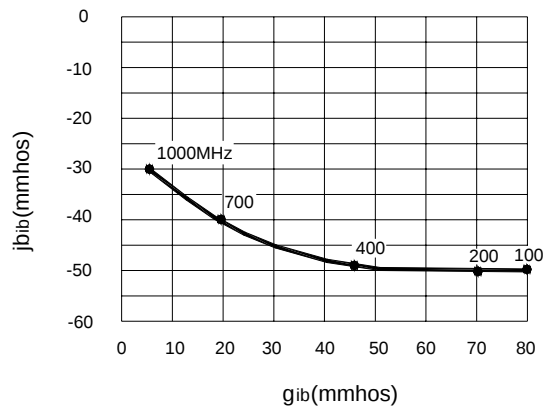


Figure 2. Polar Form

y_{fb} , FORWARD TRANSFER ADMITTANCE

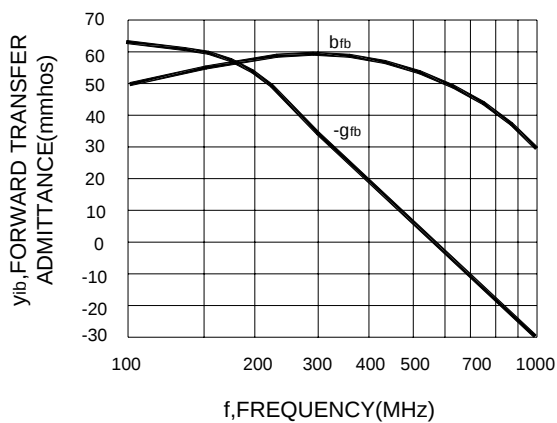


Figure 3. Rectangular Form

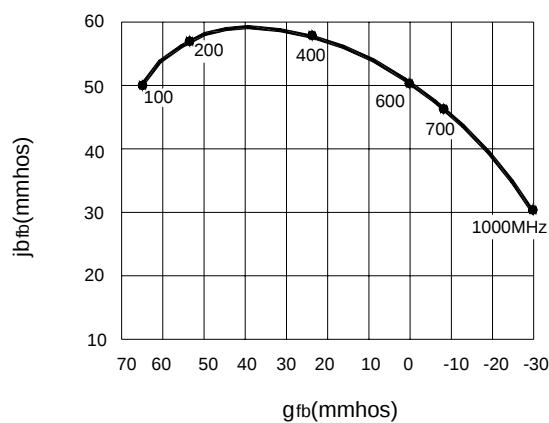


Figure 4. Polar Form

TYPICAL CHARACTERISTICS

COMMON-BASE y PARAMETERS versus FREQUENCY ($V_{CB}=10V_{dc}$, $I_C=4.0mA_{dc}$, $T_A=25^\circ C$)

y_{rb} , REVERSE TRANSFER ADMITTANCE

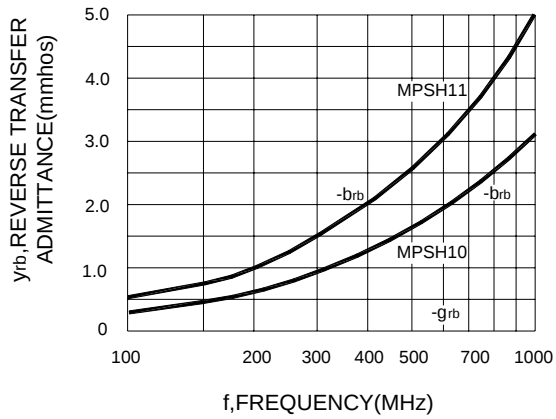


Figure 5. Rectangular Form

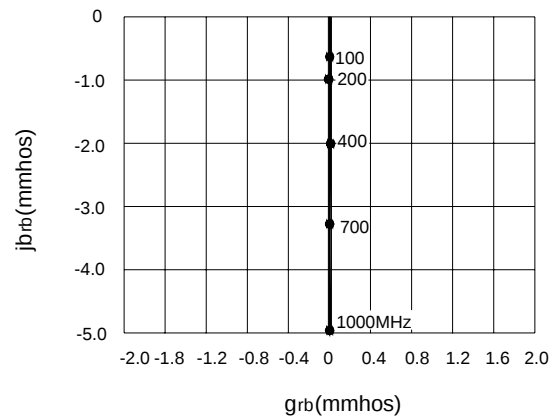


Figure 6. Polar Form

y_{ob} , OUTPUT ADMITTANCE

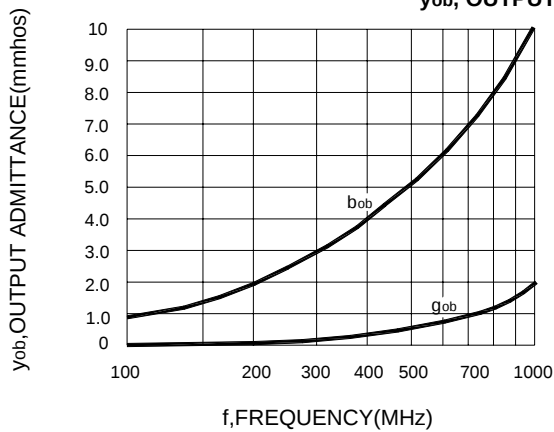


Figure 7. Rectangular Form

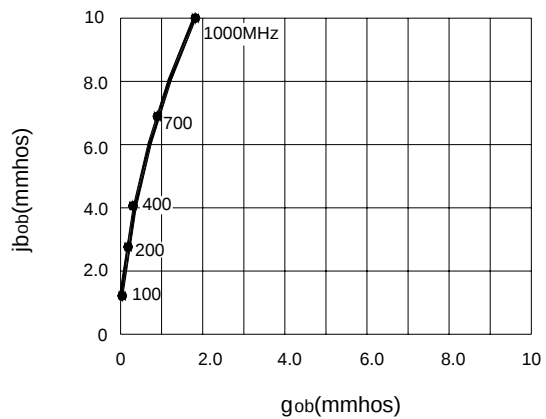


Figure 8. Polar Form