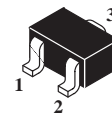
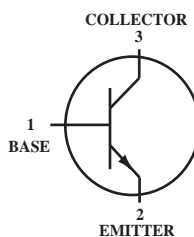


VHF/UHF Transistors

 Lead(Pb)-Free



SOT-323(SC-70)

FEATURES:

* We declare that the material of product compliance with RoHS requirements.

Maximum Ratings (T_A=25°C Unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	25	V
Collector-Base Voltage	V _{CBO}	30	V
Emitter-Base Voltage	V _{EBO}	3.0	V
Collector Current-Continuous	I _C	50	mA

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note.1) T _A =25°C Derate above 25°C	P _D	225 1.8	mW mW/°C
Thermal Resistance, Junction to Ambient	R _{θJA}	556	°C/W
Total Device Dissipation Alumina Substrate, (2) T _A =25°C Derate above 25°C	P _D	300 2.4	mW mW/°C
Thermal Resistance, Junction to Ambient	R _{θJA}	417	°C/W
Junction Temperature Range	T _J	-55 to +150	°C
Storage Temperature Range	T _{stg}	-55 to +150	°C

Device Marking

MMBTH10W=3E

- FR-5=1.0 x 0.75 x 0.062 in.
- Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

Electrical Characteristics ($T_A=25^\circ\text{C}$ Unless Otherwise noted)

Characteristics	Symbol	Min	Typ	Max	Unit
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Off Characteristics

Collector-Emitter Breakdown Voltage ($I_C=1.0\text{mA}$, $I_B=0$)	$V_{(BR)CEO}$	25	-	-	V
Collector-Base Breakdown Voltage ($I_C=100\mu\text{A}$, $I_E=0$)	$V_{(BR)CBO}$	30	-	-	V
Emitter-Base Breakdown Voltage ($I_E=10\mu\text{A}$, $I_C=0$)	$V_{(BR)EBO}$	3.0	-	-	V
Collector Cutoff Current ($V_{CB} = 25\text{V}$, $I_E=0$)	I_{CBO}	-	-	100	nA
Emitter Cutoff Current ($V_{EB}=3\text{V}$, $I_C=0$)	I_{EBO}	-	-	100	nA

On Characteristics

DC Current Gain ($I_C=4.0\text{mA}$, $V_{CE}=10\text{V}$)	h_{FE}	60	-	270	
Collector-Emitter Saturation Voltage ($I_C=4.0\text{mA}$, $I_B=0.4\text{mA}$)	$V_{CE(sat)}$	-	-	0.5	V
Base-Emitter On Voltage ($I_C=4.0\text{mA}$, $V_{CE}=10\text{V}$)	$V_{BE(on)}$	-	-	0.95	V

Small-Signal Characteristics

Current-Gain-Bandwidth Product ($V_{CE} = 10\text{Vdc}$, $I_C = 4.0\text{mA}$, $f = 100\text{MHz}$)	f_T	650	-	-	MHz
Collector –Base Capacitance ($V_{CB} = 10\text{Vdc}$, $I_E = 0$, $f = 1.0\text{MHz}$)	C_{cb}	-	0.7	-	pF
Collector –Base Feedback Capacitance ($V_{CB} = 10\text{Vdc}$, $I_E = 0$, $f = 1.0\text{MHz}$)	C_{rb}	-	0.65	-	pF
Collector Base Time Constant ($I_C = 4.0\text{mA}$, $V_{CB}=10\text{Vdc}$, $f = 31.8\text{MHz}$)	$r_b' C_c$	-	-	9.0	ps

TYPICAL CHARACTERISTICS

COMMON-BASE y PARAMETERS versus FREQUENCY

($V_{CB} = 10 \text{ Vdc}$, $I_C = 4.0 \text{ mAdc}$, $T_A = 25^\circ\text{C}$)

y_{ib} , INPUT ADMITTANCE

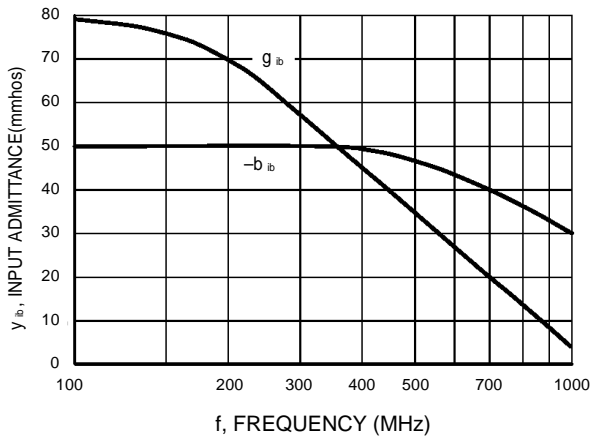


Figure 1. Rectangular Form

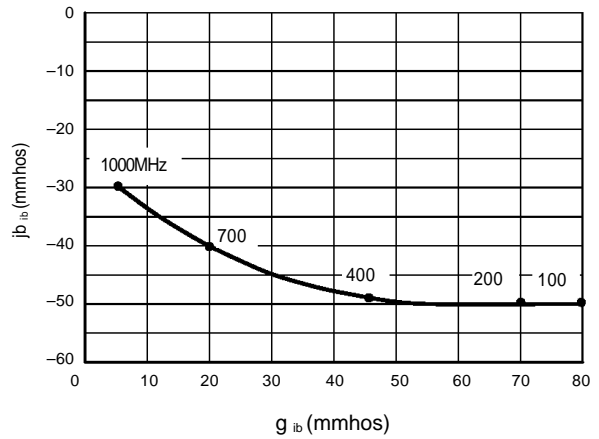


Figure 2. Polar Form

y_{fb} , FORWARD TRANSFER ADMITTANCE

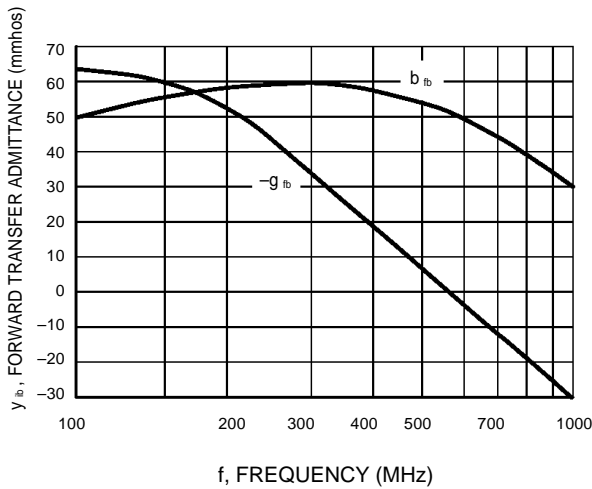


Figure 3. Rectangular Form

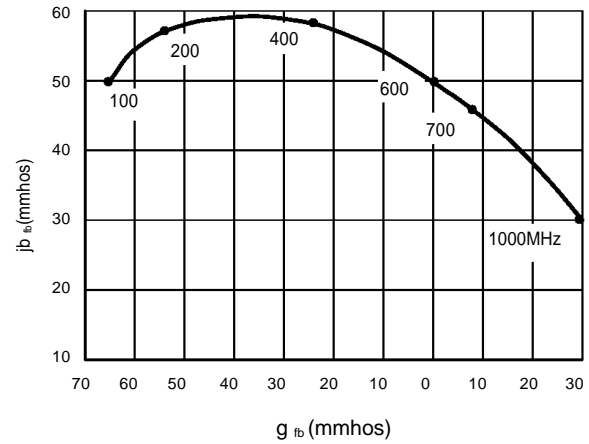


Figure 4. Polar Form

TYPICAL CHARACTERISTICS

COMMON-BASE y PARAMETERS versus FREQUENCY

($V_{CB} = 10 \text{ Vdc}$, $I_C = 4.0 \text{ mA dc}$, $T_A = 25^\circ\text{C}$)

y_{rb} , REVERSE TRANSFER ADMITTANCE

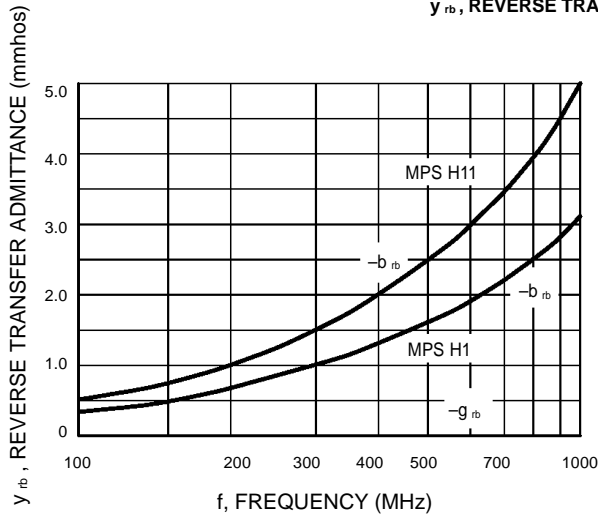


Figure 5. Rectangular Form

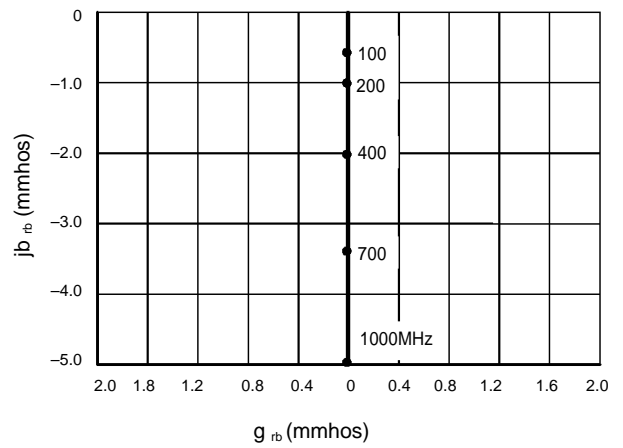


Figure 6. Polar Form

y_{ob} , OUTPUT ADMITTANCE

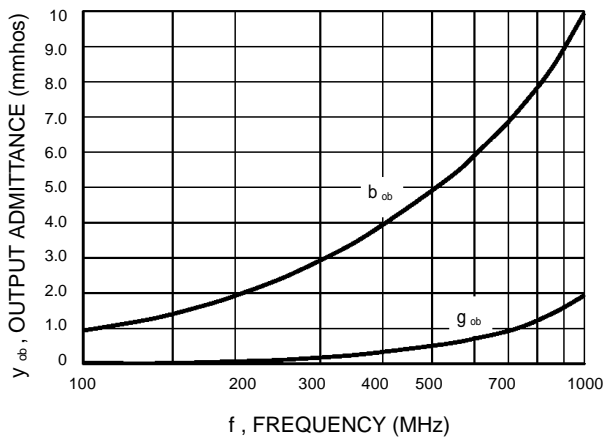


Figure 7. Rectangular Form

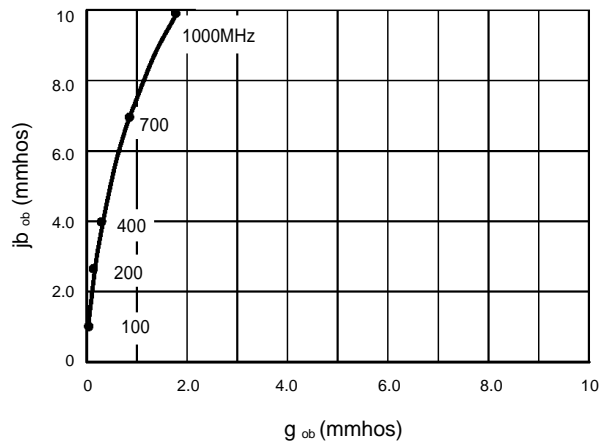
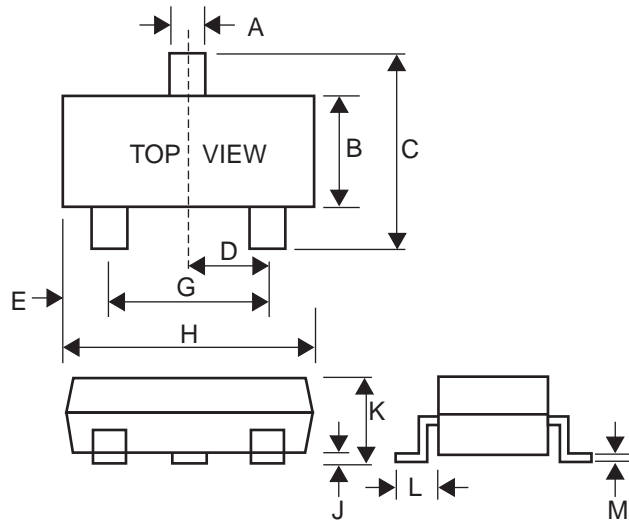


Figure 8. Polar Form

SOT-323 Outline Demensions

Unit:mm



SOT-323		
Dim	Min	Max
A	0.30	0.40
B	1.15	1.35
C	2.00	2.40
D	-	0.65
E	0.30	0.40
G	1.20	1.40
H	1.80	2.20
J	0.00	0.10
K	0.80	1.00
L	0.42	0.53
M	0.10	0.25