

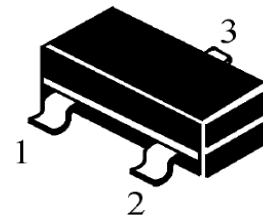
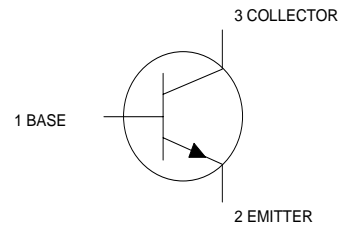
### »Features

$V_{CE} = 25V$   
 $f_T = 650MHz @ V_{CE}=10V, I_C=4mA, f=100MHz$

### »General Description

- VHF/UHF Transistors
- SOT-23 Plastic Package
- We declare that the material of product compliance with RoHS requirements.

### »Pin Configurations



### »Absolute Maximum Ratings @ $T_A=25^{\circ}C$ unless otherwise noted

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	$V_{CEO}$	25	Vdc
Collector–Base Voltage	$V_{CBO}$	30	Vdc
Emitter–Base Voltage	$V_{EBO}$	3.0	Vdc

### »Thermal Characteristics

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR– 5 Board, (1) $T_A = 25^{\circ}C$	$P_D$	225	mW
Derate above $25^{\circ}C$		1.8	mW/ $^{\circ}C$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^{\circ}C/W$
Total Device Dissipation Alumina Substrate, (2) $T_A = 25^{\circ}C$	$P_D$	300	mW
Derate above $25^{\circ}C$		2.4	mW/ $^{\circ}C$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^{\circ}C/W$
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +150	$^{\circ}C$

**»Electrical Characteristics @ $T_A=25^{\circ}\text{C}$  unless otherwise noted**

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector–Emitter Breakdown Voltage ( $I_C = 1.0\text{ mA}$ , $I_B = 0$ )	$V_{(BR)CEO}$	25	—	—	Vdc
Collector–Base Breakdown Voltage ( $I_C = 100\text{ }\mu\text{A}$ , $I_E = 0$ )	$V_{(BR)CBO}$	30	—	—	Vdc
Emitter–Base Breakdown Voltage ( $I_E = 10\text{ }\mu\text{A}$ , $I_C = 0$ )	$V_{(BR)EBO}$	3.0	—	—	Vdc
Collector Cutoff Current ( $V_{CB} = 25\text{ Vdc}$ , $I_E = 0$ )	$I_{CBO}$	—	—	100	nAdc
Collector Cutoff Current ( $V_{CB} = 30\text{ Vdc}$ , $I_E = 0$ )	$I_{CBO}$	—	—	100	uAdc
Emitter Cutoff Current ( $V_{EB} = 2.0\text{ Vdc}$ , $I_C = 0$ )	$I_{EBO}$	—	—	100	nAdc
Emitter Cutoff Current ( $V_{EB} = 3.0\text{ Vdc}$ , $I_C = 0$ )	$I_{EBO}$	—	—	10	uAdc
<b>ON CHARACTERISTICS</b>					
DC Current Gain ( $I_C = 4.0\text{ mA}$ , $V_{CE} = 10\text{ Vdc}$ )	$h_{FE}$	60	—	—	—
Collector–Emitter Saturation Voltage ( $I_C = 4.0\text{ mA}$ , $I_B = 0.4\text{ mA}$ )	$V_{CE(sat)}$	—	—	0.5	Vdc
Base–Emitter On Voltage ( $I_C = 4.0\text{ mA}$ , $V_{CE} = 10\text{ Vdc}$ )	$V_{BE}$	—	—	0.95	Vdc
<b>SMALL–SIGNAL CHARACTERISTICS</b>					
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 ( $I_C = 4.0\text{ mA}$ , $V_{CB} = 10\text{ Vdc}$ , $f = 31.8\text{ MHz}$ )	$rb' C_C$	—	—	9.0	ps

1. FR–5 = 1.0 x 0.75 x 0.062 in.

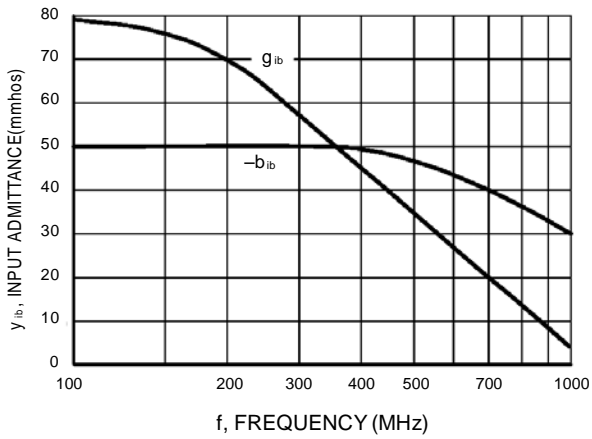
2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

»Typical Performance Characteristics

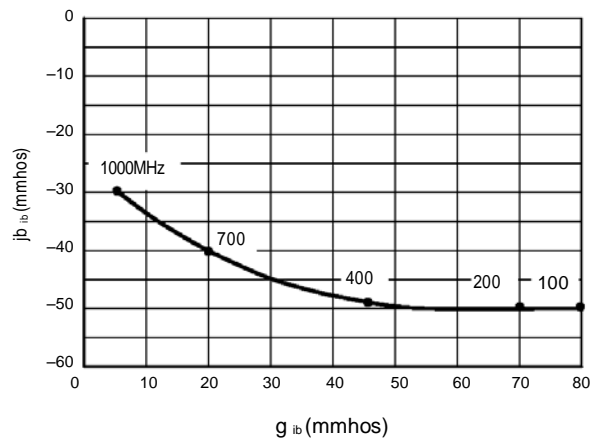
**COMMON-BASE  $y$  PARAMETERS versus FREQUENCY**

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

**$y_{ib}$ , INPUT ADMITTANCE**

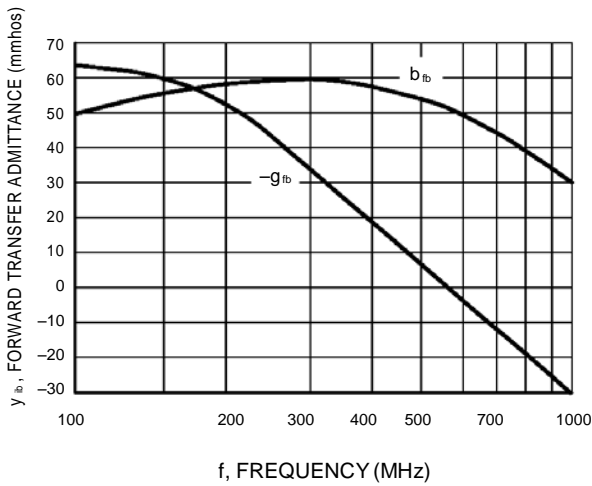


**Figure 1. Rectangular Form**

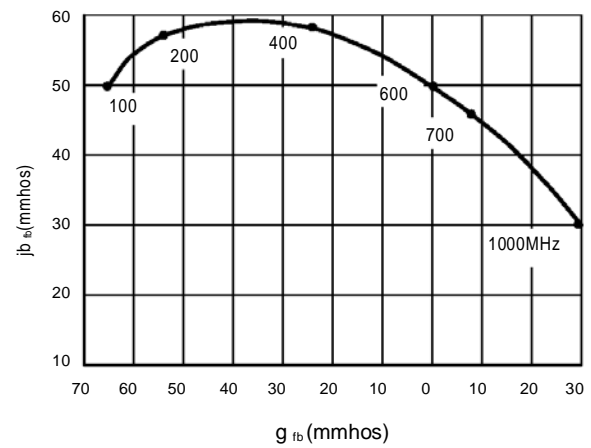


**Figure 2. Polar Form**

**$y_{fb}$ , FORWARD TRANSFER ADMITTANCE**



**Figure 3. Rectangular Form**

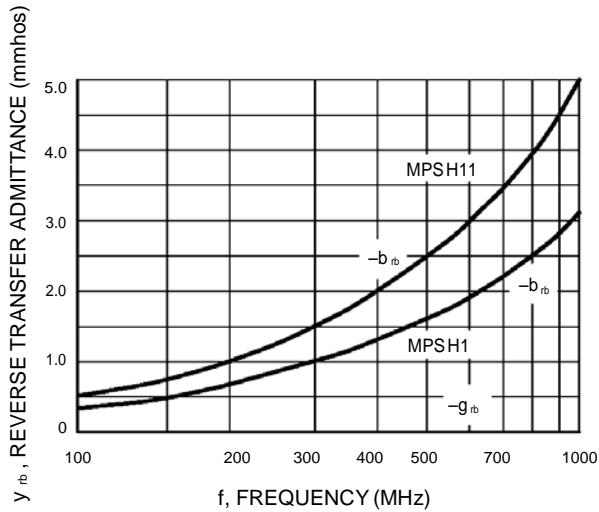


**Figure 4. Polar Form**

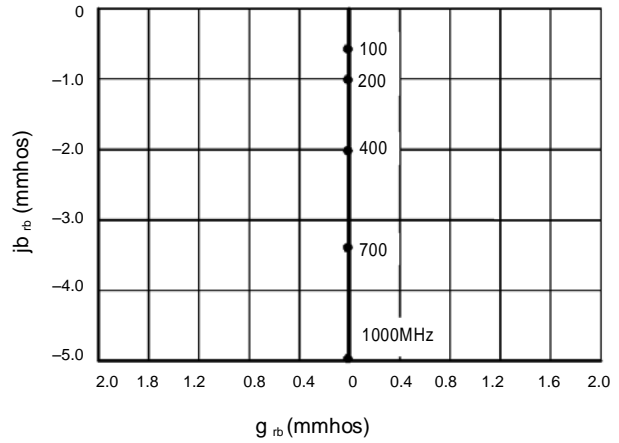
**COMMON-BASE y PARAMETERS versus FREQUENCY**

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

**$y_{ib}$ , INPUT ADMITTANCE**

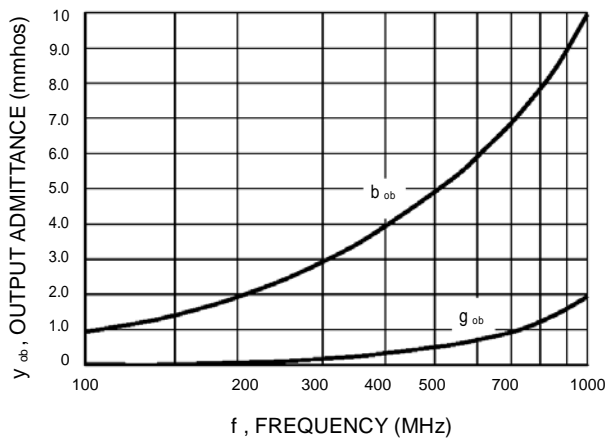


**Figure 5. Rectangular Form**

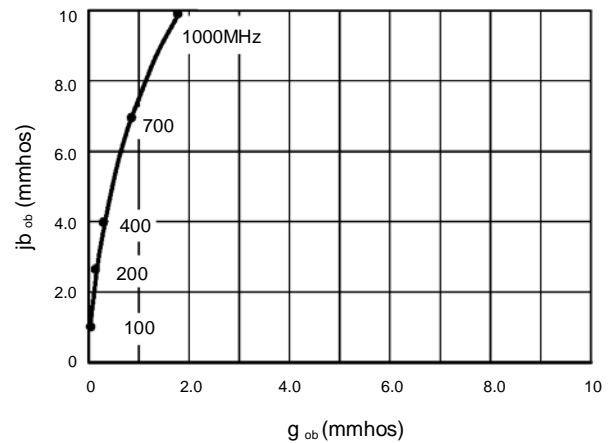


**Figure 6. Polar Form**

**$y_{ob}$ , OUTPUT ADMITTANCE**



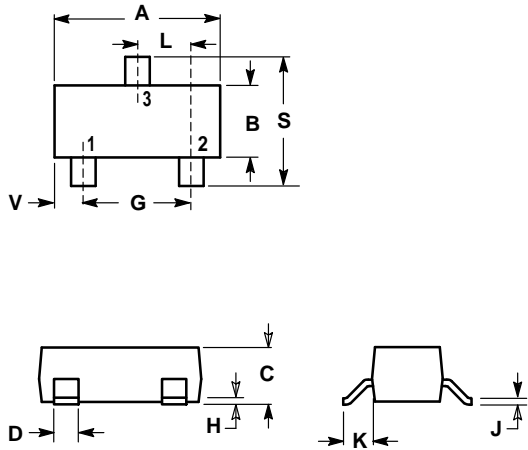
**Figure 7. Rectangular Form**



**Figure 8. Polar Form**

»Package Information

**SOT-23**

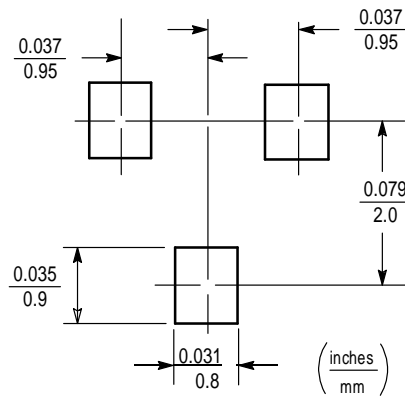


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

- PIN 1. BASE  
2. EMITTER  
3. COLLECTOR



»Ordering information

Order code	Package	Marking	Base qty	Delivery mode
KTD1304	SOT-23	AOQ	3K	Tape and reel

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