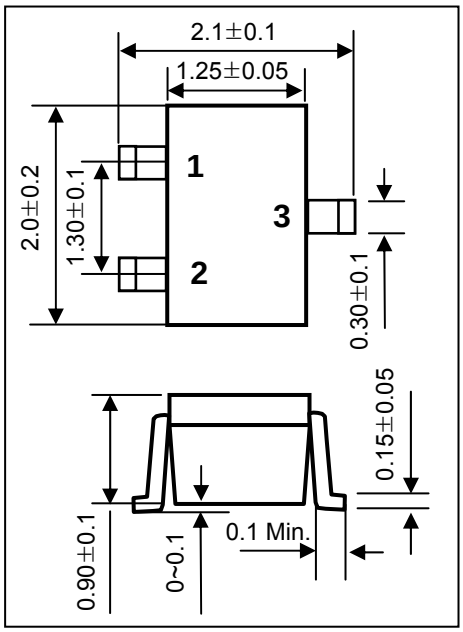
AUK Semiconductor

TBN4226 Series

Si NPN Transistor

SOT-323 **Unit in mm**



Pin Configuration

1. Base
2. Emitter
3. Collector

☐ *Applications*

- VHF and UHF low noise amplifier
- Wide band amplifier

☐ *Features*

- High gain bandwidth product

  f_T = 6 GHz at V_{CE} = 3 V, I_C = 7 mA

  f_T = 8 GHz at V_{CE} = 3 V, I_C = 30 mA
- High power gain

  $|S_{21}|^2$ = 9.0 dB at V_{CE} = 3 V, I_C = 7 mA, f = 1 GHz
- Low noise figure

  NF = 1.2 dB at V_{CE} = 3 V, I_C = 7 mA, f = 1 GHz

☐ *Absolute Maximum Ratings* (T_A = 25 ℃)

Parameter	Symbol	Ratings	Unit
Collector to Base Voltage	BV_{CBO}	20	V
Collector to Emitter Voltage	BV_{CEO}	8	V
Emitter to Base Voltage	BV_{EBO}	3	V
Collector Current	I_C	100	mA
Total Power Dissipation	P_{tot}	150	mW
Operating Junction Temperature	T_j	150	℃
Storage Temperature	T_{stg}	-65 ~ 150	℃

Caution : **E**lectro **S**tatic **D**ischarge sensitive device

☐ *Electrical Characteristics* (T_A = 25 ℃)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector Cut-off Current	I_{CBO}	V_{CB} = 15 V, I_E = 0 mA	-	-	0.5	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 2 V, I_C = 0 mA	-	-	0.5	μA
DC Current Gain	h_{FE}	V_{CE} = 3 V, I_C = 7 mA	70	100	250	
Gain Bandwidth Product	f_T	V_{CE} = 3 V, I_C = 7 mA	4.0	6.0	-	GHz
Insertion Power Gain	$\|S_{21}\|^2$	V_{CE} = 3 V, I_C = 7 mA, f = 1 GHz	7.0	9.0	-	dB
Noise Figure	NF	V_{CE} = 3 V, I_C = 7 mA, f = 1 GHz	-	1.2	2.0	dB
Reverse Transfer Capacitance	C_{re}	V_{CB} = 3 V, I_E = 0 mA, f = 1 MHz	-	0.9	1.4	pF

☐ *h_{FE} Classification*

Marking	SM2	SM1
h_{FE} Value	70 - 140	125 - 250

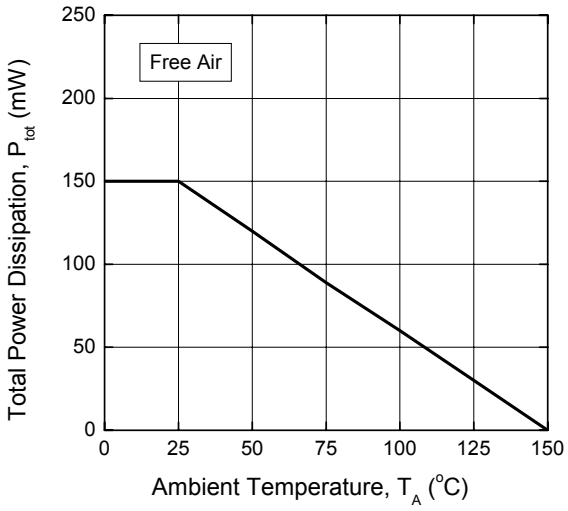
☐ *Available Package*

Unit in mm

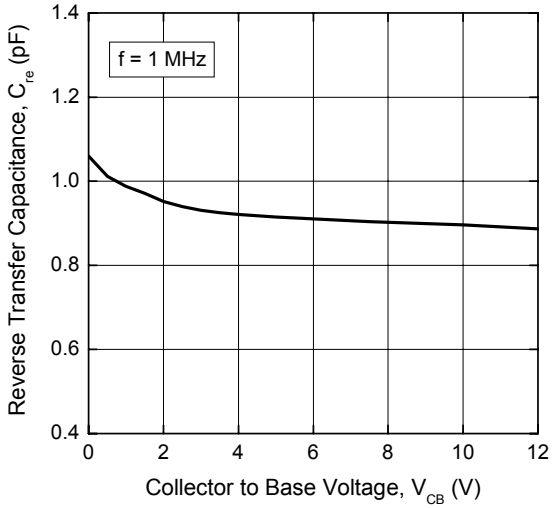
Product	Package	Dimension
TBN4226S	SOT-23	2.9 x 1.3, 1.2t
TBN4226U	SOT-323	2.0 x 1.25, 1.0t
TBN4226E	SOT-523	1.6 x 0.8, 0.8t
TBN4226KF	SOT-623F	1.4 x 0.8, 0.6t

□ *Typical Characteristics (T_A = 25 ℃, unless otherwise specified)*

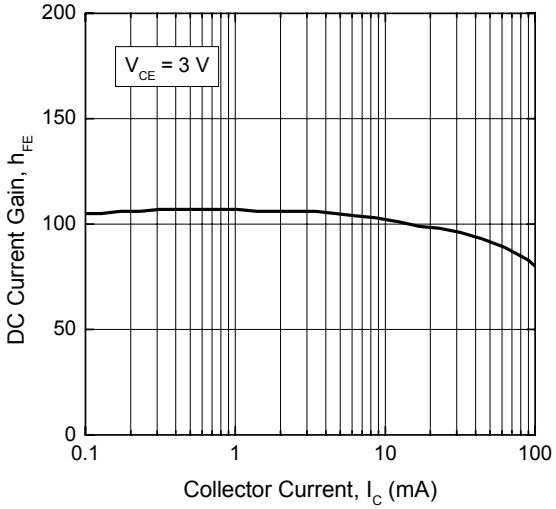
Total Power Dissipation vs. Ambient Temperature



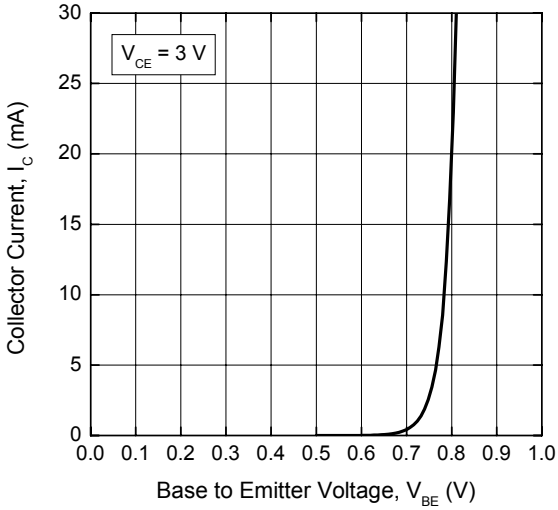
Reverse Transfer Capacitance vs. Collector to Base Voltage



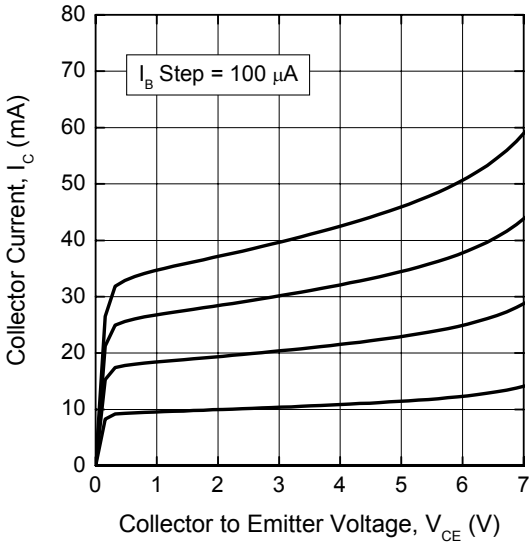
DC Current Gain vs. Collector Current



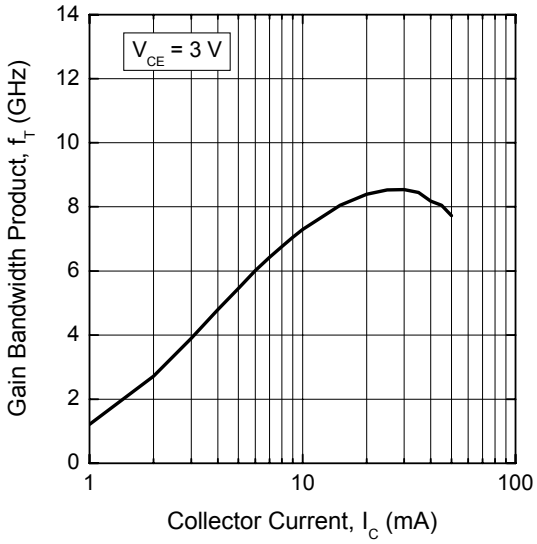
Collector Current vs. Base to Emitter Voltage



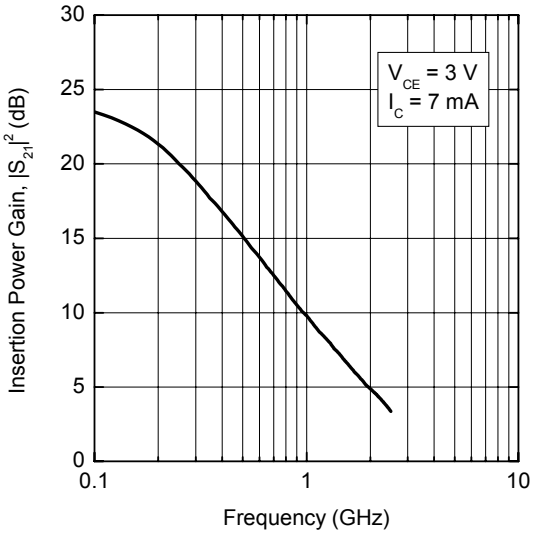
Collector Current vs. Collector to Emitter Voltage



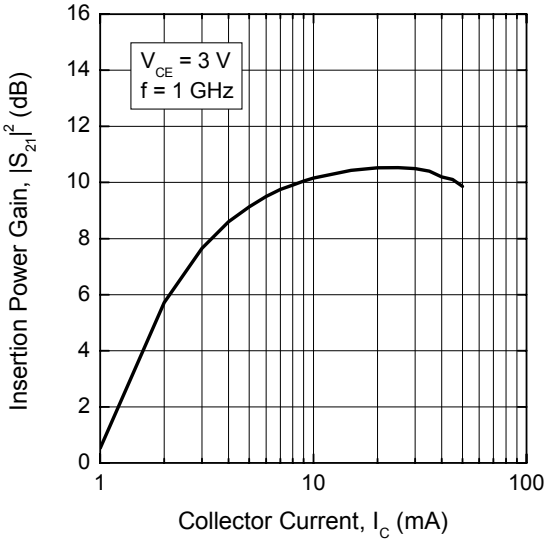
Gain Bandwidth Product vs. Collector Current



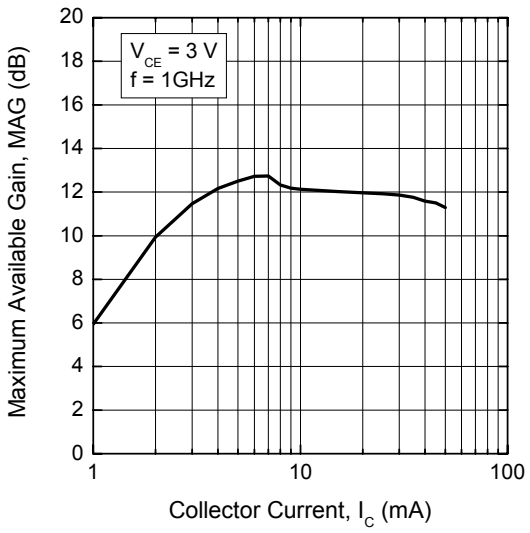
Insertion Power Gain vs. Frequency



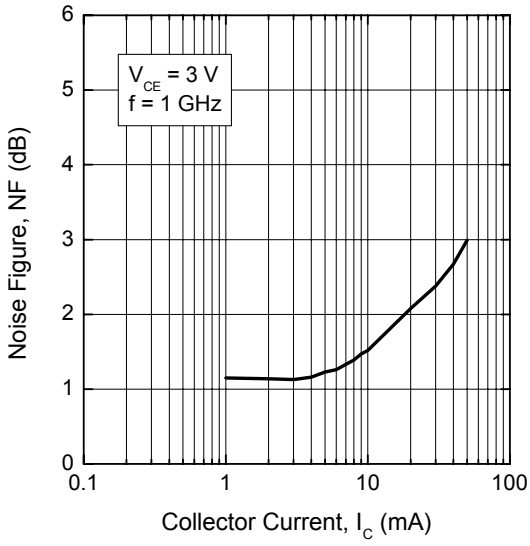
Insertion Power Gain vs. Collector Current



Maximum Available Gain vs. Collector Current



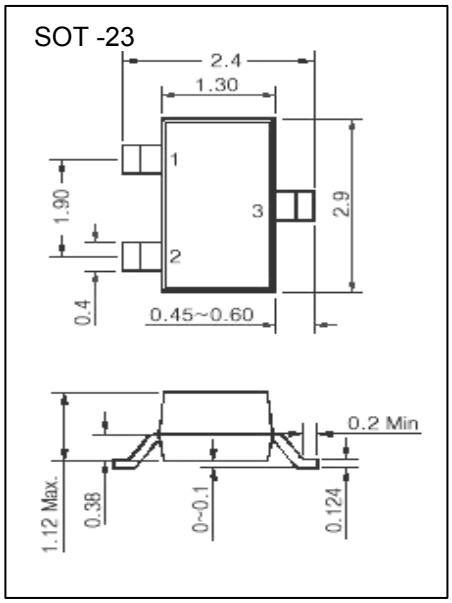
Noise Figure vs. Collector Current



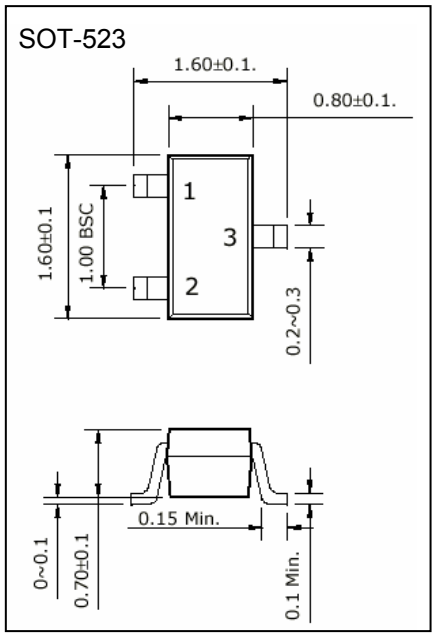
Noise Parameter vs. Frequency

Frequency (GHz)	Fmin (dB)	rn	Γ_{opt}		Association gain (dB)	G_{max} (dB)
			Mag	Phase		
0.9	1.27	0.11	0.290	144.4	11.58	12.98
1.0	1.16	0.09	0.301	141.3	10.60	11.83
1.5	1.79	0.08	0.436	-162.9	8.13	8.57
2.0	1.91	0.11	0.543	-143.2	6.45	6.89

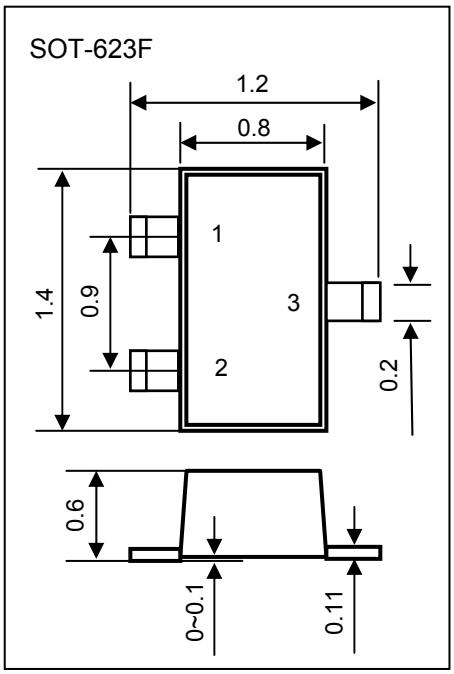
☐ **Dimensions of TBN4226S in mm**



☐ **Dimensions of TBN4226E in mm**



☐ **Dimensions of TBN4226KF in mm**



Pin Configuration

(SOT-23, SOT-523, SOT-623F)

Pin No.	Symbol	Description
1	B	Base
2	E	Emitter
3	C	Collector