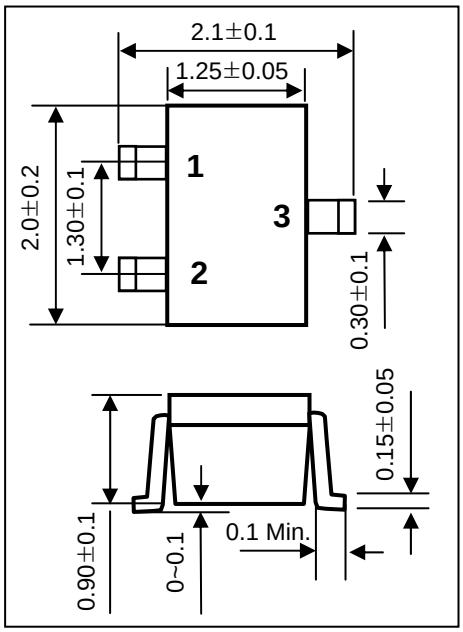
AUK Semiconductor

TBN6501U

Si NPN Transistor

SOT-323 **Unit in mm**



Pin Configuration

1. Base
2. Emitter
3. Collector

☐ *Applications*

- Broadband amplifier application under 1GHz
- SAW filter driver in TV tuners

☐ *Features*

- Gain bandwidth product

  f_T = 1.1 GHz at V_{CE} = 3 V, I_C = 20 mA

  f_T = 1.5 GHz at V_{CE} = 5 V, I_C = 30 mA
- Power gain

  $|S_{21}|^2$ = 3.0 dB at V_{CE} = 3 V, I_C = 10 mA, f = 1 GHz
- Noise figure

  NF = 1.8 dB at V_{CE} = 3 V, I_C = 10 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}	200	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 ℃)

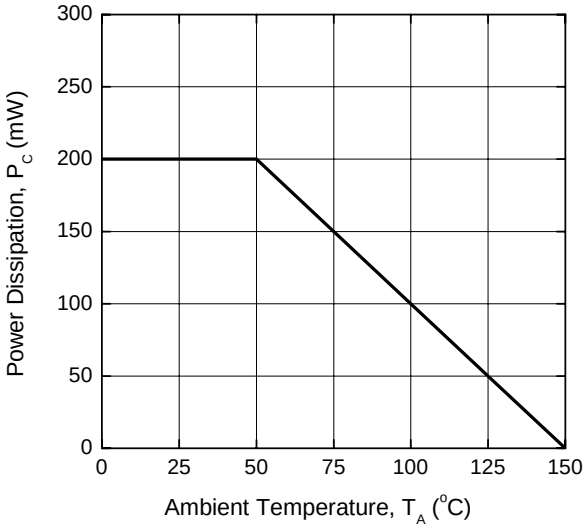
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector Cut-off Current	I_{CBO}	V_{CB} = 15 V, I_E = 0 mA	-	-	0.5	μA
	I_{CEO}	V_{CE} = 8 V, I_B = 0 mA	-	-	10	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 2 V, I_C = 0 mA	-	-	0.5	μA
DC Current Gain	h_{FE}	V_{CE} = 3 V, I_C = 10 mA	50	-	250	
Gain Bandwidth Product	f_T	V_{CE} = 3 V, I_C = 20 mA	0.9	1.1	-	GHz
		V_{CE} = 5 V, I_C = 30 mA	1.3	1.5	-	GHz
Insertion Power Gain	$\|S_{21}\|^2$	V_{CE} = 3 V, I_C = 20 mA, f = 1 GHz	-	3.0	-	dB
		V_{CE} = 5 V, I_C = 30 mA, f = 1 GHz	-	4.0	-	dB
Noise Figure	NF	V_{CE} = 3 V, I_C = 10 mA, f = 1 GHz	-	1.8	-	
Reverse Transfer Capacitance	C_{re}	V_{CB} = 3 V, I_E = 0 mA, f = 1 MHz	-	2.0	-	pF

☐ h_{FE} *Classification*

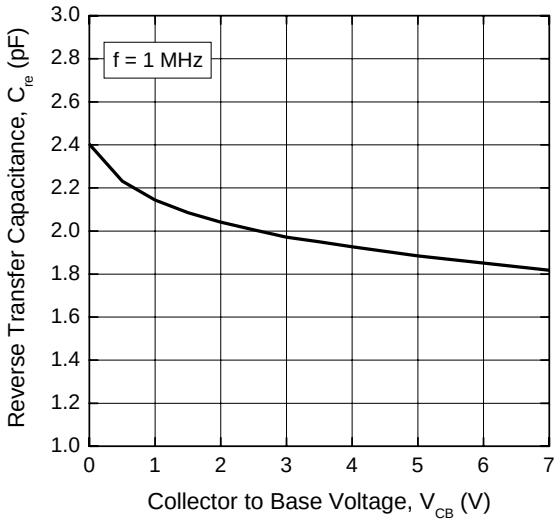
Marking	SD2	SD1
h_{FE} Value	80 - 160	125 - 250

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

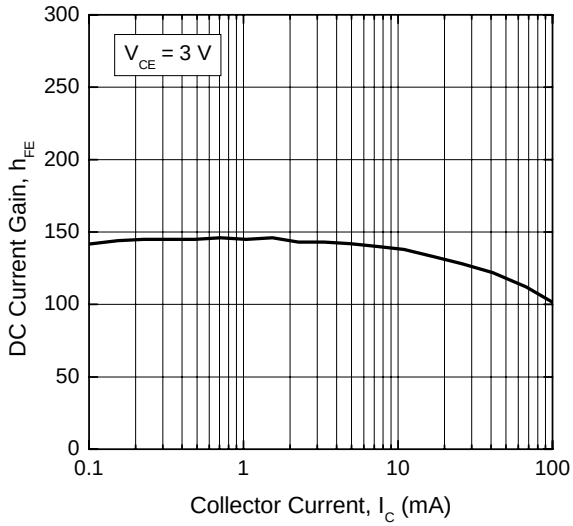
Power Dissipation vs. Ambient Temperature



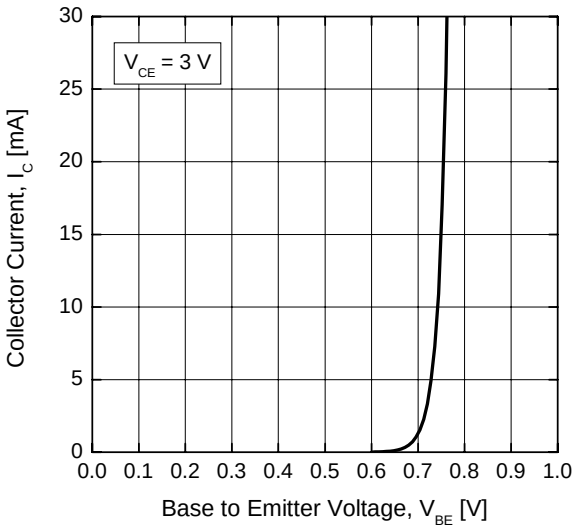
Reverse Transfer Capacitance vs. Collector to Base Voltage



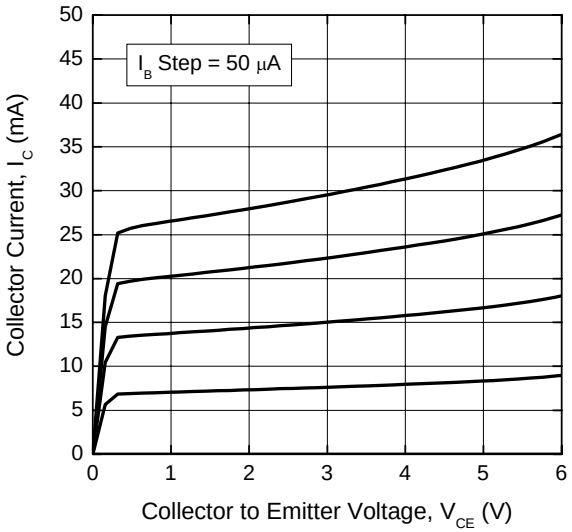
DC Current Gain vs. Collector Current



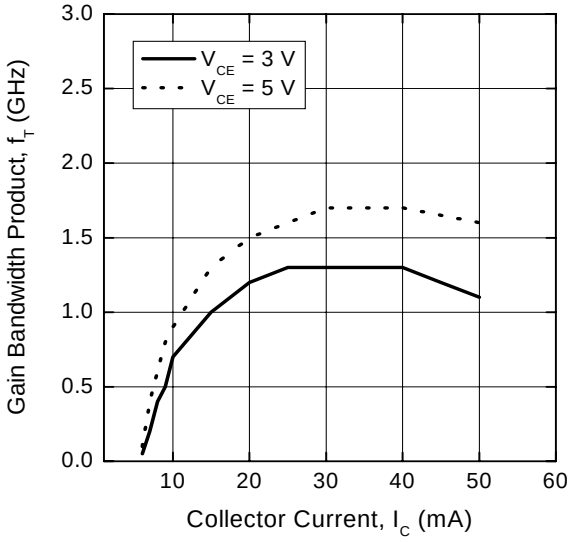
Collector Current vs. Base to Emitter Voltage



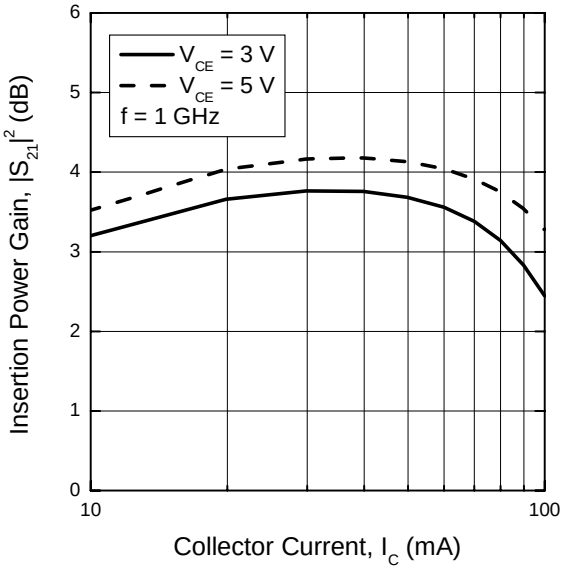
Collector Current vs. Collector to Emitter Voltage



Gain Bandwidth Product vs. Collector Current



Insertion Power Gain vs. Collector Current



Maximum Available Gain vs. Collector Current

