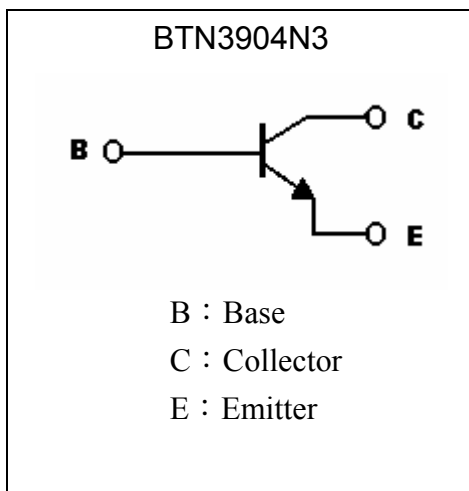
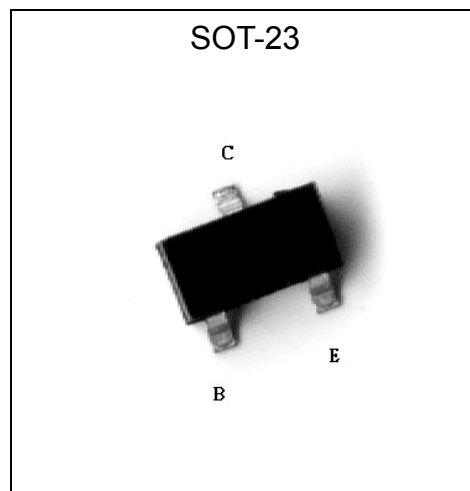


**General Purpose NPN Epitaxial Planar Transistor**

# BTN3904N3

**Description**

- The BTN3904N3 is designed for general purpose switching amplifier applications.
- Complementary to BTP3906N3.

**Symbol**

**Outline**

**Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V <sub>CB0</sub>	60	V
Collector-Emitter Voltage	V <sub>CEO</sub>	40	V
Emitter-Base Voltage	V <sub>EBO</sub>	6	V
Collector Current	I <sub>C</sub>	200	mA
Power Dissipation (T <sub>A</sub> =25°C)	P <sub>D</sub>	225 (Note)	mW
Power Dissipation (T <sub>C</sub> =25°C)	P <sub>D</sub>	560	mW
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	556 (Note)	°C/W
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	223	°C/W
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55~+150	°C

Note : Free air condition



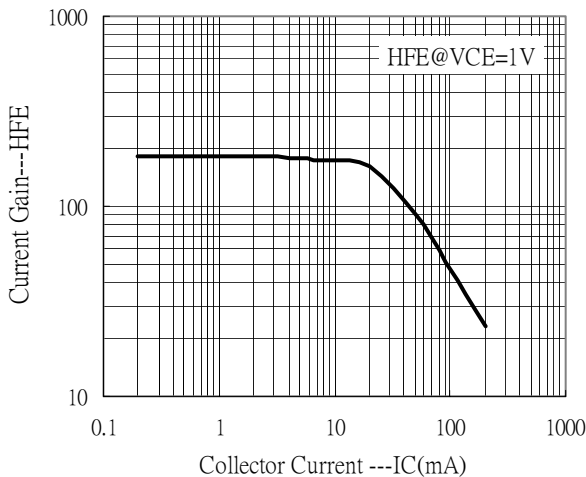
**Characteristics (Ta=25°C)**

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV <sub>CBO</sub>	60	-	-	V	I <sub>C</sub> =10μA
BV <sub>CEO</sub>	40	-	-	V	I <sub>C</sub> =1mA
BV <sub>EBO</sub>	6	-	-	V	I <sub>E</sub> =10μA
I <sub>CEX</sub>	-	-	50	nA	V <sub>CE</sub> =30V, V <sub>BE</sub> =-3V
*V <sub>CE(sat)1</sub>	-	0.1	0.2	V	I <sub>C</sub> =10mA, I <sub>B</sub> =1mA
*V <sub>CE(sat)2</sub>	-	0.15	0.3	V	I <sub>C</sub> =50mA, I <sub>B</sub> =5mA
*V <sub>BE(sat)1</sub>	0.65	0.75	0.85	V	I <sub>C</sub> =10mA, I <sub>B</sub> =1mA
*V <sub>BE(sat)2</sub>	-	0.85	0.95	V	I <sub>C</sub> =50mA, I <sub>B</sub> =5mA
*h <sub>FE1</sub>	40	-	-		V <sub>CE</sub> =1V, I <sub>C</sub> =100μA
*h <sub>FE2</sub>	70	-	-		V <sub>CE</sub> =1V, I <sub>C</sub> =1mA
*h <sub>FE3</sub>	100	-	300		V <sub>CE</sub> =1V, I <sub>C</sub> =10mA
*h <sub>FE4</sub>	60	-	-		V <sub>CE</sub> =1V, I <sub>C</sub> =50mA
*h <sub>FE5</sub>	30	-	-		V <sub>CE</sub> =1V, I <sub>C</sub> =100mA
f <sub>T</sub>	300	-	-	MHz	V <sub>CE</sub> =20V, I <sub>C</sub> =10mA, f=100MHz
C <sub>ob</sub>	-	-	4	pF	V <sub>CB</sub> =5V, I <sub>E</sub> =0A, f=1MHz

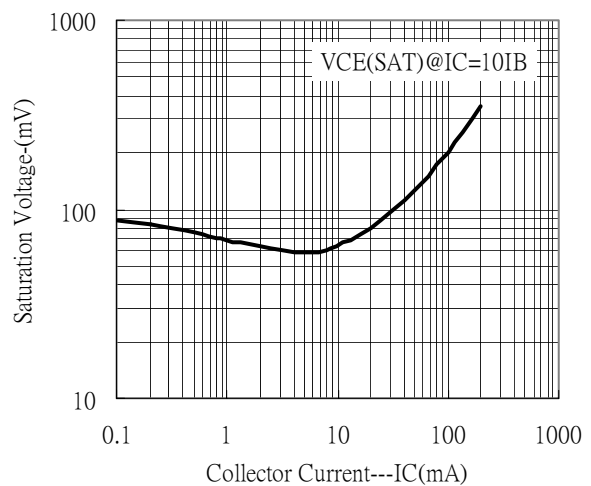
\*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

**Characteristic Curves**

Current Gain vs Collector Current

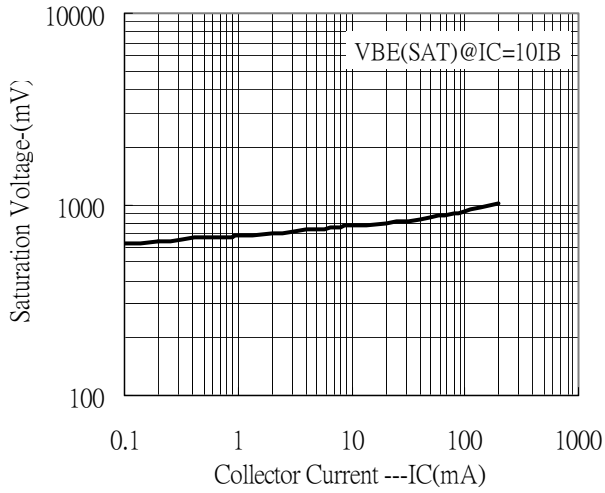


Saturation Voltage vs Collector Current

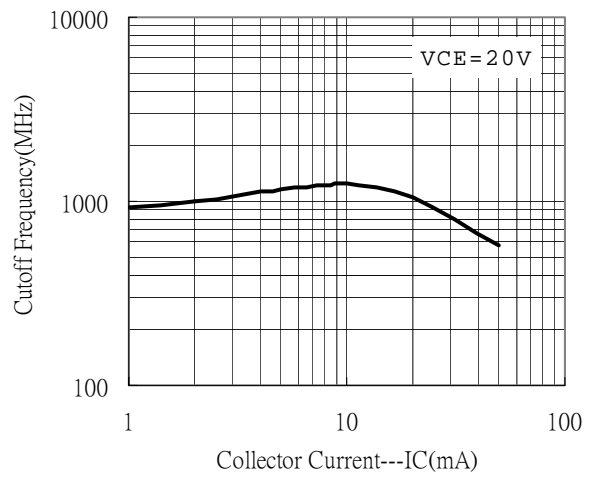




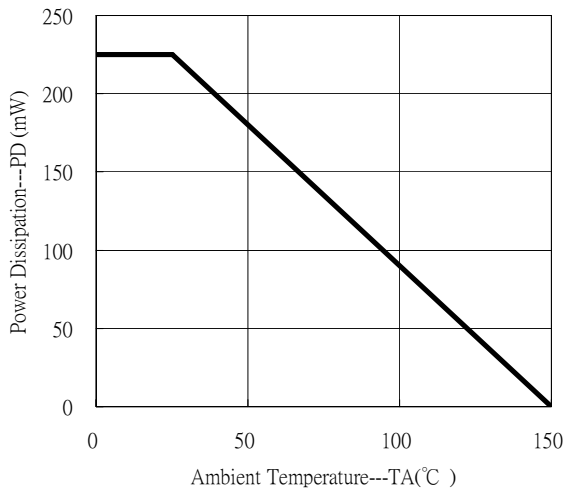
Saturation Voltage vs Collector Current



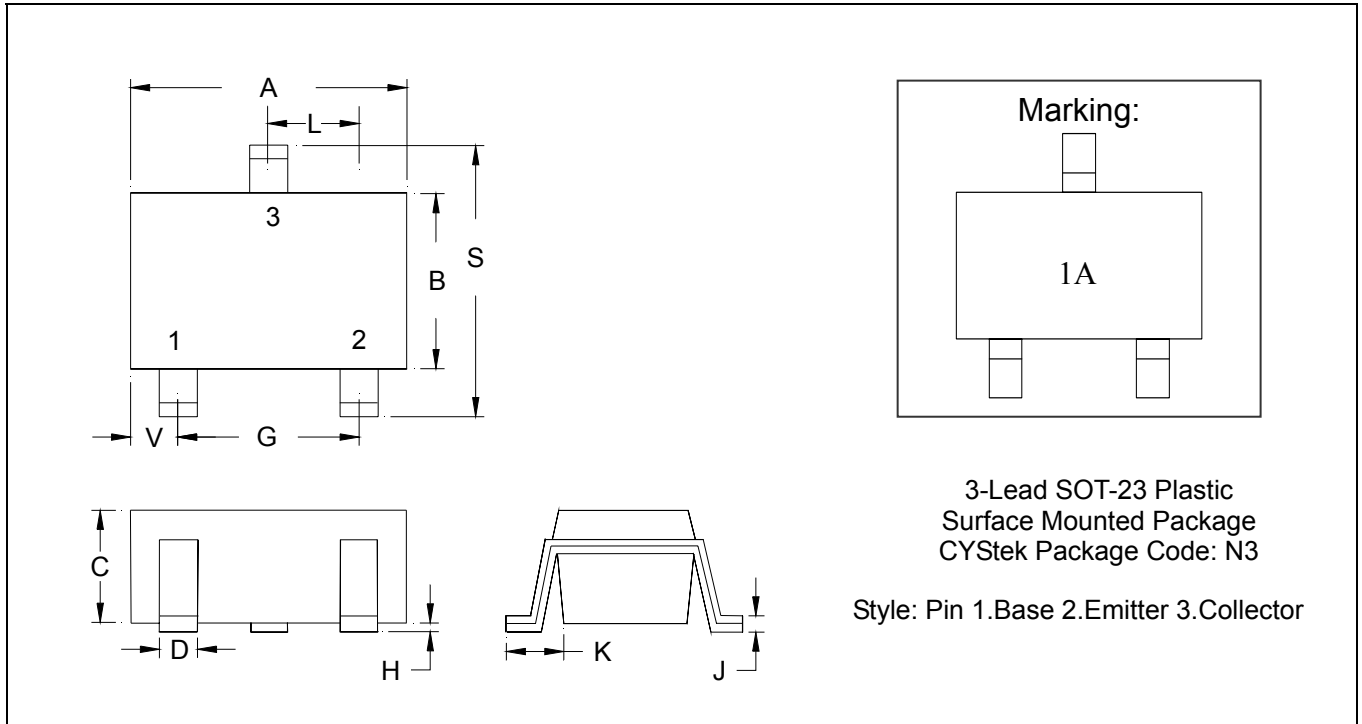
Cutoff Frequency vs Collector Current



Power Derating Curve



**SOT-23 Dimension**



\*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0034	0.0070	0.085	0.177
B	0.0472	0.0630	1.20	1.60	K	0.0128	0.0266	0.32	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1083	2.10	2.75
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0005	0.0040	0.013	0.10					

- Notes: 1.Controlling dimension: millimeters.  
 2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.  
 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

**Material:**

- Lead: 42 Alloy ; solder plating
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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