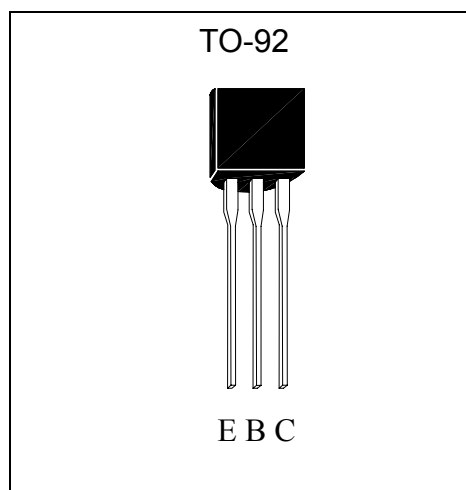
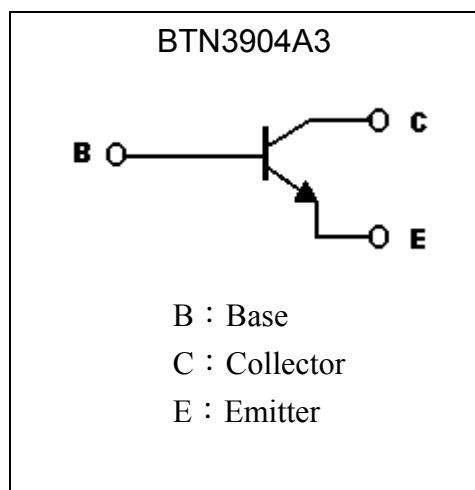


**General Purpose NPN Epitaxial Planar Transistor**

# BTN3904A3

**Description**

- The BTN3904A3 is designed for general purpose switching amplifier applications.
- Complementary to BTP3906A3.

**Equivalent Circuit**

**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>EB0</sub>	6	V
Collector Current	I <sub>C</sub>	200	mA
Power Dissipation	P <sub>d</sub>	625	mW
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	200	°C/W
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55~+150	°C

**Characteristics (Ta=25°C)**

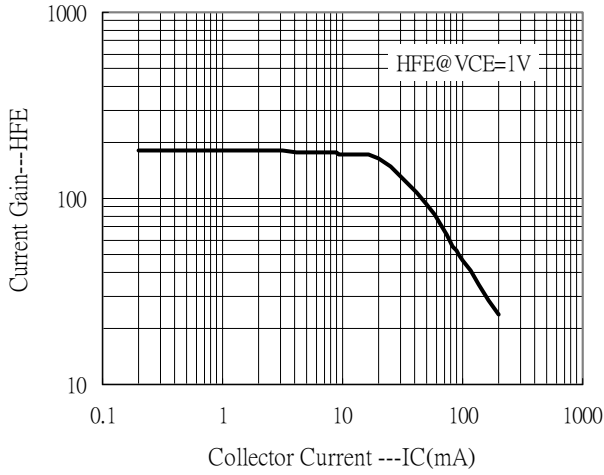
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
$BV_{CBO}$	60	-	-	V	$I_C=10\mu A$
$BV_{CEO}$	40	-	-	V	$I_C=1mA$
$BV_{EBO}$	6	-	-	V	$I_E=10\mu A$
$I_{CEX}$	-	-	50	nA	$V_{CE}=30V, V_{BE}=-3V$
$*V_{CE(sat)1}$	-	0.07	0.2	V	$I_C=10mA, I_B=1mA$
$*V_{CE(sat)2}$	-	0.13	0.3	V	$I_C=50mA, I_B=5mA$
$*V_{BE(sat)1}$	0.65	0.8	0.85	V	$I_C=10mA, I_B=1mA$
$*V_{BE(sat)2}$	-	0.85	0.95	V	$I_C=50mA, I_B=5mA$
$*h_{FE1}$	40	-	-	-	$V_{CE}=1V, I_C=100\mu A$
$*h_{FE2}$	70	-	-	-	$V_{CE}=1V, I_C=1mA$
$*h_{FE3}$	100	-	300	-	$V_{CE}=1V, I_C=10mA$
$*h_{FE4}$	60	-	-	-	$V_{CE}=1V, I_C=50mA$
$*h_{FE5}$	30	-	-	-	$V_{CE}=1V, I_C=100mA$
$f_T$	300	-	-	MHz	$V_{CE}=20V, I_C=10mA, f=100MHz$
Cob	-	-	4	pF	$V_{CB}=5V, I_E=0A, f=1MHz$

\*Pulse Test: Pulse Width  $\leq 380\mu s$ , Duty Cycle  $\leq 2\%$

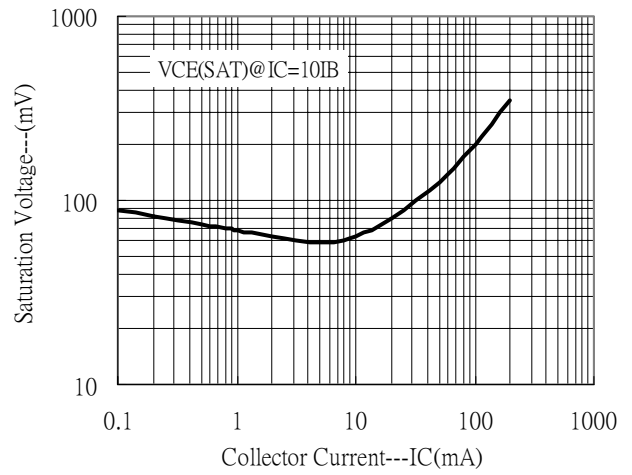


### Characteristic Curves

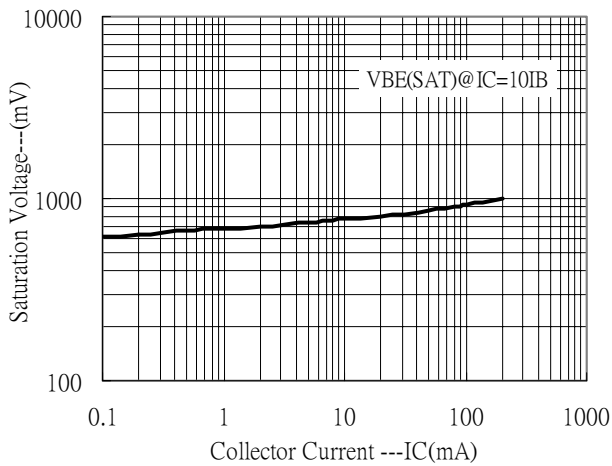
Current Gain vs Collector Current



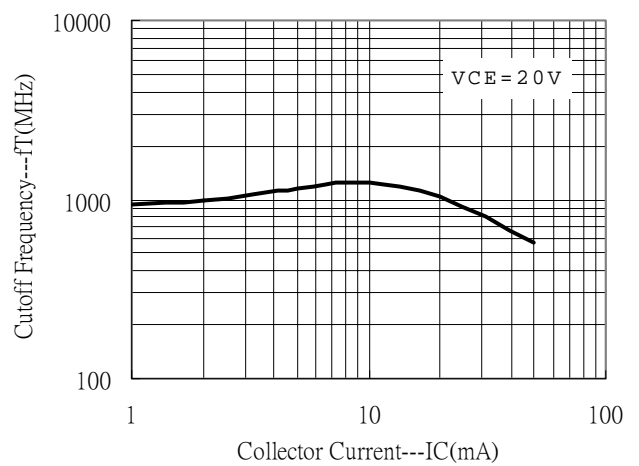
Saturation Voltage vs Collector Current



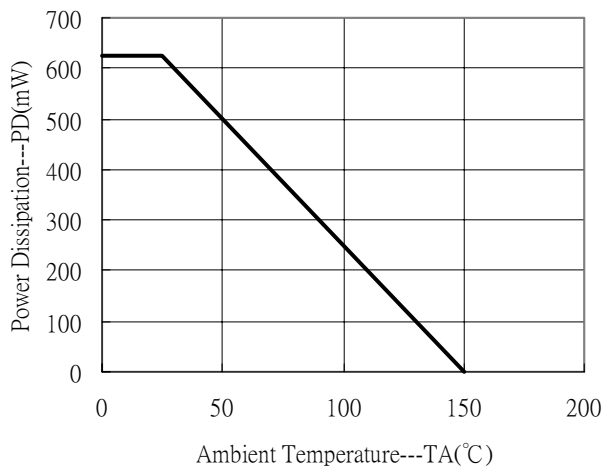
Saturation Voltage vs Collector Current



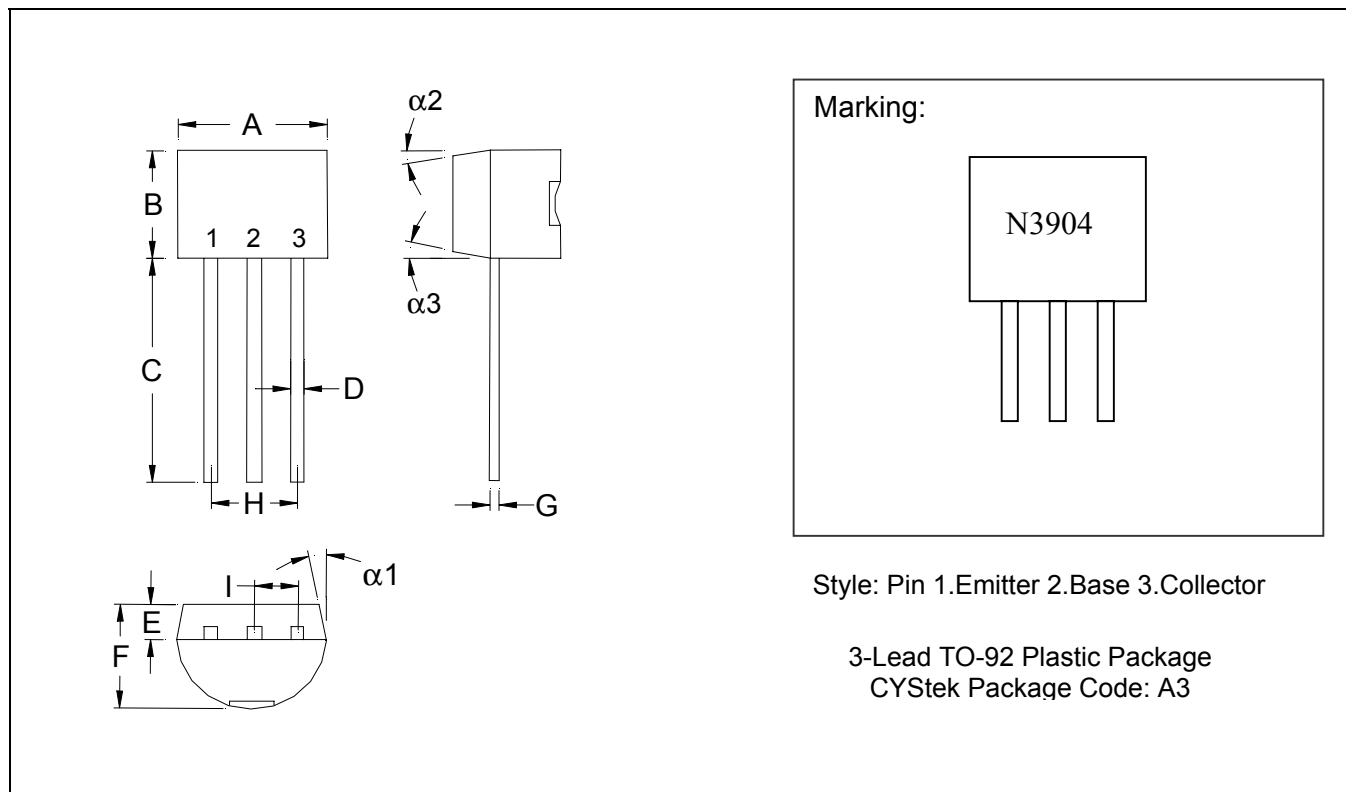
Cutoff Frequency vs Collector Current



Power Derating Curve



**TO-92 Dimension**



\*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1704	0.1902	4.33	4.83	G	0.0142	0.0220	0.36	0.56
B	0.1704	0.1902	4.33	4.83	H	-	*0.1000	-	*2.54
C	0.5000	-	12.70	-	I	-	*0.0500	-	*1.27
D	0.0142	0.0220	0.36	0.56	α1	-	*5°	-	*5°
E	-	*0.0500	-	*1.27	α2	-	*2°	-	*2°
F	0.1323	0.1480	3.36	3.76	α3	-	*2°	-	*2°

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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