

General Purpose NPN Epitaxial Planar Transistor

BTC3906N3

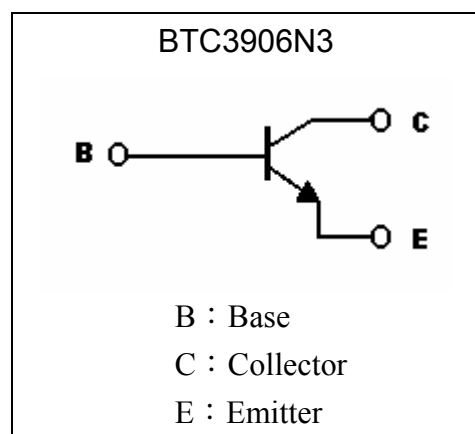
Description

The BTC3906N3 is designed for general purpose applications requiring high breakdown voltage.

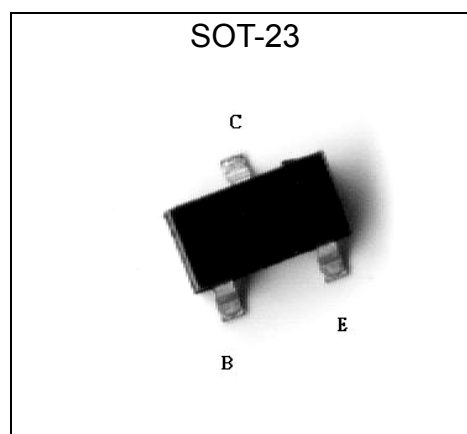
Features

- High collector-emitter breakdown voltage. ($BV_{CEO}=160V$ @ $I_C=1mA$)
- Complement to BTA1514N3

Symbol



Outline



Absolute Maximum Ratings ($T_a=25^{\circ}C$)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	180	V
Collector-Emitter Voltage	V_{CEO}	160	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	600	mA
Power Dissipation ($T_A=25^{\circ}C$)	P_D	225 (Note)	mW
Power Dissipation ($T_C=25^{\circ}C$)	P_D	560	mW
Thermal Resistance, Junction to Ambient (Note)	$R_{\theta JA}$	556 (Note)	$^{\circ}C/W$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	223	$^{\circ}C/W$
Junction Temperature	T_j	150	$^{\circ}C$
Storage Temperature	T_{stg}	-55~+150	$^{\circ}C$

Note : Free air condition.

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	180	-	-	V	$I_C=100\mu A$
BV_{CEO}	160	-	-	V	$I_C=1mA$
BV_{EBO}	6	-	-	V	$I_E=10\mu A$
I_{CBO}	-	-	50	nA	$V_{CB}=120V$
I_{EBO}	-	-	50	nA	$V_{EB}=4V$
$*V_{CE(sat)1}$	-	0.1	0.15	V	$I_C=10mA, I_B=1mA$
$*V_{CE(sat)2}$	-	-	0.2	V	$I_C=50mA, I_B=5mA$
$*V_{BE(sat)1}$	-	-	1	V	$I_C=10mA, I_B=1mA$
$*V_{BE(sat)2}$	-	-	1	V	$I_C=50mA, I_B=5mA$
$*h_{FE1}$	25	-	-	-	$V_{CE}=5V, I_C=1mA$
$*h_{FE2}$	60	-	-	-	$V_{CE}=5V, I_C=10mA$
$*h_{FE3}$	40	-	-	-	$V_{CE}=5V, I_C=50mA$
$*h_{FE4}$	52	-	390	-	$V_{CE}=6V, I_C=2mA$
f_T	100	-	-	MHz	$V_{CE}=20V, I_C=10mA, f=100MHz$
C_{ob}	-	-	6	pF	$V_{CB}=20V, I_E=0A, f=1MHz$

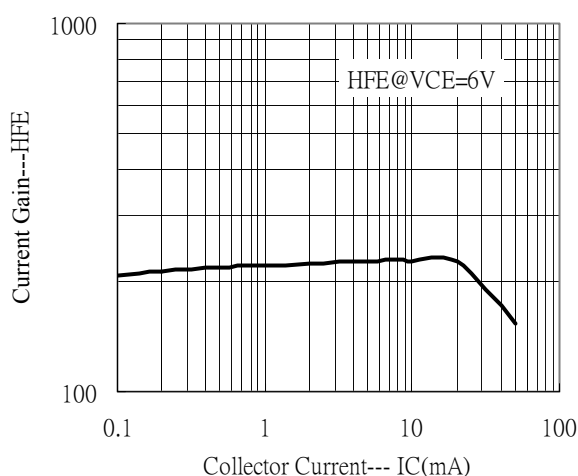
*Pulse Test: Pulse Width $\leq 380\mu s$, Duty Cycle $\leq 2\%$

Classification Of h_{FE4}

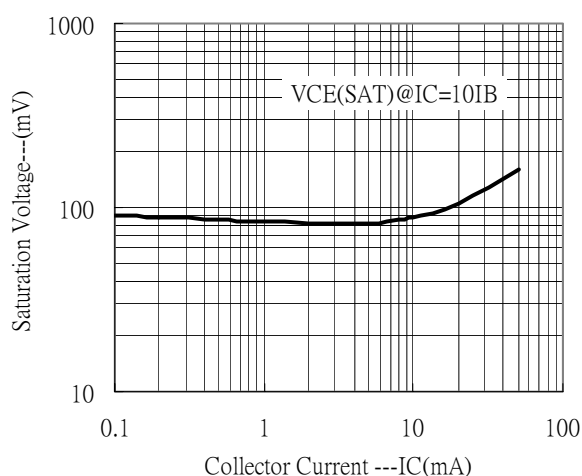
Rank	K	P	Q	R
Range	52~120	82~180	120~270	180~390

Characteristic Curves

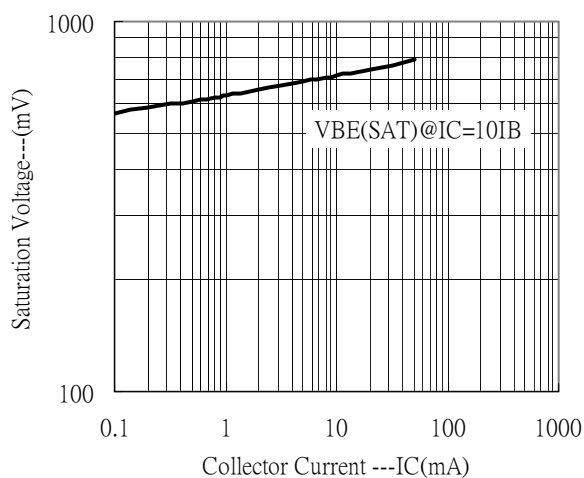
Current Gain vs Collector Current



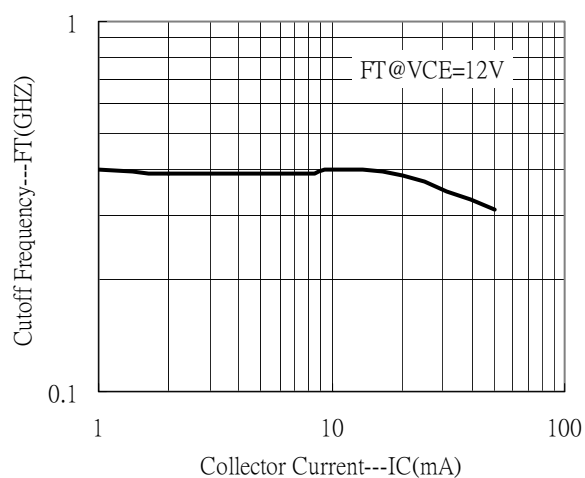
Saturation Voltage vs Collector Current



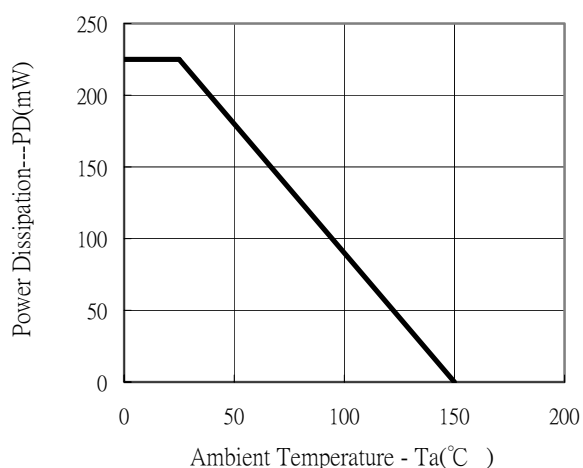
Saturation Voltage vs Collector Current



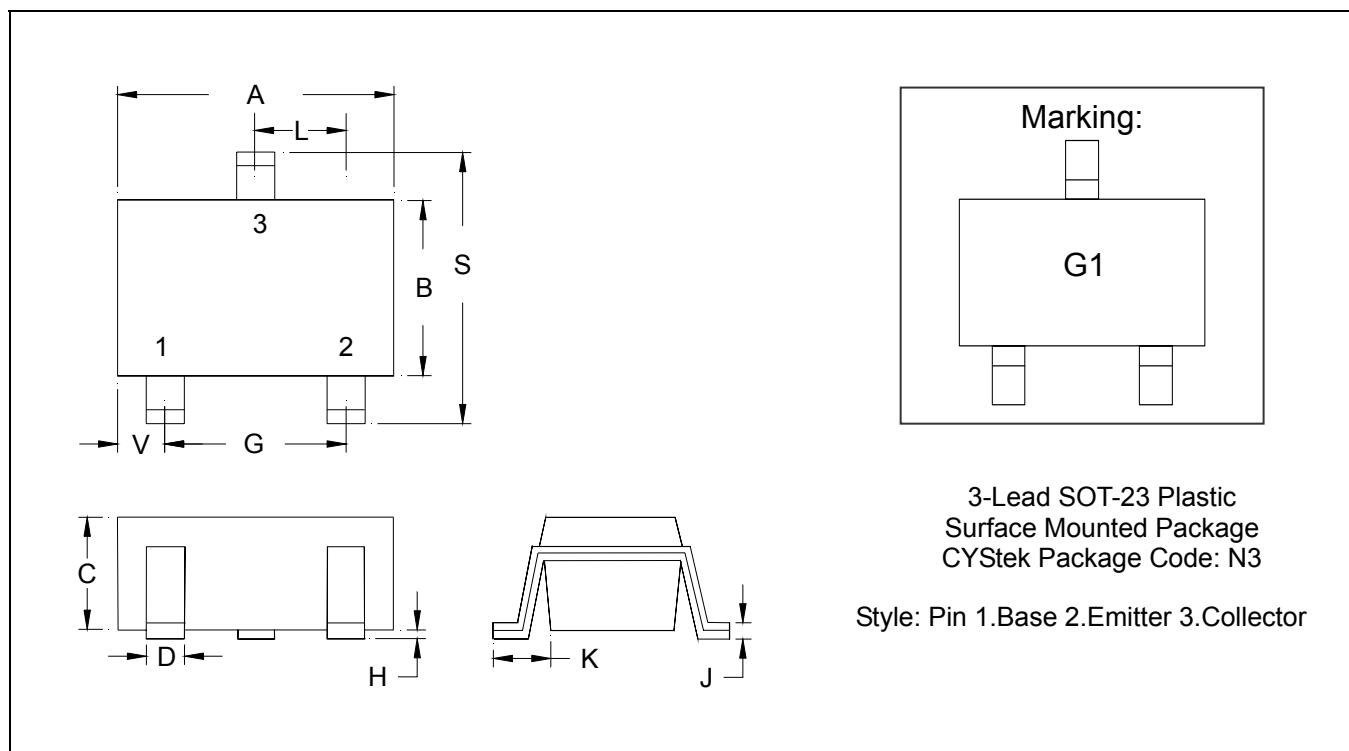
Cutoff Frequency vs Collector Current



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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