

**Low Saturation PNP Epitaxial Planar Transistor**

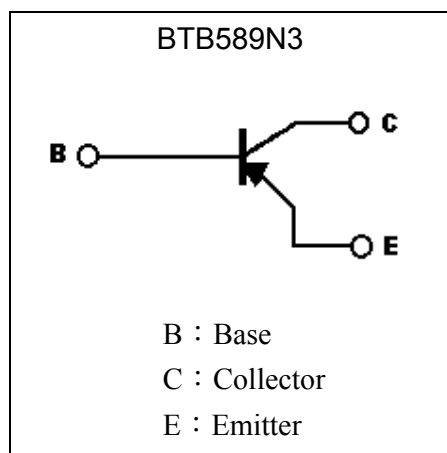
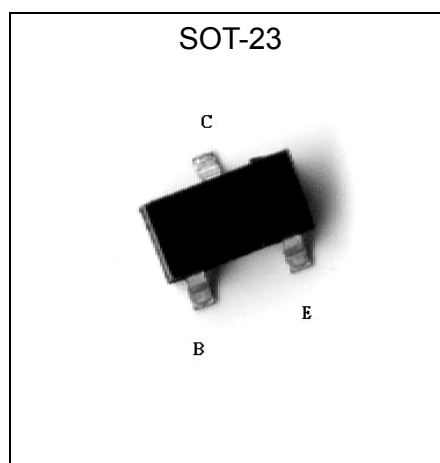
# BTB589N3

**Description**

The BTB589N3 is designed with high current gain and low saturation voltage with collector current up to 1A continuous.

**Features**

- Low  $V_{CE(SAT)}$ ,  $V_{CE(SAT)} \leq -0.3V$  ( $I_C / I_B = -1A / -100mA$ )
- Large collector current,  $I_C = -1A$
- Pb-free package

**Symbol****Outline**



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

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-50	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-32	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5	V
Collector Current (DC)	I <sub>C</sub>	-1	A
Collector Current (Pulse)	I <sub>CP</sub>	-2	
Power Dissipation	P <sub>d</sub>	310 (Note 1)	mW
		500 (Note 2)	
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	403 (Note 1)	°C/W
		250 (Note 2)	
Junction Temperature	T <sub>j</sub>	-55~+150	°C
Storage Temperature	T <sub>stg</sub>	-55~+150	°C

Note: 1.Device mounted on FR-4 PCB with minimum pad  
 2.Device mounted on FR-4 PCB with area of 4.5"x5", mounting pad 0.02 in<sup>2</sup> of 2 oz copper

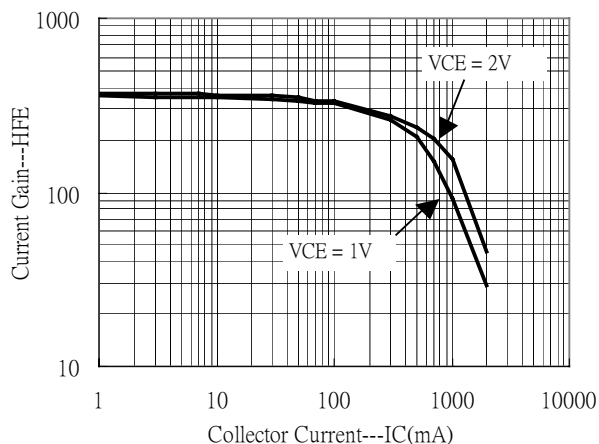
**Characteristics (Ta=25°C)**

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV <sub>CBO</sub>	-40	-	-	V	I <sub>C</sub> =-50μA
BV <sub>CEO</sub>	-32	-	-	V	I <sub>C</sub> =-1mA
BV <sub>EBO</sub>	-5	-	-	V	I <sub>E</sub> =-50μA
I <sub>CBO</sub>	-	-	-100	nA	V <sub>CB</sub> =-30V
I <sub>EBO</sub>	-	-	-100	nA	V <sub>EB</sub> =-4V
*V <sub>CE(sat) 1</sub>	-	-	-0.25	V	I <sub>C</sub> =-500mA, I <sub>B</sub> =-50mA
*V <sub>CE(sat) 2</sub>	-	-	-0.30	V	I <sub>C</sub> =-1A, I <sub>B</sub> =-100mA
*V <sub>CE(sat) 3</sub>	-	-	-0.65	V	I <sub>C</sub> =-2A, I <sub>B</sub> =-200mA
*V <sub>BE(sat)</sub>	-	-	-1.2	V	I <sub>C</sub> =-1A, I <sub>B</sub> =-100mA
*V <sub>BE(on)</sub>	-	-	-1.1	V	V <sub>CE</sub> =-2V, I <sub>C</sub> =-1A
*h <sub>FE 1</sub>	180	-	420	-	V <sub>CE</sub> =-3V, I <sub>C</sub> =-100mA
*h <sub>FE 2</sub>	100	-	-	-	V <sub>CE</sub> =-2V, I <sub>C</sub> =-500mA
*h <sub>FE 3</sub>	80	-	-	-	V <sub>CE</sub> =-2V, I <sub>C</sub> =-1A
*h <sub>FE 4</sub>	30	-	-	-	V <sub>CE</sub> =-2V, I <sub>C</sub> =-2A
f <sub>T</sub>	100	200	-	MHz	V <sub>CE</sub> =-5V, I <sub>C</sub> =-50mA, f=100MHz
C <sub>ob</sub>	-	12	25	pF	V <sub>CB</sub> =-10V, f=1MHz

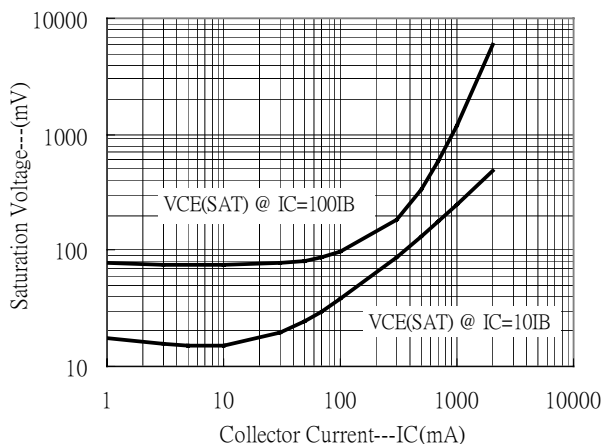
\*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

**Characteristic Curves**

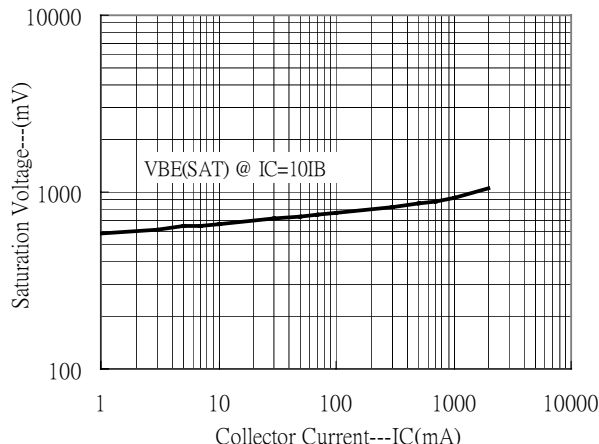
Current Gain vs Collector Current



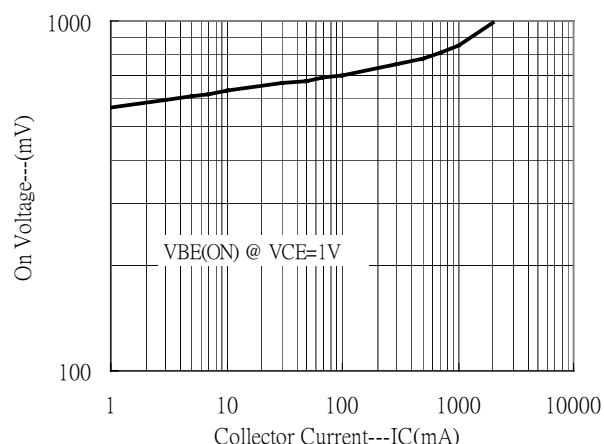
Saturation Voltage vs Collector Current



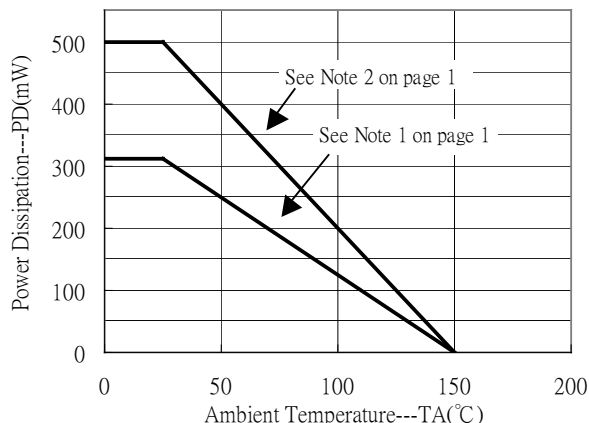
Saturation Voltage vs Collector Current



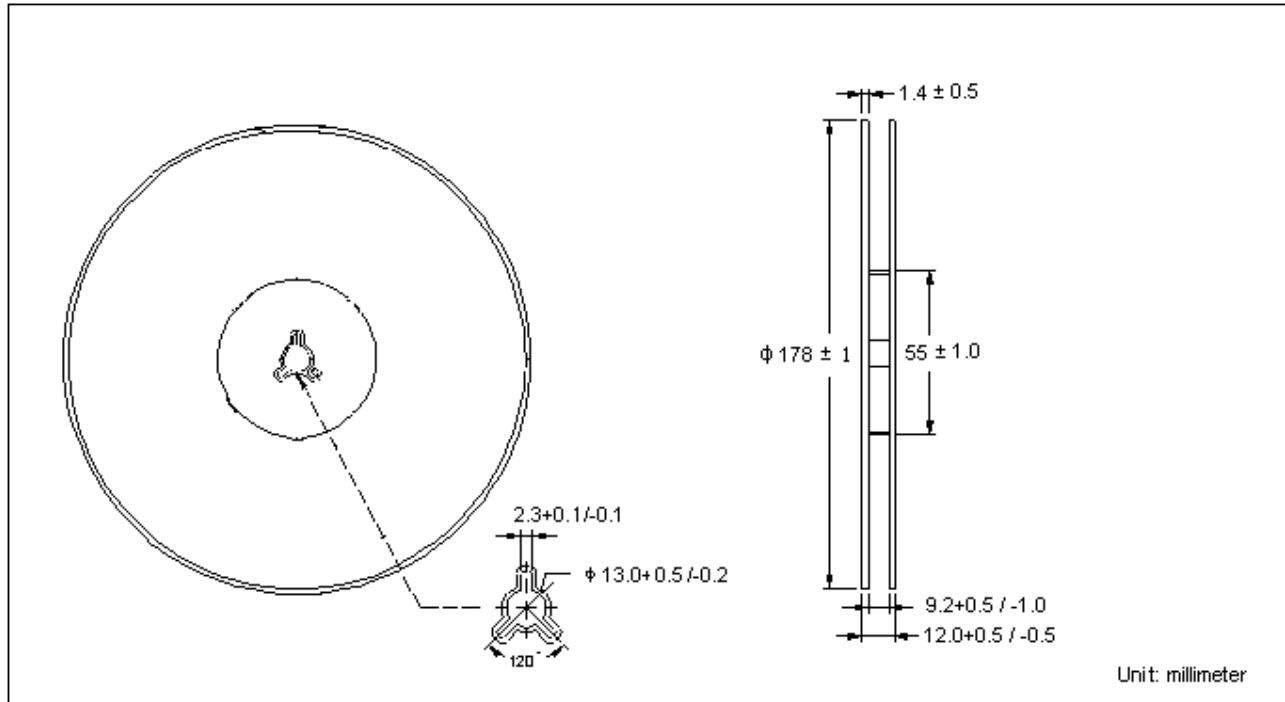
On Voltage vs Collector Current



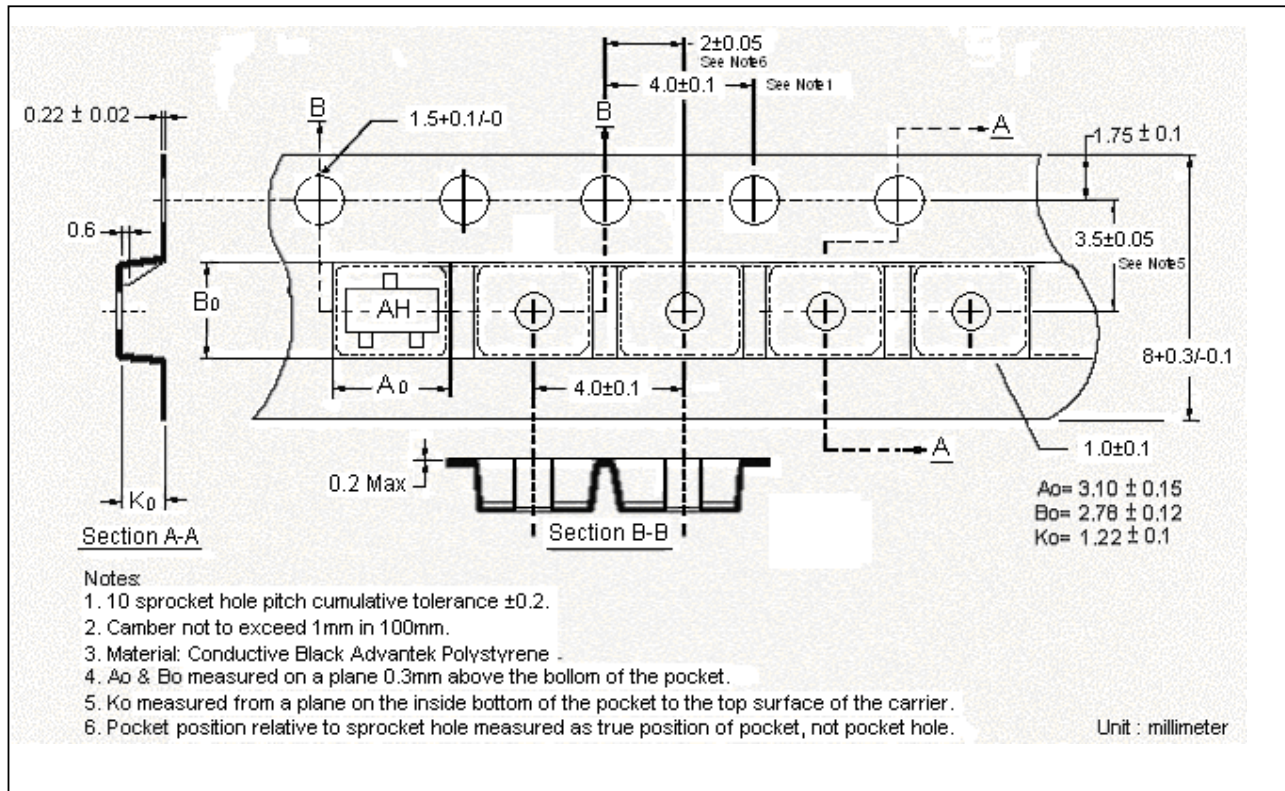
Power Derating Curves



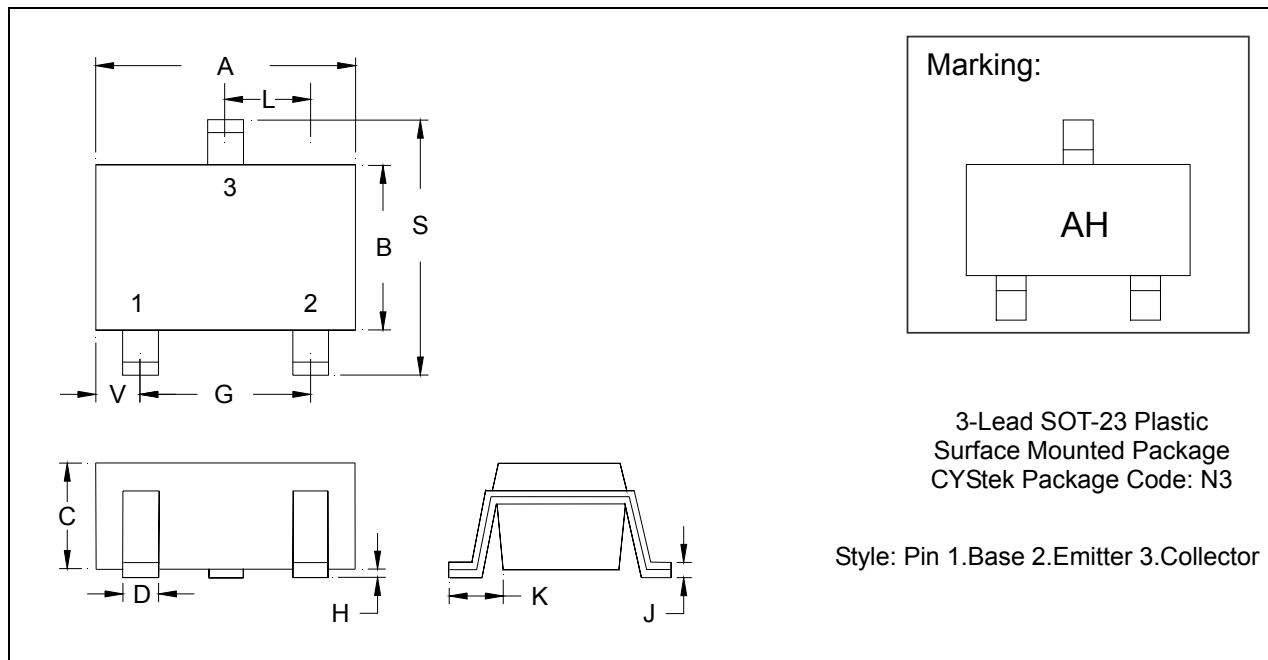
**Reel Dimension**



**Carrier Tape Dimension**



**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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