

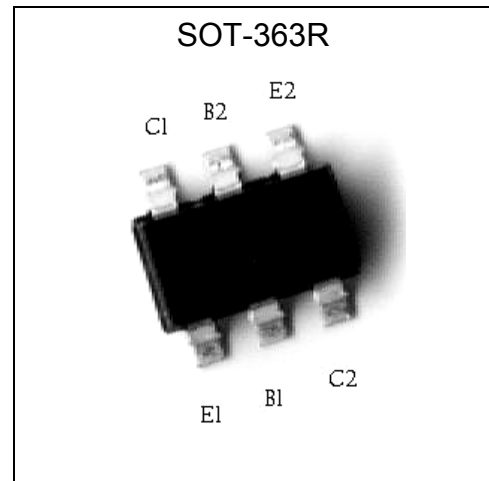
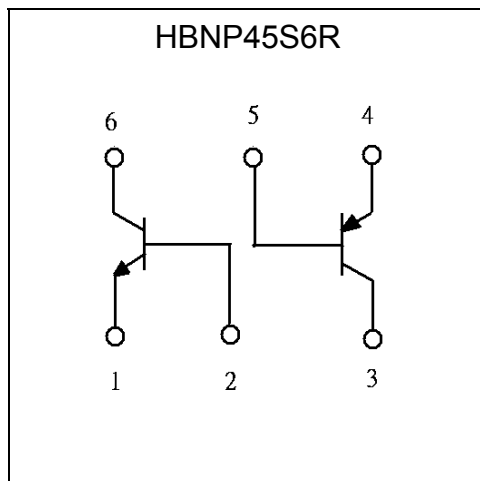
**General Purpose NPN / PNP Epitaxial Planar Transistors  
 (dual transistors)**

# HBNP45S6R

**Features**

- Includes a BTC2412 chip and a BTA1037 chip in a SOT-363 package.
- Mounting possible with SOT-323 automatic mounting machines.
- Transistor elements are independent, eliminating interference.
- Mounting cost and area can be cut in half.

**Equivalent Circuit**



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

Parameter	Symbol	Limits		Unit
		TR1 (NPN)	TR2 (PNP)	
Collector-Base Voltage	V <sub>CB0</sub>	60	-60	V
Collector-Emitter Voltage	V <sub>CE0</sub>	50	-50	V
Emitter-Base Voltage	V <sub>EB0</sub>	7	-6	V
Collector Current	I <sub>C</sub>	150	-150	mA
Power Dissipation	P <sub>d</sub>	200(total) *1		mW
Junction Temperature	T <sub>j</sub>	150		°C
Storage Temperature	T <sub>stg</sub>	-55~+150		°C

Note: \*1 150mW per element must not be exceeded.



**Characteristics** (Ta=25°C)

**• TR1 (NPN)**

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV <sub>CBO</sub>	60	-	-	V	I <sub>C</sub> =100μA
BV <sub>CEO</sub>	50	-	-	V	I <sub>C</sub> =1mA
BV <sub>EBO</sub>	7	-	-	V	I <sub>E</sub> =50μA
I <sub>CBO</sub>	-	-	0.1	μA	V <sub>CB</sub> =60V
I <sub>EBO</sub>	-	-	0.1	μA	V <sub>EB</sub> =7V
*V <sub>CE(sat)</sub>	-	0.2	0.4	V	I <sub>C</sub> =50mA, I <sub>B</sub> =5mA
*h <sub>FE</sub>	200	-	600		V <sub>CE</sub> =6V, I <sub>C</sub> =1mA
f <sub>T</sub>	80	180	-	MHz	V <sub>CE</sub> =12V, I <sub>C</sub> =2mA, f=100MHz
Cob	-	2	3.5	pF	V <sub>CB</sub> =12V, f=1MHz

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

**• TR2 (PNP)**

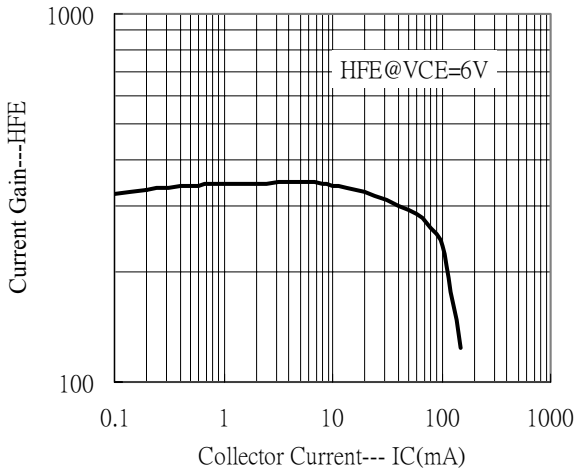
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV <sub>CBO</sub>	-60	-	-	V	I <sub>C</sub> =-50μA
BV <sub>CEO</sub>	-50	-	-	V	I <sub>C</sub> =-1mA
BV <sub>EBO</sub>	-6	-	-	V	I <sub>E</sub> =-50μA
I <sub>CBO</sub>	-	-	-0.1	μA	V <sub>CB</sub> =-60V
I <sub>EBO</sub>	-	-	-0.1	μA	V <sub>EB</sub> =-6V
*V <sub>CE(sat)</sub>	-	-0.25	-0.5	V	I <sub>C</sub> =-50mA, I <sub>B</sub> =-5mA
*h <sub>FE</sub>	200	-	600		V <sub>CE</sub> =-6V, I <sub>C</sub> =-1mA
f <sub>T</sub>	60	140	-	MHz	V <sub>CE</sub> =-12V, I <sub>C</sub> =-2mA, f=100MHz
Cob	-	4	5	pF	V <sub>CB</sub> =-12V, f=1MHz

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

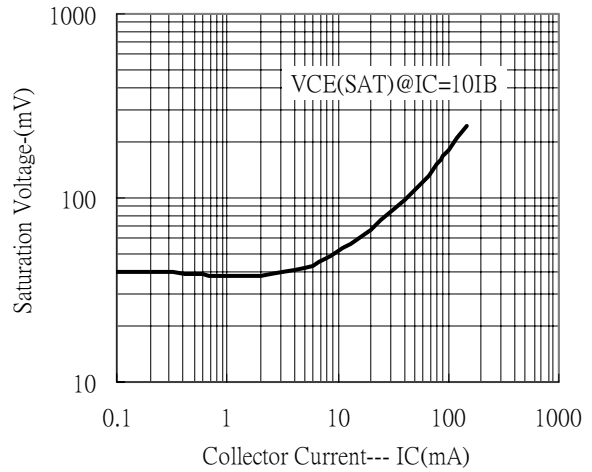
**Characteristic curves**

• **TR1 (NPN)**

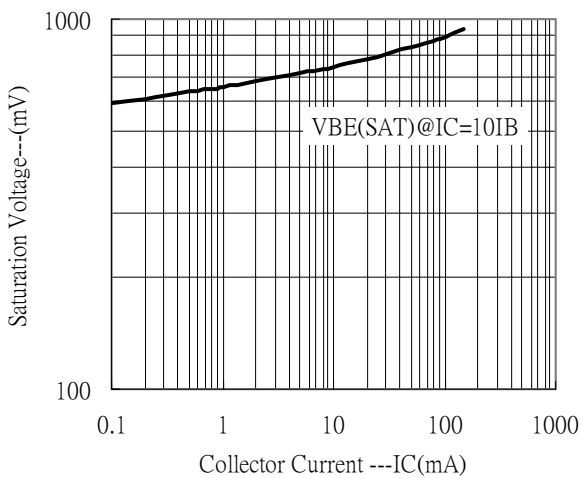
Current Gain vs Collector Current



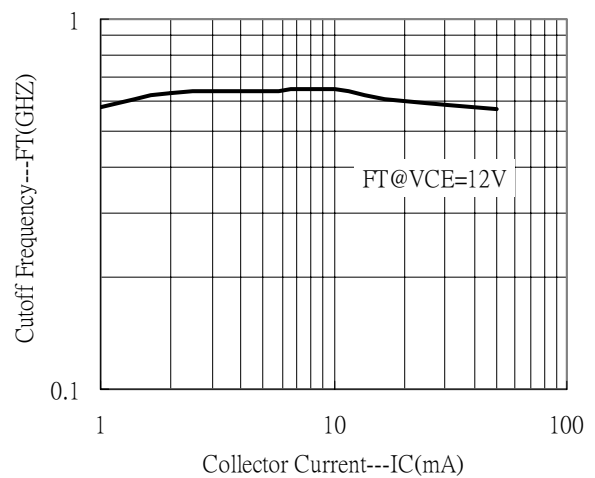
Saturation Voltage vs Collector Current



Saturation Voltage vs Collector Current



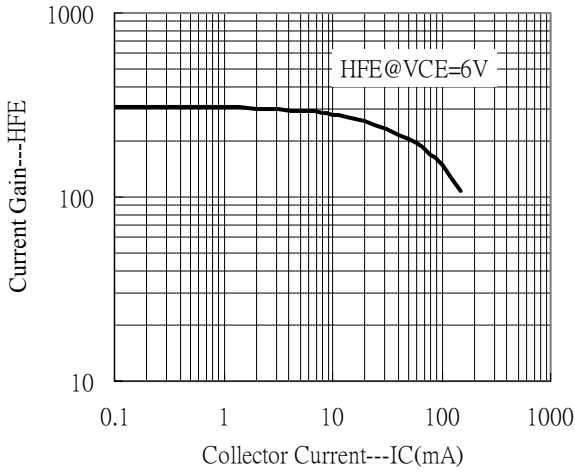
Cutoff Frequency vs Collector Current



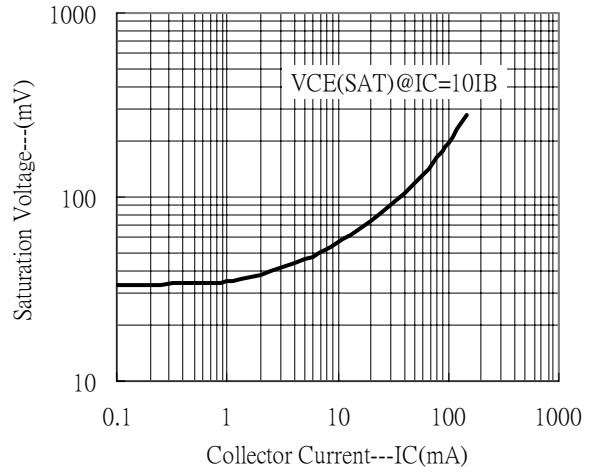


• TR2 (PNP)

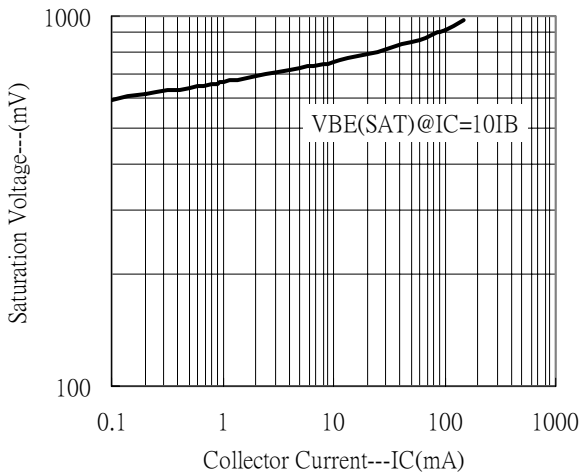
Current Gain vs Collector Current



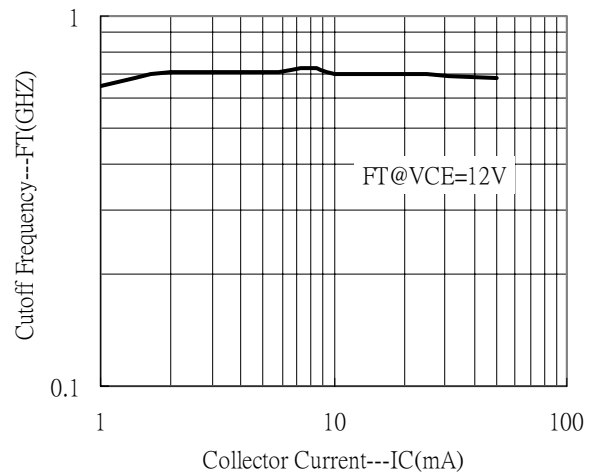
Saturation Voltage vs Collector Current



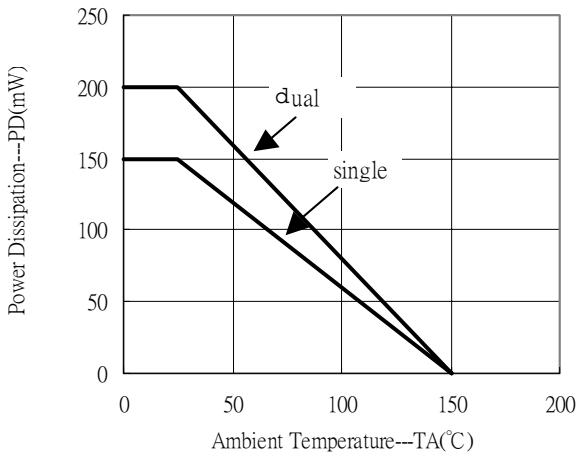
Saturation Voltage vs Collector Current



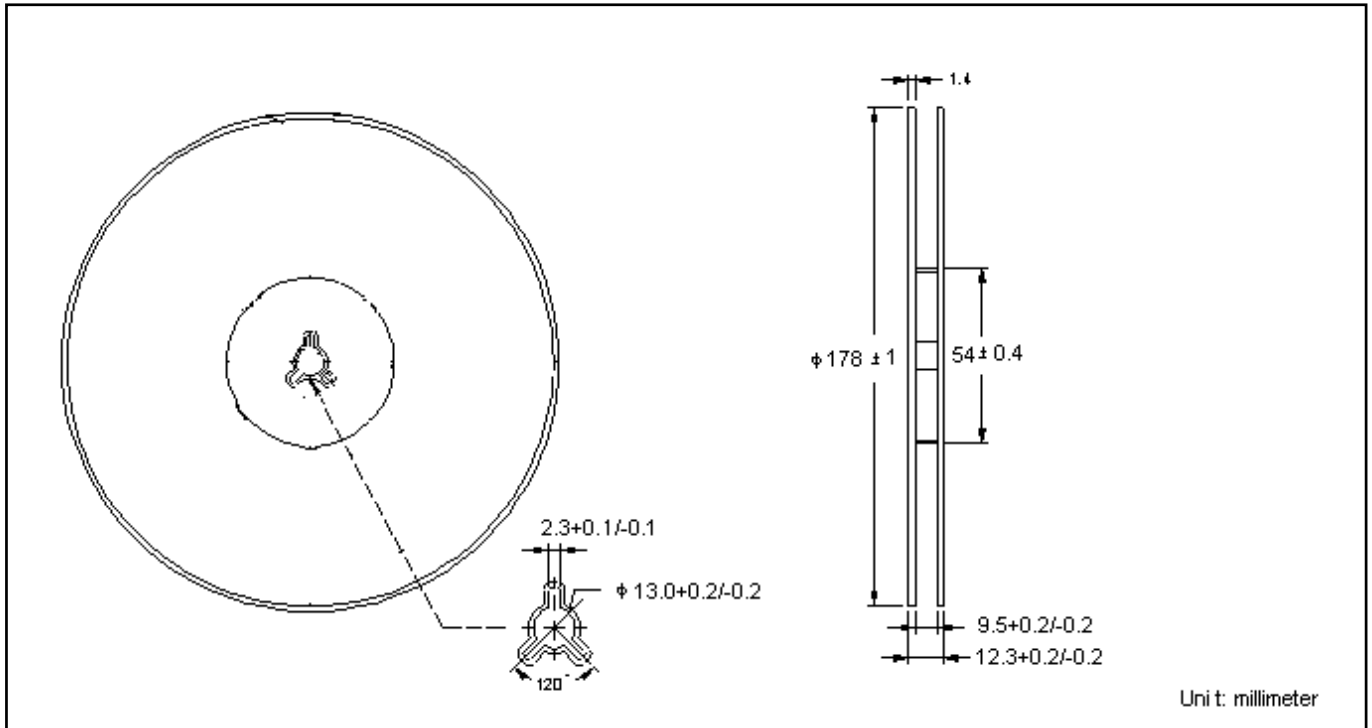
Cutoff Frequency vs Collector Current



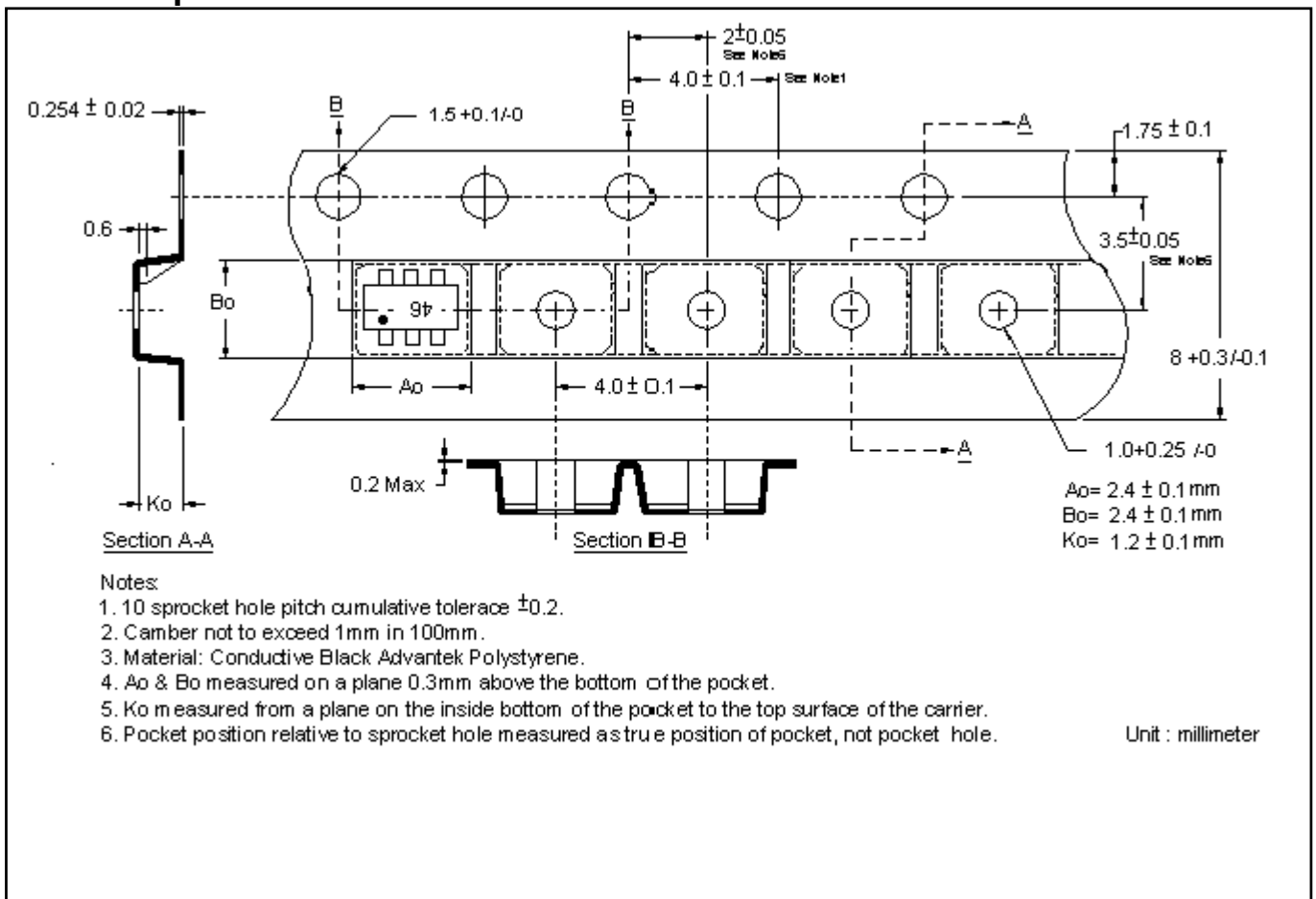
Power Derating Curves



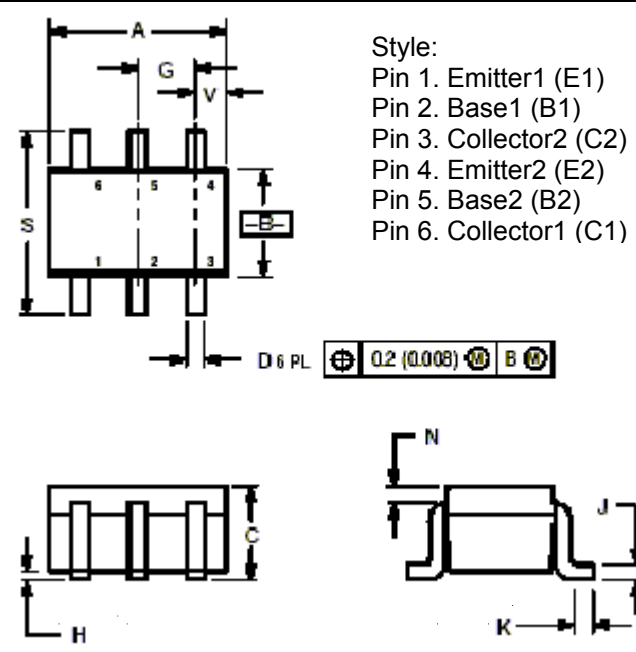
**Reel Dimension**



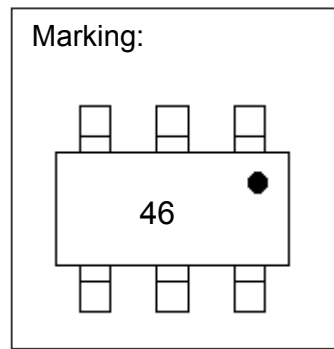
**Carrier Tape Dimension**



**SOT-363R Dimension**



Style:  
 Pin 1. Emitter1 (E1)  
 Pin 2. Base1 (B1)  
 Pin 3. Collector2 (C2)  
 Pin 4. Emitter2 (E2)  
 Pin 5. Base2 (B2)  
 Pin 6. Collector1 (C1)

Marking:  


6-Lead SOT-363R Plastic Surface Mounted Package  
 CYStek Package Code: S6R

D 6 PL  $\oplus$  0.2 (0.008)  $\ominus$  B  $\oplus$

\*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.071	0.087	1.8	2.2	J	0.004	0.010	0.1	0.25
B	0.045	0.053	1.15	1.35	K	0.004	0.012	0.1	0.30
C	0.031	0.043	0.8	1.1	N	0.008 REF		0.20 REF	
D	0.004	0.012	0.1	0.3	S	0.079	0.087	2.00	2.20
G	0.026BSC		0.65BSC		Y	0.012	0.016	0.30	0.40
H	-	0.004	-	0.1					

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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