

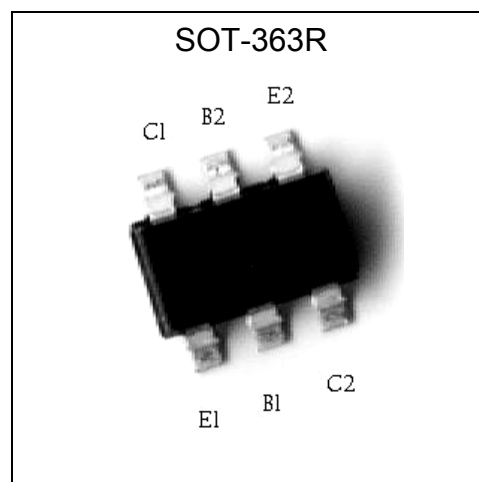
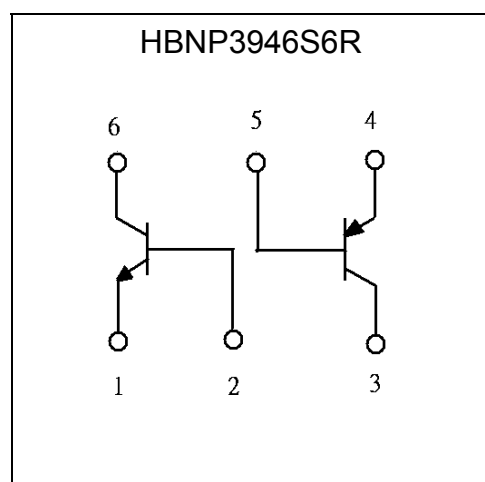
General Purpose NPN / PNP Epitaxial Planar Transistors (dual transistors)

HBNP3946S6R

Features

- Includes a 2N3904 chip and 2N3906 chip in a SOT-363R 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	VCBO	60	-40	V
Collector-Emitter Voltage	VCEO	40	-40	V
Emitter-Base Voltage	VEBO	6	-5	V
Collector Current	IC	200	-200	mA
Power Dissipation	Pd	300(total) *1		mW
Junction Temperature	Tj	150		°C
Storage Temperature	Tstg	-55~+150		°C

Note: *1 200mW per element must not be exceeded.

**Characteristics** (Ta=25°C)**• TR1 (NPN)**

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BVCBO	60	-	-	V	IC=10uA
BVCEO	40	-	-	V	IC=1mA
BVEBO	6	-	-	V	IE=10uA
ICBO	-	-	100	nA	VCB=50V
ICEX	-	-	50	nA	VCE=30V, VEB=3V
IEBO	-	-	100	nA	VEB=5V
VCE(sat)	-	-	0.2	V	IC=10mA, IB=1mA
VCE(sat)	-	-	0.3	V	IC=50mA, IB=5mA
hFE	40	-	-	-	VCE=1V, IC=100uA
hFE	70	-	-	-	VCE=1V, IC=1mA
hFE	100	-	300	-	VCE=1V, IC=10mA
hFE	60	-	-	-	VCE=1V, IC=50mA
*hFE	30	-	-	-	VCE=1V, IC=100mA
fT	300	-	-	MHz	VCE=20V, IC=10mA, f=100MHz
Cob	-	-	4	pF	VCB=5V, f=1MHz

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

• TR2 (PNP)

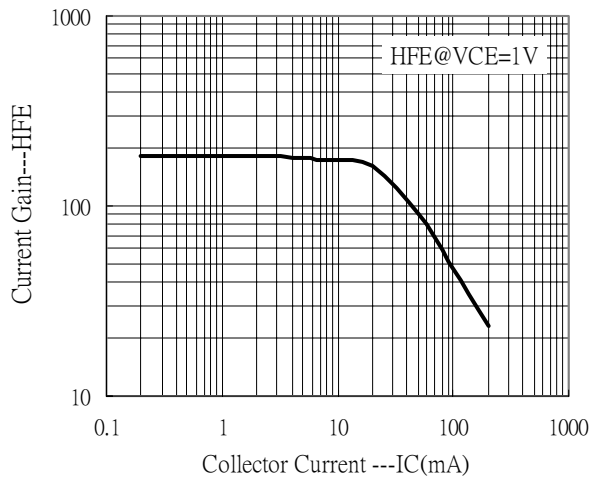
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BVCBO	-40	-	-	V	IC=-10uA
BVCEO	-40	-	-	V	IC=-1mA
BVEBO	-5	-	-	V	IE=-10uA
ICBO	-	-	-100	nA	VCB=-30V
ICEX	-	-	-50	nA	VCE=-30V, VEB=-3V
IEBO	-	-	-100	nA	VEB=-4V
VCE(sat)	-	-	-0.25	V	IC=-10mA, IB=-1mA
*VCE(sat)	-	-	-0.4	V	IC=-50mA, IB=-5mA
hFE	60	-	-	-	VCE=-1V, IC=-100uA
hFE	80	-	-	-	VCE=-1V, IC=-1mA
hFE	100	-	300	-	VCE=-1V, IC=-10mA
hFE	60	-	-	-	VCE=-1V, IC=-50mA
*hFE	30	-	-	-	VCE=-1V, IC=-100mA
fT	300	-	-	MHz	VCE=-20V, IC=-10mA, f=100MHz
Cob	-	-	4.5	pF	VCB=-5V, f=1MHz

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

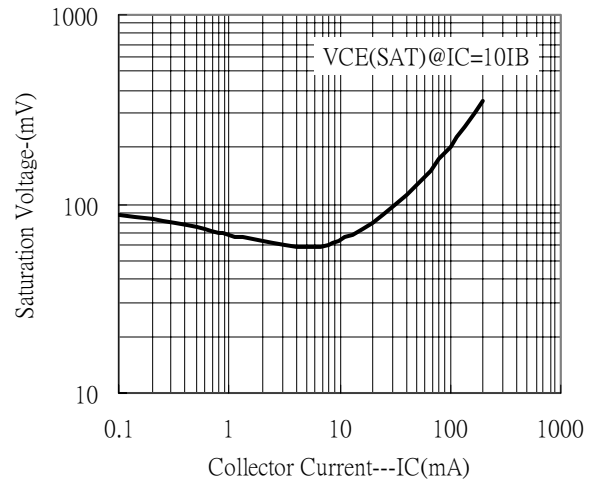
Characteristic curves

• TR1 (NPN)

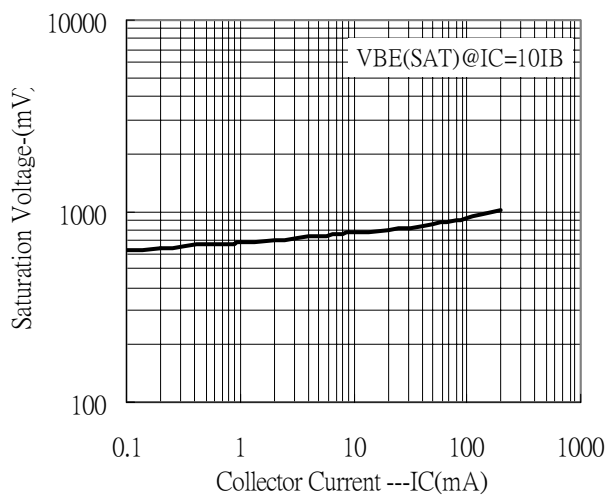
Current Gain vs Collector Current



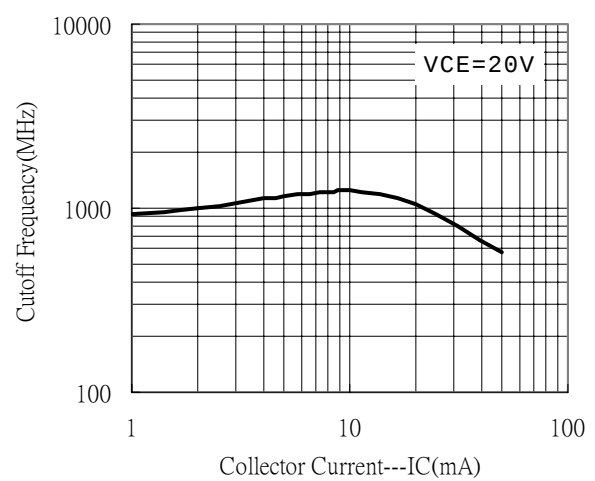
Saturation Voltage vs Collector Current



Saturation Voltage vs Collector Current

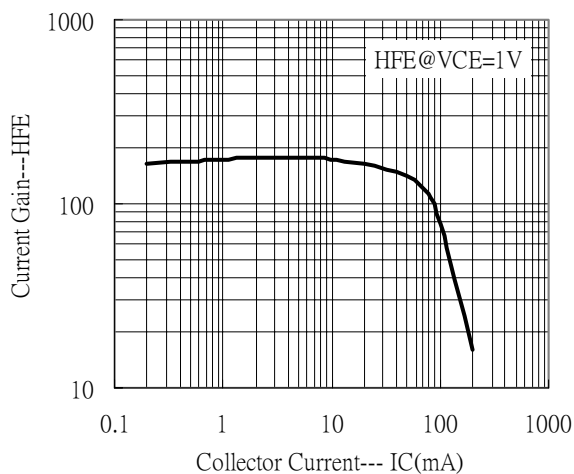


Cutoff Frequency vs Collector Current

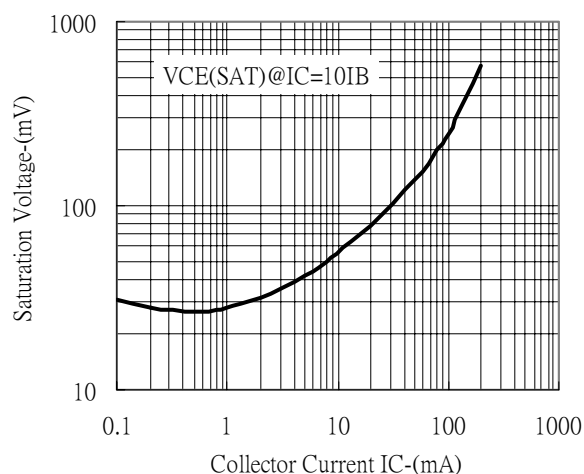


• TR2 (PNP)

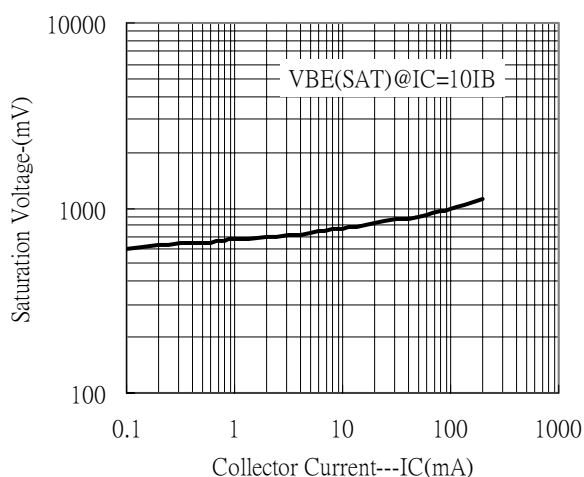
Current Gain vs Collector Current



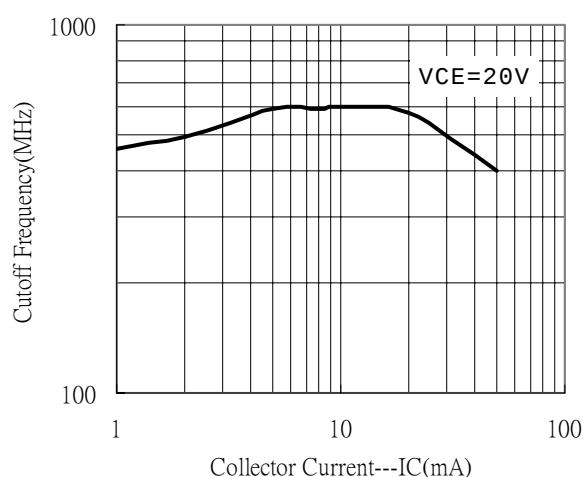
Saturation Voltage vs Collector Current



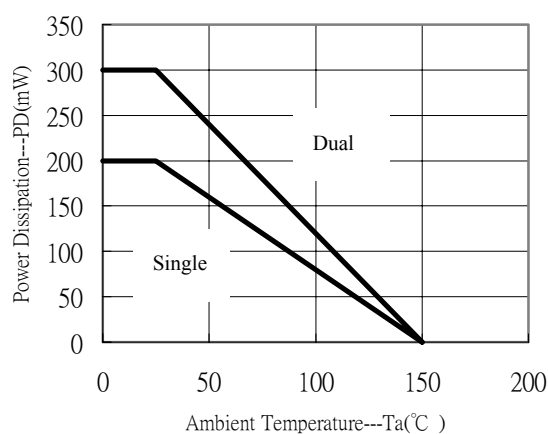
Saturation Voltage vs Collector Current



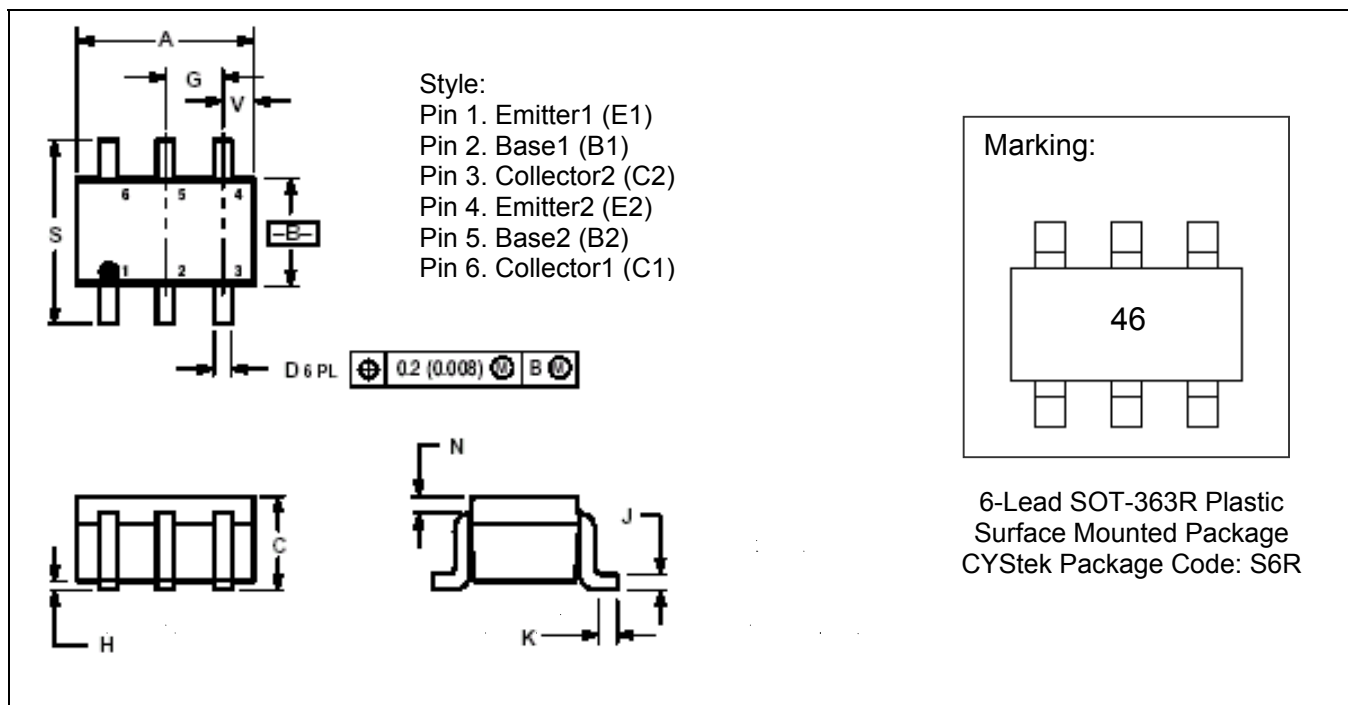
Cutoff Frequency vs Collector Current



PD - Ta



SOT-363R Dimension



*: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	2.40
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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