

# Low Vcesat NPN Epitaxial Planar Transistor

## BTC5706J3

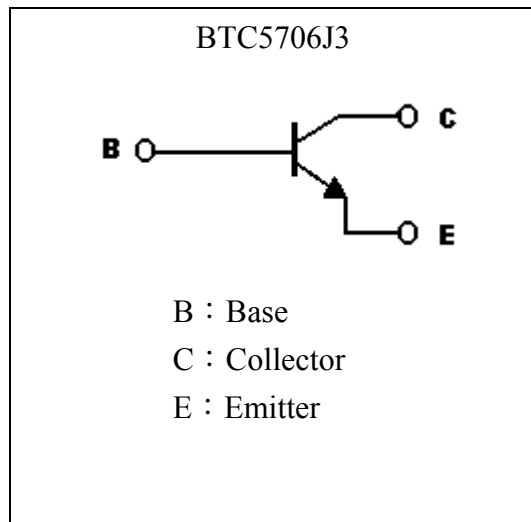
### Features

- Low collector-to-emitter saturation voltage
- High-speed switching
- High allowable power dissipation
- Large current capability

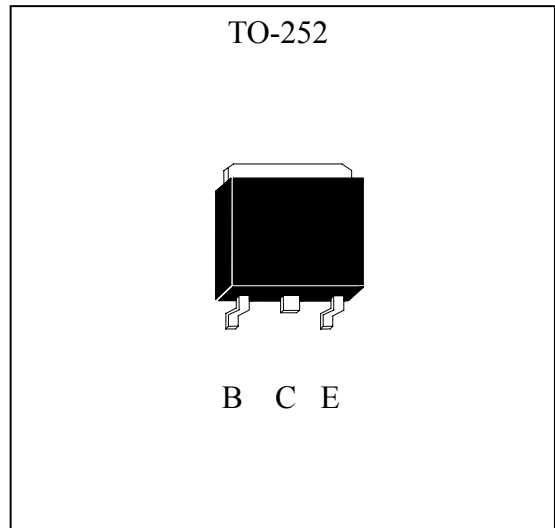
### Applications

- DC-DC converter, relay drivers, lamp drivers, motor drivers, strobes.

### Symbol



### Outline





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

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V <sub>CBO</sub>	80	V
Collector-Emitter Voltage	V <sub>CES</sub>	80	V
Collector-Emitter Voltage	V <sub>CEO</sub>	60	V
Emitter-Base Voltage	V <sub>EBO</sub>	6	V
Collector Current (DC)	I <sub>C</sub>	5	A
Collector Current (Pulse)	I <sub>CP</sub>	7.5 (Note 1)	
Base Current	I <sub>B</sub>	1.2	A
Power Dissipation @ T <sub>A</sub> =25°C	P <sub>D</sub>	0.8	W
Power Dissipation @ T <sub>C</sub> =25°C	P <sub>D</sub>	15	
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	156	°C/W
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	8.33	°C/W
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55~+150	°C

Note : 1. Single Pulse , P<sub>w</sub> ≤ 380μs, Duty ≤ 2%.

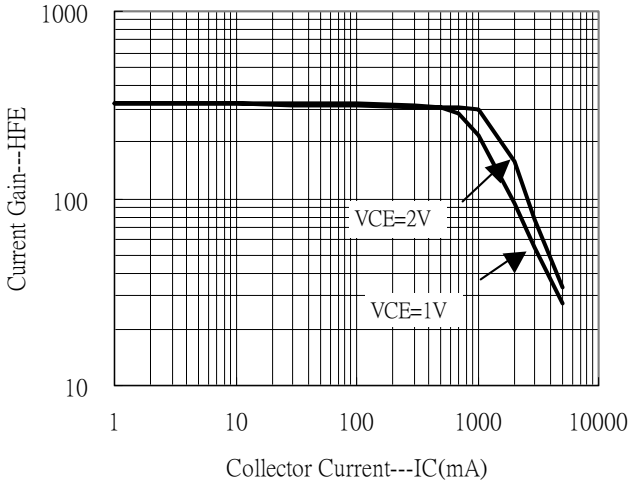
**Characteristics** (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV <sub>CBO</sub>	80	-	-	V	I <sub>C</sub> =10μA, I <sub>E</sub> =0
BV <sub>CES</sub>	80	-	-	V	I <sub>C</sub> =100μA, R <sub>BE</sub> =0
*BV <sub>CEO</sub>	60	-	-	V	I <sub>C</sub> =1mA, I <sub>B</sub> =0
BV <sub>EBO</sub>	6	-	-	V	I <sub>C</sub> =10μA, I <sub>C</sub> =0
I <sub>CBO</sub>	-	-	1	μA	V <sub>CB</sub> =80V, I <sub>E</sub> =0
I <sub>EBO</sub>	-	-	1	μA	V <sub>EB</sub> =4V, I <sub>C</sub> =0
*V <sub>CE(sat) 1</sub>	-	110	135	mV	I <sub>C</sub> =1A, I <sub>B</sub> =50mA
*V <sub>CE(sat) 2</sub>	-	200	240	mV	I <sub>C</sub> =2A, I <sub>B</sub> =100mA
*V <sub>BE(sat)</sub>	-	0.89	1.2	V	I <sub>C</sub> =2A, I <sub>B</sub> =100mA
*h <sub>FE</sub>	200	-	560	-	V <sub>CE</sub> =2V, I <sub>C</sub> =500mA
f <sub>T</sub>	-	400	-	MHz	V <sub>CE</sub> =10V, I <sub>C</sub> =500mA
C <sub>ob</sub>	-	15	-	pF	V <sub>CB</sub> =10V, f=1MHz
t <sub>on</sub>	-	35	-	ns	V <sub>CC</sub> =25V, I <sub>C</sub> =10I <sub>B1</sub> =-10I <sub>B2</sub> =1A, R <sub>L</sub> =25Ω
t <sub>stg</sub>	-	300	-	ns	
t <sub>f</sub>	-	20	-	ns	

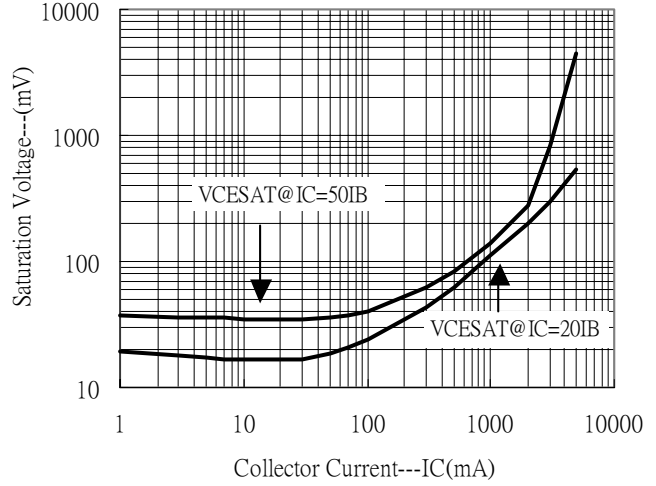
\*Pulse Test : Pulse Width ≤ 380μs, Duty Cycle ≤ 2%

**Characteristic Curves**

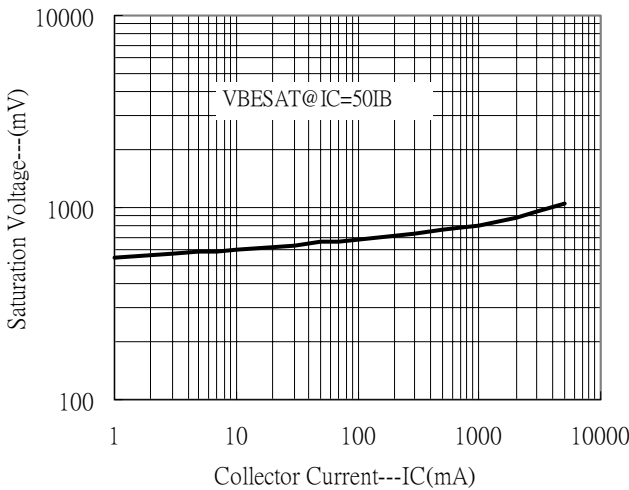
Current Gain vs Collector Current



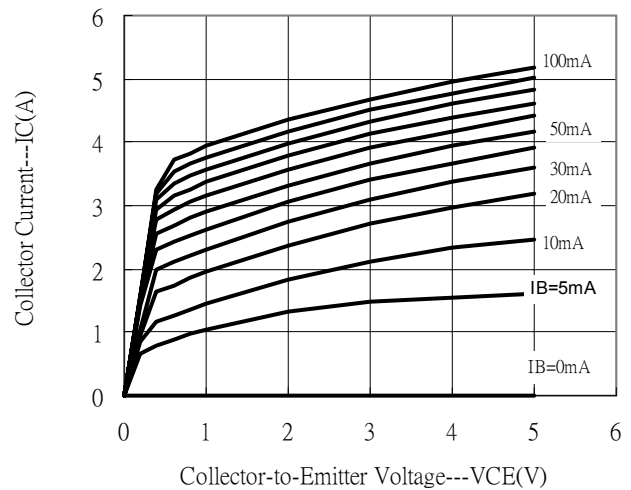
Saturation Voltage vs Collector Current



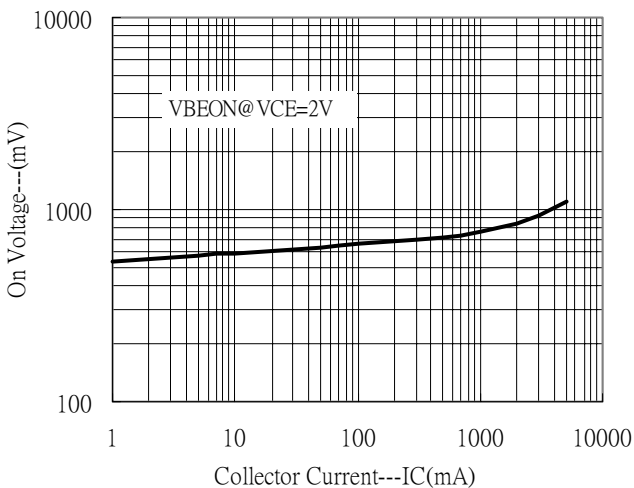
Saturation Voltage vs Collector Current



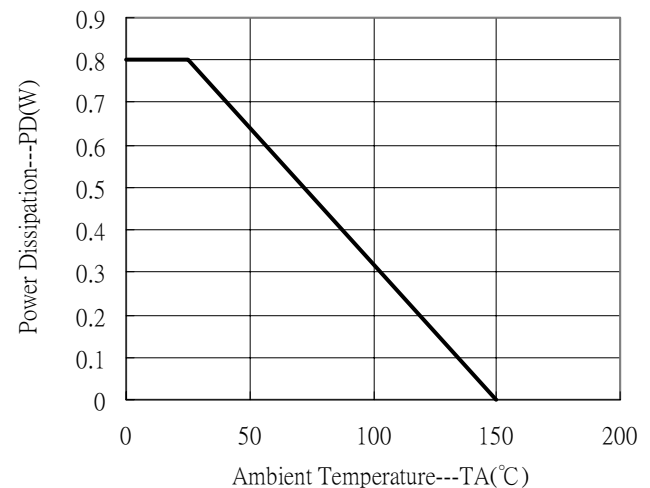
Output Characteristics



On Voltage vs Collector Current



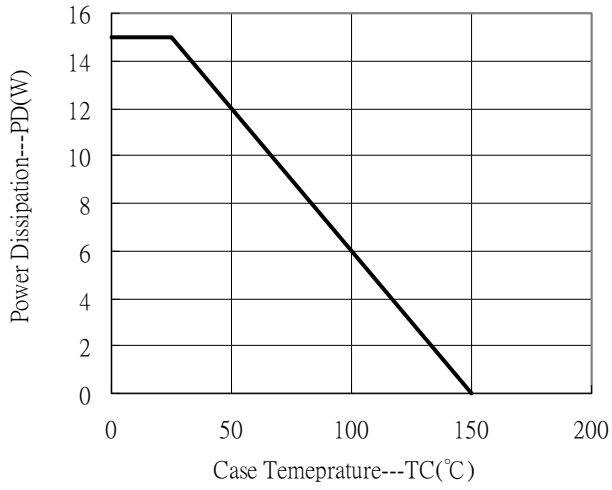
Power Derating Curve



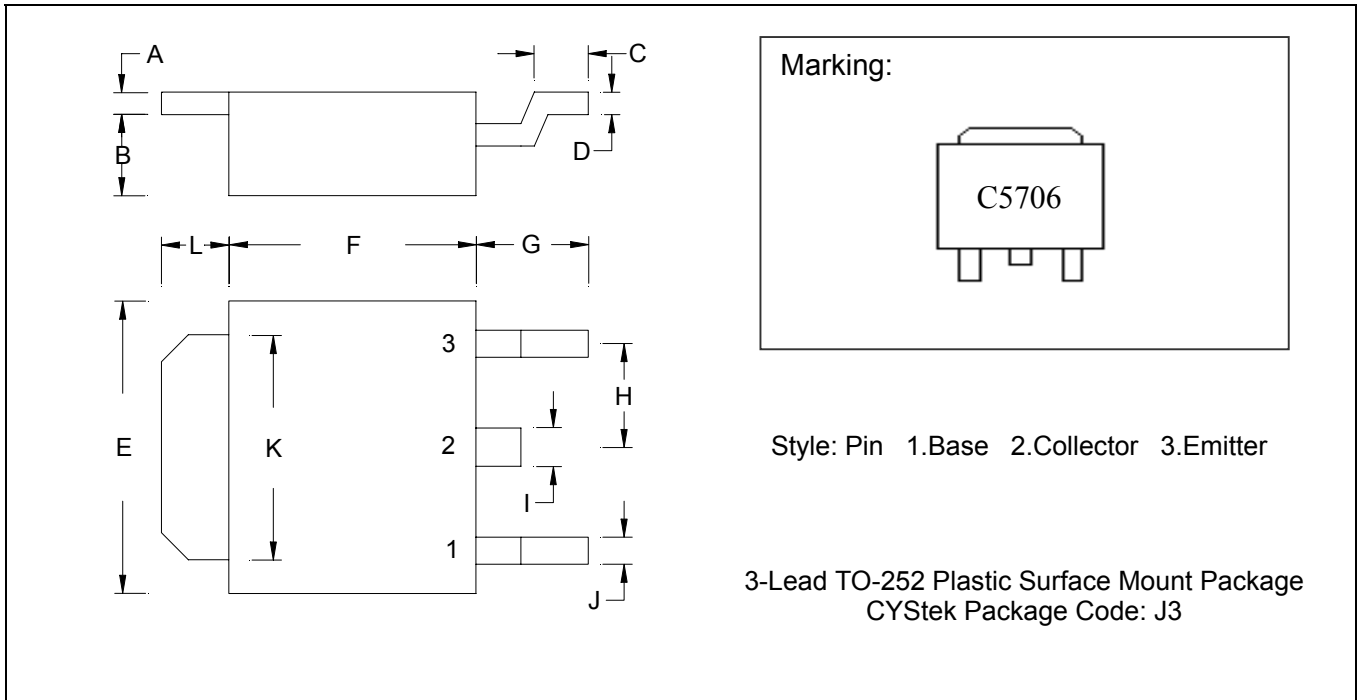


### Characteristic Curves(Cont.)

Power Derating Curve



**TO-252 Dimension**



\*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0177	0.0217	0.45	0.55	G	0.0866	0.1102	2.20	2.80
B	0.0650	0.0768	1.65	1.95	H	-	*0.0906	-	*2.30
C	0.0354	0.0591	0.90	1.50	I	-	0.0354	-	0.90
D	0.0177	0.0236	0.45	0.60	J	-	0.0315	-	0.80
E	0.2520	0.2677	6.40	6.80	K	0.2047	0.2165	5.20	5.50
F	0.2125	0.2283	5.40	5.80	L	0.0551	0.0630	1.40	1.60

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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