

Low Vcesat NPN Epitaxial Planar Transistor

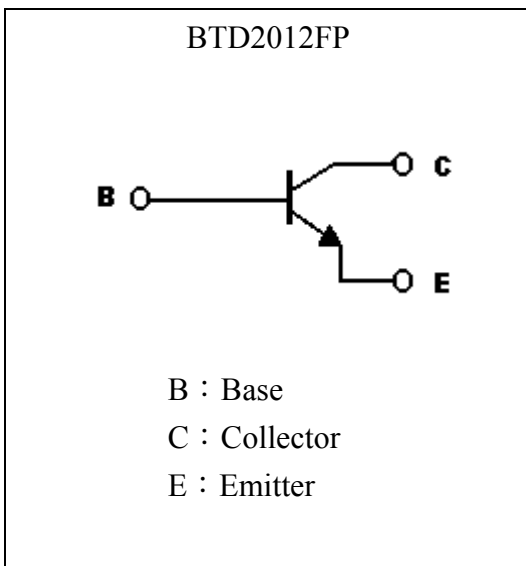
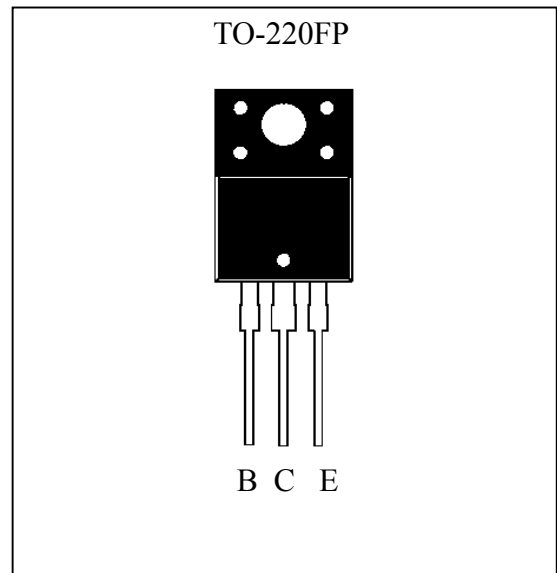
BTD2012FP

Features

- Low collector-to-emitter saturation voltage, typically $V_{CE(SAT)}=0.25V$ at $I_C / I_B=2A / 0.2A$
- Excellent DC current gain characteristics
- High allowable power dissipation, $P_D=25W(T_C=25^\circ C)$
- Large current capability
- Pb-free package

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 _{CB0}	80	V
Collector-Emitter Voltage	V _{CEO}	60	V
Emitter-Base Voltage	V _{EBO}	6	V
Collector Current (DC)	I _C	3	A
Collector Current (Pulse)	I _{CP}	6 (Note 1)	
Base Current	I _B	0.5	A
Power Dissipation @ T _A =25°C	P _D	2	W
Power Dissipation @ T _C =25°C	P _D	25	
Thermal Resistance, Junction to Ambient	R _{θJA}	62.5	°C/W
Thermal Resistance, Junction to Case	R _{θJC}	5	°C/W
Insulation Withstand Voltage (RMS) from All Three Leads to External Heatsink	Visol	1000	V
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55~+150	°C

Note : 1. Single Pulse , P_w ≤ 380μs, Duty ≤ 2%.

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CB0}	80	-	-	V	I _C =10μA, I _E =0
*BV _{CEO}	60	-	-	V	I _C =1mA, I _B =0
BV _{EBO}	6	-	-	V	I _C =10μA, I _C =0
I _{CB0}	-	-	1	μA	V _{CB} =80V, I _E =0
I _{EBO}	-	-	1	μA	V _{EB} =4V, I _C =0
*V _{CE(sat) 1}	-	150	220	mV	I _C =1A, I _B =50mA
*V _{CE(sat) 2}	-	250	350	mV	I _C =2A, I _B =200mA
*V _{BE(sat)}	-	1	1.2	V	I _C =2A, I _B =100mA
*V _{BE(on)}	-	-	1	V	V _{CE} =2V, I _C =500mA
*h _{FE 1}	120	-	560	-	V _{CE} =5V, I _C =500mA
*h _{FE 2}	60	-	-	-	V _{CE} =5V, I _C =3A
f _T	-	100	-	MHz	V _{CE} =5V, I _C =500mA, f=5MHz
Cob	-	15	-	pF	V _{CB} =10V, f=1MHz

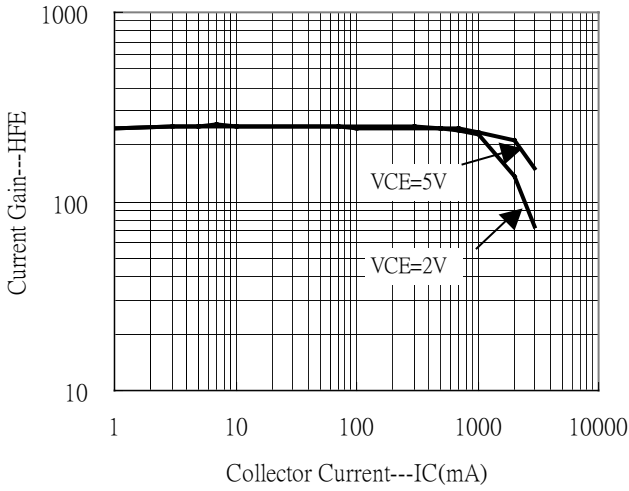
*Pulse Test : Pulse Width ≤ 380μs, Duty Cycle ≤ 2%

Classification of hFE 1

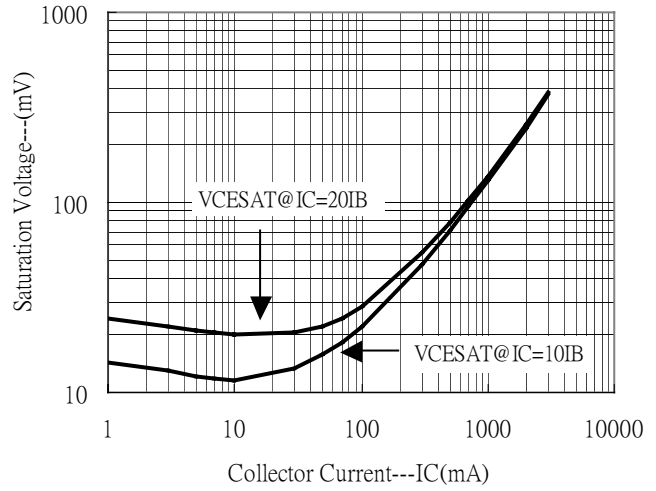
Rank	Q	R	S
Range	120~270	180~390	270~560

Characteristic Curves

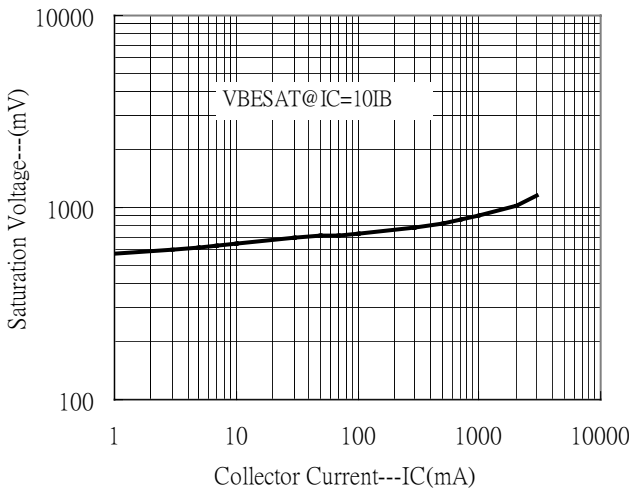
Current Gain vs Collector Current



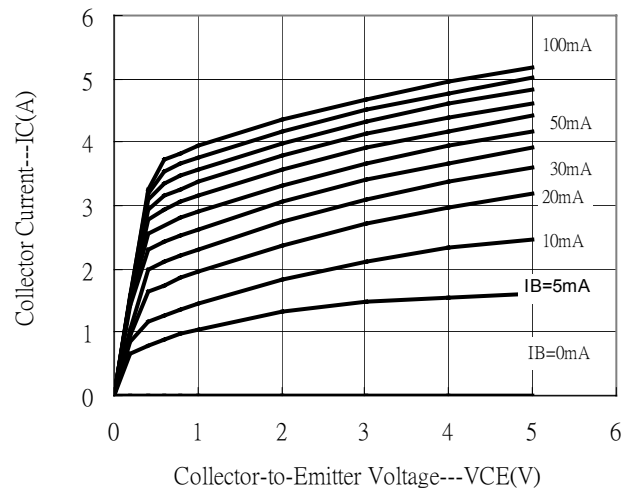
Saturation Voltage vs Collector Current



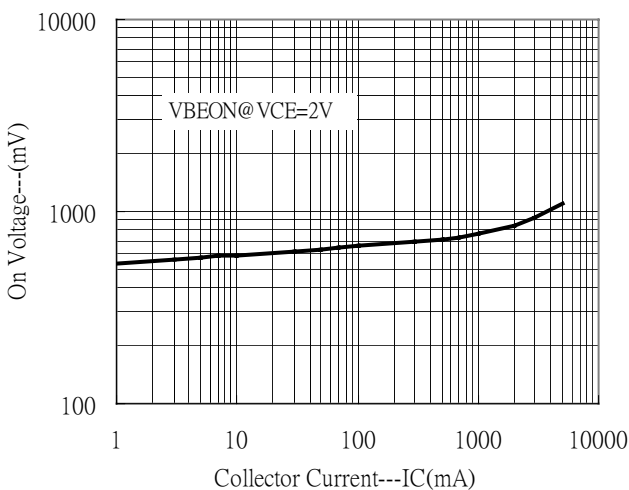
Saturation Voltage vs Collector Current



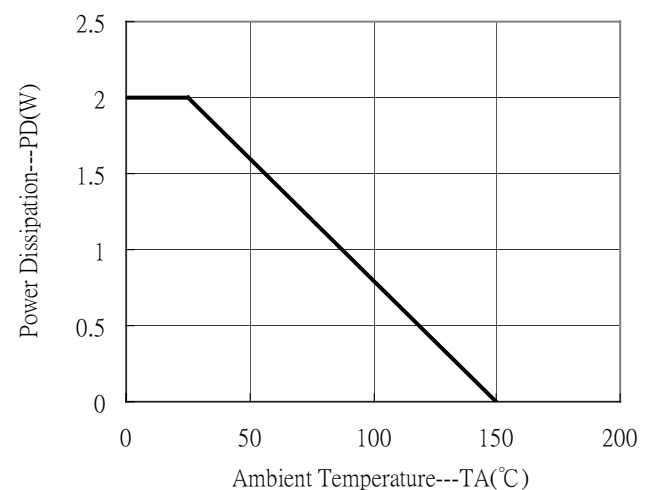
Output Characteristics



On Voltage vs Collector Current

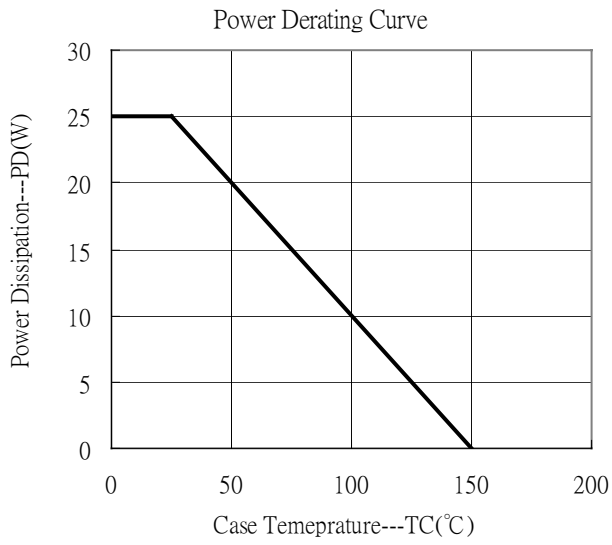


Power Derating Curve

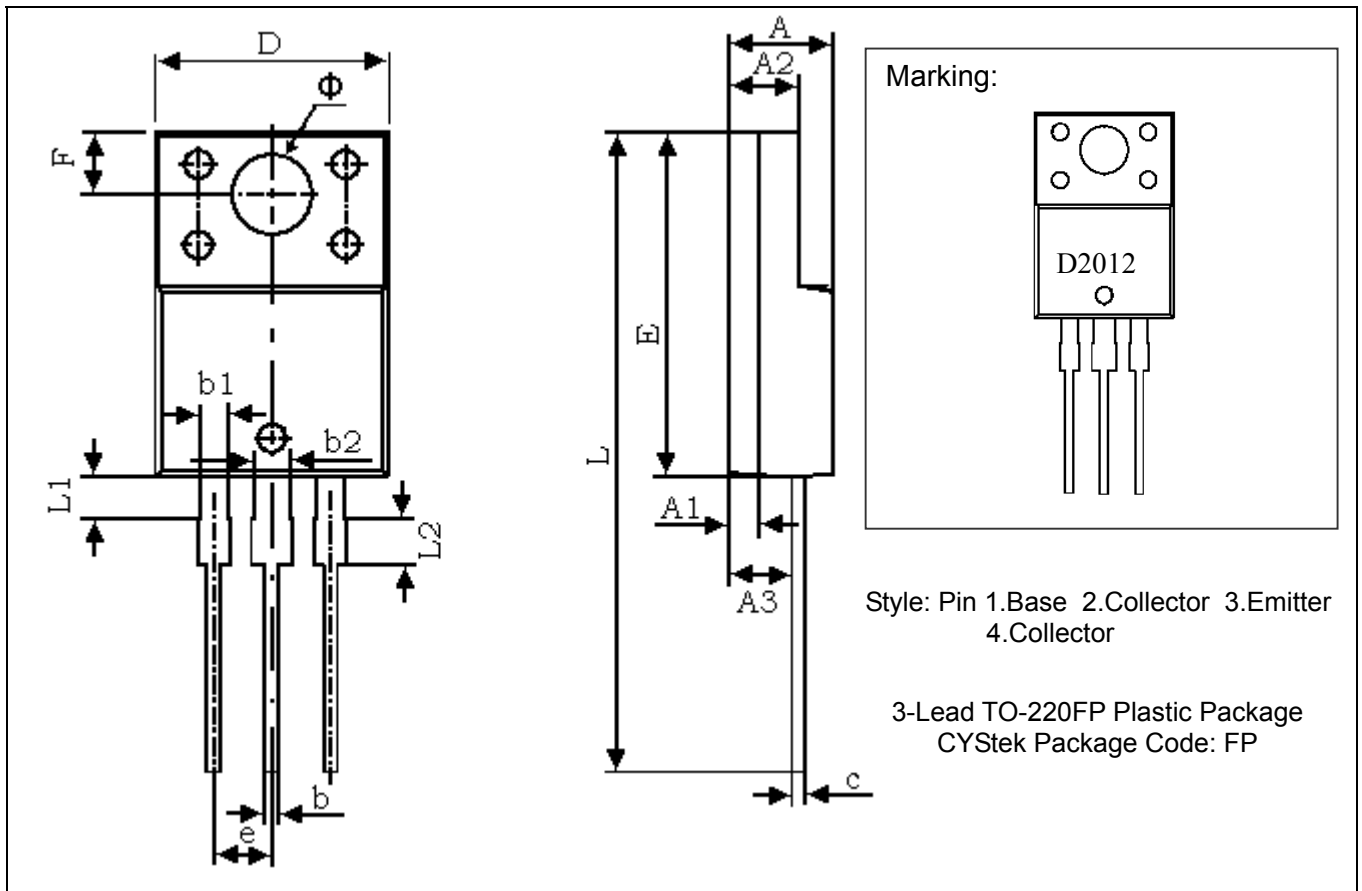




Characteristic Curves(Cont.)



TO-220FP Dimension



*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.169	0.185	4.300	4.700	D	0.392	0.408	9.960	10.360
A1	0.051 REF		1.300 REF		E	0.583	0.598	14.800	15.200
A2	0.110	0.126	2.800	3.200	e	0.100 TYP		2.540 TYP	
A3	0.098	0.114	2.500	2.900	F	0.106 REF		2.700 REF	
b	0.020	0.030	0.500	0.750	Φ	0.138 REF		3.500 REF	
b1	0.043	0.053	1.100	1.350	L	1.102	1.118	28.000	28.400
b2	0.059	0.069	1.500	1.750	L1	0.067	0.075	1.700	1.900
c	0.020	0.030	0.500	0.750	L2	0.075	0.083	1.900	2.100

- 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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