

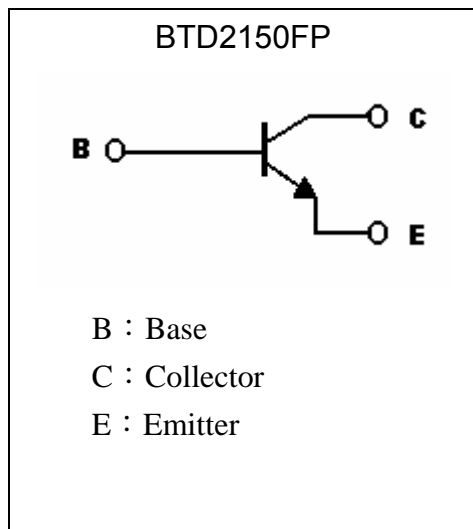
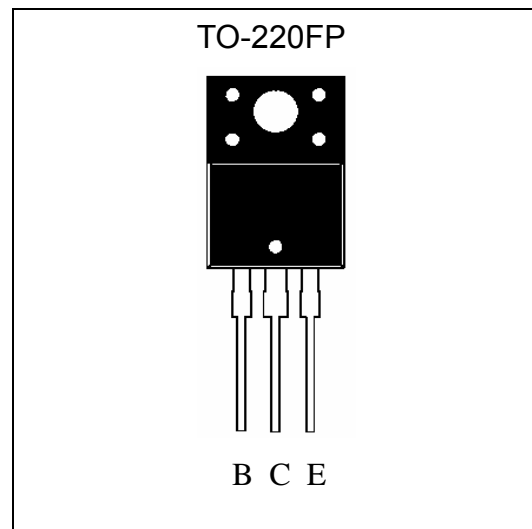
Low Vcesat NPN Epitaxial Planar Transistor

BTD2150FP

BV_{CEO}	50V
I_C	3A
R_{CESAT}	125m Ω typ.

Features

- Low $V_{CE(sat)}$, $V_{CE(sat)}=0.25$ V (typical), at $I_C / I_B = 2A / 0.2A$
- Excellent current gain characteristics
- Complementary to BTB1424FP
- Pb-free lead plating package

Symbol

Outline

Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	50	
Emitter-Base Voltage	V_{EBO}	6	
Collector Current(DC)	I_C	3	A
Collector Current(Pulse)	I_{CP}	7 *1	
Power Dissipation($T_A=25^\circ\text{C}$)	P_d	2	W
Power Dissipation($T_C=25^\circ\text{C}$)		30	
Operating Junction and Storage Temperature Range	$T_j ; T_{stg}$	-55~+150	$^\circ\text{C}$

 Note : *1. Single Pulse $P_w=10\text{ms}$

**Characteristics (Ta=25°C)**

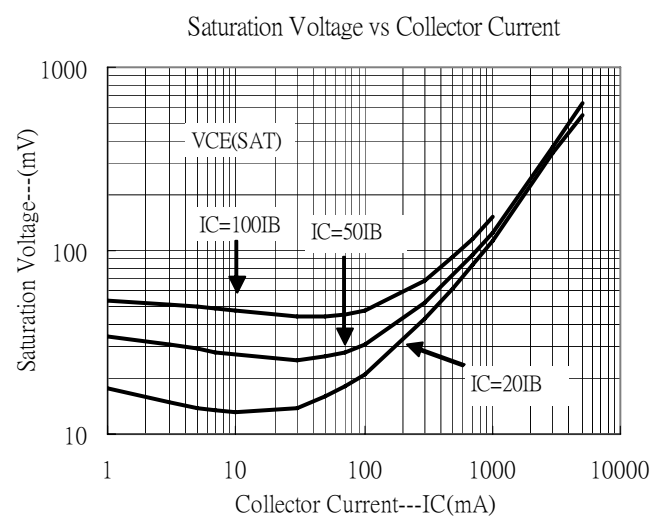
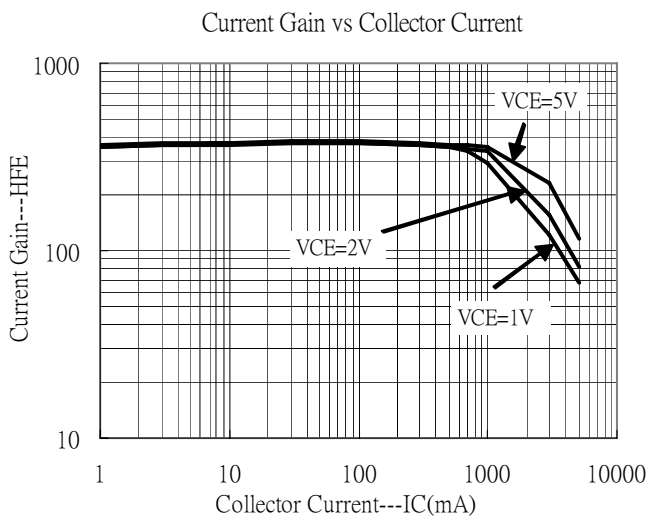
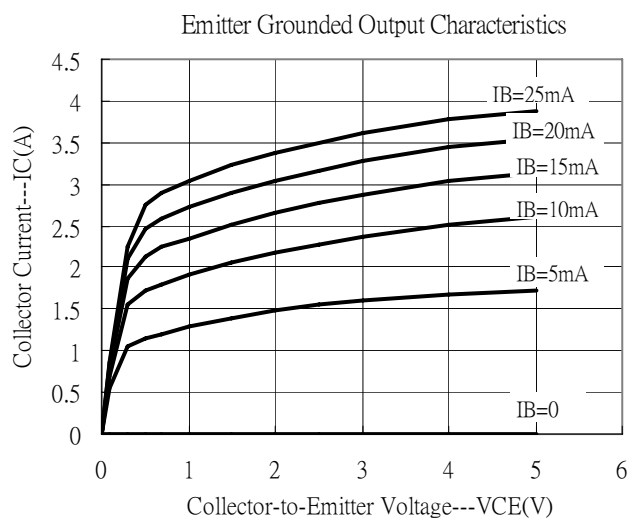
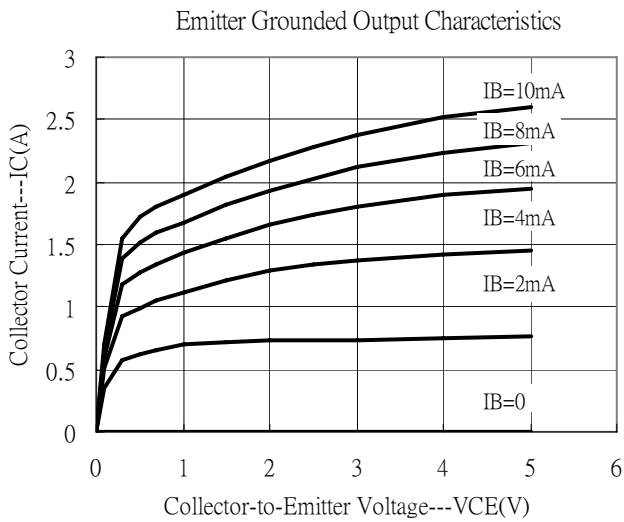
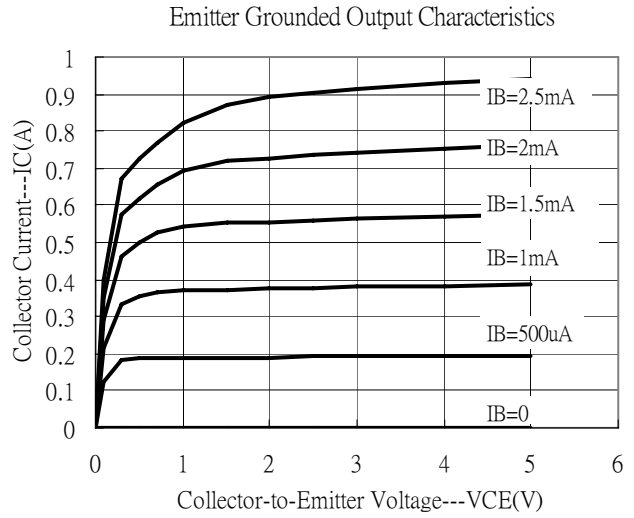
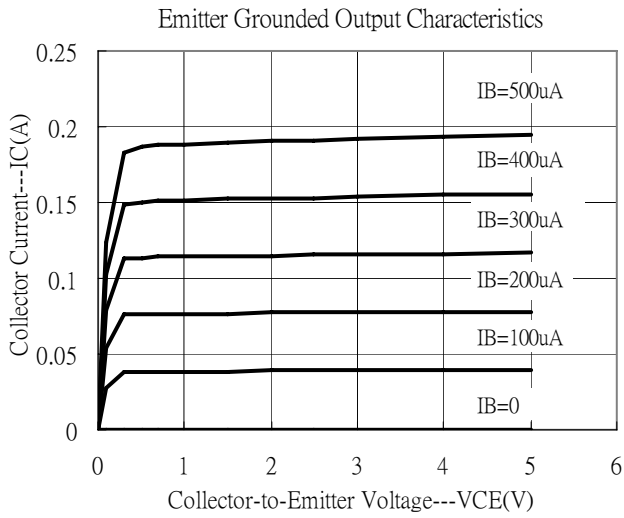
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CB0}	50	-	-	V	I _C =50μA, I _E =0
BV _{CE0}	50	-	-	V	I _C =1mA, I _B =0
BV _{EB0}	6	-	-	V	I _E =50μA, I _C =0
I _{CB0}	-	-	1	μA	V _{CB} =50V, I _E =0
I _{EB0}	-	-	1	μA	V _{EB} =6V, I _C =0
*V _{CE(sat)}	-	-	120	mV	I _C =500mA, I _B =50mA
*V _{CE(sat)}	-	-	0.3	V	I _C =1A, I _B =10mA
*V _{CE(sat)}	-	0.25	0.5	V	I _C =2A, I _B =100mA
*R _{CE(sat)}	-	125	250	mΩ	I _C =2A, I _B =100mA
*V _{BE(sat)}	-	-	1.4	V	I _C =2A, I _B =200mA
*h _{FE1}	250	-	-	-	V _{CE} =2V, I _C =20mA
*h _{FE2}	270	-	560	-	V _{CE} =2V, I _C =100mA
*h _{FE3}	200	-	-	-	V _{CE} =2V, I _C =1A
f _T	-	90	-	MHz	V _{CE} =5V, I _C =0.5A, f=100MHz
Cob	-	13	-	pF	V _{CB} =10V, f=1MHz

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

Ordering Information

Device	Package	Shipping
BTD2150FP	TO-220FP (Pb-free lead plating package)	50 pcs / tube, 40 tubes / boxes

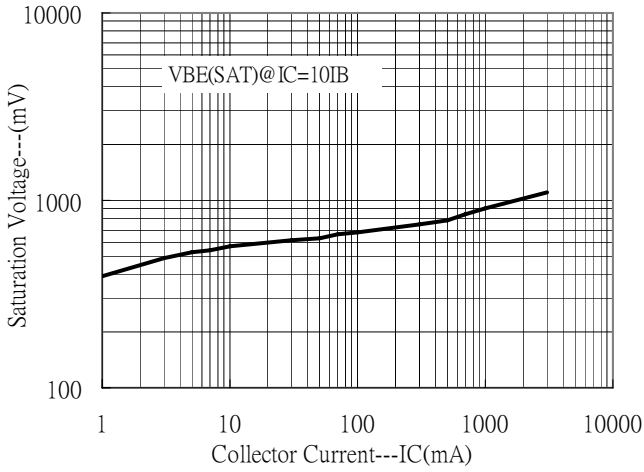
Typical Characteristics



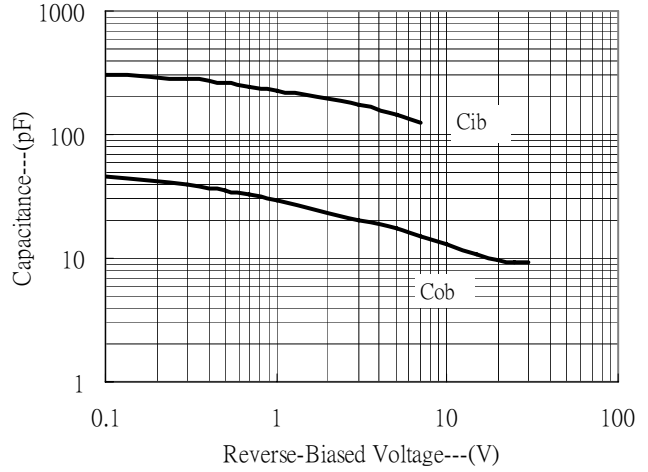


Typical Characteristics(Cont.)

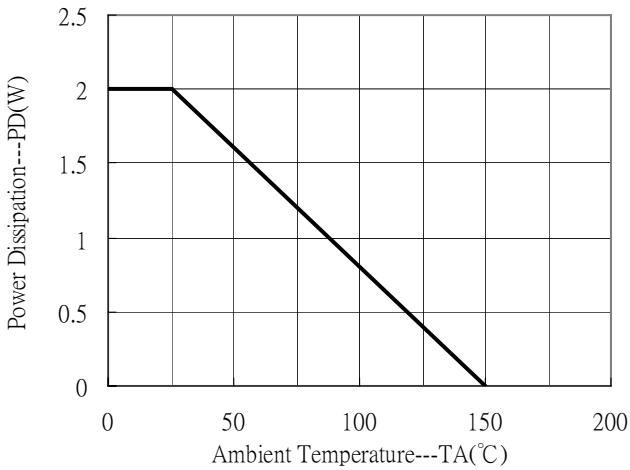
Saturation Voltage vs Collector Current



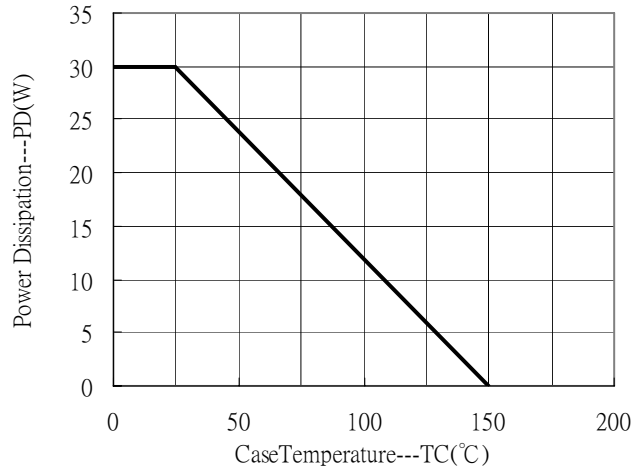
Capacitance vs Reverse-Biased Voltage



Power Derating Curve

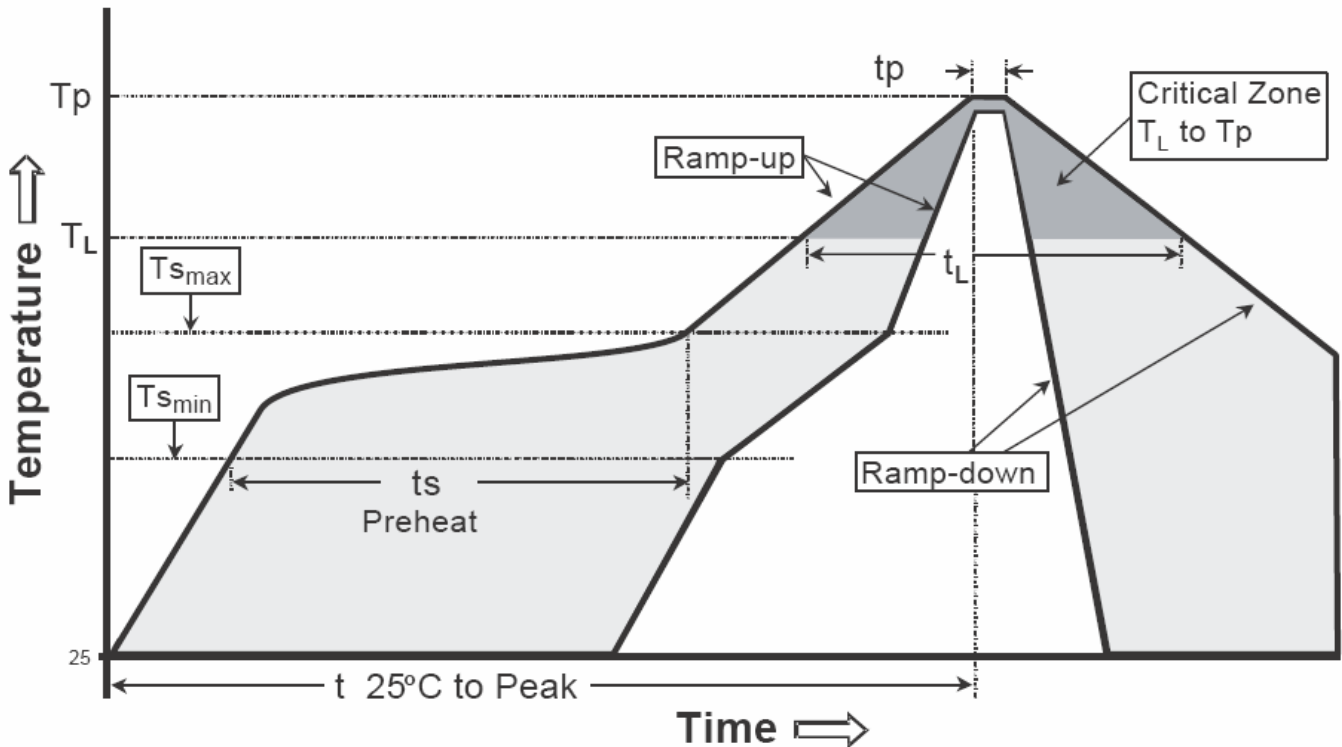


Power Derating Curve



Recommended wave soldering condition

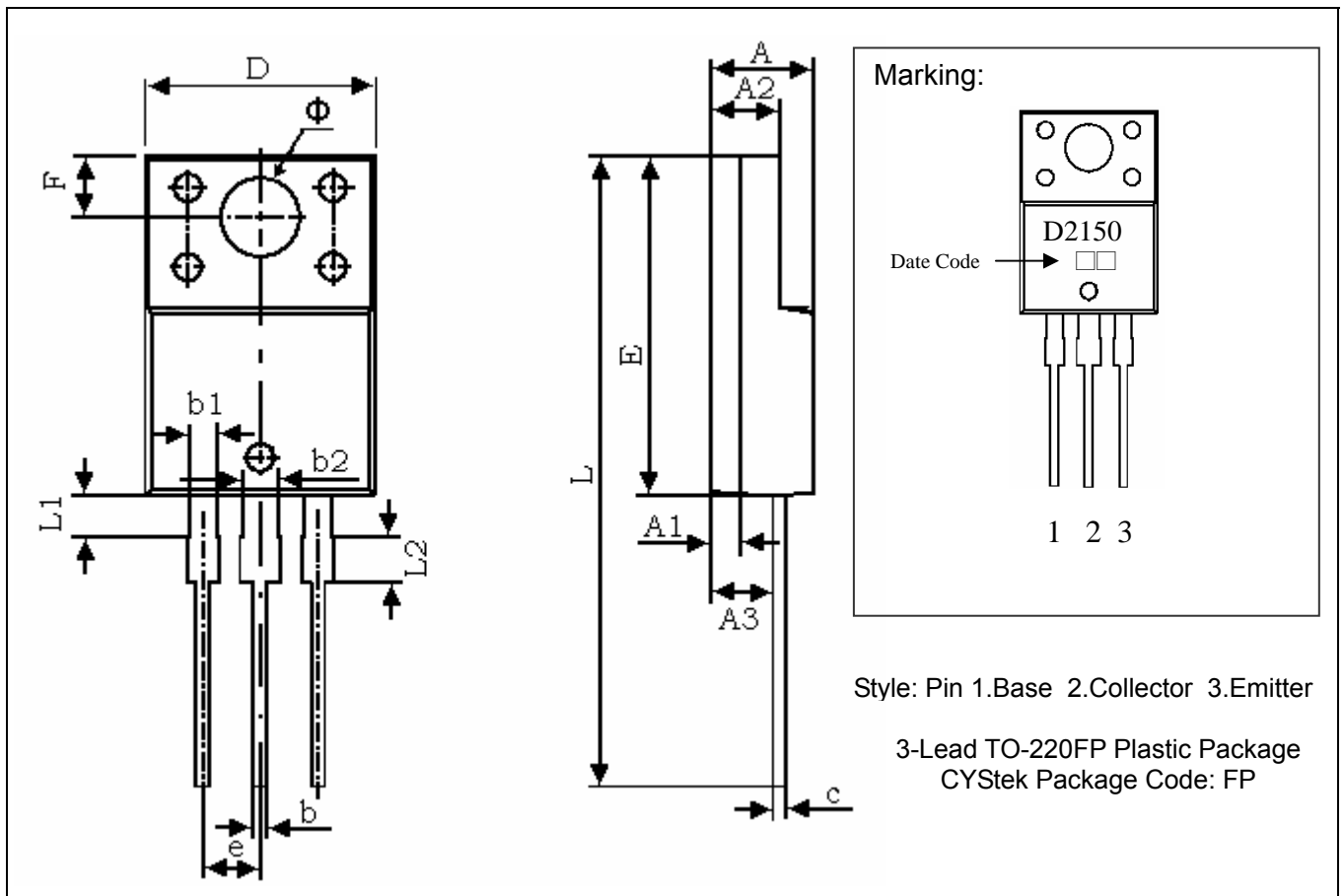
Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T _{s min})	100°C	150°C
-Temperature Max(T _{s max})	150°C	200°C
-Time(t _{s min} to t _{s max})	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T _L)	183°C	217°C
- Time (t _L)	60-150 seconds	60-150 seconds
Peak Temperature(T _P)	220 +0/-5 °C	245 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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