NPN Epitaxial Planar Transistor

BTC1510I3

BV_{CEO}	150V
I_C	10A
R_{CESAT}	220mΩ

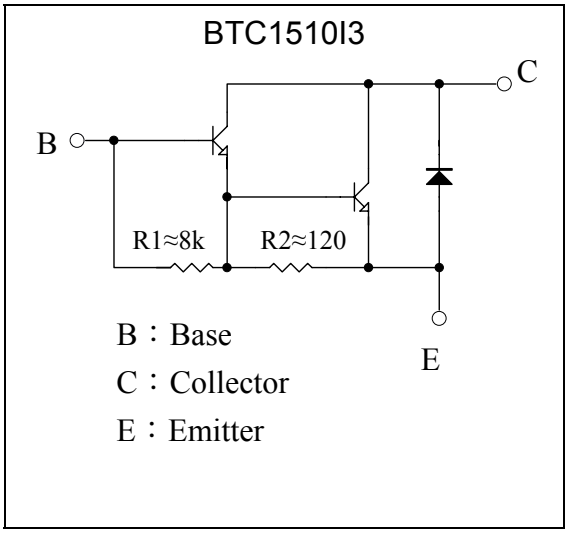
Description

The BTC1510I3 is a NPN Darlington transistor, designed for general purpose amplifier and low speed switching application.

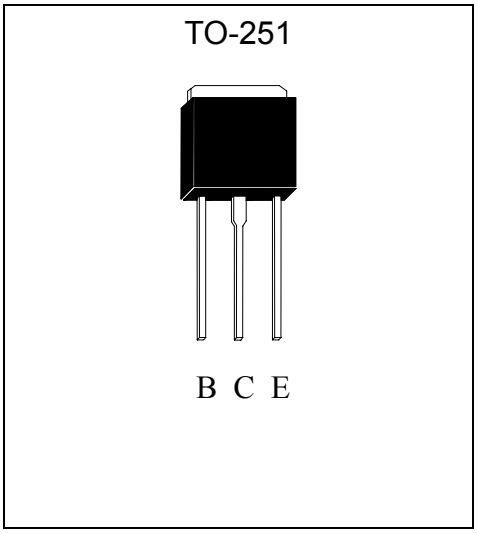
Features:

- High BV_{CEO}
- Low $V_{CE(SAT)}$
- High current gain
- Monolithic construction with built-in base-emitter shunt resistors
- RoHS compliant package

Equivalent Circuit



Outline



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	150	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C(DC)	10	A
	I_C(Pulse)	15 *1	
Power Dissipation	Pd(T_A=25℃)	1.75	W
	Pd(T_C=25℃)	20	
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55~+150	°C

Note : *1. Single Pulse Pw=100ms

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	150	-	-	V	I_C=100μA, I_E=0
BV_{CEO}	150	-	-	V	I_C=1mA, I_B=0
I_{CEO}	-	-	200	μA	V_{CE}=150V, I_E=0
I_{CBO}	-	-	200	μA	V_{CB}=150V, I_E=0
I_{EBO}	-	-	2	mA	V_{EB}=5V, I_C=0
*$V_{CE(sat)}$ 1	-	-	1.5	V	I_C=5A, I_B=10mA
*$V_{CE(sat)}$ 2	-	-	3	V	I_C=10A, I_B=100mA
*$V_{CE(sat)}$ 3	-	-	2	V	I_C=5A, I_B=2.5mA
*$V_{BE(sat)}$	-	-	2	V	I_C=5A, I_B=5mA
*$V_{BE(on)}$ 1	-	-	2.8	V	V_{CE}=3V, I_C=5A
*$V_{BE(on)}$ 2	-	-	4.5	V	V_{CE}=3V, I_C=10A
*V_{FEC}	-	-	3	V	I_C=5A
*h_{FE}1	2	-	20	K	V_{CE}=3V, I_C=5A
*h_{FE}2	100	-	-	-	V_{CE}=3V, I_C=10A

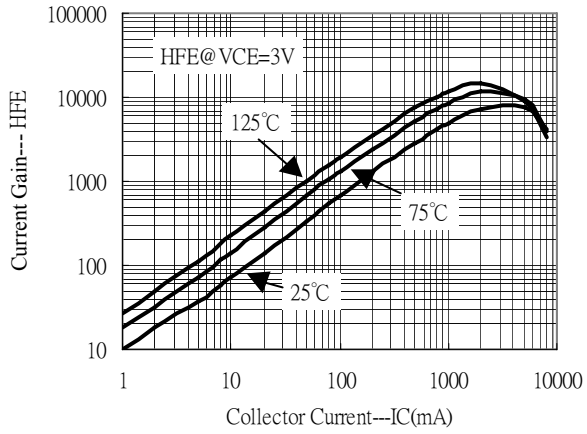
*Pulse Test : Pulse Width ≤380μs, Duty Cycle≤2%

Ordering Information

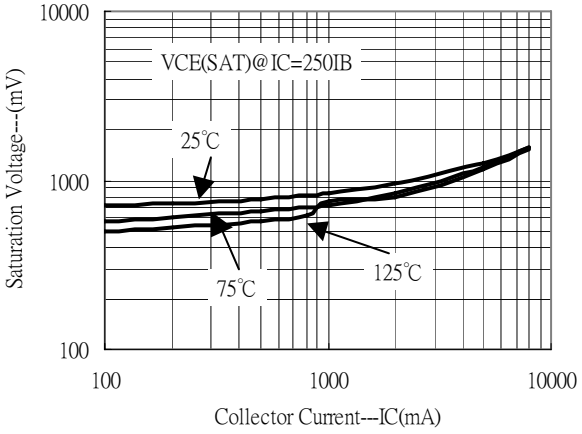
Device	Package	Shipping	Marking
BTC1510I3	TO-251 (RoHS compliant)	80 pcs / tube, 50 tubes / box	C1510

Characteristic Curves

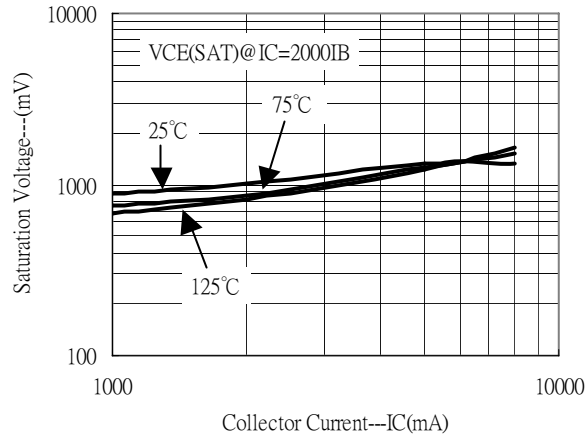
Current Gain vs Collector Current



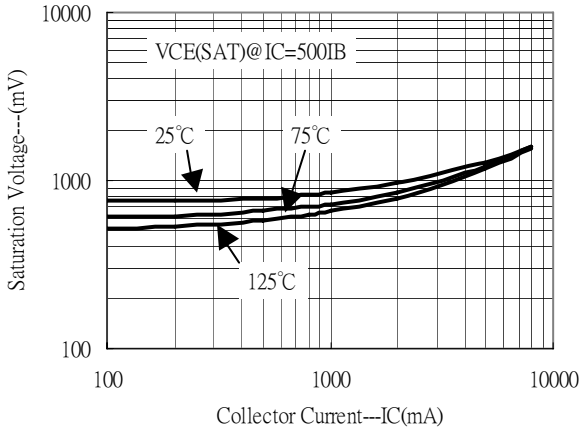
Saturation Voltage vs Collector Current



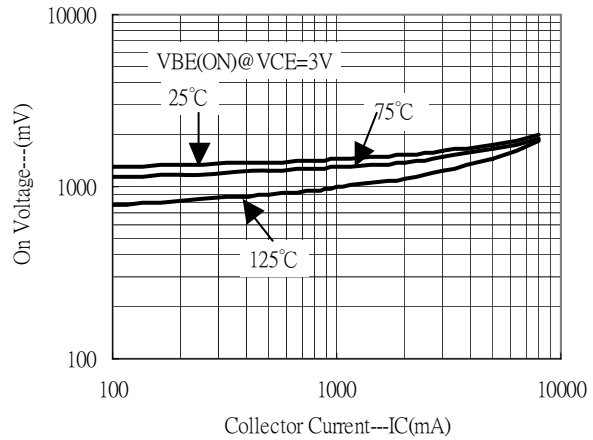
Saturation Voltage vs Collcetor Current



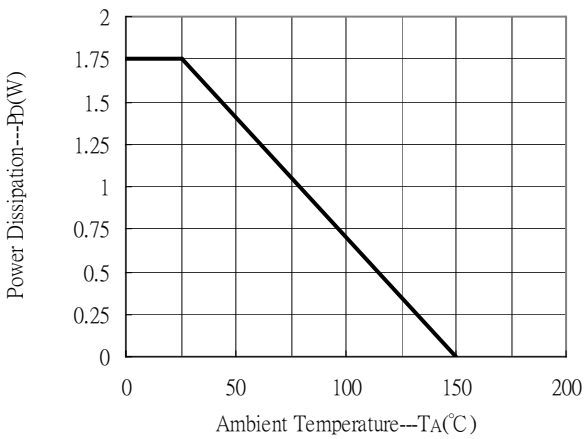
Saturation Voltage vs Colltctor Current



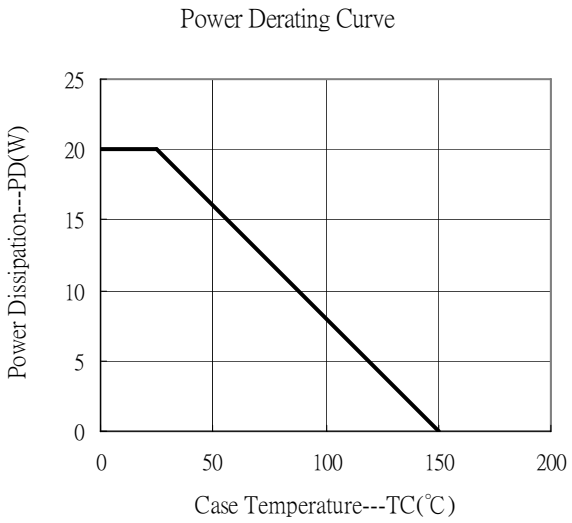
Saturation Voltage vs Collcetor Current



Power Derating Curve



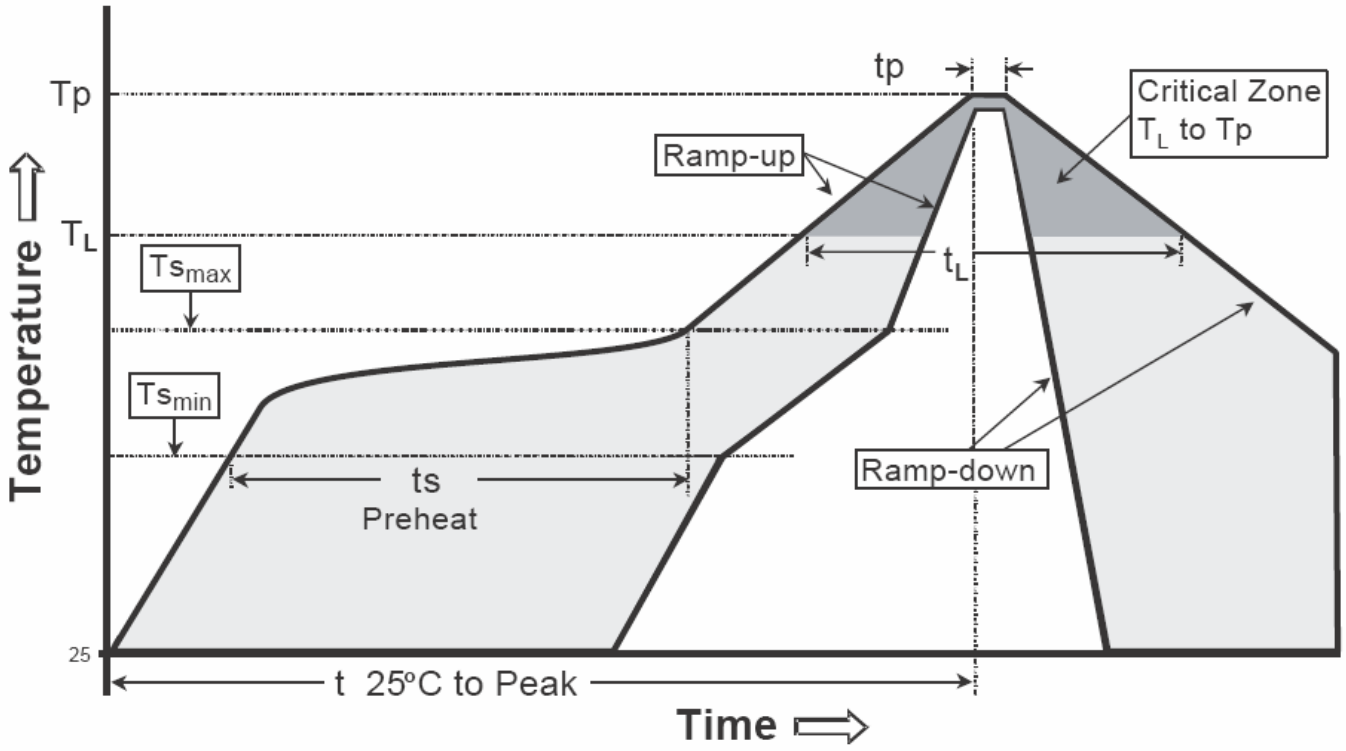
Characteristic Curves(Cont.)



Recommended wave soldering condition

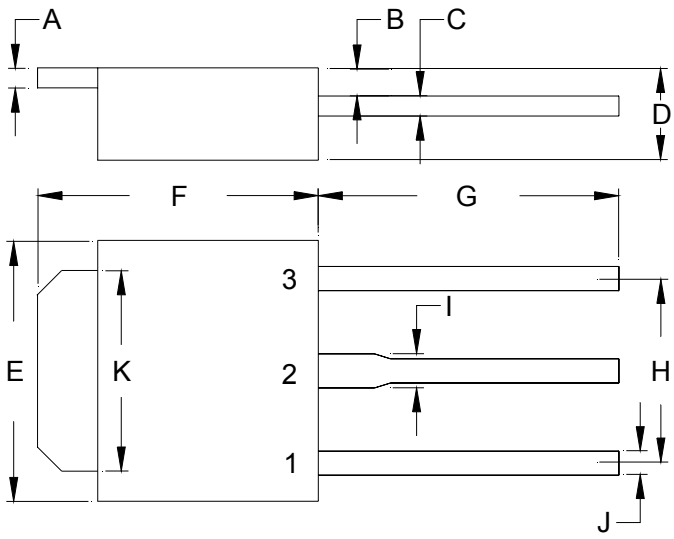
Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow

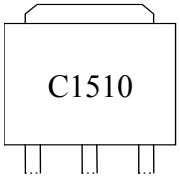


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL) − Time (tL)	 183°C 60-150 seconds	 217°C 60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +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.

TO-251 Dimension



Marking:



Style: Pin 1.Base 2.Collector 3.Emitter

3-Lead TO-251 Plastic Package
CYStek Package Code: I3

*: 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	0.2559	-	6.50	-
B	0.0354	0.0591	0.90	1.50	H	-	*0.1811	-	*4.60
C	0.0177	0.0236	0.45	0.60	I	-	0.0449	-	1.14
D	0.0866	0.0945	2.20	2.40	J	-	0.0346	-	0.88
E	0.2441	0.2677	6.20	6.80	K	0.2047	0.2165	5.20	5.50
F	0.2677	0.2835	6.80	7.20					

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: KFC; pure tin plated
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0