General Purpose NPN Epitaxial Planar Transistor

BTC2880A3

Description

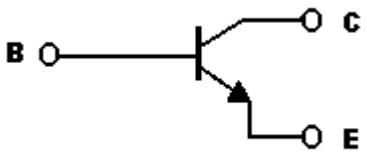
The BTC2880A3 is designed for general purpose medium power amplifier and switching applications.

Features

- Low collector saturation voltage
- High breakdown voltage, V_{CEO}=100V (min.)
- High collector current, $I_{C(max)}$=1A (DC)
- Pb-free package

Symbol

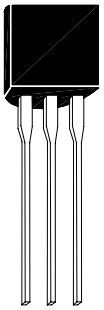
BTC2880A3



B：Base
C：Collector
E：Emitter

Outline

TO-92



E C B

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	180	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current (DC)	I_C	1	A
Collector Current (Pulse)	I_{CP}	2 (Note)	A
Power Dissipation	P_D	850	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	147	°C/W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55~+150	°C

Note : Pulse test, Pw ≤ 10ms, Duty ≤ 50%.

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	180	-	-	V	I_C=50μA
BV_{CEO}	100	-	-	V	I_C=1mA
BV_{EBO}	7	-	-	V	I_E=50μA
I_{CBO}	-	-	100	nA	V_{CB}=150V, I_E=0
I_{EBO}	-	-	100	nA	V_{EB}=6V, I_C=0
*$V_{CE(SAT)}$	-	0.09	0.2	V	I_C=350mA, I_B=35mA
*$V_{CE(SAT)}$	-	0.11	0.25	V	I_C=500mA, I_B=50mA
*$V_{CE(SAT)}$	-	0.22	0.5	V	I_C=1A, I_B=50mA
*$V_{BE(SAT)}$	-	-	1	V	I_C=500mA, I_B=50mA
*$V_{BE(ON)}$	-	-	1	V	V_{CE}=5V, I_C=500mA
*h_{FE} 1	80	-	-	-	V_{CE}=1V, I_C=50mA
*h_{FE} 2	82	-	270	-	V_{CE}=1V, I_C=250mA
*h_{FE} 3	60	-	-	-	V_{CE}=1V, I_C=500mA
f_T	50	-	-	MHz	V_{CE}=10V, I_C=50mA, f=100MHz
Cob	-	-	20	pF	V_{CB}=10V, I_E=0A, f=1MHz

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

Classification Of h_{FE} 2

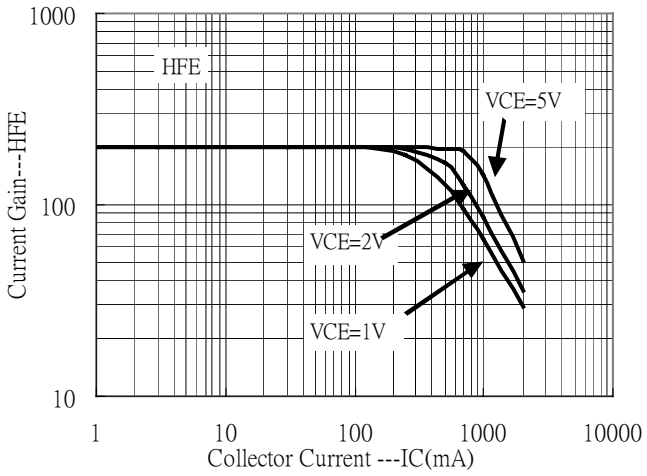
Rank	P	Q
Range	82~180	120~270

Ordering Information

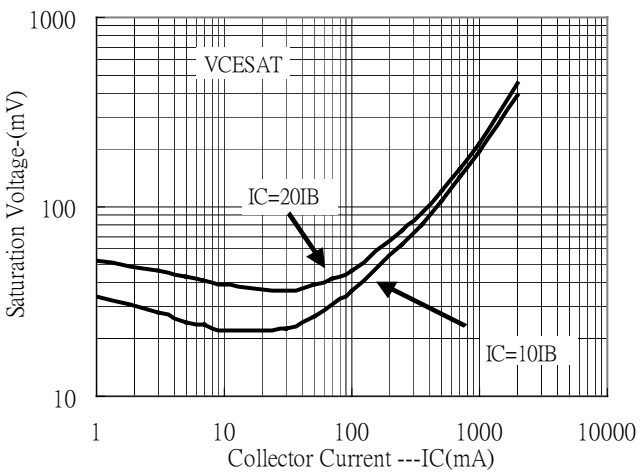
Device	Package	Shipping	Marking
BTC2880A3	TO-92 (Pb-free)	2000 pcs / Tape & Box	C2880

Characteristic Curves

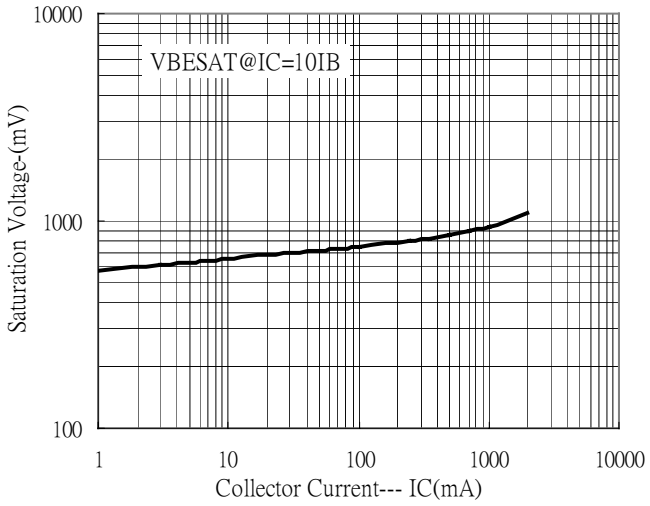
Current Gain vs Collector Current



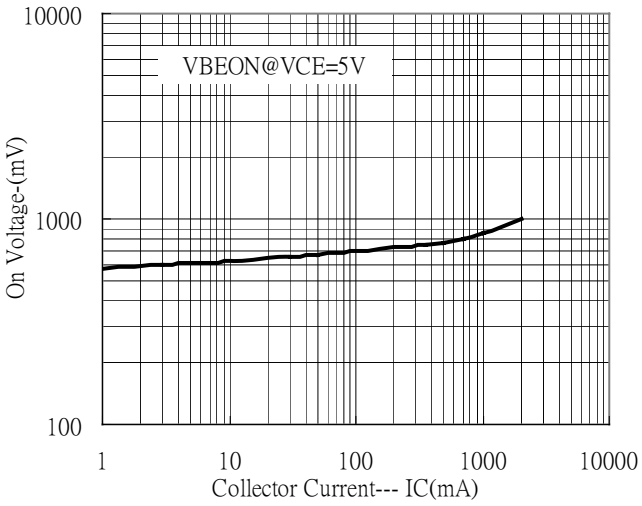
Saturation Voltage vs Collector Current



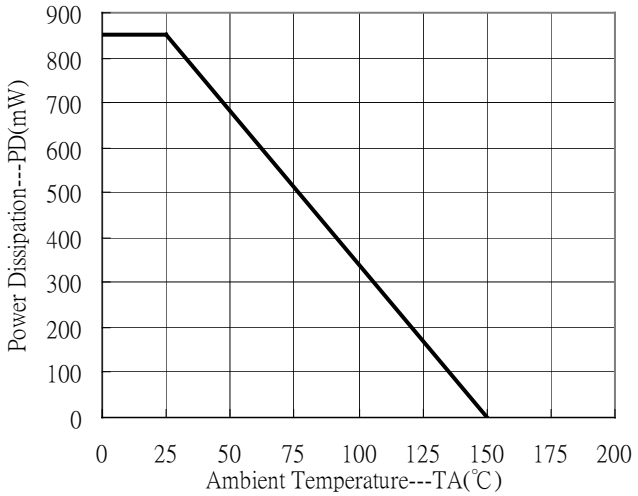
Saturation Voltage vs Collector Current



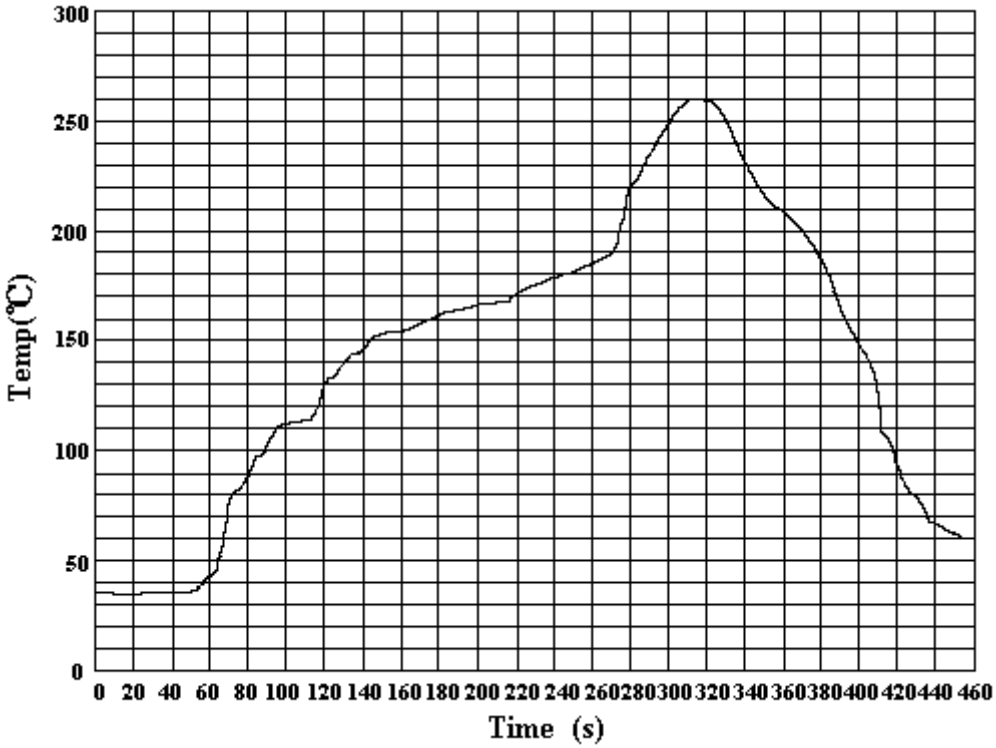
On Voltage vs Collector Current



Power Derating Curve

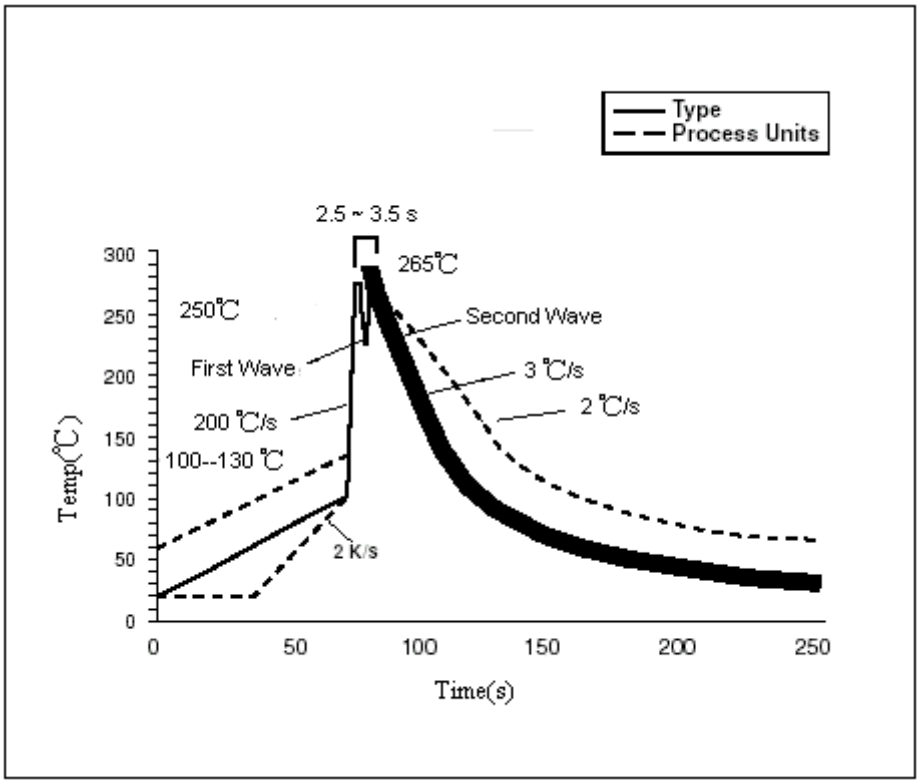


Recommended IR reflow profile



Average ramp-up rate(25 to 150℃)	1~4 ℃/second
Preheat temperature 150~180℃	60~90 seconds
Temperature maintained above 220℃	30 seconds min.
Time within 5℃ of actual peak temperature	3~5 seconds
Peak temperature range	255+0/-5℃
Ramp-down rate	2~10 ℃/second
Time 25℃ to peak temperature	6 minutes max.

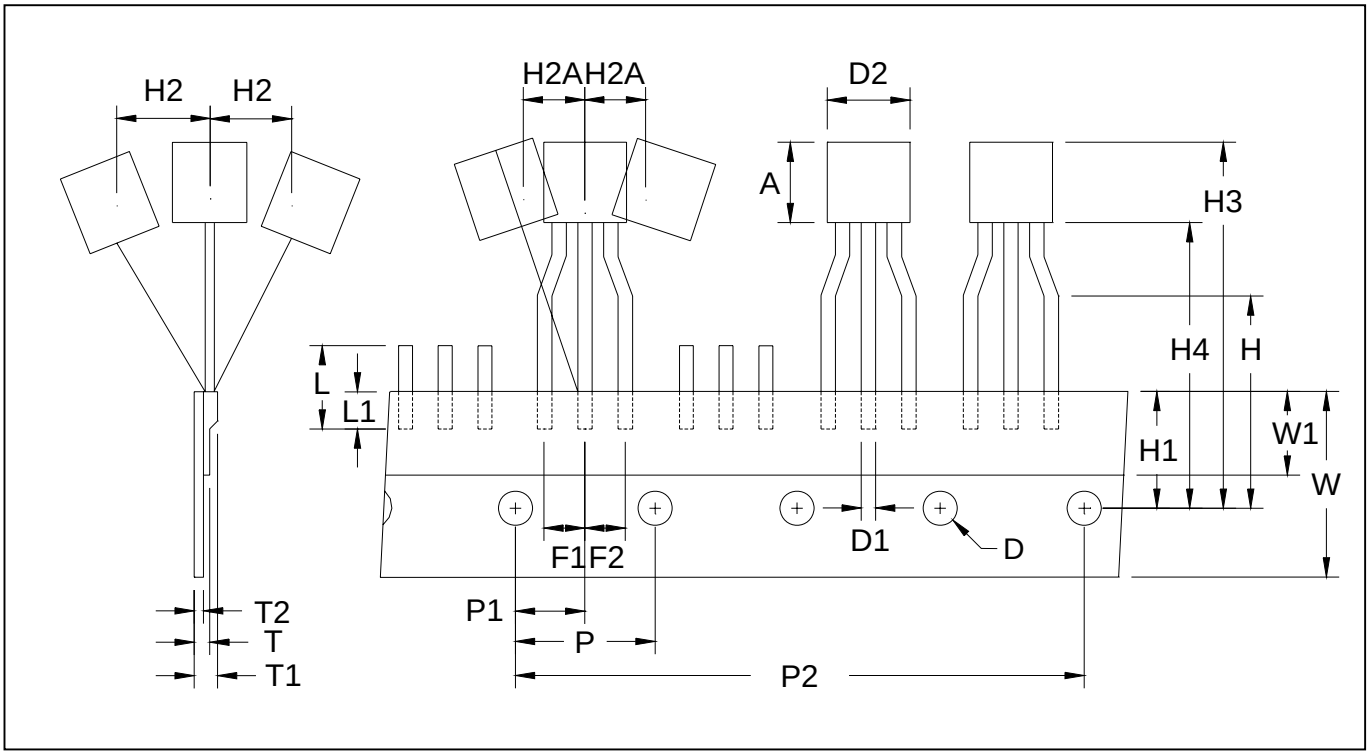
Recommended temperature profile for wave soldering



Recommendation:

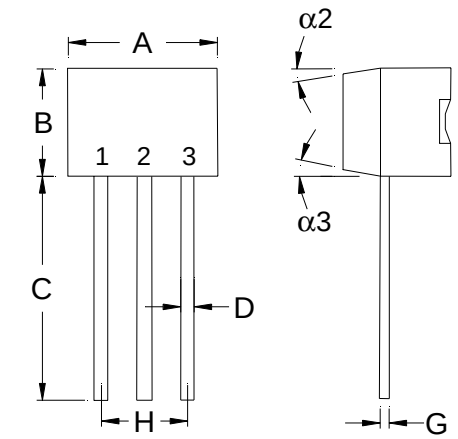
1. Preheat temperature at solder side must be between 100 and 130 ℃ for 80 to 100 seconds.
2. Temperature ramp-up rate : 1~2 ℃/s
3. The temperature gradient between preheat and wave soldering must be smaller than +100℃.
4. Terminations must go through the wave simultaneously.
5. Travel through the wave from 255 to 260℃ for 2.5 to 3.5 seconds
6. Temperature ramp-down rate : 2~3 ℃/s

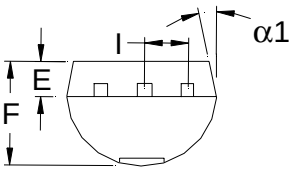
TO-92 Taping Outline



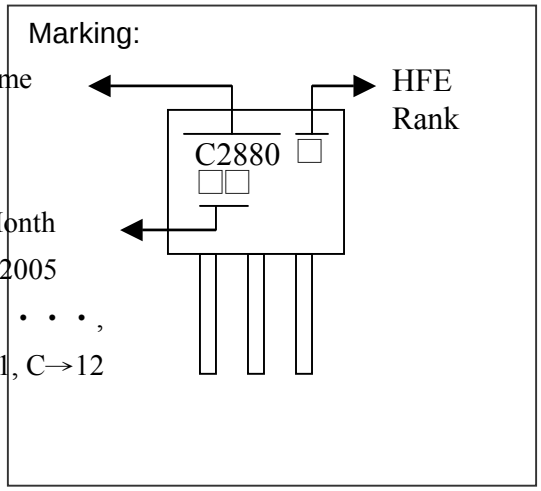
DIM	Item	Millimeters	
		Min.	Max.
A	Component body height	4.33	4.83
D	Tape Feed Diameter	3.80	4.20
D1	Lead Diameter	0.36	0.53
D2	Component Body Diameter	4.33	4.83
F1,F2	Component Lead Pitch	2.40	2.90
F1,F2	F1-F2	-	±0.3
H	Height Of Seating Plane	15.50	16.50
H1	Feed Hole Location	8.50	9.50
H2	Front To Rear Deflection	-	1
H2A	Deflection Left Or Right	-	1
H3	Component Height	-	27
H4	Feed Hole To Bottom Of Component	-	21
L	Lead Length After Component Removal	-	11
L1	Lead Wire Enclosure	2.50	-
P	Feed Hole Pitch	12.50	12.90
P1	Center Of Seating Plane Location	5.95	6.75
P2	4 Feed Hole Pitch	50.30	51.30
T	Over All Tape Thickness	-	0.55
T1	Total Taped Package Thickness	-	1.42
T2	Carrier Tape Thickness	0.36	0.68
W	Tape Width	17.50	19.00
W1	Adhesive Tape Width	5.00	7.00
-	20 pcs Pitch	253	255

TO-92 Dimension





Marking:



Date Code: Year+Month

Year: 4→2004, 5→2005

Month: 1→1, 2→2, • • • ,

9→9, A→10, B→11, C→12

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

3-Lead TO-92 Plastic Package
CYStek Package Code: A3

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1704	0.1902	4.33	4.83	G	0.0142	0.0220	0.36	0.56
B	0.1704	0.1902	4.33	4.83	H	-	*0.1000	-	*2.54
C	0.5000	-	12.70	-	I	-	*0.0500	-	*1.27
D	0.0142	0.0220	0.36	0.56	α1	-	*5°	-	*5°
E	-	*0.0500	-	*1.27	α2	-	*2°	-	*2°
F	0.1323	0.1480	3.36	3.76	α3	-	*2°	-	*2°

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