General Purpose NPN Epitaxial Planar Transistor

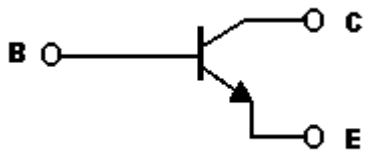
BTC2880M3

Features

- High breakdown voltage, $BV_{CEO} \geq 120V$
- Large continuous collector current capability
- Low collector saturation voltage
- Pb-free lead plating and halogen-free package
- Weight : approx. 48.34 mg

Symbol

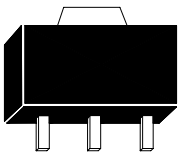
BTC2880M3



B：Base
C：Collector
E：Emitter

Outline

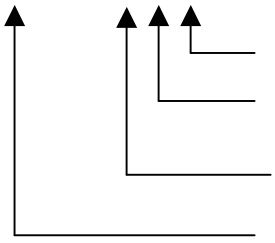
SOT-89



B C E

Ordering Information

Device	Package	Shipping
BTC2880M3-X-T2-G	SOT-89 (Pb-free lead plating and halogen-free package)	1000 pcs / Tape & Reel



Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products

Packing spec, T2 :1000 pcs/tape & reel

Product rank, zero for no rank products

Product name

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	180	V
Collector-Emitter Voltage	V_{CEO}	120	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current	I_C	1	A
Base Current	I_B	0.2	A
Power Dissipation	P_D	0.6	W
		1 (Note 1)	W
		2 (Note 2)	W
Operating Junction Temperature Range	Tj	-55~+150	°C
Storage Temperature Range	Tstg	-55~+150	°C

Note : 1. When mounted on FR-4 PCB with area measuring 10×10×1 mm
2 . When mounted on ceramic with area measuring 40×40×1 mm

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	180	-	-	V	I_C=50μA
BV_{CEO}	120	-	-	V	I_C=1mA
BV_{EBO}	7	-	-	V	I_E=50μA
I_{CBO}	-	-	100	nA	V_{CB}=180V
I_{EBO}	-	-	100	nA	V_{EB}=6V
*$V_{CE(sat)}$	-	0.1	0.2	V	I_C=500mA, I_B=50mA
*$V_{CE(sat)}$	-	0.2	0.5	V	I_C=1A, I_B=50mA
*$V_{BE(sat)}$	-	-	1	V	I_C=500mA, I_B=50mA
*$V_{BE(on)}$	-	-	0.9	V	V_{CE}=5V, I_C=500mA
*h_{FE} 1	100	-	-	-	V_{CE}=5V, I_C=50mA
*h_{FE} 2	100	-	270	-	V_{CE}=5V, I_C=100mA
*h_{FE} 3	80	-	-	-	V_{CE}=5V, I_C=800mA
f_T	50	-	-	MHz	V_{CE}=10V, I_C=50mA, f=100MHz
Cob	-	-	20	pF	V_{CB}=10V, I_E=0A,f=1MHz

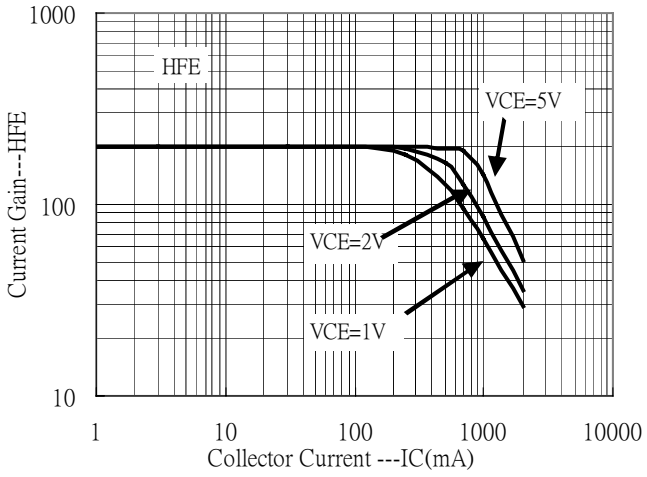
*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

Classification Of h_{FE} 2

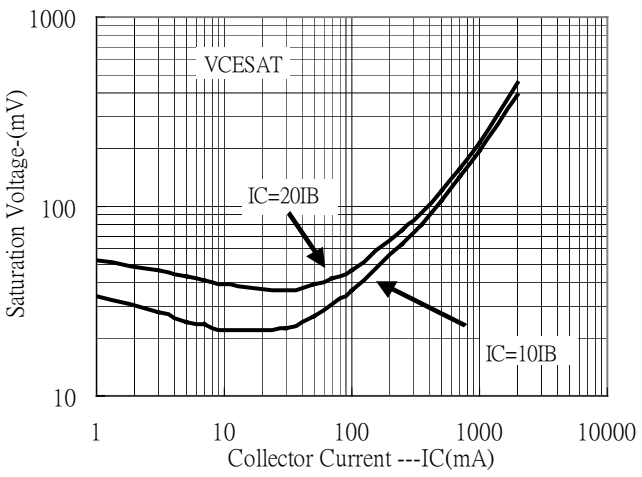
Rank	P	Q
Range	100~200	120~270

Typical Characteristics

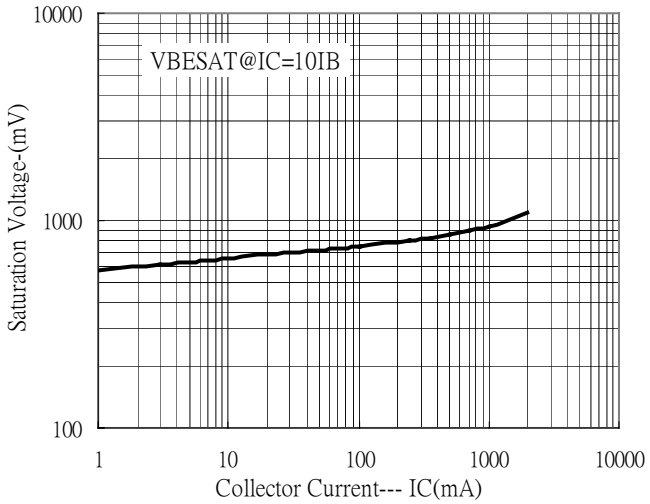
Current Gain vs Collector Current



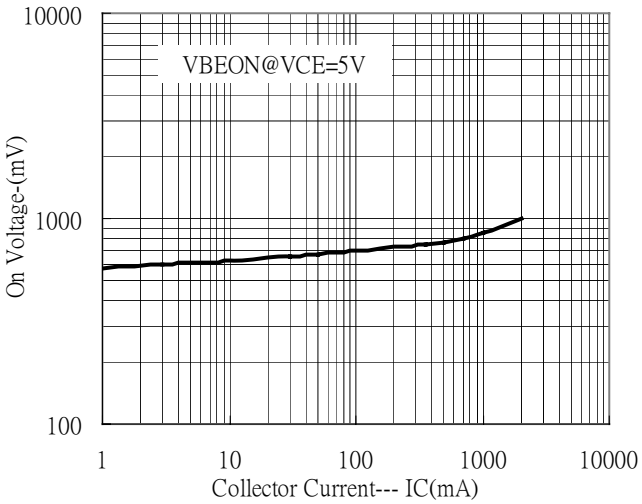
Saturation Voltage vs Collector Current



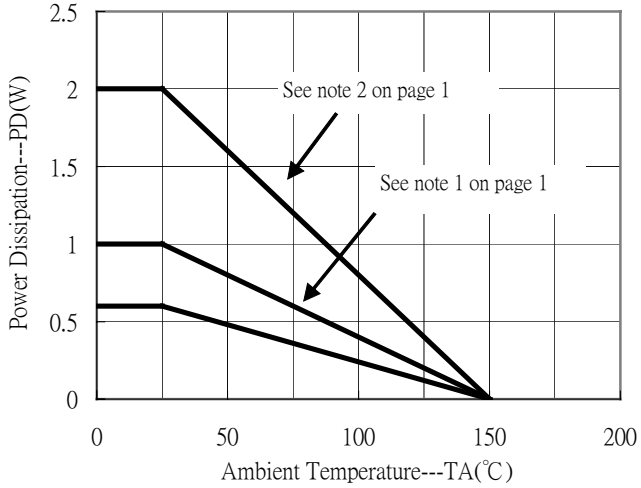
Saturation Voltage vs Collector Current



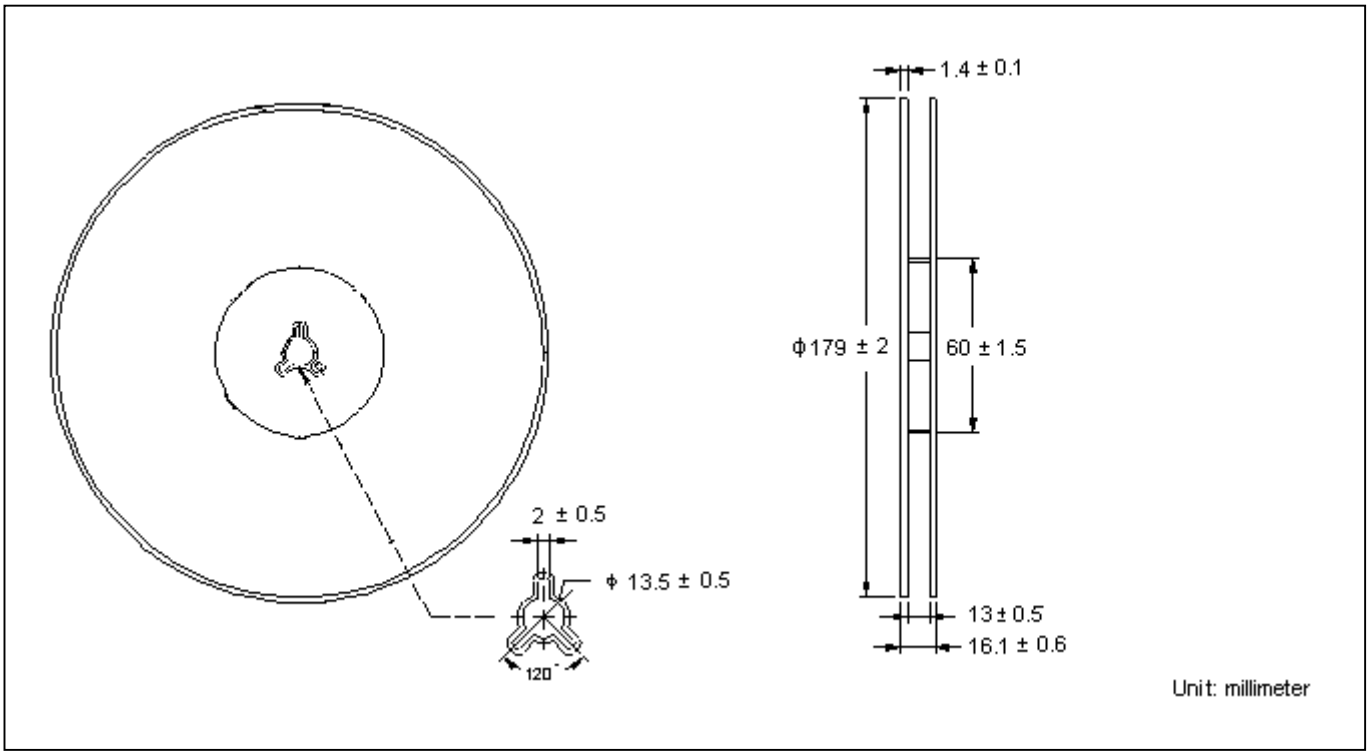
On Voltage vs Collector Current



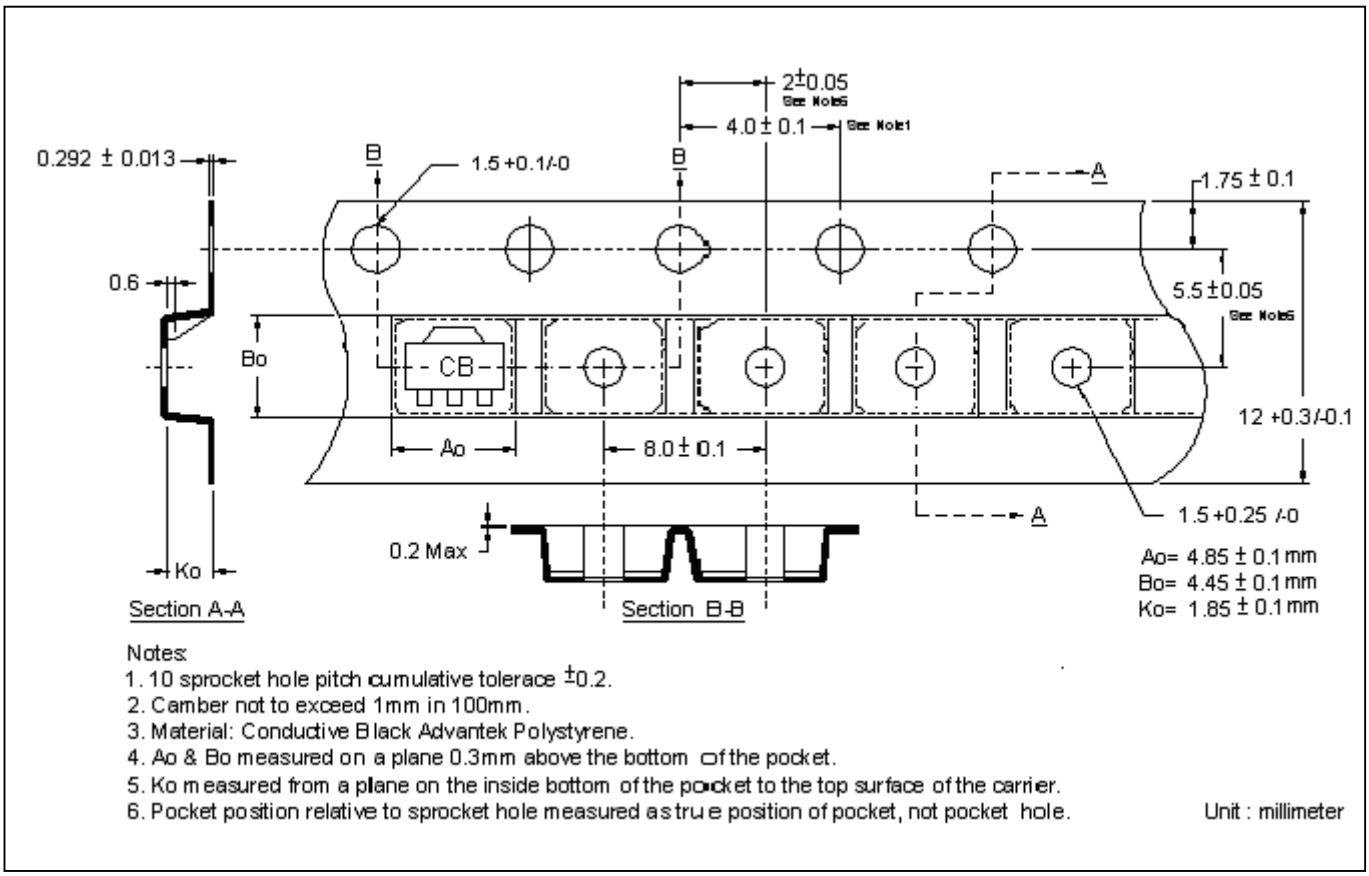
Power Derating Curves



Reel Dimension



Carrier Tape Dimension



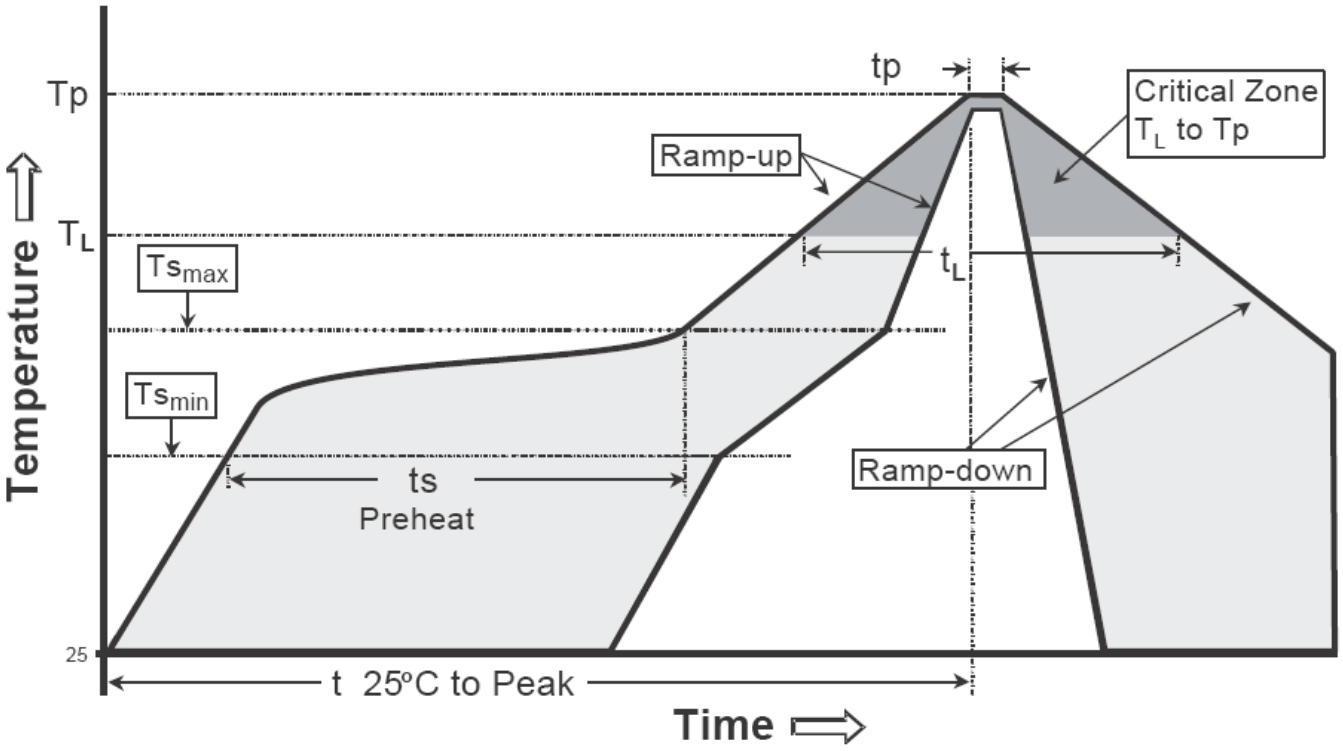
Notes:
1. 10 sprocket hole pitch cumulative tolerace ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material: Conductive Black Advantek Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Unit : millimeter

Recommended wave soldering condition

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

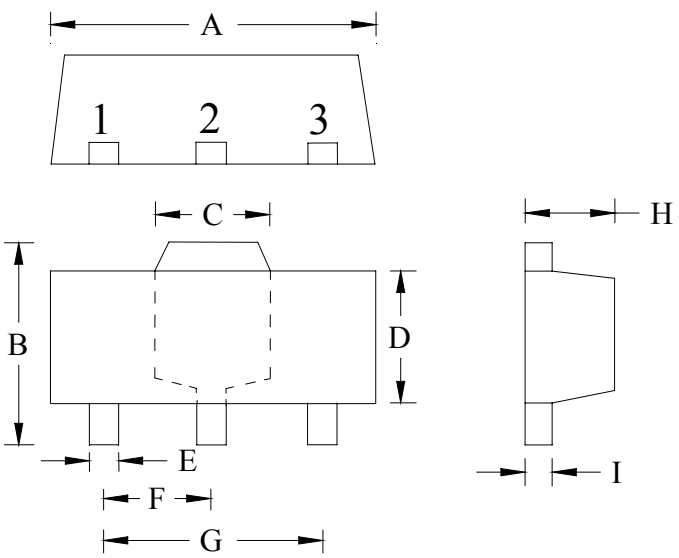
Recommended temperature profile for IR reflow

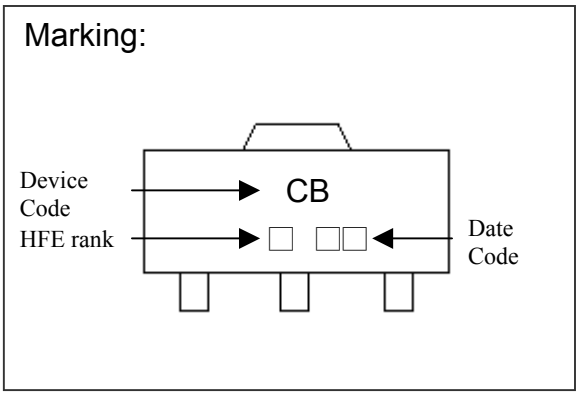


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(T_S min) −Temperature Max(T_S max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (T_L) − Time (t_L)	 183°C 60-150 seconds	 217°C 60-150 seconds
Peak Temperature(T_P)	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.

Note :1. All temperatures refer to topside of the package, measured on the package body surface.
2.For devices mounted on FR-4 PCB of 1.6mm or equivalent grade PCB. If other grade PCB is used, care should be taken to match the coefficients of thermal expansion between components and PCB. If they are not matched well, the solder joints may crack or the bodies of the parts may crack or shatter as the assembly cools.

SOT-89 Dimension





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

3-Lead SOT-89 Plastic
Surface Mounted Package
CYStek Package Code: M3

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1732	0.1811	4.40	4.60	F	0.0591 TYP		1.50 TYP	
B	0.1551	0.1673	3.94	4.25	G	0.1181 TYP		3.00 TYP	
C	0.0610 REF		1.55 REF		H	0.0551	0.0630	1.40	1.60
D	0.0906	0.1024	2.30	2.60	I	0.0138	0.0173	0.35	0.44
E	0.0126	0.0205	0.32	0.52					

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.