High Voltage NPN Epitaxial Planar Transistor

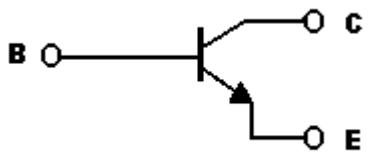
BTC4505M3

Features

- High breakdown voltage, $BV_{CEO\ (min)}$=400V.
- Low saturation voltage, typically V_{CE}(sat) =0.14V at $I_C/I_{B=}$50mA/5mA.
- Complementary to BTA1759M3.
- Pb-free lead plating and halogen-free package.

Symbol

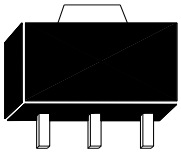
BTC4505M3



B：Base
C：Collector
E：Emitter

Outline

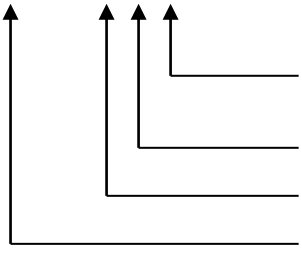
SOT-89



B C E

Ordering Information

Device	Package	Shipping
BTC4505M3-0-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, 7” reel

Product rank, zero for no rank products

Product name

Absolute Maximum Ratings (Ta=25°C)

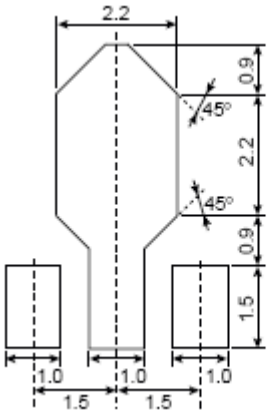
Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V_{CBO}	500	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	300	mA
Power Dissipation	Pd	600	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55~+150	°C

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	500	-	-	V	I_C=50μA, I_E=0
BV_{CEO}	400	-	-	V	I_C=1mA, I_B=0
BV_{EBO}	6	-	-	V	I_E=50μA, I_C=0
I_{CBO}	-	-	100	nA	V_{CB}=500V, I_E=0
I_{CES}	-	-	100	nA	V_{CE}=500V, V_{BE}=0
I_{EBO}	-	-	100	nA	V_{EB}=6V, I_C=0
$V_{CE(sat)}$	-	0.08	0.15	V	I_C=1mA, I_B=0.1mA
$V_{CE(sat)}$	-	0.08	0.15	V	I_C=10mA, I_B=1mA
*$V_{CE(sat)}$	-	0.14	0.25	V	I_C=50mA, I_B=5mA
*$V_{BE(sat)}$	-	0.68	0.75	V	I_C=10mA, I_B=1mA
h_{FE}	80	-	-	-	V_{CE}=10V, I_C=1mA
h_{FE}	120	-	270	-	V_{CE}=10V, I_C=10mA
h_{FE}	100	-	-	-	V_{CE}=10V, I_C=50mA
h_{FE}	40	-	-	-	V_{CE}=10V, I_C=100mA
f_T	-	20	-	MHz	V_{CE}=10V, I_C=10mA, f=100MHz
Cob	-	7	-	pF	V_{CB}=10V, f=1MHz

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

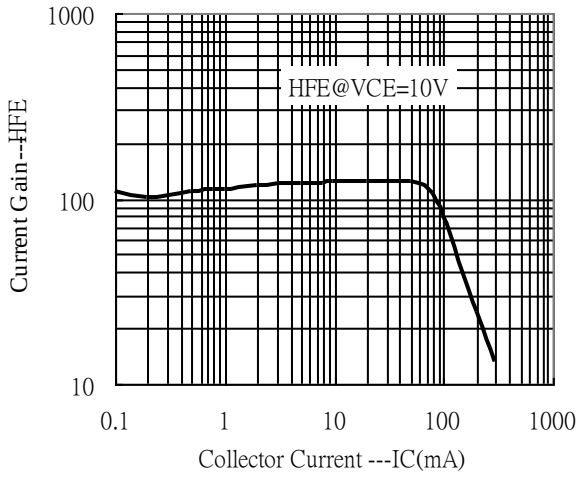
Recommended soldering footprint



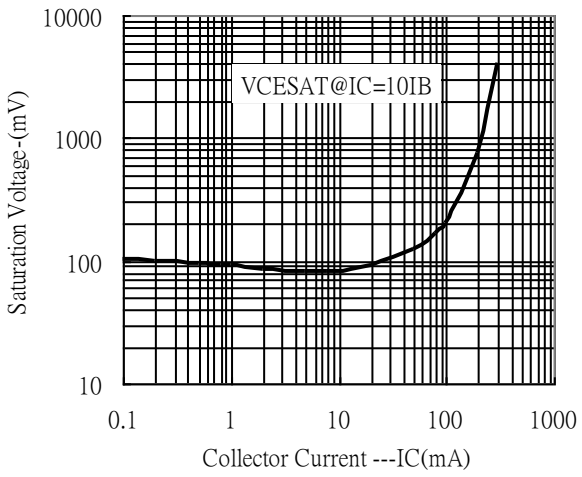
unit : mm

Typical Characteristics

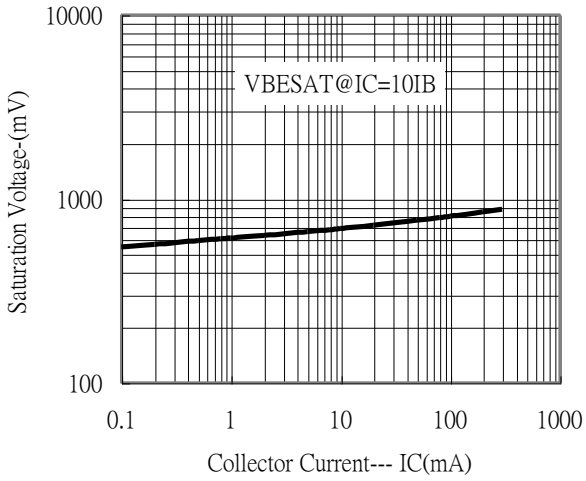
Current Gain vs Collector Current



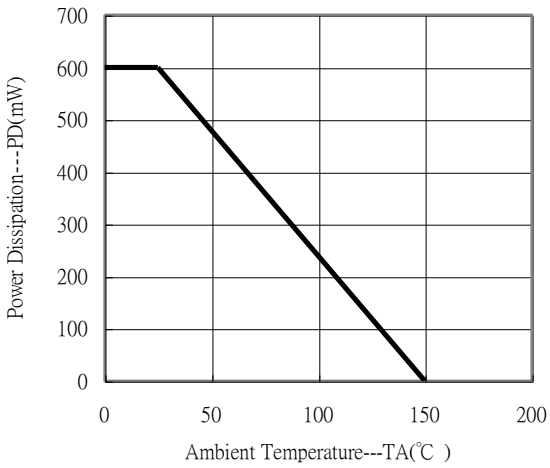
Saturation Voltage vs Collector Current



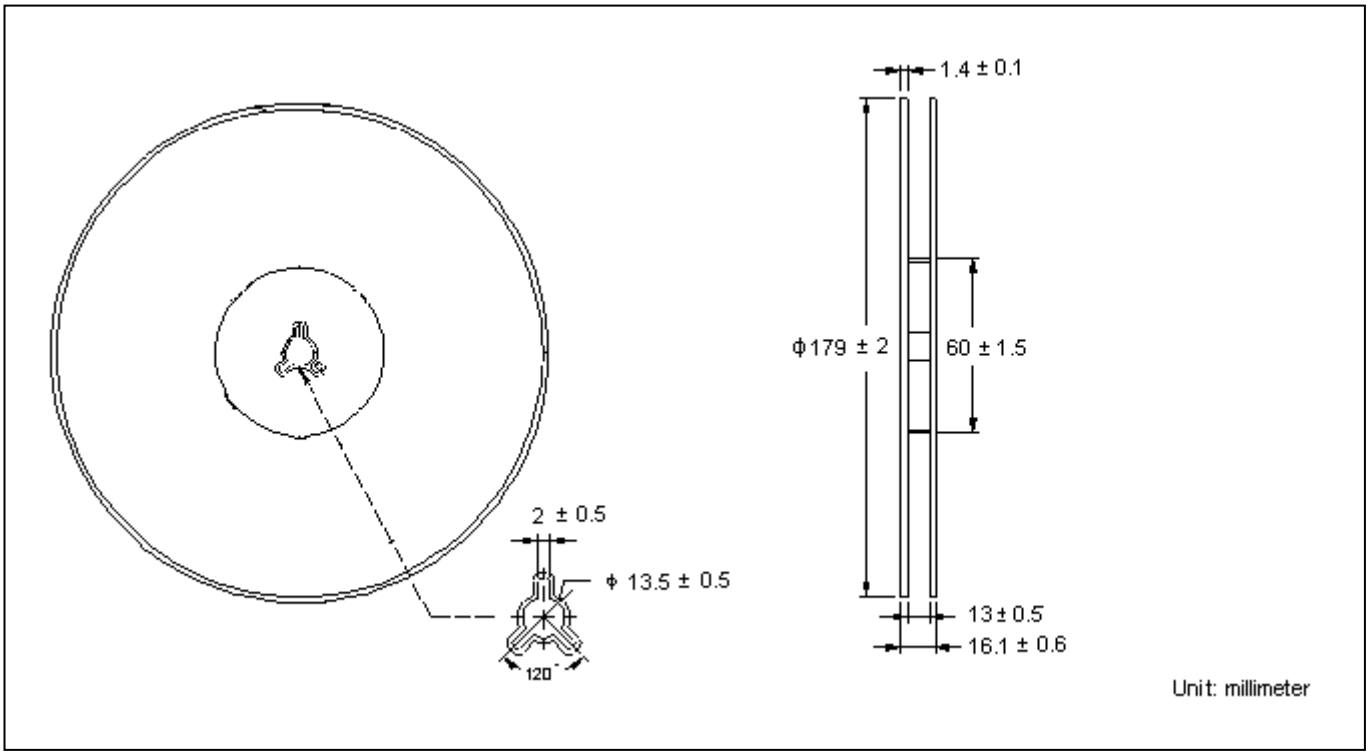
Saturation Voltage vs Collector Current



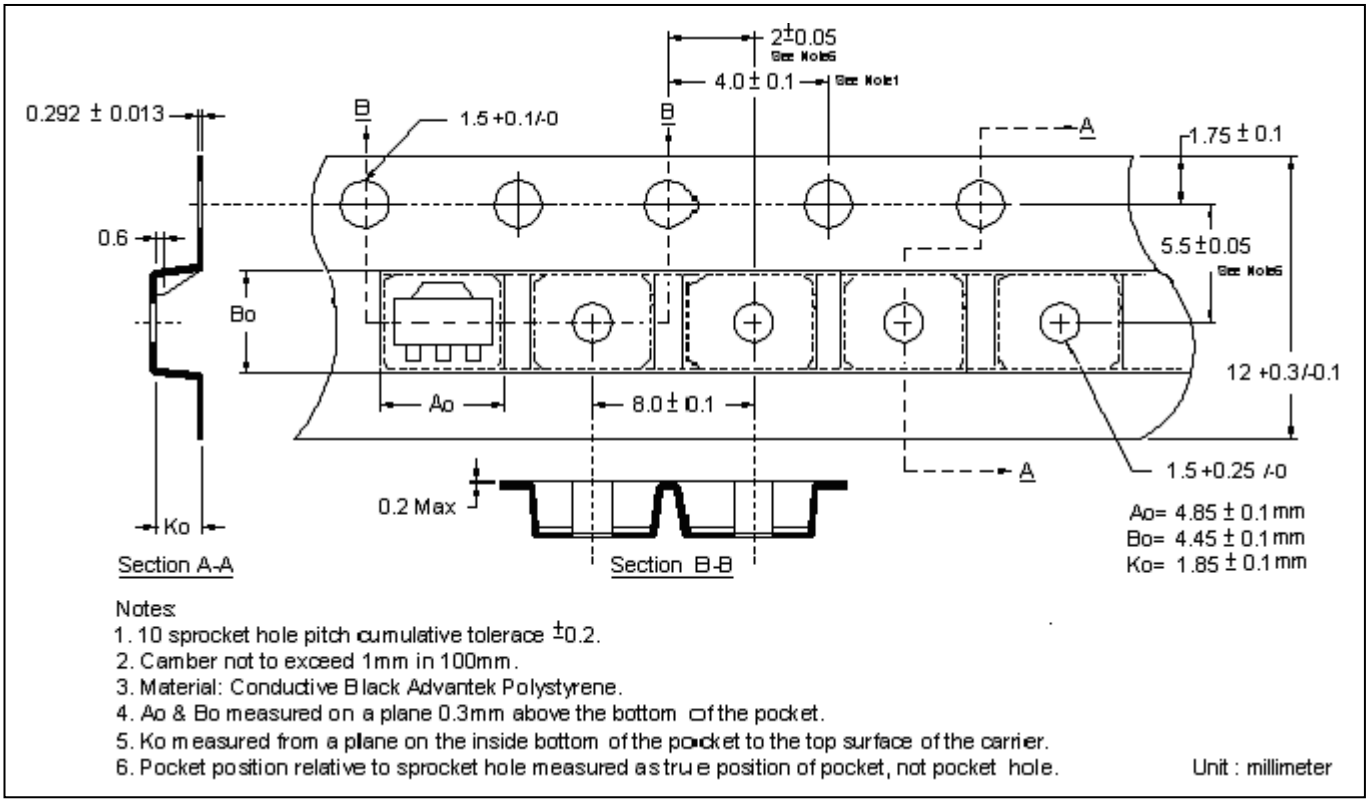
Power Derating Curve



Reel Dimension



Carrier Tape Dimension



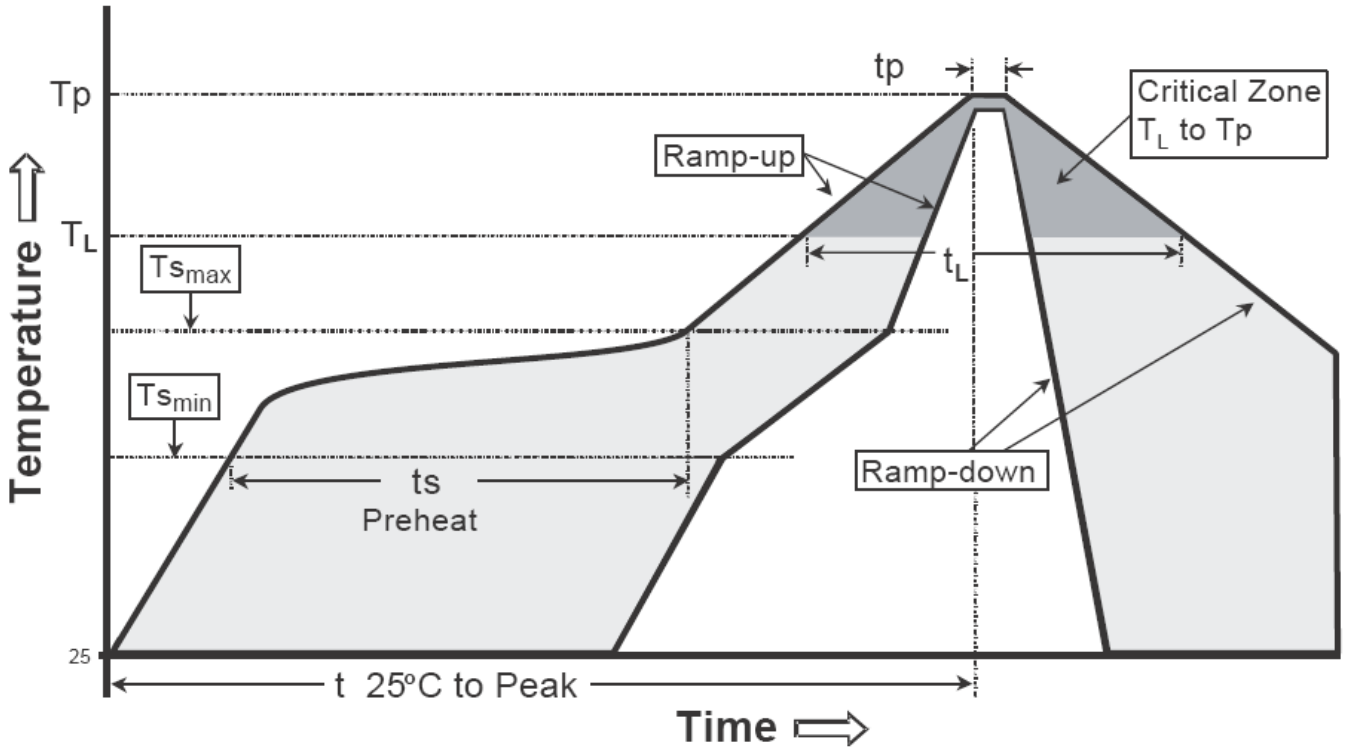
Notes:
1. 10 sprocket hole pitch cumulative tolerace ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material: Conductive Black Advantek Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of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

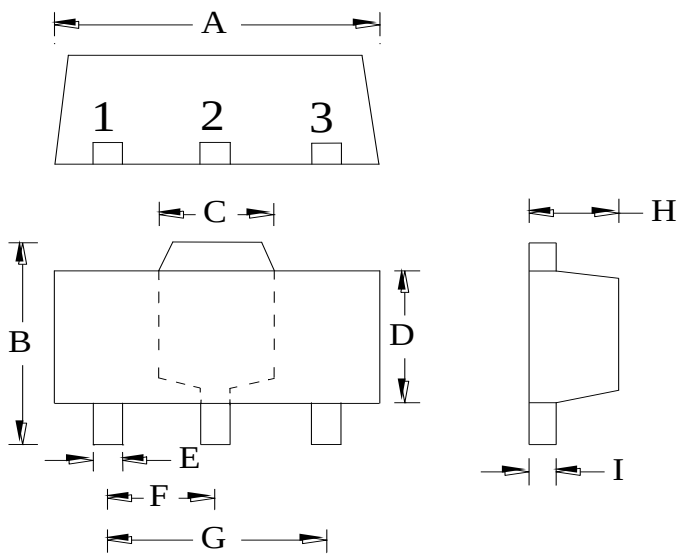
Recommended temperature profile for IR reflow

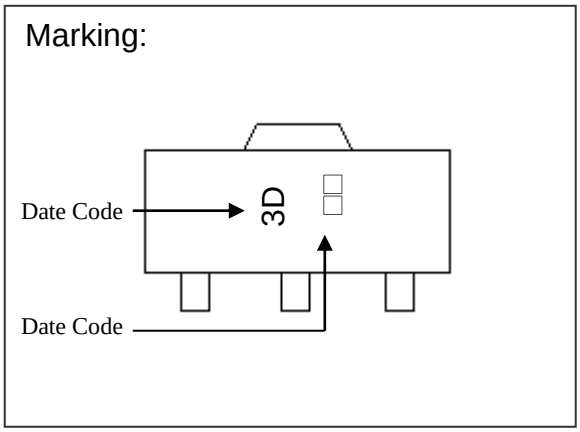


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL)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

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

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.