

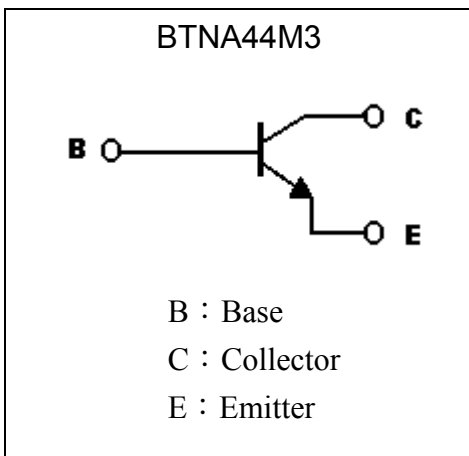
High Voltage NPN Epitaxial Planar Transistor

BTNA44M3

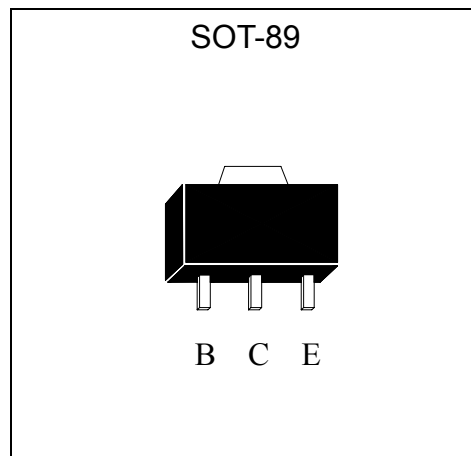
Features

- High breakdown voltage. ($BV_{CEO} = 400V$)
- Low saturation voltage, typically $V_{CE(sat)} = 60mV$ at $I_C/I_B=10mA/1mA$.
- Complementary to BTPA94M3
- Pb-free lead plating and halogen-free package

Symbol

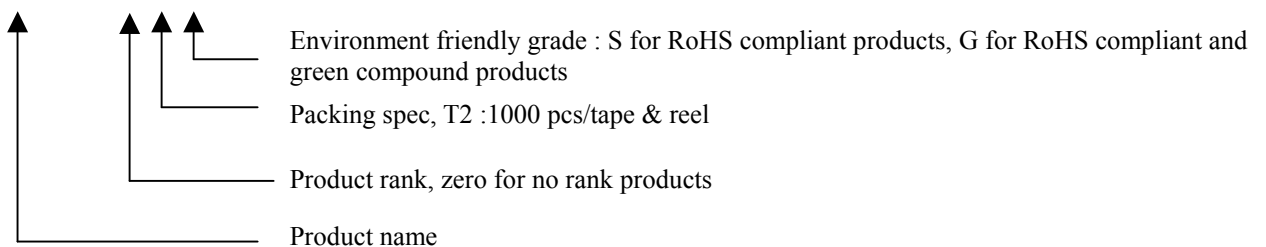


Outline



Ordering Information

Device	Package	Shipping
BTNA44M3-X-T2-G	SOT-89 (Pb-free lead plating and halogen-free package)	1000 pcs / Tape & Reel





Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V _{CB0}	500	V
Collector-Emitter Voltage	V _{CE0}	400	
Emitter-Base Voltage	V _{EB0}	6	
Collector Current(DC)	I _C	300	mA
Collector Current(Pulse)	I _{CP}	600 *1	
Power Dissipation	P _D	0.5	W
		1 *2	
		2 *3	
Thermal Resistance, Junction to Ambient	R _{θJA}	125 *2	°C/W
		62.5 *3	
Operating Junction Temperature Range	T _j	150	°C
Storage Temperature Range	T _{stg}	-55~+150	°C

Note : *1 Single pulse , Pw=10ms

*2 Printed circuit board, glass epoxy board, 1.7mm thick with collector copper plating 10mm*10mm.

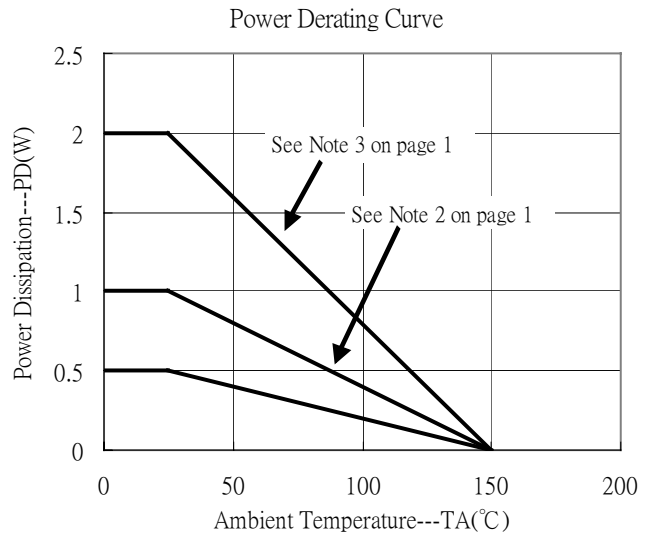
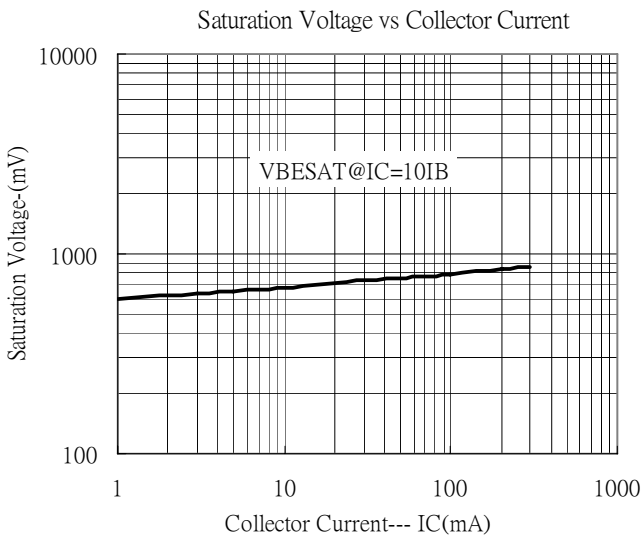
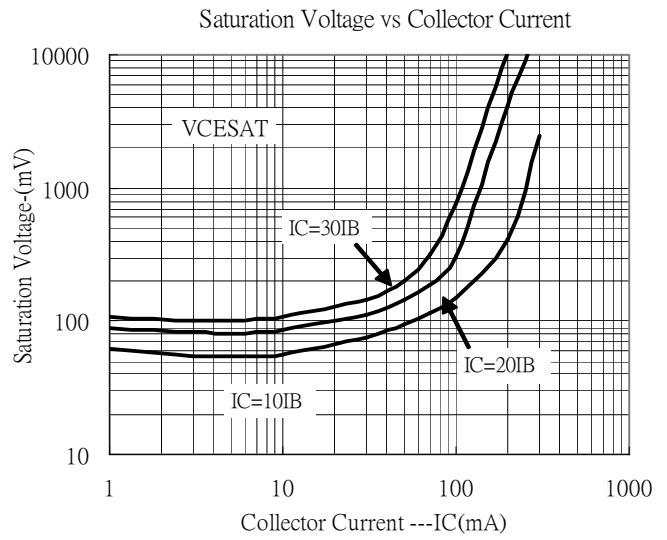
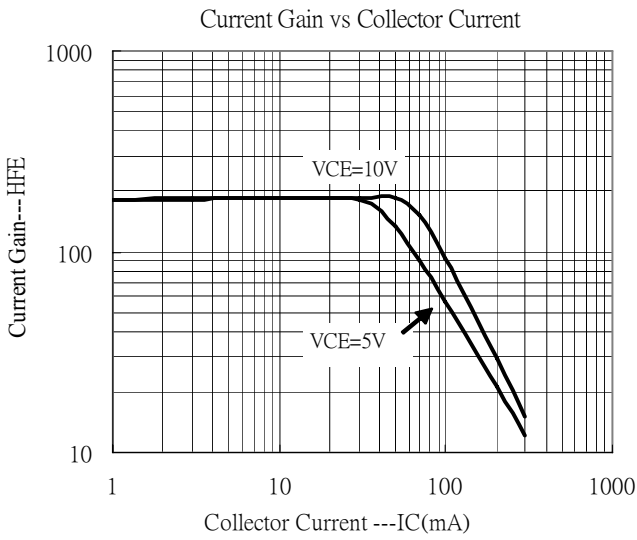
*3 When mounted on a 40*40*0.7mm ceramic board.

Characteristics (Ta=25°C)

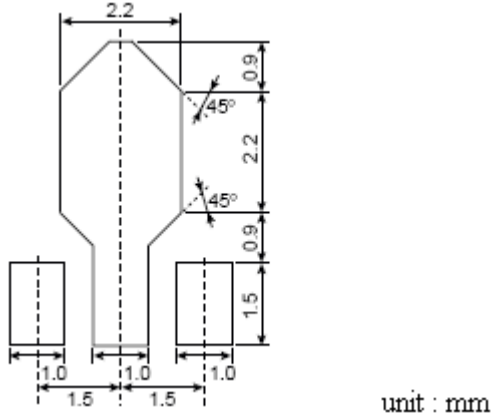
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CB0}	500	-	-	V	I _C =50μA, I _E =0
BV _{CE0}	400	-	-	V	I _C =1mA, I _B =0
BV _{EB0}	6	-	-	V	I _E =50μA, I _C =0
IC _{B0}	-	-	100	nA	V _{CB} =500V, I _E =0
IE _{B0}	-	-	100	nA	V _{EB} =6V, I _C =0
V _{CE(sat)} 1	-	65	100	mV	I _C =1mA, I _B =0.1mA
*V _{CE(sat)} 2	-	70	150	mV	I _C =20mA, I _B =2mA
*V _{CE(sat)} 3	-	105	200	mV	I _C =50mA, I _B =5mA
*V _{BE(sat)} 1	-	0.69	0.9	V	I _C =10mA, I _B =1mA
*V _{BE(sat)} 2	-	0.76	1	V	I _C =50mA, I _B =5mA
h _{FE} 1	50	-	-	-	V _{CE} =10V, I _C =1mA
h _{FE} 2	100	-	250	-	V _{CE} =10V, I _C =10mA
*h _{FE} 3	90	-	-	-	V _{CE} =10V, I _C =50mA
*h _{FE} 4	40	-	-	-	V _{CE} =10V, I _C =100mA
f _T	50	-	-	MHz	V _{CE} =10V, I _C =10mA, f=100MHz
Cob	-	3.5	-	pF	V _{CB} =20V, f=1MHz

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

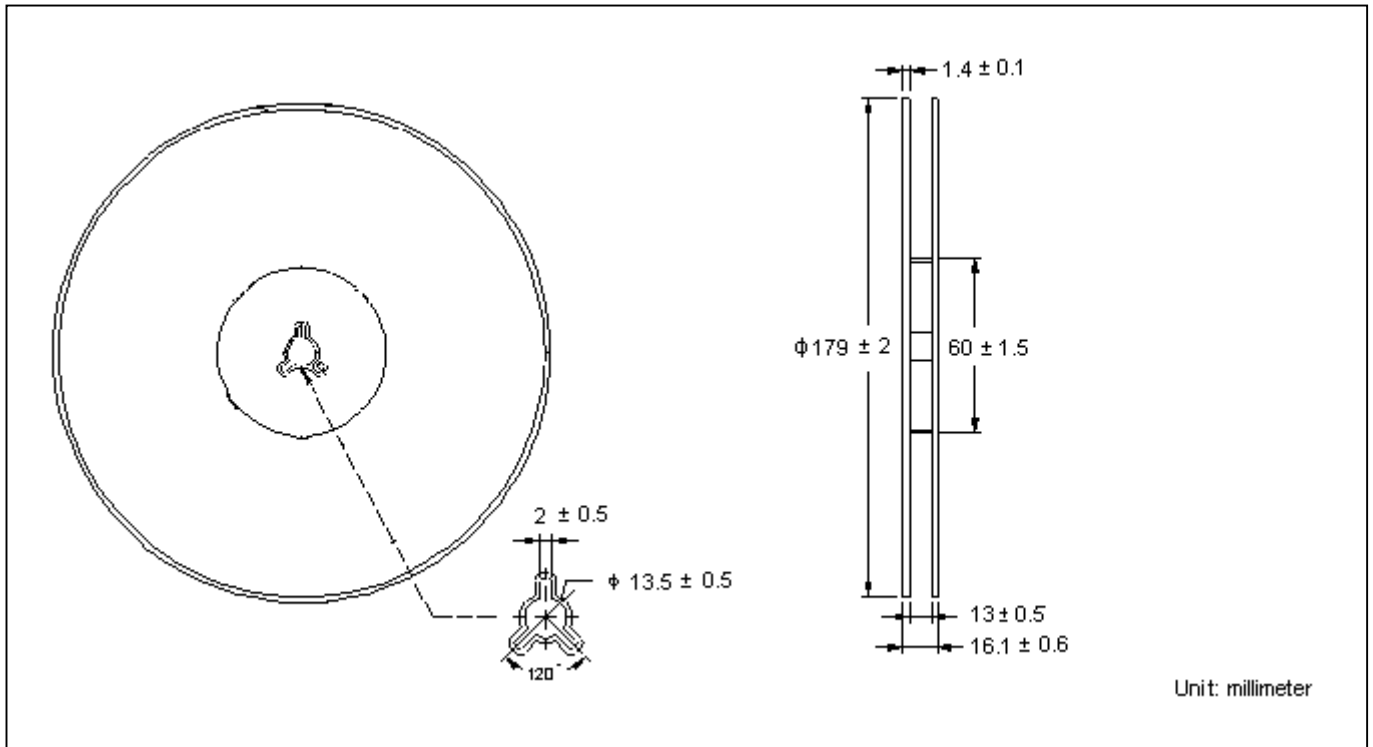
Typical Characteristics



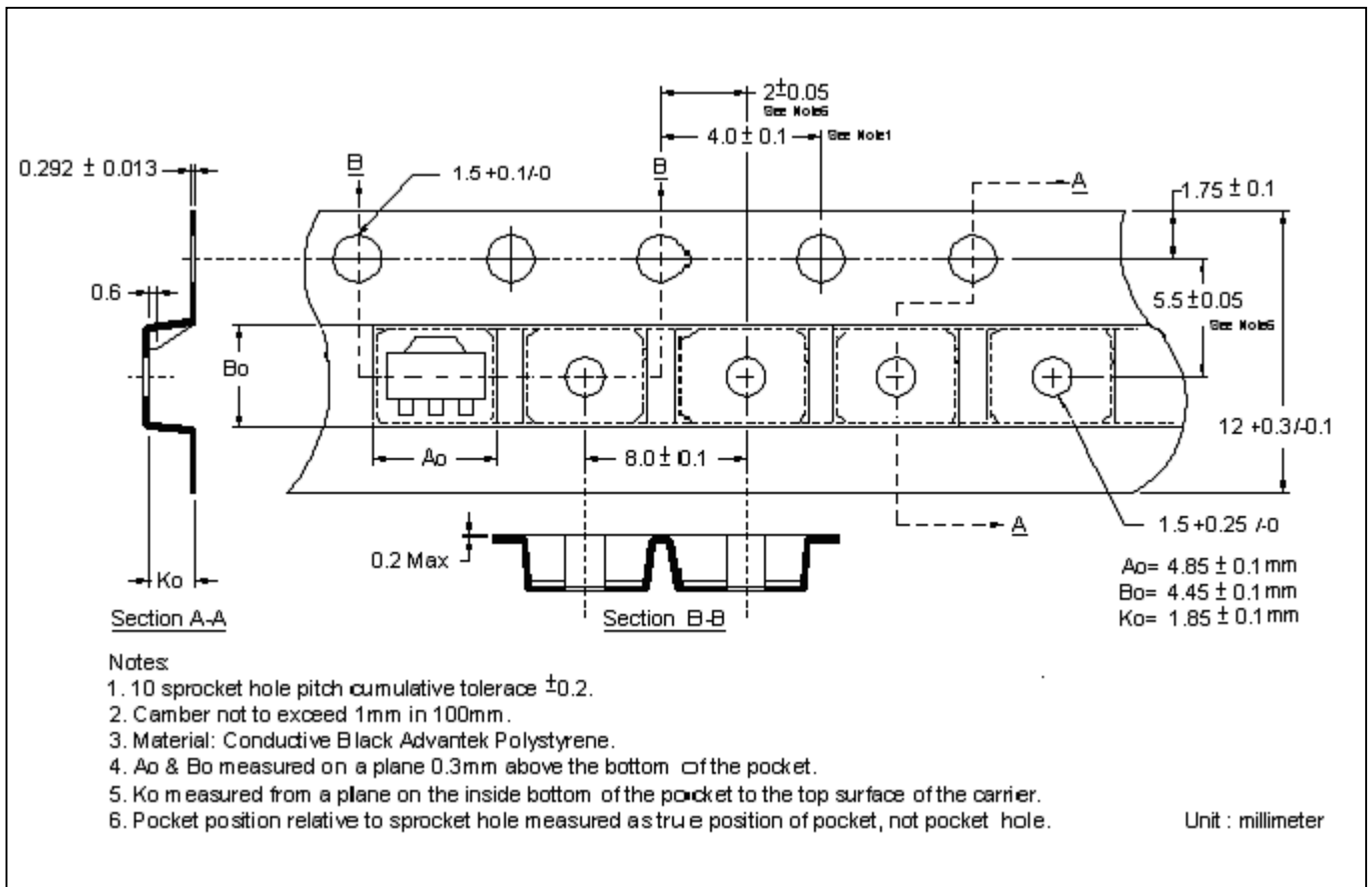
Recommended soldering footprint



Reel Dimension



Carrier Tape Dimension



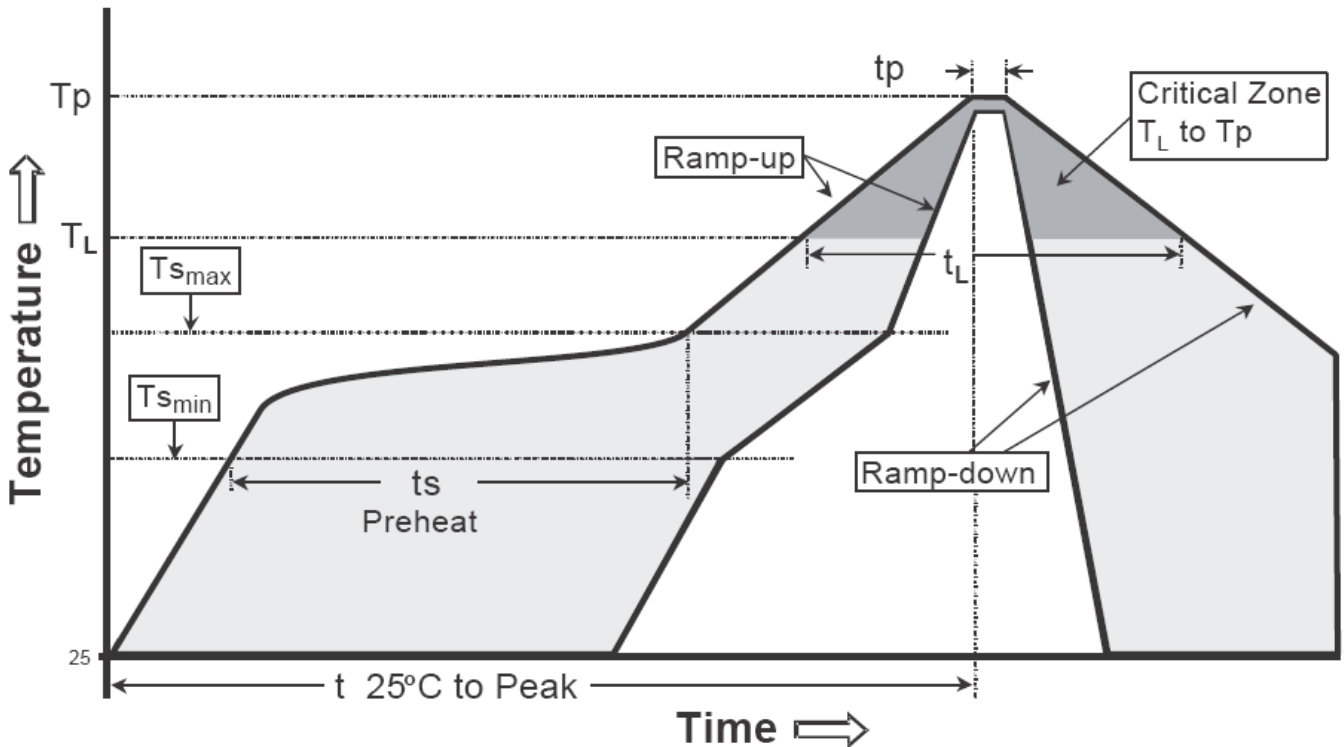
Notes:

1. 10 sprocket hole pitch cumulative tolerance ± 0.2 .
2. Camber not to exceed 1mm in 100mm.
3. Material: Conductive Black Advantek Polystyrene.
4. A_o & B_o measured on a plane 0.3mm above the bottom of the pocket.
5. K_o 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.

Recommended wave soldering condition

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

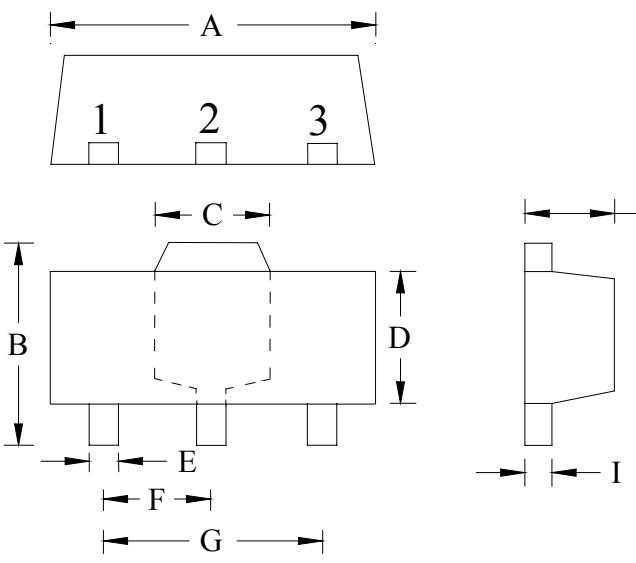
Recommended temperature profile for IR reflow



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)	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.

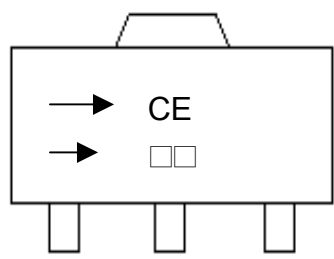
Note : All temperatures refer to topside of the package, measured on the package body surface.

SOT-89 Dimension



The diagram shows three views of the SOT-89 package: a top view with dimensions A, B, C, D, E, F, and G; a side view with dimensions H and I; and a perspective view of the package with pins 1, 2, and 3 labeled.

Marking:



Device Code → CE
 Date Code → □□

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

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

*: Typical

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	0.0906	0.1024
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.

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