## Low Vcesat NPN Epitaxial Planar Transistor

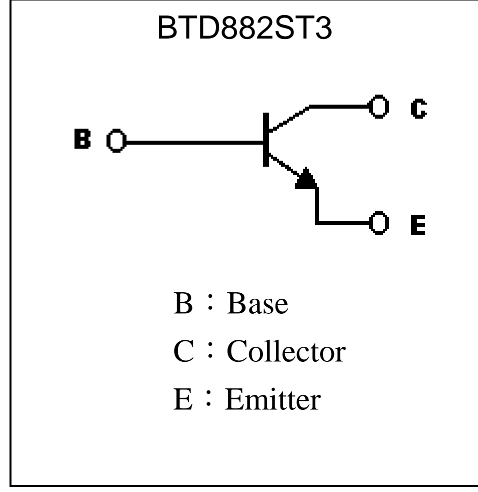
# BTD882ST3

| | |
|---|---|
| $BV_{CEO}$ | 30V |
| $I_C$ | 3A |
| $R_{CESAT(typ)}$ | 150mΩ |

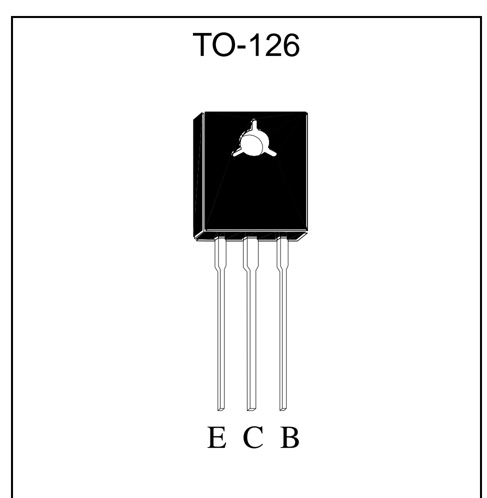
## Features

- Low $V_{CE(sat)}$, 0.3V typ. at $I_C$ / $I_B$ = 2A / 0.2A
- Excellent current gain characteristics
- Complementary to BTB772ST3
- Pb-free lead plating package

## Symbol

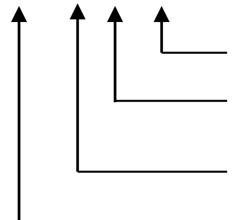



## Outline




## Ordering Information

| Device | Package | Shipping |
|---|---|---|
| BTD882ST3-X-BL-X | TO-126<br>(Pb-free lead plating package) | 200 pcs / bag, 3,000 pcs/box ,<br>30,000 pcs/carton |



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

Packing spec, BL: bulk, 200 pcs/bag, 15 bags/box, 10 boxes/carton

Product rank, zero for no rank products

Product name

## Absolute Maximum Ratings (Ta=25°C)

| Parameter | Symbol | Limit | Unit |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 60 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 30 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 6 | V |
| Collector Current | $I_C$(DC) | 3 | A |
| | $I_C$(Pulse) | 7 *1 | A |
| Power Dissipation | Pd(Ta=25℃) | 1 | W |
| | Pd(Tc=25℃) | 10 | |
| Operating Junction and Storage Temperature Range | Tj ; Tstg | -55~+150 | °C |

Note : *1. Single Pulse Pw≦350μs,Duty≦2%.

## Characteristics (Ta=25°C)

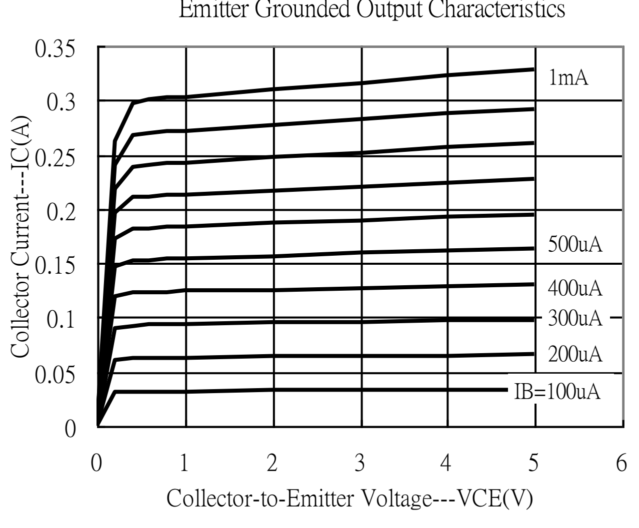
| Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|
| $BV_{CBO}$ | 60 | - | - | V | $I_C$=50μA, $I_E$=0 |
| $BV_{CEO}$ | 30 | - | - | V | $I_C$=1mA, $I_B$=0 |
| $BV_{EBO}$ | 6 | - | - | V | $I_E$=50μA, $I_C$=0 |
| $I_{CBO}$ | - | - | 100 | nA | $V_{CB}$=60V, $I_E$=0 |
| $I_{EBO}$ | - | - | 100 | nA | $V_{EB}$=6V, $I_C$=0 |
| *$V_{CE(sat)}$ | - | 0.3 | 0.5 | V | $I_C$=2A, $I_B$=0.2A |
| *$R_{CE(sat)}$ | - | 0.15 | 0.25 | Ω | $I_C$=2A, $I_B$=0.2A |
| *$V_{BE(sat)}$ | - | - | 1.5 | V | $I_C$=2A, $I_B$=0.2A |
| *$h_{FE}1$ | 160 | - | - | - | $V_{CE}$=2V, $I_C$=20mA |
| *$h_{FE}2$ | 180 | - | 390 | - | $V_{CE}$=2V, $I_C$=500mA |
| *$h_{FE}3$ | 150 | - | - | - | $V_{CE}$=2V, $I_C$=1A |
| $f_T$ | - | 270 | - | MHz | $V_{CE}$=5V, $I_C$=0.5A, f=100MHz |
| Cob | - | 16 | - | pF | $V_{CB}$=10V, f=1MHz |

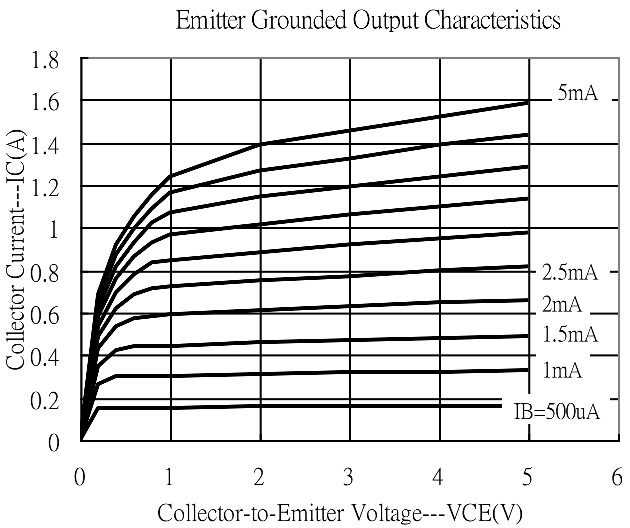
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

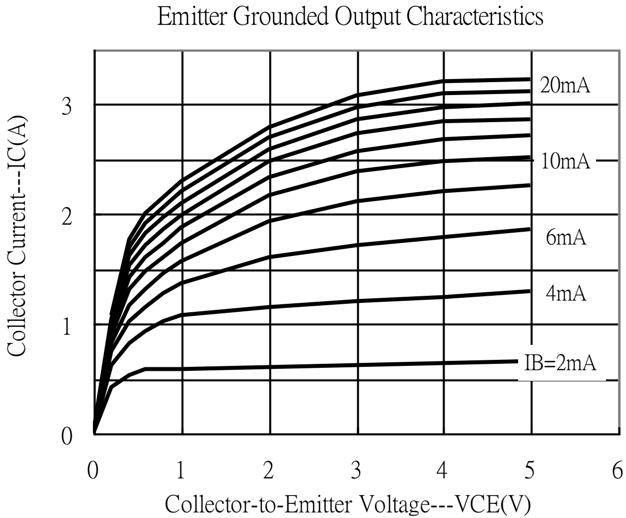
## Classification Of $h_{FE}$ 2

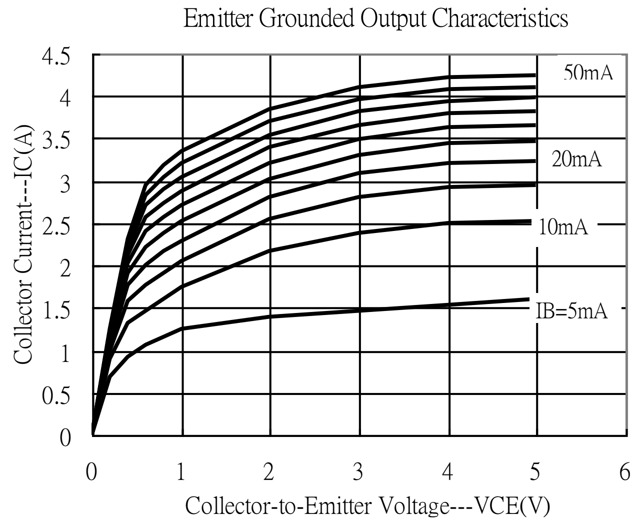
| Rank | P |
|---|---|
| Range | 180~390 |

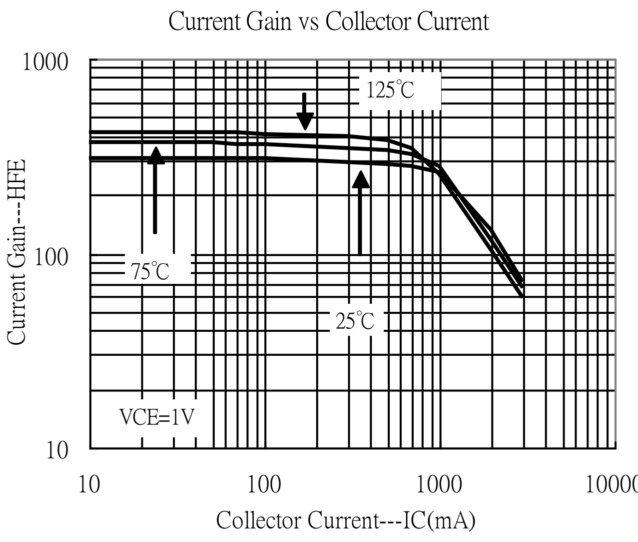
## Typical Characteristics

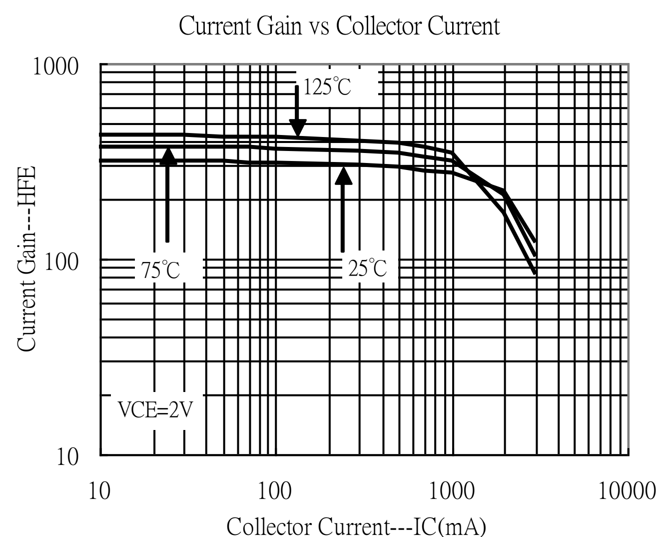


## Typical Characteristics(Cont.)

Current Gain vs Collector Current

Current Gain---HFE: 100, 1000
Collector Current---IC(mA): 10, 100, 1000, 10000
125°C
75°C
25°C
VCE=5V

Saturation Voltage vs Collector Current

Saturation Voltage---(mV): 1, 10, 100, 1000
Collector Current---IC(mA): 1, 10, 100, 1000, 10000
VCESAT=10IB
25°C
75°C
125°C

Saturation Voltage vs Collector Current

Saturation Voltage---(mV): 10, 100, 1000
Collector Current---IC(mA): 1, 10, 100, 1000, 10000
VCESAT=50IB
25°C
75°C
125°C

Saturation Voltage vs Collector Current

Saturation Voltage---(mV): 10, 100, 1000, 10000
Collector Current---IC(mA): 1, 10, 100, 1000, 10000
VCESAT=100IB
25°C
75°C
125°C

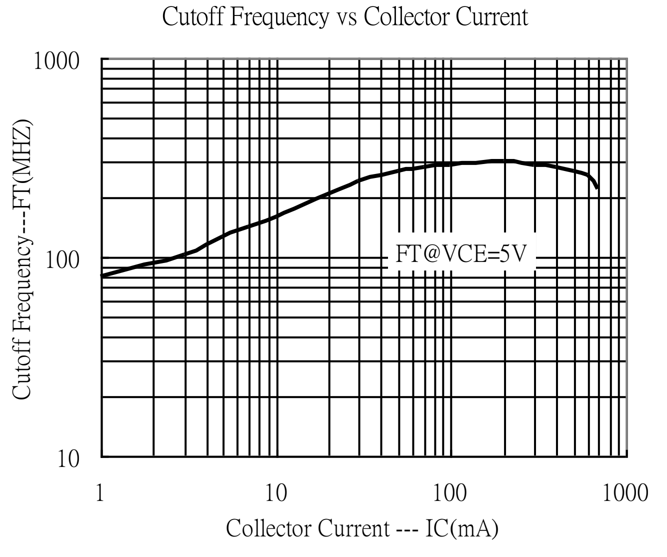
Saturation Voltage vs Collector Current

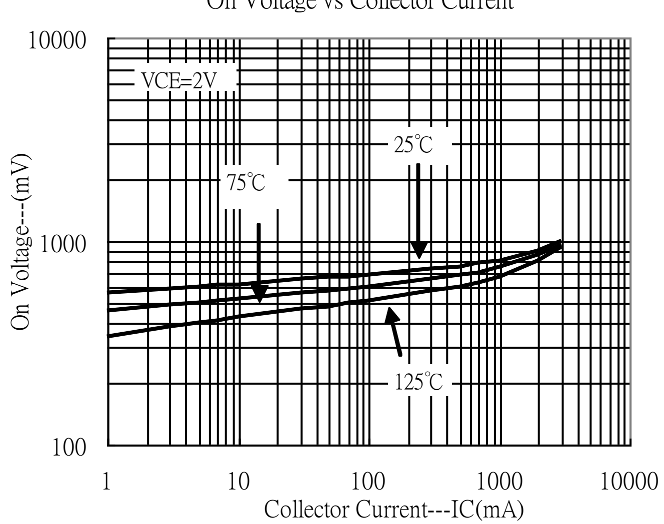
Saturation Voltage---(mV): 100, 1000, 10000
Collector Current---IC(mA): 1, 10, 100, 1000, 10000
VBESAT=50IB
25°C
125°C
75°C

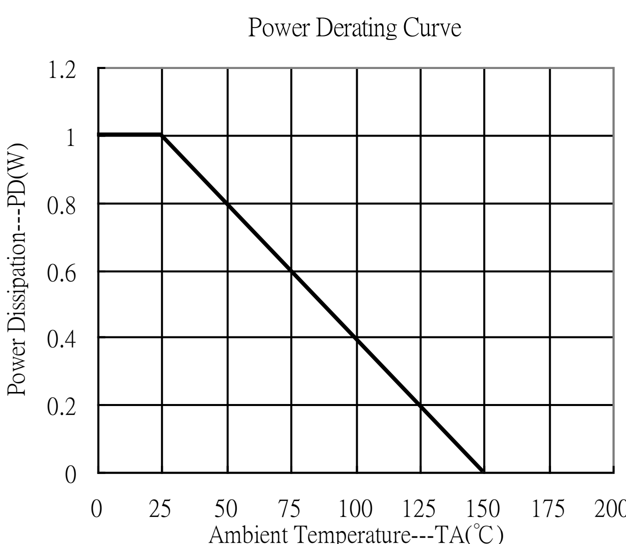
Capacitance vs Reverse-biased Voltage

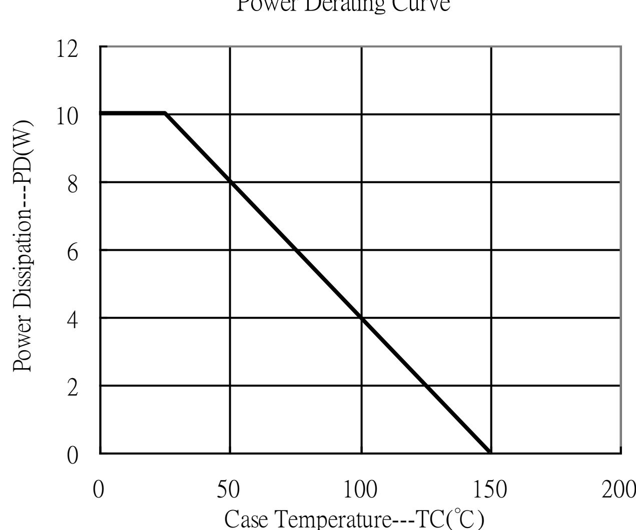
Capacitance---(pF): 10, 100, 1000
Reverse-biased Voltage---(V): 0.1, 1, 10, 100
Cib
Cob

## Typical Characteristics(Cont.)



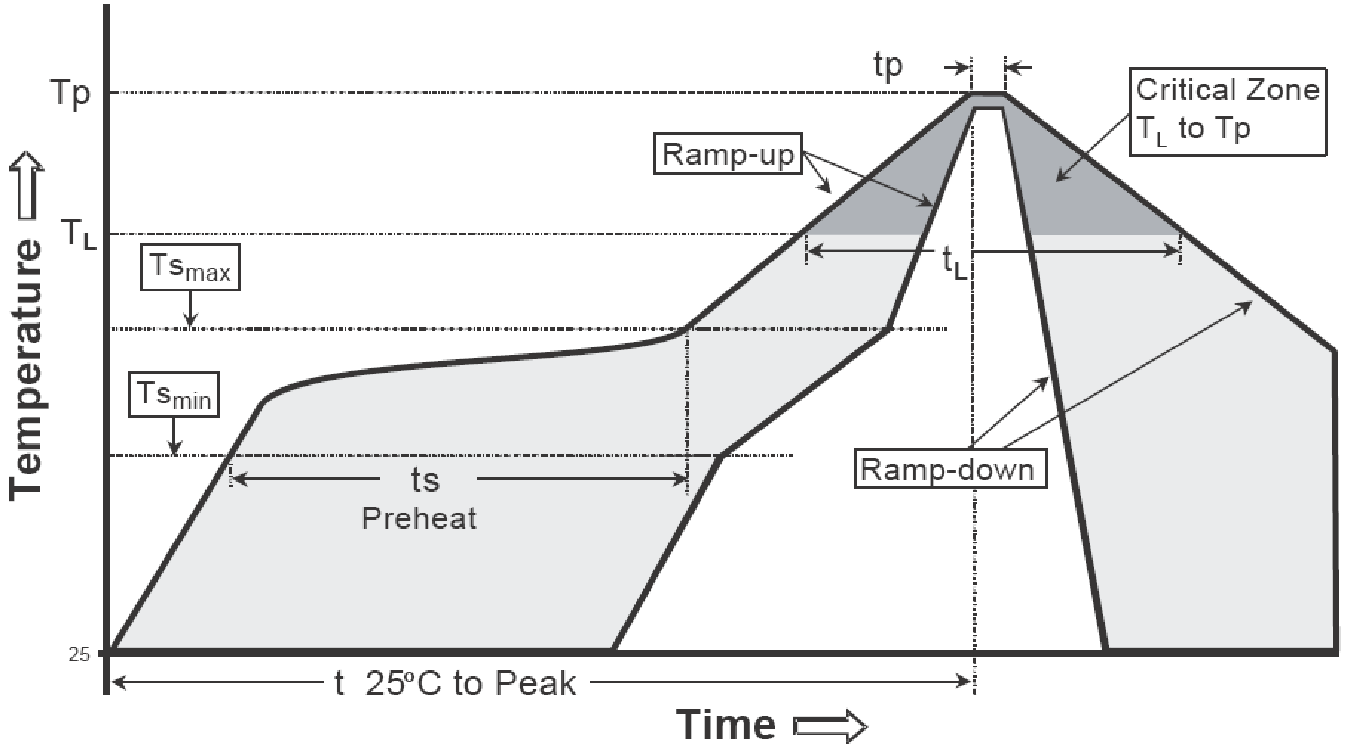



## Recommended wave soldering condition

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

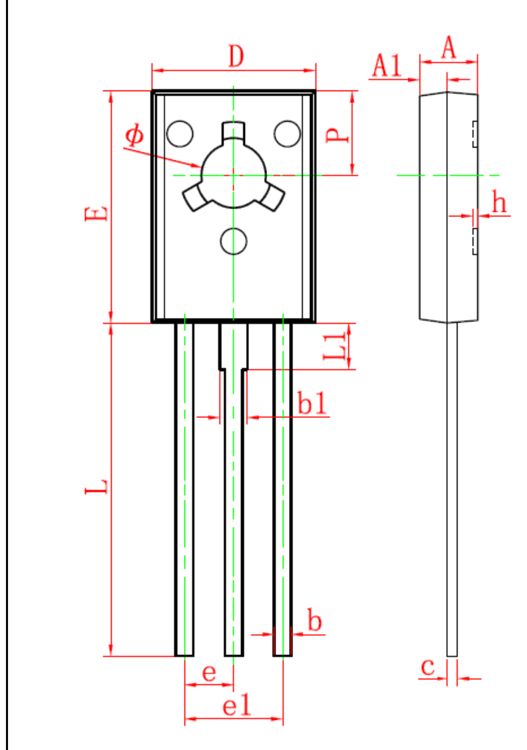
## Recommended temperature profile for IR reflow

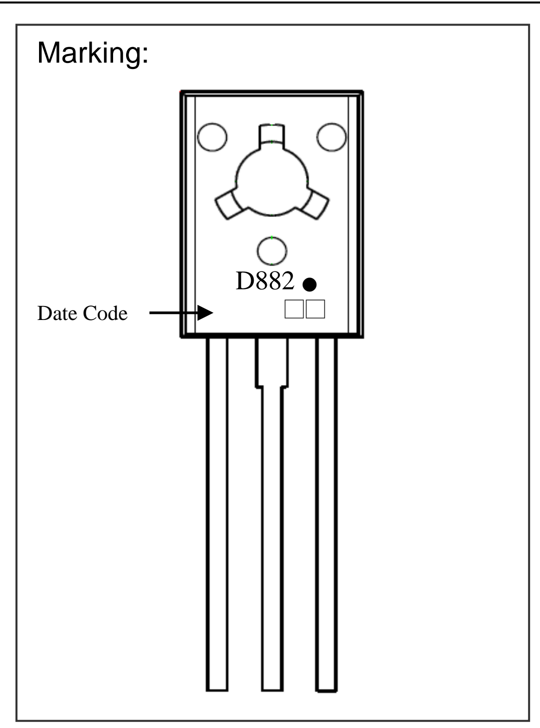



| Profile feature | Sn-Pb eutectic Assembly | Pb-free Assembly |
|---|---|---|
| Average ramp-up rate (Tsmax to Tp) | 3°C/second max. | 3°C/second max. |
| Preheat<br>−Temperature Min(Ts min)<br>−Temperature Max(Ts max)<br>−Time(ts min to ts max) | 100°C<br>150°C<br>60-120 seconds | 150°C<br>200°C<br>60-180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

## TO-126 Dimension




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

3-Lead TO-126 Plastic Package
CYStek Package Code: T3

*: Typical

| DIM | Millimeters | | Inches | | DIM | Millimeters | | Inches | |
|---|---|---|---|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | | Min. | Max. | Min. | Max. |
| A | 2.500 | 2.900 | 0.098 | 0.114 | e | *2.290 | | *0.090 | |
| A1 | 1.100 | 1.500 | 0.043 | 0.059 | e1 | 4.480 | 4.680 | 0.176 | 0.184 |
| b | 0.660 | 0.860 | 0.026 | 0.034 | h | 0.000 | 0.300 | 0.000 | 0.012 |
| b1 | 1.170 | 1.370 | 0.046 | 0.054 | L | 15.300 | 15.700 | 0.602 | 0.618 |
| c | 0.450 | 0.600 | 0.018 | 0.024 | L1 | 2.100 | 2.300 | 0.083 | 0.091 |
| D | 7.400 | 7.800 | 0.291 | 0.307 | P | 3.900 | 4.100 | 0.154 | 0.161 |
| E | 10.600 | 11.000 | 0.417 | 0.433 | Φ | 3.000 | 3.200 | 0.118 | 0.126 |

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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