## PNP Digital Transistors (Built-in Resistors)

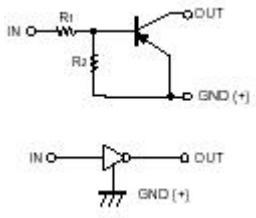
# DTA114EA3

## Features

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- Only the on/off conditions need to be set for operation, making device design easy.
- Complements the DTC114EA3

## Equivalent Circuit

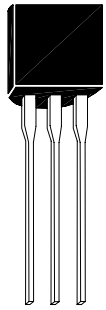
DTA114EA3




R1=10kΩ , R2=10 kΩ
IN(B) : Base
OUT(C) : Collector
GND(E) : Emitter

## Outline

TO-92



G O I

## Absolute Maximum Ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|---|---|---|---|
| Supply Voltage | $V_{CC}$ | -50 | V |
| Input Voltage | $V_{IN}$ | -40~+10 | V |
| Output Current | $I_O$ | -50 | mA |
| | $I_{O(max)}$ | -100 | mA |
| Power Dissipation | Pd | 400 | mW |
| Junction Temperature | Tj | 150 | °C |
| Storage Temperature | Tstg | -55~+150 | °C |

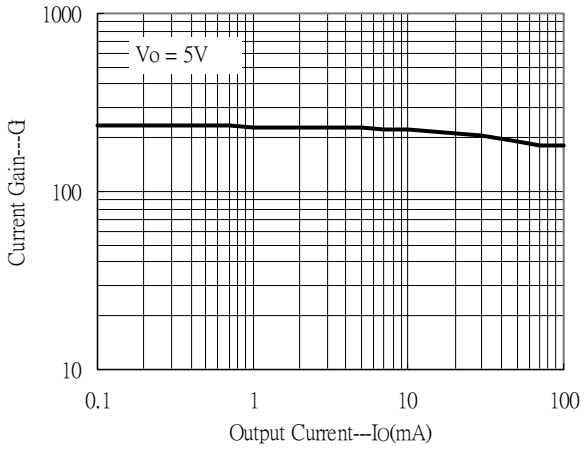
## Electrical Characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Input Voltage | $V_{I(off)}$ | - | - | -0.5 | V | $V_{CC}$=-5V, $I_O$=-100μA |
| | $V_{I(on)}$ | -3 | - | - | V | $V_O$=-0.3V, Io=-10mA |
| Output Voltage | $V_{O(on)}$ | - | - | -0.3 | V | $I_O/I_I$=-10mA/-0.5mA |
| Input Current | $I_I$ | - | - | -0.88 | mA | $V_I$=-5V |
| Output Current | $I_{O(off)}$ | - | - | -0.5 | μA | $V_{CC}$=-50V, $V_I$=0V |
| DC Current Gain | $G_I$ | 30 | - | - | - | $V_O$=-5V, $I_O$=-5mA |
| Input Resistance | $R_1$ | 7 | 10 | 13 | kΩ | - |
| Resistance Ratio | $R_2/R_1$ | 0.8 | 1 | 1.2 | - | - |
| Transition Frequency | $f_T$ | - | 250 | - | MHz | $V_{CE}$=-10V, $I_C$=-5mA, f=100MHz * |

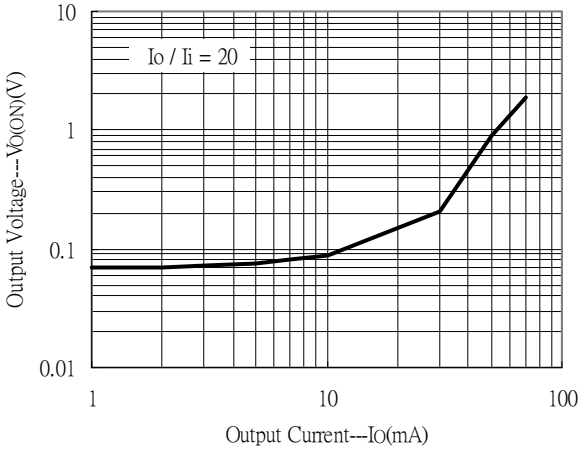
* Transition frequency of the device

## Characteristic Curves

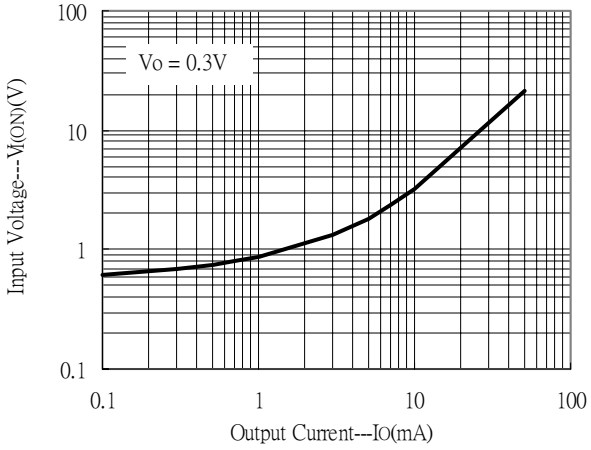
Current Gain vs Output Current



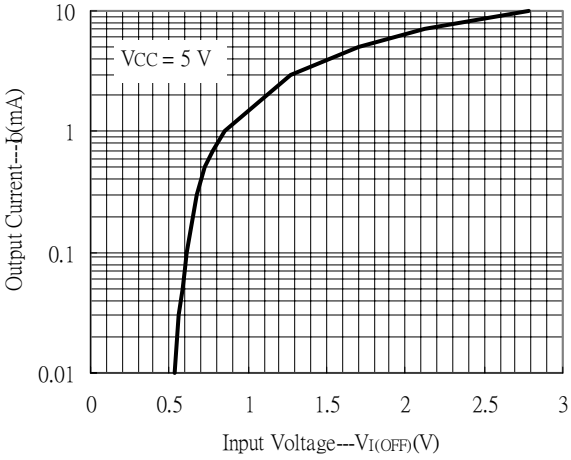

Output Voltage vs Output Current



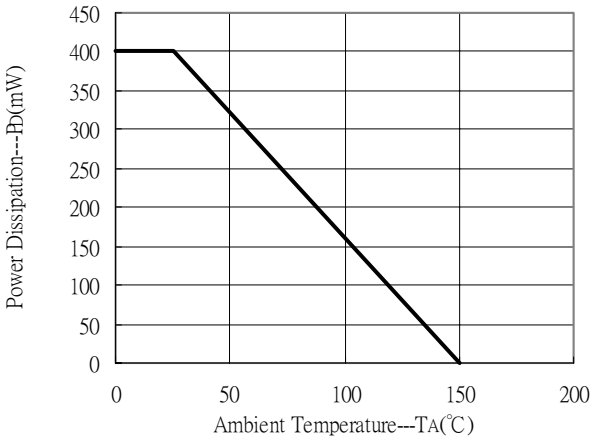

Input Voltage vs Output Current(ON characteristics)



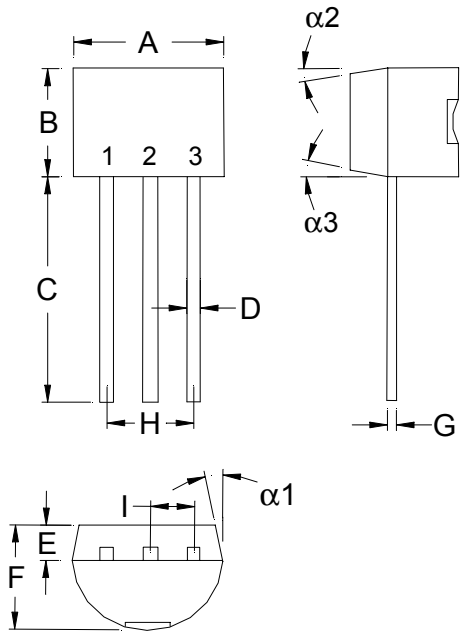

Output Current vs Input Voltage(OFF characteristics)



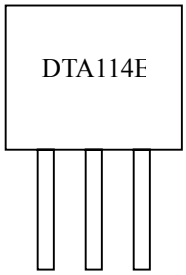

Power Derating Curve



## TO-92 Dimension




Marking:




Style : Pin 1.GND(Emitter) 2.OUT(Collector)
3.IN(Base)

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

*: Typical

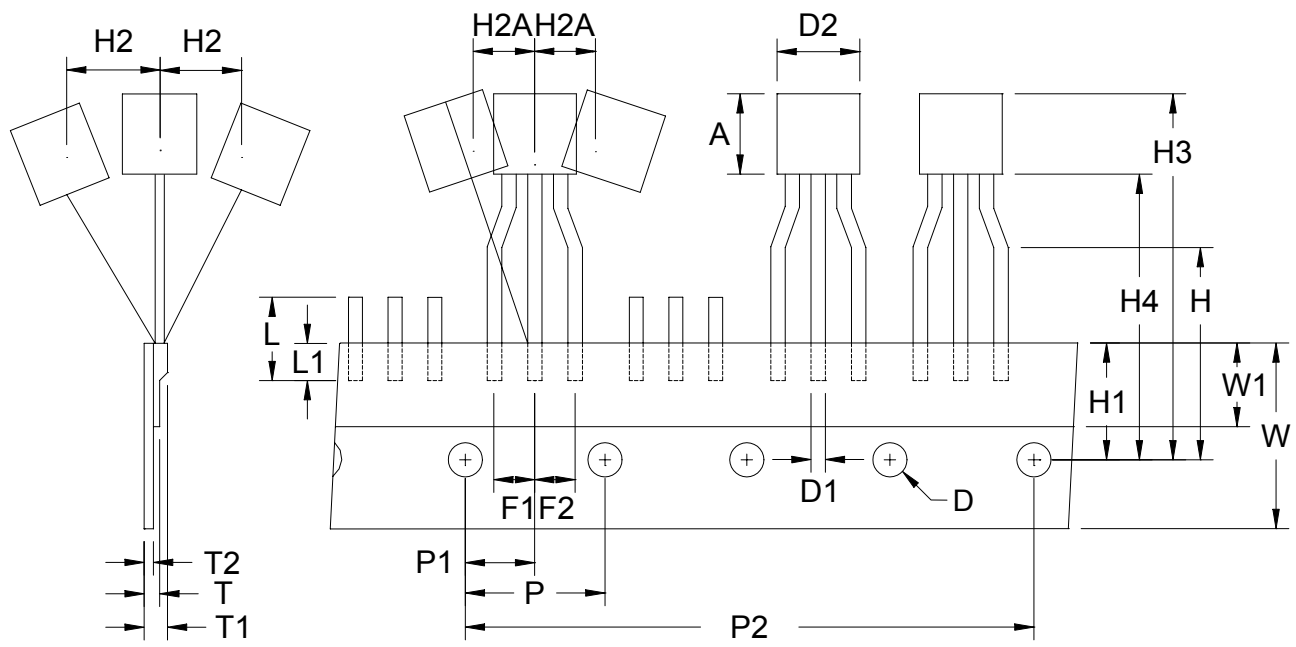
| DIM | Inches | | Millimeters | | DIM | Inches | | Millimeters | |
|---|---|---|---|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | | Min. | Max. | Min. | Max. |
| A | 0.1704 | 0.1902 | 4.33 | 4.83 | G | 0.0142 | 0.0220 | 0.36 | 0.56 |
| B | 0.1704 | 0.1902 | 4.33 | 4.83 | H | - | *0.1000 | - | *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

## 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 |