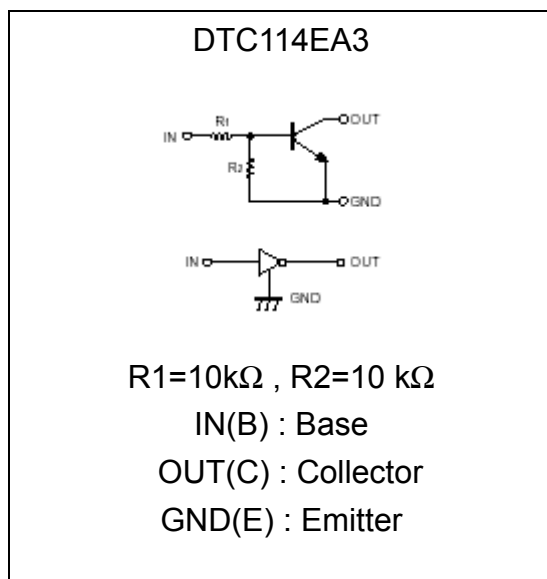
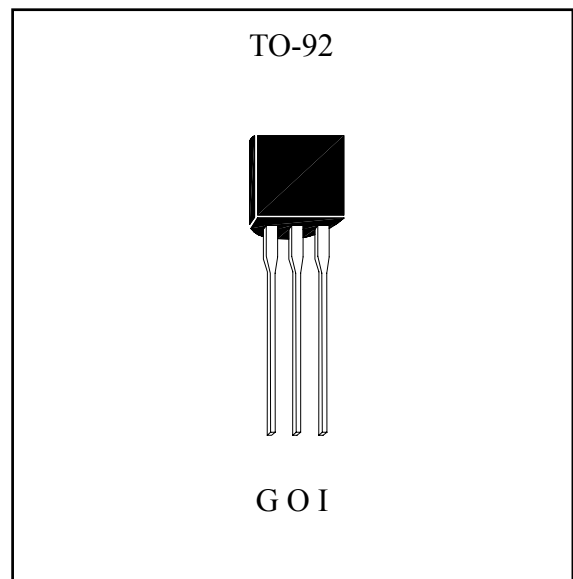


**NPN Digital Transistors (Built-in Resistors)**

# DTC114EA3

**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 negative 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 DTA114EA3

**Equivalent Circuit**

**Outline**

**Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Limits	Unit
Supply Voltage	V <sub>CC</sub>	50	V
Input Voltage	V <sub>I</sub>	-10~+40	V
Output Current	I <sub>O</sub>	50	mA
	I <sub>O(max.)</sub>	100	mA
Power Dissipation	P <sub>d</sub>	400	mW
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55~+150	°C



**Electrical Characteristics (Ta=25°C)**

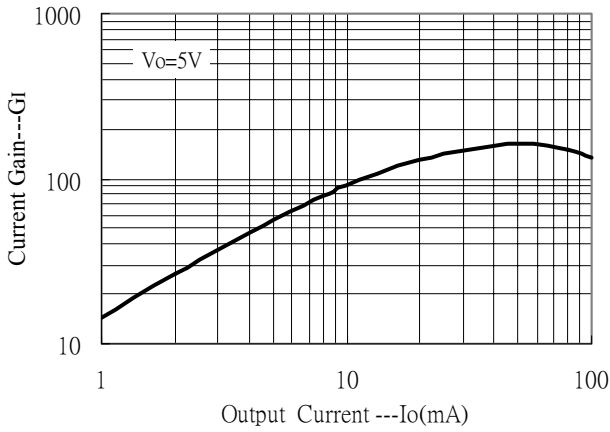
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Input Voltage	$V_{I(off)}$	-	-	0.5	V	$V_{CC}=5V, I_o=100\mu A$
	$V_{I(on)}$	3	-	-	V	$V_o=0.3V, I_o=10mA$
Output Voltage	$V_{O(on)}$	-	-	0.3	V	$I_o/I_i=10mA/0.5mA$
Input Current	$I_i$	-	-	0.88	mA	$V_i=5V$
Output Current	$I_{O(off)}$	-	-	0.5	$\mu A$	$V_{CC}=50V, V_i=0V$
DC Current Gain	$G_i$	30	-	-	-	$V_o=5V, I_o=5mA$
Input Resistance	$R_i$	7	10	13	k $\Omega$	-
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

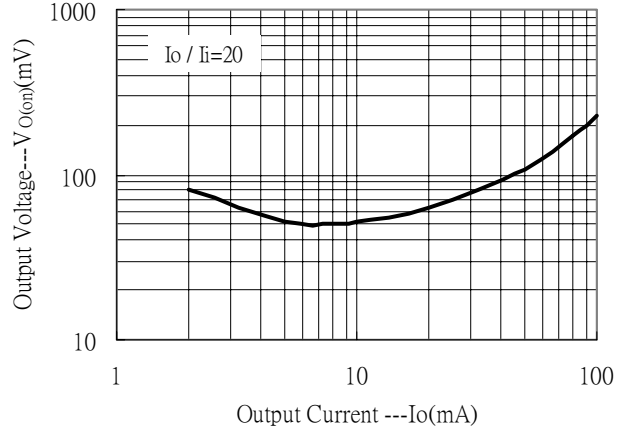


### Characteristic Curves

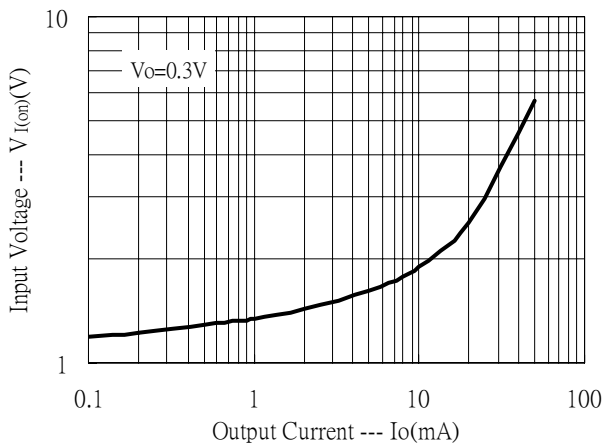
Current Gain vs Output Current



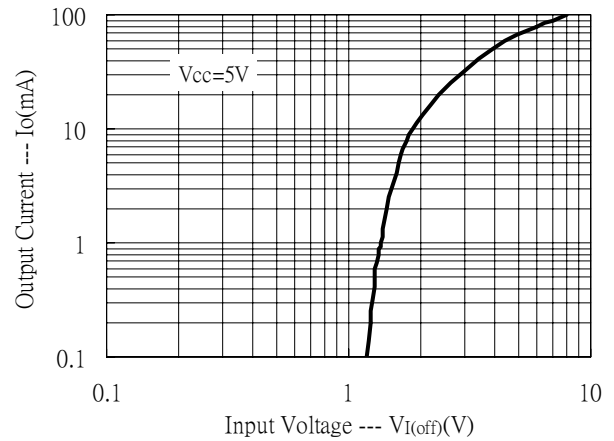
Output Voltage vs Output Current



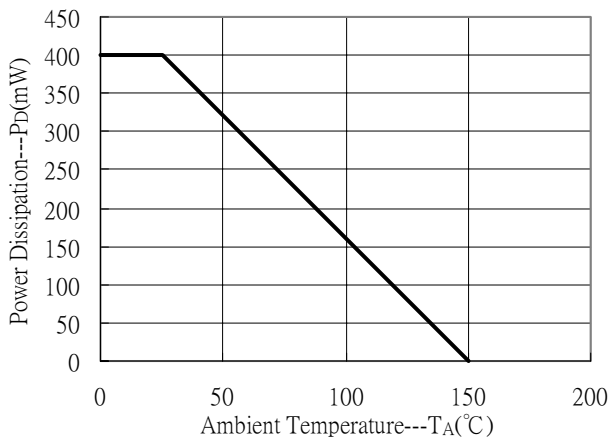
Input Voltage vs Output Current (ON characteristics)



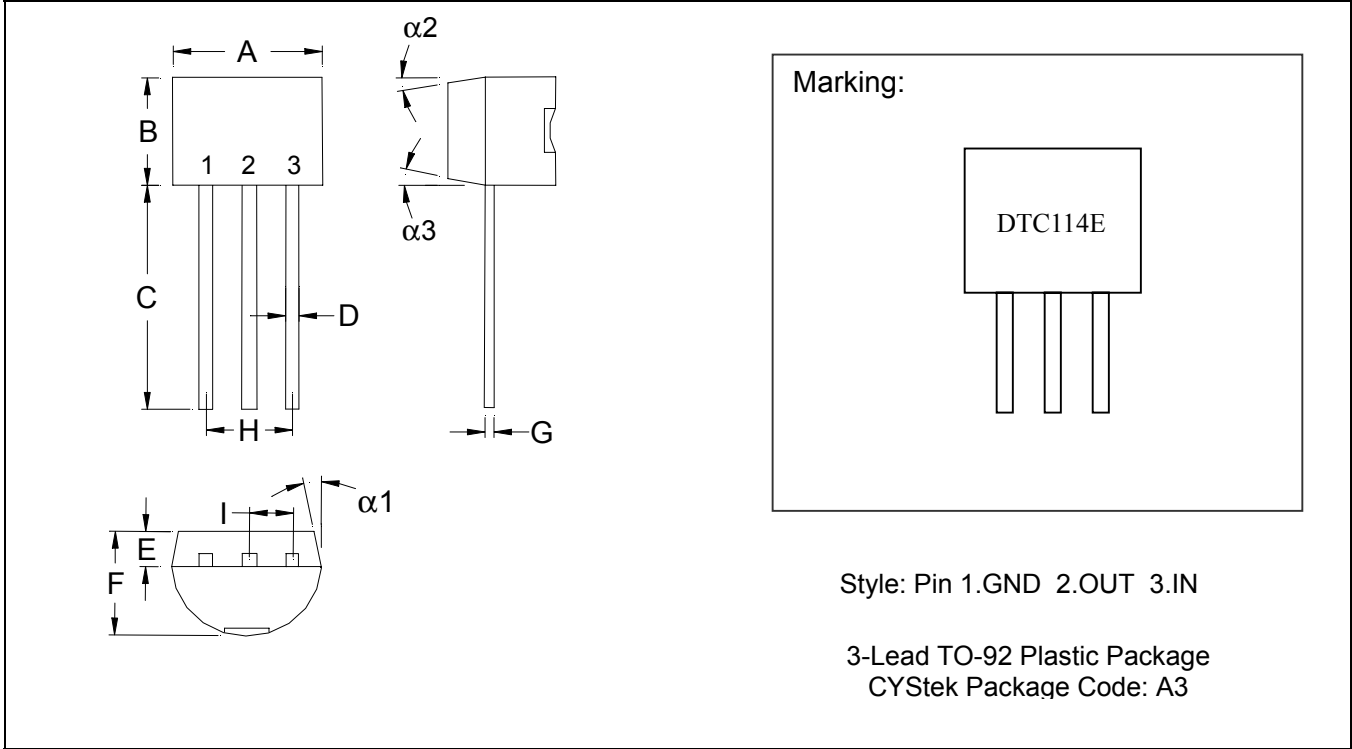
Output Current vs Input Voltage (OFF characteristics)



Power Derating Curve



**TO-92 Dimension**



\*: Typical

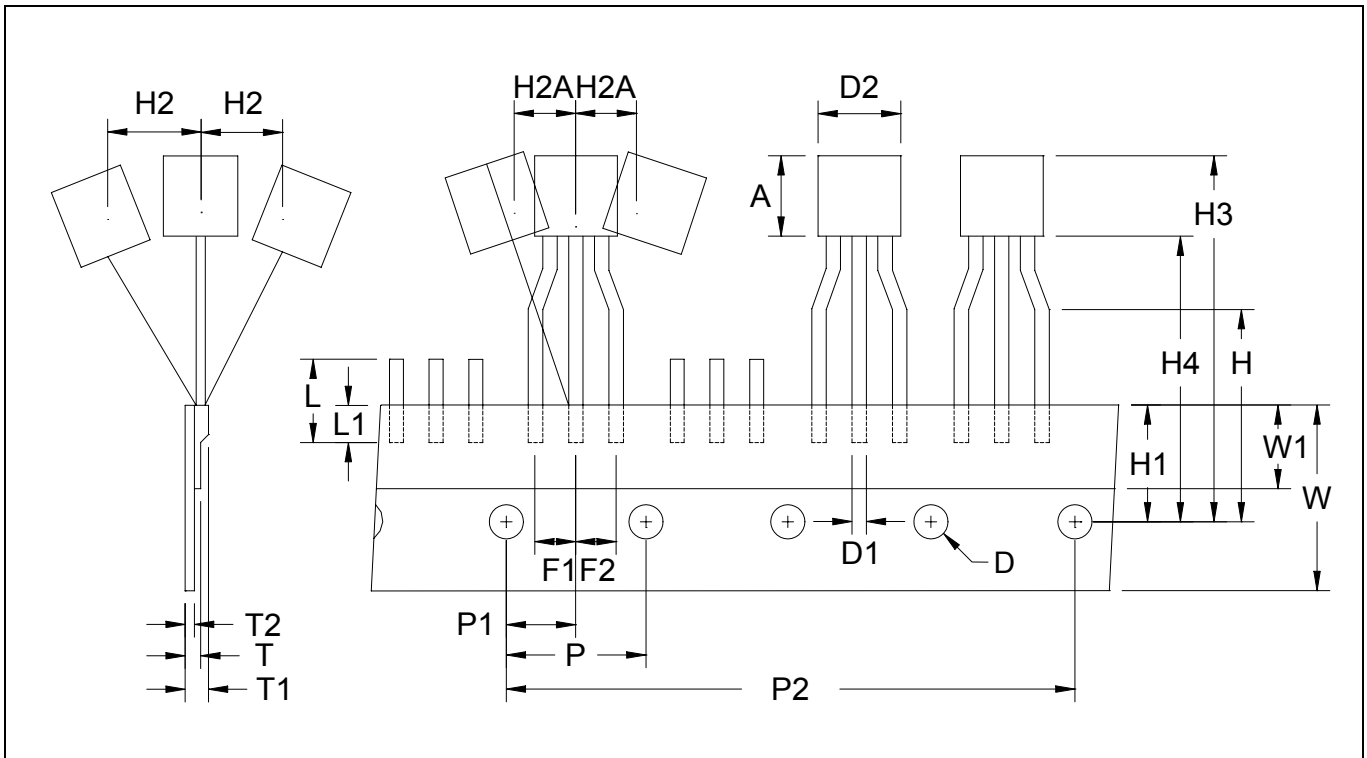
DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1704	0.1902	4.33	4.83	G	0.0142	0.0220	0.36	0.56
B	0.1704	0.1902	4.33	4.83	H	-	*0.1000	-	*2.54
C	0.5000	-	12.70	-	I	-	*0.0500	-	*1.27
D	0.0142	0.0220	0.36	0.56	$\alpha 1$	-	*5°	-	*5°
E	-	*0.0500	-	*1.27	$\alpha 2$	-	*2°	-	*2°
F	0.1323	0.1480	3.36	3.76	$\alpha 3$	-	*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



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