



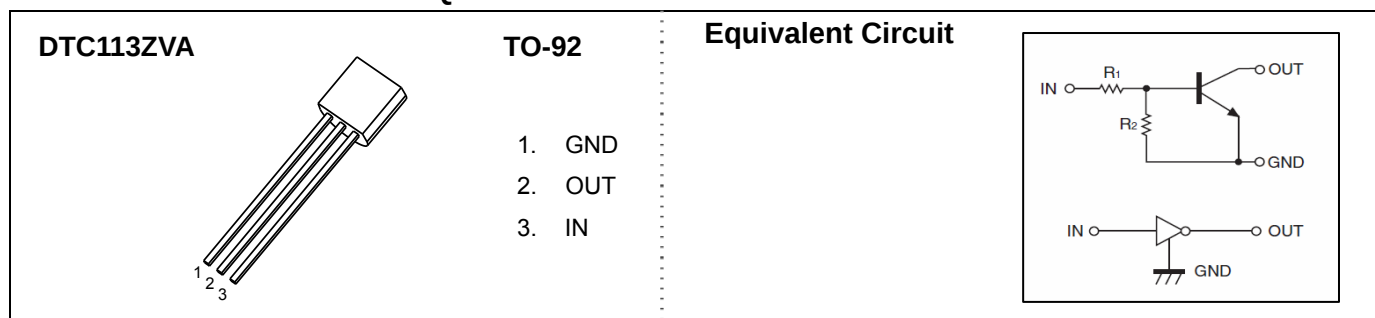
Digital Transistors (Built-in Resistors)

DTC113ZVA DIGITAL TRANSISTOR (NPN)

FEATURE

- 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

PIN CONNENCTIONS and EQUIVALENT CIRCUIT



ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
DTC113ZVA	TO-92	Bulk	1000pcs/Bag
DTC113ZVA-TA	TO-92	Tape	2000pcs/Box

MAXIMUM RATINGS(Ta=25°C unless otherwise noted)

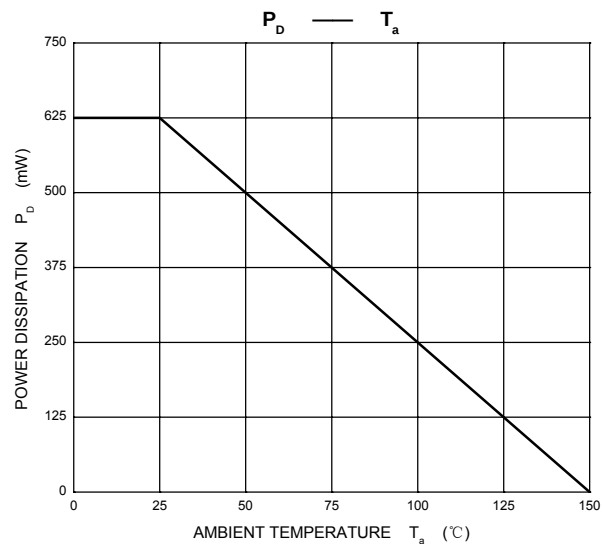
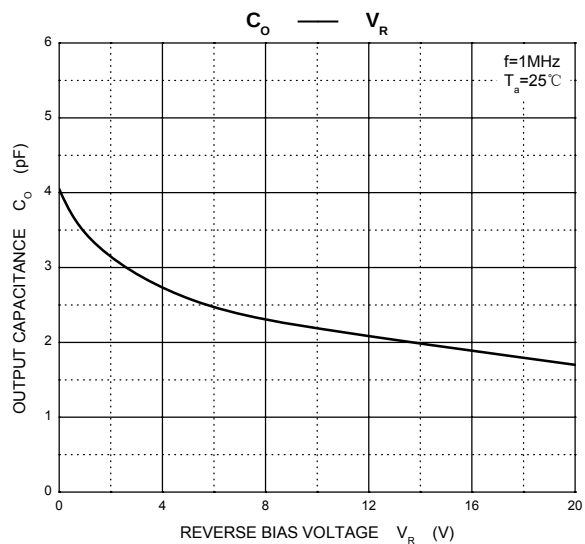
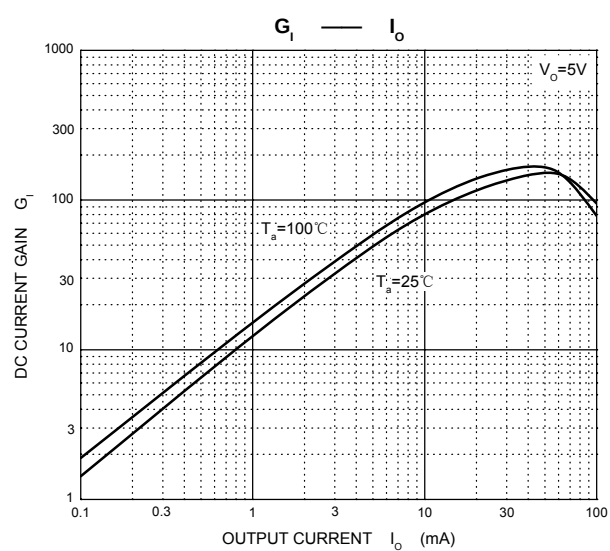
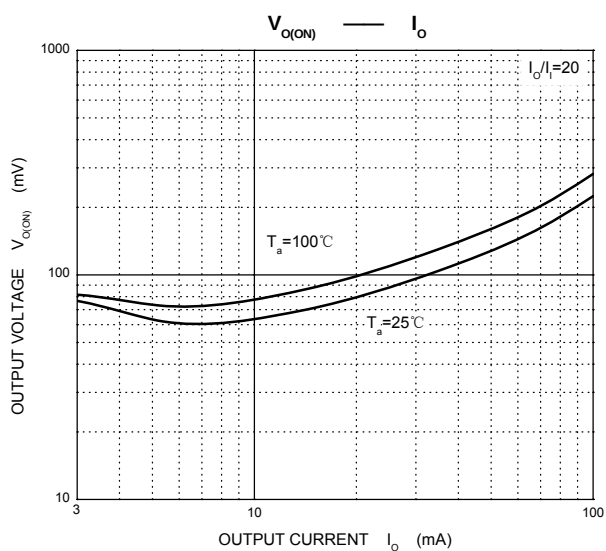
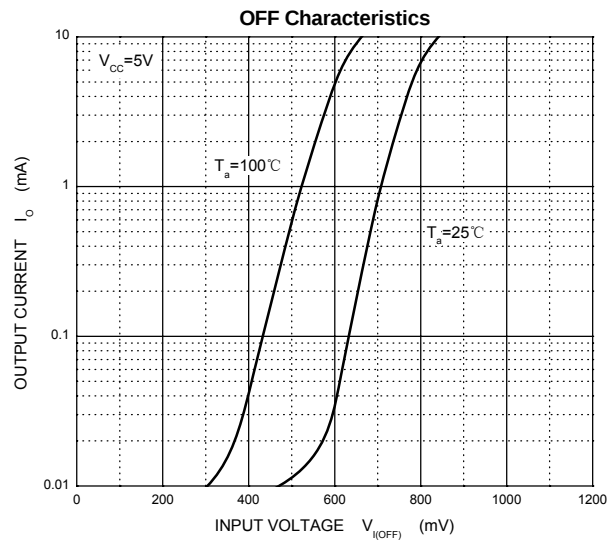
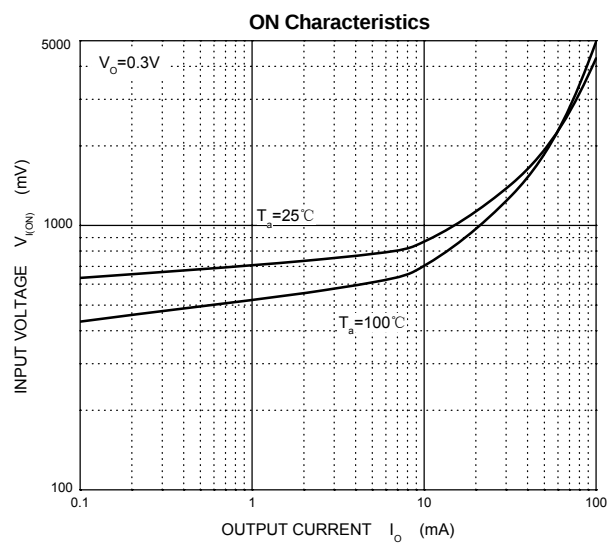
Symbol	Parameter	Limit	Unit
V _{CC}	Supply Voltage	50	V
V _{IN}	Input Voltage	-5~+10	V
I _O	Output Current	100	mA
P _D	Power Dissipation	625	mW
T _J	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55~+150	°C

ELECTRICAL CHARACTERISTICS

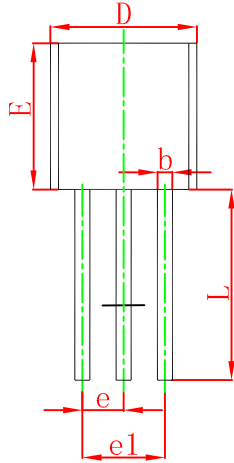
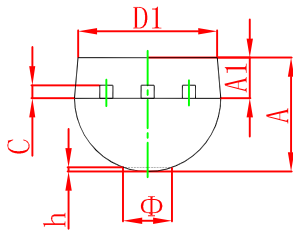
$T_a=25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Input voltage	$V_{I(\text{off})}$	$V_{CC}=5\text{V}, I_O=100\mu\text{A}$	0.3			V
	$V_{I(\text{on})}$	$V_O=0.3\text{V}, I_O=20\text{mA}$			3	V
Output voltage	$V_{O(\text{on})}$	$I_O/I_I=10\text{mA}/0.5\text{mA}$			0.3	V
Input current	I_I	$V_I=5\text{V}$			7.2	mA
Output current	$I_{O(\text{off})}$	$V_{CC}=50\text{V}, V_I=0$			0.5	μA
DC current gain	G_I	$V_O=5\text{V}, I_O=5\text{mA}$	33			
Input resistance	R_1		0.7	1	1.3	$\text{k}\Omega$
Resistance ratio	R_2/R_1		8	10	12	
Transition frequency	f_T	$V_O=10\text{V}, I_O=5\text{mA}, f=100\text{MHz}$		250		MHz

Typical Characteristics

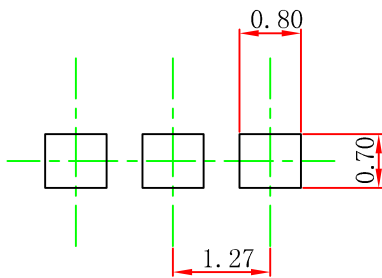


TO-92 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.300	4.700	0.169	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270 TYP		0.050 TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015

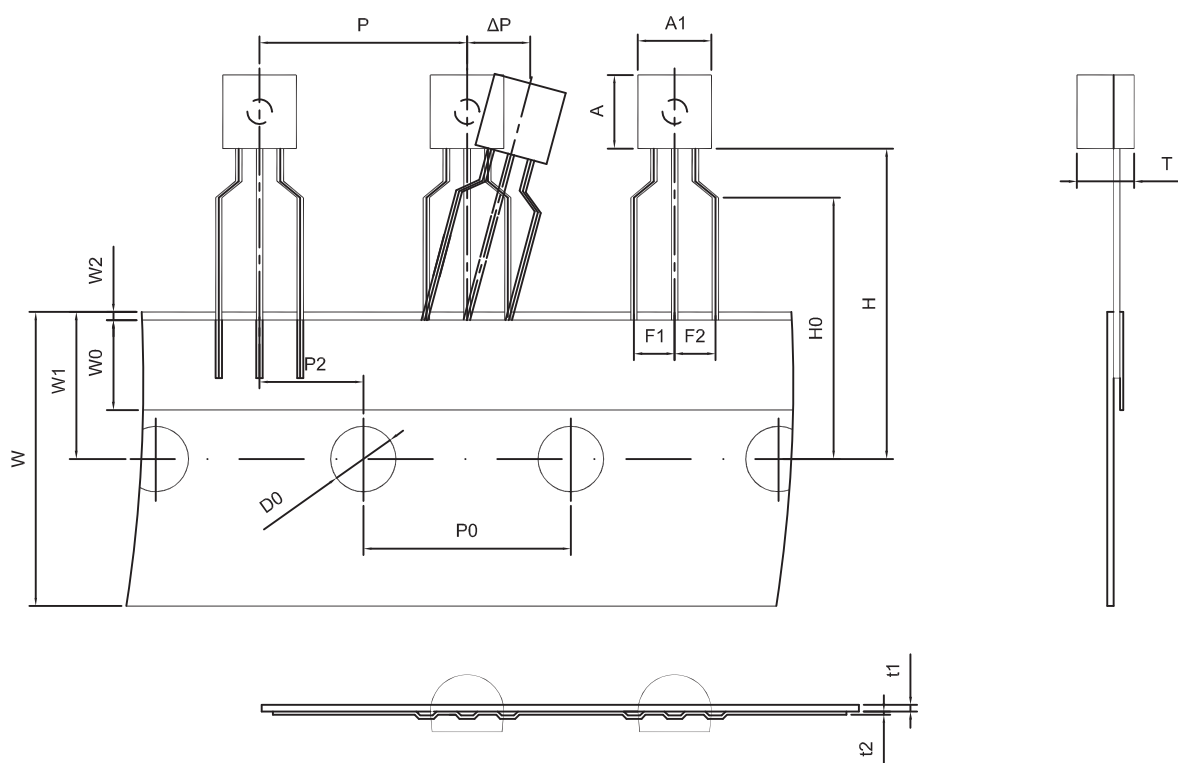
TO-92 Suggested Pad Layout



Note:

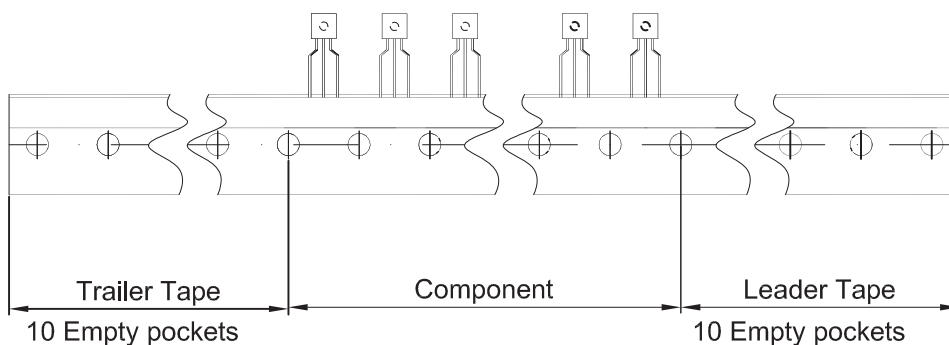
1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

TO-92 PACKAGE TAPEING DIMENSION



Dimiensions are in millimeter

A1	A	T	P	P0	P2	F1	F2	W
4.5	4.5	3.5	12.7	12.7	6.35	2.5	2.5	18.0
W0	W1	W2	H	H0	D0	t1	t2	ΔP
6.0	9.0	1.0 MAX.	19.0	16.0	4.0	0.4	0.2	0



Package	Box	Box Size(mm)	Carton	Carton Size(mm)
TO-92	2000 pcs	333×162×43	20,000 pcs	350×340×250