

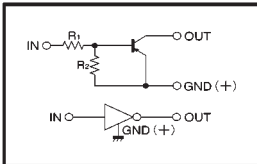
# Digital transistor (built-in resistors)

DTA144VUA / DTA144VKA / DTA144VSA

### ●Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input, and parasitic effects are almost completely eliminated.
- 3) Only the on / off conditions need to be set for operation, making device design easy.
- 4) Higher mounting densities can be achieved.

### ●Circuit schematic



### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V <sub>CC</sub>	-50	V
Input voltage	V <sub>I</sub>	-40~+15	V
Output current	I <sub>O</sub>	-30	mA
	I <sub>C(Max.)</sub>	-10	
Power dissipation	DTA144VUA / DTA144VKA	200	mW
	DTA144VSA	300	
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55~+150	°C

### ●Package, marking, and packaging specifications

Part No.	DTA144VUA	DTA144VKA	DTA144VSA
Package	UMT3	SMT3	SPT
Marking	E56	E56	—
Packaging code	T106	T146	TP
Basic ordering unit (pieces)	3000	3000	5000

### ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V <sub>I(off)</sub>	—	—	-1	V	V <sub>CC</sub> =-5V, I <sub>O</sub> =-100 μA V <sub>O</sub> =-0.3V, I <sub>O</sub> =-2mA
	V <sub>I(on)</sub>	-5	—	—		
Output voltage	V <sub>O(on)</sub>	—	-0.1	-0.3	V	I <sub>O</sub> =-10mA, I <sub>I</sub> =-0.5mA
Input current	I <sub>I</sub>	—	—	-0.16	mA	V <sub>I</sub> =-5V
Output current	I <sub>O(off)</sub>	—	—	-0.5	μA	V <sub>CC</sub> =-50V, V <sub>I</sub> =0V
DC current gain	G <sub>I</sub>	33	—	—	—	I <sub>O</sub> =-5mA, V <sub>O</sub> =-5V
Input resistance	R <sub>I</sub>	32.9	47	61.1	kΩ	—
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	0.17	0.21	0.26	—	—
Transition frequency	f <sub>r</sub>	—	250	—	MHz	V <sub>CE</sub> =-10V, I <sub>E</sub> =5mA, f=100MHz *

\* Transition frequency of the device.

(94S-576-A144V)

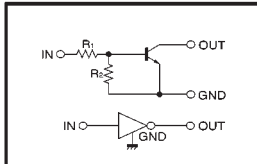
# Digital transistor (built-in resistors)

DTC144VUA / DTC144VKA / DTC144VSA

### ●Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input, and parasitic effects are almost completely eliminated.
- 3) Only the on / off conditions need to be set for operation, making device design easy.
- 4) Higher mounting densities can be achieved.

### ●Circuit schematic



### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V <sub>CC</sub>	50	V
Input voltage	V <sub>I</sub>	-15~+40	V
Output current	I <sub>O</sub>	30	mA
	I <sub>C(Max.)</sub>	100	
Power dissipation	DTC144VUA / DTC144VKA	200	mW
	DTC144VSA	300	
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55~+150	°C

### ●Package, marking, and packaging specifications

Part No.	DTC144VUA	DTC144VKA	DTC144VSA
Package	UMT3	SMT3	SPT
Marking	E66	E66	—
Packaging code	T106	T146	TP
Basic ordering unit (pieces)	3000	3000	5000

### ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V <sub>I(off)</sub>	—	—	1	V	V <sub>CC</sub> =5V, I <sub>O</sub> =100 μA V <sub>O</sub> =0.3V, I <sub>O</sub> =2mA
	V <sub>I(on)</sub>	5	—	—		
Output voltage	V <sub>O(on)</sub>	—	0.1	0.3	V	I <sub>O</sub> =10mA, I <sub>I</sub> =0.5mA
Input current	I <sub>I</sub>	—	—	0.16	mA	V <sub>I</sub> =5V
Output current	I <sub>O(off)</sub>	—	—	0.5	μA	V <sub>CC</sub> =50V, V <sub>I</sub> =0V
DC current gain	G <sub>I</sub>	33	—	—	—	I <sub>O</sub> =5mA, V <sub>O</sub> =5V
Input resistance	R <sub>I</sub>	32.9	47	61.1	kΩ	—
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	0.17	0.21	0.26	—	—
Transition frequency	f <sub>r</sub>	—	250	—	MHz	V <sub>CE</sub> =10V, I <sub>E</sub> =-5mA, f=100MHz *

\* Transition frequency of the device.

(94S-698-C144V)