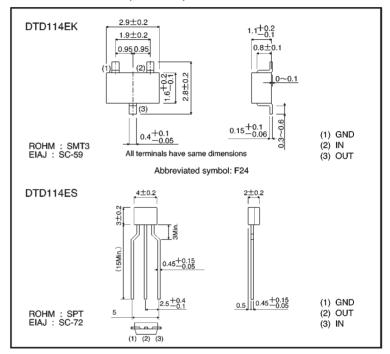
# Digital transistors (built-in resistors) DTD114EK / DTD114ES

### 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 thinfilm 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.

# ●Structure NPN digital transistor (Built-in resistor type)

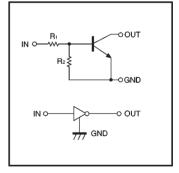
### External dimensions (Units: mm)



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

Parameter	Cumbal	Limits(D	Unit		
	Symbol	K	S	Offic	
Supply voltage	Vcc	50		V	
Input voltage	Vin	<b>−10~+40</b>		V	
Output current	lc	500		mA	
Power dissipation	Pd	200	300	mW	
Junction temperature	Tj	150		°C	
Storage temperature	Tstg	<b>−55∼</b> +150		°C	

### Equivalent circuit



(96-354-D114E)

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

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Input voltage	VI(off)	_	_	0.5	V	Vcc=5V, Io=100 μA
	VI(on)	3	_	_		Vo=0.3V, Io=10mA
Output voltage	V <sub>O(on)</sub>	_	0.1	0.3	V	lo/li=50mA/2.5mA
Input current	lı	_	_	0.88	mA	V <sub>1</sub> =5V
Output current	IO(off)	_	_	0.5	μΑ	Vcc=50V, Vi=0V
DC current gain	Gı	56	_	_	_	Vo=5V, Io=50mA
Input resistance	R <sub>1</sub>	7	10	13	kΩ	_
Resistance ratio	R2/R1	0.8	1	1.2	_	_
Transition frequency	fτ	_	200	_	MHz	Vc=10V, I=-50mA, f=100MHz *

<sup>\*</sup> Transition frequency of the device

### Packaging specifications

	Package	SMT3	SPT
	Packaging type	Taping	Taping
	Code	T146	TP
Part No.	Basic ordering unit (pieces)	3000	5000
DTD114EK		0	_
DTD114ES		_	0

### Electrical characteristic curves

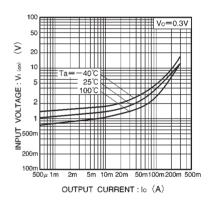


Fig.1 Input voltage vs. output current (ON characteristics)

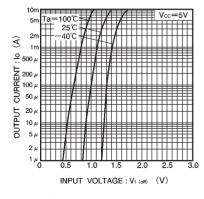


Fig.2 Output current vs. input voltage (OFF characteristics)

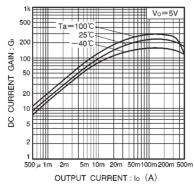


Fig.3 DC current gain vs. output current

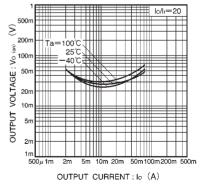


Fig.4 Output voltage vs. output current