# Digital transistors (built-in resistors) DTD143EK/DTD143EC/DTD143ES

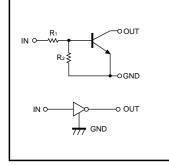
## Features

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- 2) 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.
- 3) Only the on / off conditions need to be set for operation, making device design easy.

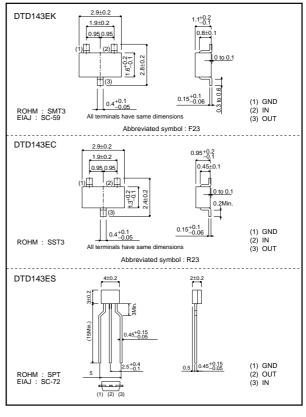
## Structure

NPN digital transistor (Built-in resistor type)

## •Equivalent circuit



## •External dimensions (Unit : mm)



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

Parameter	Symbol	Limits (DTD143E 🗆 )			Unit
	Symbol	К	С	S	Offic
Supply voltage	Vcc	50			V
Input voltage	Vin	-	V		
Output current	lc	500			mA
Power dissipation	Pd	200 3		300	mW
Junction temperature	Tj	150			°C
Storage temperature	Tstg	-55 to +150			°C

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# DTD143EK / DTD143EC / DTD143ES

## Transistors

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

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions		
	VI (off)	-	-	0.5		Vcc=5V, Io=100µA		
Input voltage	VI (on)	3	-	-	V	Vo=0.3V, Io=20mA		
Output voltage	VO (on)	-	0.1	0.3	V	lo/ I=50mA / 2.5mA		
Input current	lı	-	_	1.8	mA	Vi=5V		
Output current	IO (off)	-	_	0.5	μΑ	Vcc=50V, Vi=0V		
DC current gain	Gi	47	-	-	-	Vo=5V, Io=50mA		
Input resistance	R1	3.29	4.7	6.11	kΩ	_		
Resistance ratio	R2/R1	0.8	1	1.2	_	_		
Transition frequency	fτ	-	200	-	MHz	Vce=10V, Ie= -50mA, f=100MHz	*	

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## Packaging specifications

	Package	SMT3	SST3	SPT
	Packaging type	Taping	Taping	Taping
	Code		T116	TP
Туре	Basic ordering unit (pieces)	3000	3000	5000
DTD143EK		0	-	_
DTD143EC		_	0	_
DTD143ES		_	-	0

#### Electrical characteristic curves

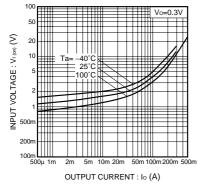
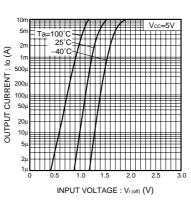
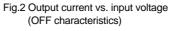


Fig.1 Input voltage vs. output current (ON characteristics)





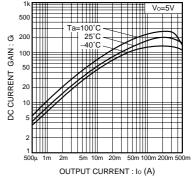


Fig.3 DC current gain vs. output current

## DTD143EK / DTD143EC / DTD143ES

## Transistors

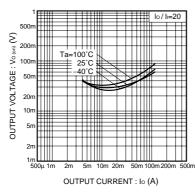


Fig.4 Output voltage vs. output current



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