

500mA / 50V Digital transistors (with built-in resistors)

DTD123EK

Applications

Inverter, Interface, Driver

Features

- 1)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
- 3)Only the on / off conditions need to be set for operation, making the device design easy.

Structure

NPN epitaxial planar silicon transistor (Resistor built-in type)

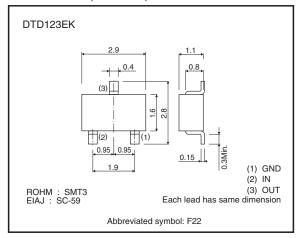
Packaging specifications

	Package	SMT3
	Packaging type	Taping
	Code	T146
Part No.	Basic ordering unit (pieces)	3000
DTD123EK		0

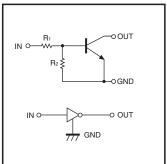
Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
- Farameter	Symbol	DTD123EK		
Supply voltage	Vcc	50	V	
Input voltage	Vin	-10 to +12	V	
Output current	Ic	500	mA	
Power dissipation	Pd	200	mW	
Junction temperature	Tj	150	°C	
Storage temperature	Tstg	-55 to +150	°C	

• Dimensions (Unit : mm)



Inner circuit



 $R_1=R_2=2.2k\Omega$

DTD123EK Data Sheet

• Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Input voltage	V _{I(off)}	_	_	0.5	V	Vcc=5V, Io=100μA
	V _{I(on)}	3	_	_		Vo=0.3V, Io=20mA
Output voltage	V _{O(on)}	_	0.1	0.3	V	lo/l≔50mA/2.5mA
Input current	lı	_	_	3.8	mA	V _I =5V
Output current	IO(off)	_	_	0.5	μΑ	Vcc=50V, V⊫0V
DC current gain	Gı	39	_	_	-	Vo=5V, Io=50mA
Input resistance	R ₁	1.54	2.2	2.86	kΩ	_
Resistance ratio	R ₂ /R ₁	0.8	1	1.2	_	-
Transition frequency	f⊤ *	-	200	_	MHz	VcE=10V, IE=-50mA, f=100MHz

^{*}Characteristics of built-in transistor.

• Electrical characteristic curves

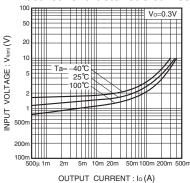


Fig.1 Input voltage vs. output current (ON characteristics)

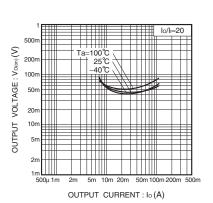


Fig.4 Output voltage vs. output current

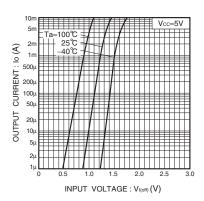


Fig.2 Output current vs. input voltage (OFF characteristics)

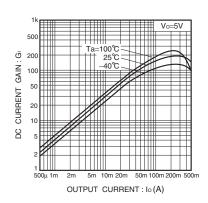


Fig.3 DC current gain vs. output current

Notes

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