

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

DTB123EK

Applications

Inverter, Interface, Driver

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 positive 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 the device design easy.

Structure

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

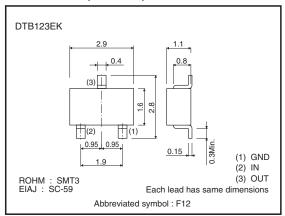
Packaging specifications

	Package	SMT3
	Packaging type	Taping
	Code	T146
Part No.	Basic ordering unit (pieces)	3000
DTB123EK		0

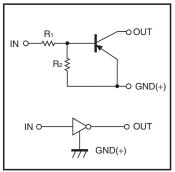
• Absolute maximum ratings (Ta=25°C)

Dovometer	Cumala al	Limits	Unit
Parameter	Symbol	DTB123EK	
Supply voltage	Vcc	-50	V
Input voltage	Vin	-12 to +10	V
Output current	Ic	-500	mA
Power dissipation	Po	200	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	-55 to +150	°C

• Dimensions (Unit : mm)



• Inner circuit



R₁=R₂=2.2kΩ

DTB123EK Data Sheet

• Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Input voltage	VI(off)	_	_	-0.5	V	Vcc= -5V, lo= -100μA
	VI(on)	-3	_	_		Vo= -0.3V, Io= -20mA
Output voltage	V _{O(on)}	_	-0.1	-0.3	V	Io/I:= -50mA/-2.5mA
Input current	lı .	_	_	-3.8	mA	V≔ -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	R2/R1	0.8	1	1.2	-	-
Transition frequency	f ⊤ *	_	200	_	MHz	VcE= -10V, IE= 50mA, f= 100MHz

^{*} Characteristics of built-in transistor

• Electrical characteristic curves

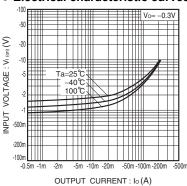


Fig.1 Input voltage vs. output current (ON characteristics)

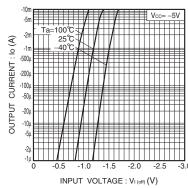


Fig.2 Output current vs. input voltage (OFF characteristics)

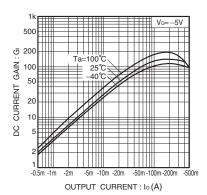


Fig.3 DC current gain vs. output current

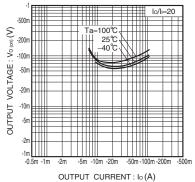


Fig.4 Output voltage vs. output current

Notes

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