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

DTB113EK / DTB113ES

Applications

Inverter, Interface, Driver

Feature

- 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.

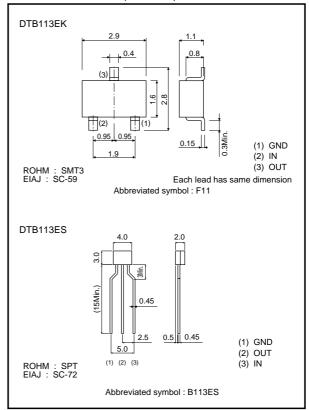
Structure

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

Packaging specifications

3 3 1								
	Package	SMT3	SPT					
	Packaging type	Taping	Taping					
	Code	TP						
Part No.	Basic ordering unit (pieces)	3000	5000					
DTB113EK		0	_					
DTB113ES		_	0					

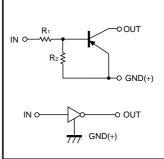
●External dimensions (Unit : mm)



● Absolute maximum ratings (Ta=25°C)

Parameter	Cumbal	Limits		Unit
raiailletei	Symbol	DTB113EK DTB113ES		
Supply voltage	Vcc	-50		V
Input voltage	Vin	-10 to +10		V
Output current	Ic	-500		mA
Power dissipation	Po	200 300		mW
Junction temperature	Tj	150		Ç
Storage temperature	Tstg	-55 to +150		သိ

●Equivalent circuit



R₁=R₂=1.0kΩ

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Input voltage	VI(off)	-	_	-0.5	V	Vcc=-5V, Io=-100μA
	VI(on)	-3	_	_	V	Vo=-0.3V, Io=-20mA
Output voltage	VO(on)	-	-0.1	-0.3	V	Io/I:=-50mA/-2.5mA
Input current	lı	1	_	-7.2	mA	Vi=-5V
Output current	IO(off)	-	-	-0.5	μΑ	Vcc=-50V, Vi=0V
DC current gain	Gı	33	_	-	_	Vo=-5V, Io=-50mA
Input resistance	R ₁	0.7	1	1.3	kΩ	-
Resistance ratio	R ₂ /R ₁	0.8	1	1.2	-	-
Transition frequency	f⊤ *	-	200	-	MHz	Vc=-10V, I=50mA, f=100MHz

^{*} Characteristics of built-in transistor

•Electrical characteristics curves

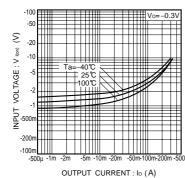


Fig.1 Input voltage vs. output current (ON characteristics)

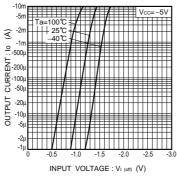


Fig.2 Output current vs. input voltage (OFF characteristics)

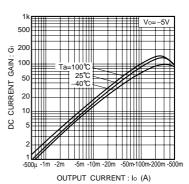


Fig.3 DC current gain vs. output current

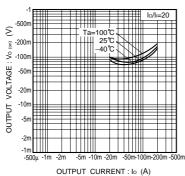


Fig.4 Output voltage vs. output current

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