# -100mA / -50V Digital transistors (with built-in resistors) DTA143EEB

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

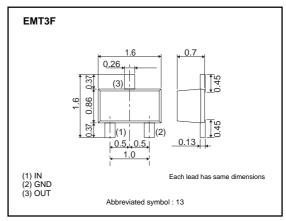
## Structure

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

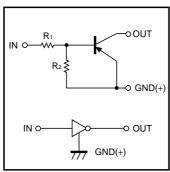
#### Packaging specifications

	Package	EMT3F
	Packaging type	Taping
	Code	TL
Part No.	Basic ordering unit (pieces)	3000
DTA143EEB		0

## ●Dimensions (Unit: mm)



## ●Equivalent circuit



R<sub>1</sub>=R<sub>2</sub>=4.7kΩ

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

Parameter	Symbol	Limits	Unit	
Supply voltage	Vcc	-50	V	
Input voltage	Vin	-30 to +10	V	
Collector current	Ic(max) *1	-100	mA	
Output current	lo	-100	mA	
Power dissipation	P <sub>D</sub> *2	150	mW	
Junction temperature	Tj	150	°C	
Storage temperature	Tstg	-55 to +150	°C	

<sup>\*1</sup> Characteristics of built-in transistor \*2 Each terminal mounted on a recommended land

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

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Input voltage	VI(off)	-	-	-500	mV	Vcc=-5V, Io=-100μA
	VI(on)	-3	-	-	V	Vo=-0.3V, Io=-20mA
Output voltage	V <sub>O(on)</sub>	-	-100	-300	mV	Io/I:=-10mA/-0.5mA
Input current	lı .	-	-	-1.8	mA	V=-5V
Output current	IO(off)	-	-	-500	nA	Vcc=-50V, Vi=0V
DC current gain	Gı	30	-	-	-	Vo=-5V, Io=-10mA
Transition frequency	f⊤ *	-	250	-	MHz	Vce=-10V, Ie=5mA, f=100MHz
Input resistance	R <sub>1</sub>	3.29	4.7	6.11	kΩ	_
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	0.8	1	1.2	_	_

<sup>\*</sup> Characteristics of built-in transistor

#### •Electrical characteristic curves

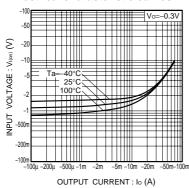


Fig.1 Input voltage vs. output current (ON characteristics)

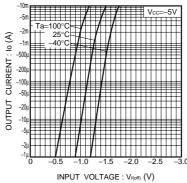


Fig.2 Output current vs. input voltage (OFF characteristics)

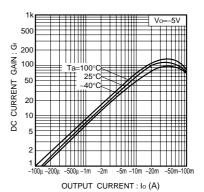


Fig.3 DC current gain vs. output current

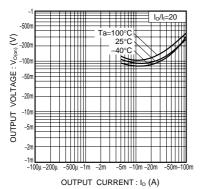


Fig.4 Output voltage vs. output current

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