

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

DTC123EM / DTC123EE / DTC123EUA / DTC123EKA

Applications

Inverter, Interface, Driver

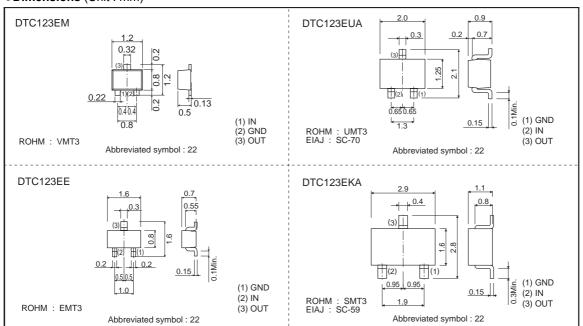
Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see the 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

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

●Dimensions (Unit: mm)



Packaging specifications

	• .				
	Package	VMT3	EMT3	UMT3	SMT3
	Packaging type	Taping	Taping	Taping	Taping
	Code	T2L	TL	T106	T146
Туре	Basic ordering unit (pieces)	8000	3000	3000	3000
DTC123EM		0			_
DTC123EE			0		-
DTC123EUA		-	_	0	_
DTC123EKA		_	_	_	

Equivalent circuit

R₁=R₂=2.2kΩ

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Lir	Unit		
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Supply voltage	Vcc	į	V		
Input voltage	VIN	-10 t	V		
Output current	lo	1	mA		
Output current	IC(Max.)	1			
Power dissipation	Pd	150	200	mW	
Junction temperature	Tj	1	°C		
Storage temperature	Tstg	–55 t	°C		

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Input voltage	VI(off)	-	_	0.5	V	Vcc=5V, Io=100μA
input voitage	VI(on)	3	_	_		Vo=0.3V, Io=20mA
Output voltage	Vo(on)	_	0.1	0.3	V	Io/I=10mA/0.5mA
Input current	lı	_	_	3.8	mA	V⊫5V
Output current	IO(off)	_	_	0.5	μΑ	Vcc=50V, V⊫0V
DC current gain	Gı	20	_	_	_	Vo=5V, Io=20mA
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⊤*	_	250	_	MHz	Vce=10V, Ie= -5mA, f=100MHz

^{*} Characteristics of built-in transistor

●Electrical characteristic curves

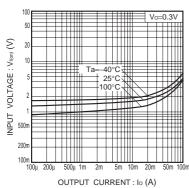


Fig.1 Input voltage vs. output current (ON characteristics)

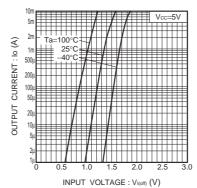


Fig.2 Output current vs. input voltage (OFF characteristics)

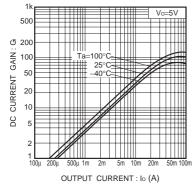


Fig.3 DC current gain vs. output current

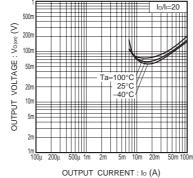


Fig.4 Output voltage vs. output current

Notes

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