

100mA / 50V Digital transistors

(with built-in resistors)

DTC124EM / DTC124EE / DTC124EUA / DTC124EKA

Applications

Inverter, Interface, Driver

Features

- 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.

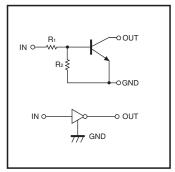
Structure

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

Packaging specifications

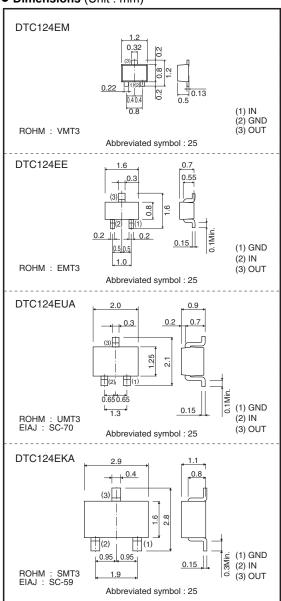
	Package	VMT3	EMT3	UMT3	SMT3
	Packaging type	Taping	Taping	Taping	Taping
	Code	T2L	TL	T106	T146
Туре	Basic ordering unit (pieces)	8000	3000	3000	3000
DTC124EM		0	-	-	_
DTC124EE		-	0	-	-
DTC124EUA		-	- 0		-
DTC124EKA		-	-	-	0

Inner circuit



 $R_1=R_2=22k\Omega$

Dimensions (Unit : mm)



• Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Lin	Unit		
Farameter		DTC124EM DTC124EE	DTC124EUA DTC124EKA		
Supply voltage	Vcc	5	V		
Input voltage	VIN	-10 t	V		
Output ourrent	lo	3	mA		
Output current	IC(Max.)	10			
Power dissipation	Pd	150	200	mW	
Junction temperature	Tj	15	°C		
Storage temperature	Tstg	–55 to	°C		

• Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Innuit valta aa	VI(off)	-	-	0.5	V	Vcc=5V, Io=100μA
Input voltage	VI(on)	3	-	_		Vo=0.2V, Io=5mA
Output voltage	V _{O(on)}	-	0.1	0.3	V	lo/l⊫10mA/0.5mA
Input current	lı	-	-	0.36	mA	Vi=5V
Output current	IO(off)	-	-	0.5	μΑ	Vcc=50V, Vi=0V
DC current gain	Gı	56	-	_	-	Vo=5V, Io=5mA
Input resistance	R ₁	15.4	22	28.6	kΩ	_
Resistance ratio	R2/R1	0.8	1	1.2	-	_
Transition frequency	f⊤ *	_	250	_	MHz	Vce=10V, Ie=-5mA, f=100MHz

^{*} Characteristics of built-in transistor

• Electrical characteristic curves

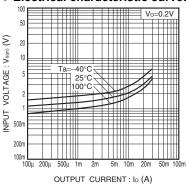


Fig.1 Input voltage vs. output current (ON characteristics)

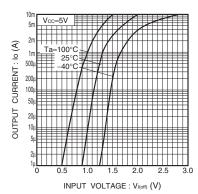


Fig.2 Output current vs. input voltage (OFF characteristics)

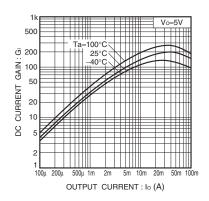


Fig.3 DC current gain vs. output current

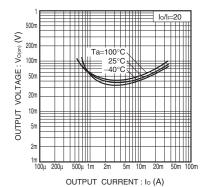


Fig.4 Output voltage vs. output current

Notes

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