

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

DTC124TM / DTC124TE / DTC124TUA / DTC124TKA

## ● Applications

Inverter, Interface, Driver

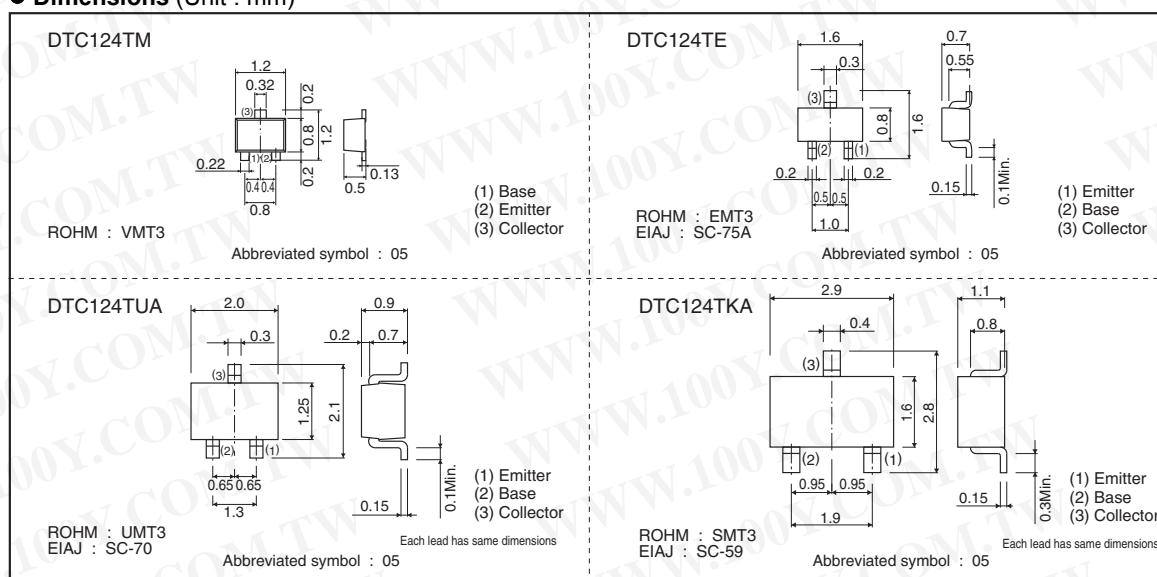
## ● Features

- 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.

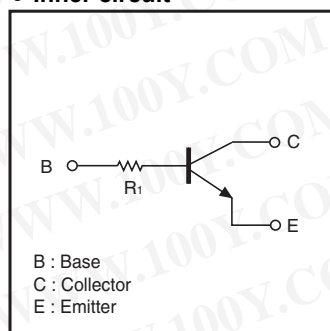
## ● Structure

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

## ● Dimensions (Unit : mm)



## ● Inner circuit



$R1=22k\Omega$

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## ● Packaging specifications

	Package	VMT3	EMT3	UMT3	SMT3
	Packaging type	Taping	Taping	Taping	Taping
	Code	T2L	TL	T106	T146
Part No.	Basic ordering unit (pieces)	8000	3000	3000	3000
DTC124TM		○	—	—	—
DTC124TE		—	○	—	—
DTC124TUA		—	—	○	—
DTC124TKA		—	—	—	○

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

Parameter	Symbol	Limits				Unit
		DTC124TM	DTC124TE	DTC124TUA	DTC124TKA	
Collector-base voltage	V <sub>CB0</sub>	50				V
Collector-emitter voltage	V <sub>CEO</sub>	50				V
Emitter-base voltage	V <sub>EBO</sub>	5				V
Collector current	I <sub>C</sub>	100				mA
Collector power dissipation	P <sub>C</sub>	150		200		mW
Junction temperature	T <sub>J</sub>	150				°C
Storage temperature	T <sub>stg</sub>	−55 to +150				°C

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CB0</sub>	50	—	—	V	I <sub>C</sub> =50μA
Collector-emitter breakdown voltage	BV <sub>CE0</sub>	50	—	—	V	I <sub>C</sub> =1mA
Emitter-base breakdown voltage	BV <sub>EB0</sub>	5	—	—	V	I <sub>E</sub> =50μA
Collector cutoff current	I <sub>CBO</sub>	—	—	0.5	μA	V <sub>CB</sub> =50V
Emitter cutoff current	I <sub>EBO</sub>	—	—	0.5	μA	V <sub>EB</sub> =4V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	—	—	0.3	V	I <sub>C</sub> /I <sub>B</sub> =5mA/0.5mA
DC current transfer ratio	h <sub>FE</sub>	100	250	600	—	V <sub>CE</sub> =5V, I <sub>C</sub> =1mA
Input resistance	R <sub>i</sub>	15.4	22	28.6	kΩ	—
Transition frequency	f <sub>T</sub> *	—	250	—	MHz	V <sub>CE</sub> =10V, I <sub>E</sub> =-5mA, f=100MHz

\* Characteristics of built-in transistor

## ● Electrical characteristic curves

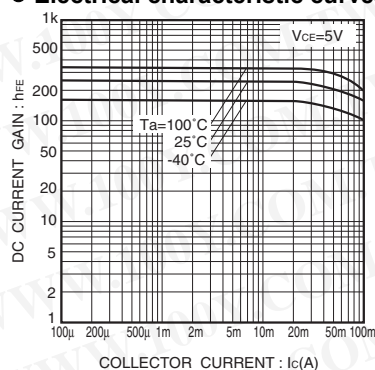


Fig.1 DC current gain vs. collector current

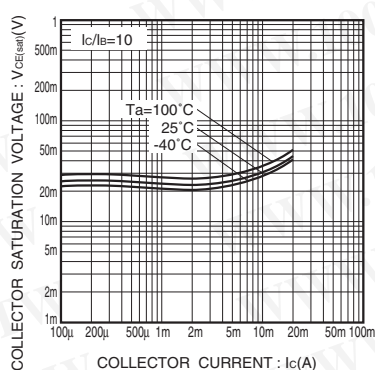


Fig.2 Collector-emitter saturation voltage vs. collector current

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