

100mA / 50V Digital transistors

(with built-in resistor)

DTC144TM / DTC144TE / DTC144TUA / DTC144TKA

Applications

Inverter, Interface, Driver

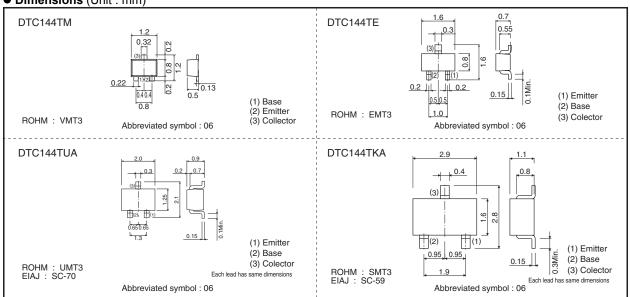
Features

- 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.

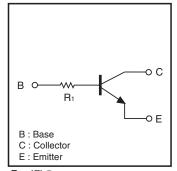
Structure

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

• Dimensions (Unit : mm)



Inner circuit



 $R_1=47k\Omega$

Packaging specifications

	Package	VMT3	EMT3	UMT3	SMT3	
Part No.	Packaging type	Taping	Taping	Taping	Taping	
	Code	T2L	TL	T106	T146	
	Basic ordering unit (pieces)	8000	3000	3000	3000	
DTC144TM		0	-	-	-	
DTC144TE		-	0	-	-	
DTC144TUA		-	-	0	-	
DTC144TKA		-	-	-	0	

● Absolute maximum ratings (Ta=25°C)

Parameter	Cumbal		Unit				
	Symbol	DTC144TM	DTC144TE	DTC144TUA	DTC144TKA	Offic	
Collector-base voltage	Vсво	50			V		
Collector-emitter voltage	VCEO	50				V	
Emitter-base voltage	VEBO						
Collector current	lc	100			mA		
Collector power dissipation	Pc	15	150 200		00	mW	
Junction temperature	Tj	150				°C	
Storage temperature	Tstg	-55 to +150				°C	

• Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Collector-base breakdown voltage	ВУсво	50	_	-	V	Ic=50μA
Collector-emitter breakdown voltage	BVCEO	50	_	_	V	Ic=1mA
Emitter-base breakdown voltage	ВУево	5	_	-	V	Iε=50μA
Collector cutoff current	Ісво	_	_	0.5	μΑ	V _{CB} =50V
Emitter cutoff current	ІЕВО	-	_	0.5	μΑ	V _{EB} =4V
Collector-emitter saturation voltage	VCE(sat)	-	_	0.3	٧	Ic/Iв=5mA/0.5mA
DC current transfer ratio	hfE	100	250	600	_	Vce=5V, lc=1mA
Input resistance	R ₁	32.9	47	61.1	kΩ	_
Transition frequency	f ⊤ *	_	250	_	MHz	Vce=10V, Ie= -5mA, f=100MHz

^{*} Characteristics of built-in transistor

• Electrical characteristic curves

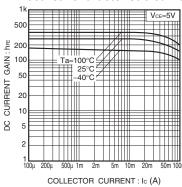


Fig.1 DC current gain vs. collector

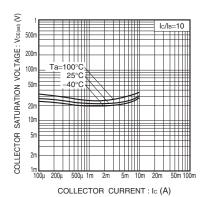


Fig.2 Collector-emitter saturation voltage vs. collector current

Notes

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