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

DTC114TM / DTC114TE / DTC114TUA / DTC114TKA / DTC114TSA

Applications

Inverter, Interface, Driver

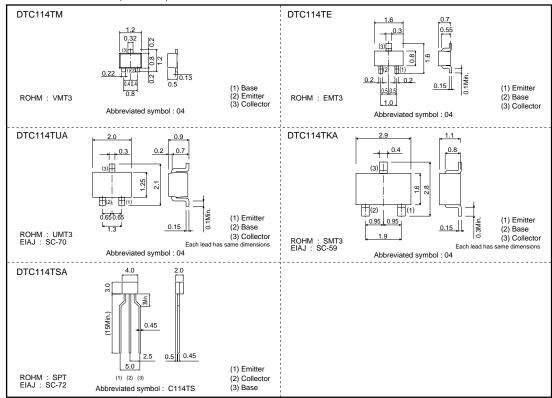
Features

- 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)

●External dimensions (Unit: mm)

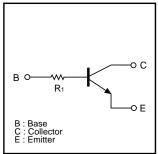


Rev.B

Packaging specifications

Package		VMT3	VMT3 EMT3		SMT3	SPT
	Package type	Taping	Taping	Taping	Taping	Taping
	Code	T2L	TL	T106	T146	TP
Part No.	Basic ordering unit (pieces)	8000	3000	3000	3000	5000
DTC114TM		0	-	-	-	-
DTC114TE		-	0	-	-	-
DTC114TUA		-	-	0	-	-
DTC114TKA		-	-	-	0	-
DTC114TSA		-	-	-	-	0

●Equivalent circuit



R1=10kΩ

● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits					
raiametei		DTA114TM	DTA114TE	DTA114TUA	DTA114TKA	DTA114TSA	Unit
Collector-base voltage	Vсво	50					V
Collector-emitter voltage	VCEO	50					V
Emitter-base voltage	VEBO	5					V
Collector current	Ic	100					mA
Collector power dissipation	Pc	150 200 3		300	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	Vcb=50V	
Emitter cutoff current	ІЕВО	-	-	0.5	μΑ	V _{EB} =4V	
Collector-emitter saturation voltage	VCE(sat)	_	-	0.3	V	Ic/Iв=10mA/1mA	
DC current transfer ratio	hFE	100	250	600	-	Vce=5V, Ic=1mA	
Input resistance	R1	7	10	13	kΩ	-	
Transition frequency	f⊤ *	_	250	-	MHz	Vce=10V, Ie=-5mA, f=100MHz	

^{*} Characteristics of built-in transistor

•Electrical characteristic curves

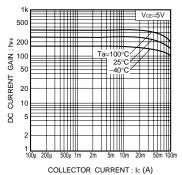


Fig.1 DC current gain vs. collector current

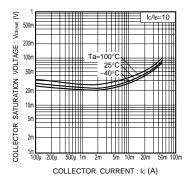


Fig.2 Collector-emitter saturation voltage vs. collector current

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Appendix1-Rev1.1