

100mA / 50V Digital transistors

(with built-in resistors)

DTC114EM / DTC114EE / DTC114EUA / DTC114EKA

Applications

Inverter, Interface, Driver

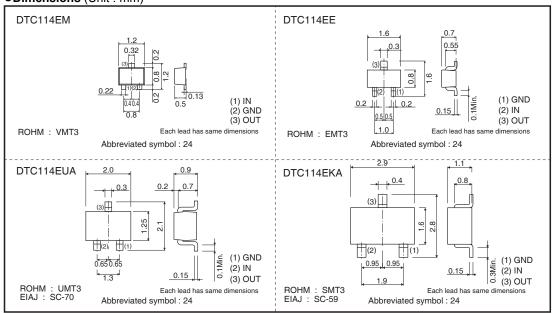
Features

- 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)

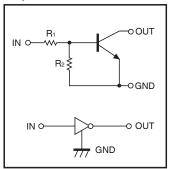
●Dimensions (Unit: mm)



Packaging specifications

Parameter	Symbol	Limits					
		DTC114EM	DTC114EE	DTC114EUA	DTC114EKA	Unit	
Supply voltage	Vcc	50					
Input voltage	VIN	-10 to +40					
Output current	lo	50					
	IC(Max.)	100					
Power dissipation	Po	150		20	00	mW	
Junction temperature	Tj	150					
Storage temperature	Tstg	-55 to +150					

●Equivalent circuit



 $R_1=R_2=10k\Omega$

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
loout valtage	VI(off)	-	_	0.5	V	Vcc=5V, Io=100μA
Input voltage	VI(on)	3	_	_		Vo=0.3V, Io=10mA
Output voltage	V _{O(on)}	-	0.1	0.3	V	lo/li=10mA/0.5mA
Input current	lı	-	-	0.88	mA	V=5V
Output current	IO(off)	-	-	0.5	μΑ	Vcc=50V, Vi=0V
DC current gain	Gı	30	-	-	-	Vo=5V, Io=5mA
Input resistance	R ₁	7	10	13	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 characteristics (Ta=25°C)

		•	•		
	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
DTC114EM		0	-	-	-
DTC114EE		_	0	_	_
DTC114EUA		-	-	0	-
DTC114EKA		-	-	-	0

•Electrical characteristic curves

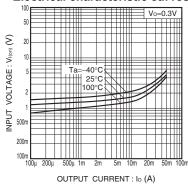


Fig.1 Input voltage vs. output current (ON characteristics)

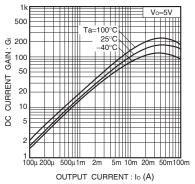


Fig.3 DC current gain vs. output

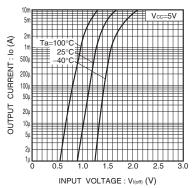


Fig.2 Output current vs. input voltage (OFF characteristics)

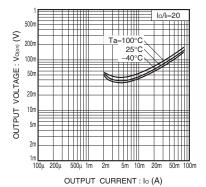


Fig.4 Output voltage vs. output current

Notes

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