

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

## DTC114GUA / DTC114GKA / DTC114GSA

### ●Applications

Inverter, Interface, Driver

### ●Features

- 1) The built-in bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input, and parasitic effects are almost completely eliminated.
- 2) Only the on / off conditions need to be set for operation, making the device design easy.
- 3) Higher mounting densities can be achieved.

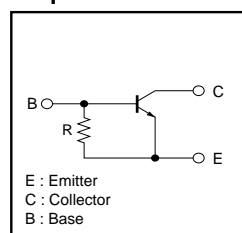
### ●Structure

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

### ●Packaging specifications

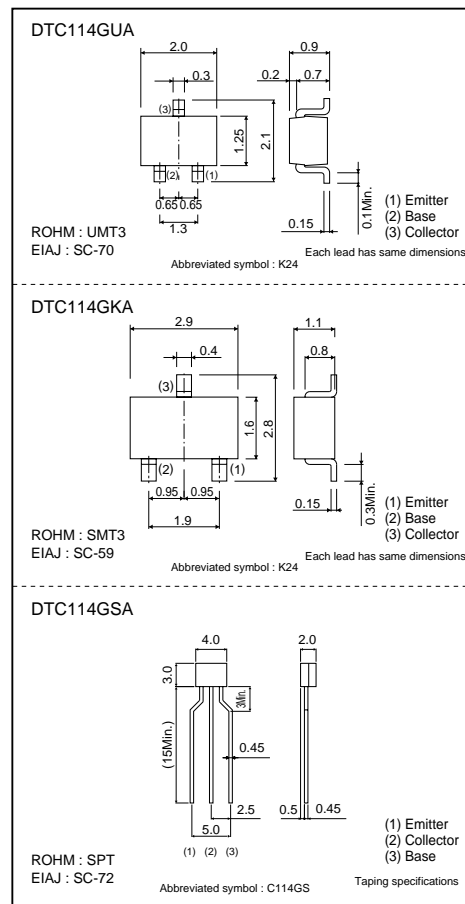
	Package	UMT3	SMT3	SPT
	Packaging type	Taping	Taping	Taping
	Code	T106	T146	TP
Part No.	Basic ordering unit (pieces)	3000	3000	5000
DTC114GUA		○	—	—
DTC114GKA		—	○	—
DTC114GSA		—	—	○

### ●Equivalent circuit



R=10kΩ

### ●External dimensions (Unit : mm)



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

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</sub>	50	V
Collector-emitter voltage	V <sub>CE0</sub>	50	V
Emitter-base voltage	V <sub>EB0</sub>	5	V
Collector current	I <sub>c</sub>	100	mA
Collector Power dissipation	P <sub>c</sub>	200	mW
		300	
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

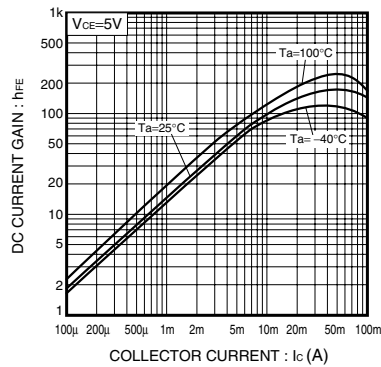
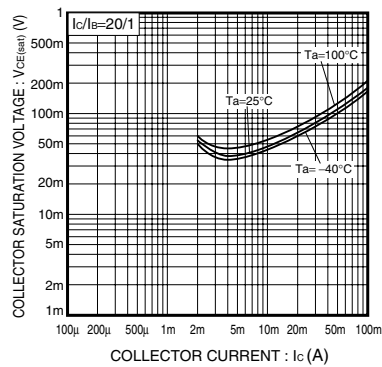
## Transistors

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	50	—	—	V	$I_C=50\mu A$
Collector-emitter breakdown voltage	$BV_{CEO}$	50	—	—	V	$I_C=1mA$
Emitter-base breakdown voltage	$BV_{EBO}$	5	—	—	V	$I_E=720\mu A$
Collector cutoff current	$I_{CBO}$	—	—	0.5	$\mu A$	$V_{CB}=50V$
Emitter cutoff current	$I_{EBO}$	300	—	580	$\mu A$	$V_{EB}=4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	0.3	V	$I_C=10mA, I_B=0.5mA$
DC current transfer ratio	$h_{FE}$	30	—	—	—	$I_C=5mA, V_{CE}=5V$
Emitter-base resistance	R	7	10	13	$k\Omega$	—
Transition frequency	$f_T$ *	—	250	—	MHz	$V_{CE}=10V, I_E=-5mA, f=100MHz$

\* Characteristics of built-in transistor

## ●Electrical characteristic curves

Fig.1 DC current gain  
vs. Collector currentFig.2 Collector-Emitter saturation voltage  
vs. Collector current

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