

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

DTC114GUA / DTC114GKA

● 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)

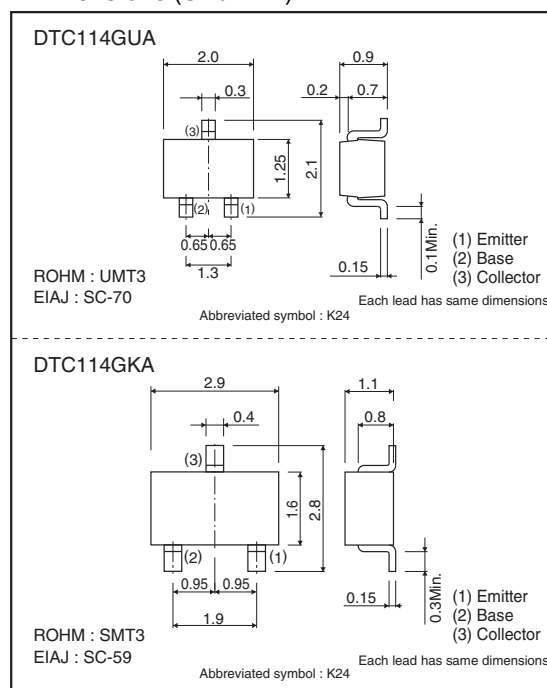
● Packaging specifications

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

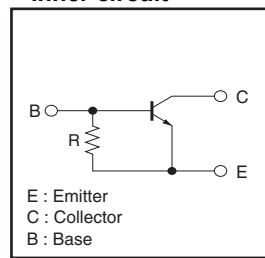
● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V _{CBO}	50	V
Collector-emitter voltage	V _{CEO}	50	V
Emitter-base voltage	V _{EBO}	5	V
Collector current	I _C	100	mA
Collector Power dissipation	P _C	200	mW
Junction temperature	T _J	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

● Dimensions (Unit : mm)



● Inner circuit



R=10kΩ

● 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	μA	$V_{CB}=50V$
Emitter cutoff current	I_{EBO}	300	—	580	μA	$V_{EB}=4V$
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

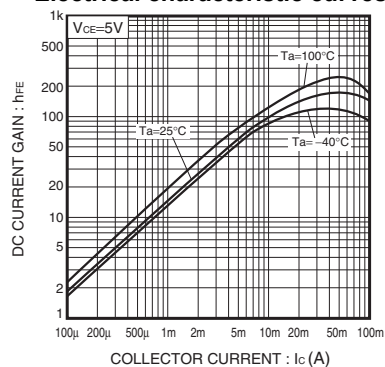


Fig.1 DC current gain
vs. Collector current

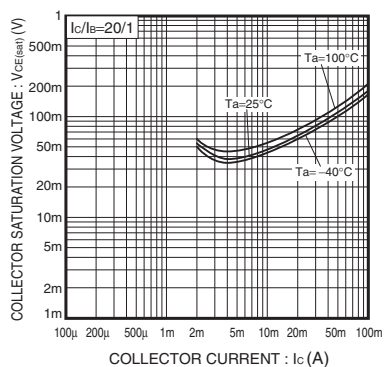


Fig.2 Collector-Emitter saturation voltage
vs. Collector current

Notes

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