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.

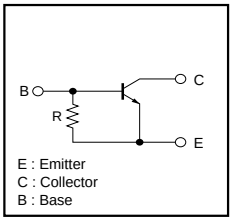
●Structure

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		–	–	○

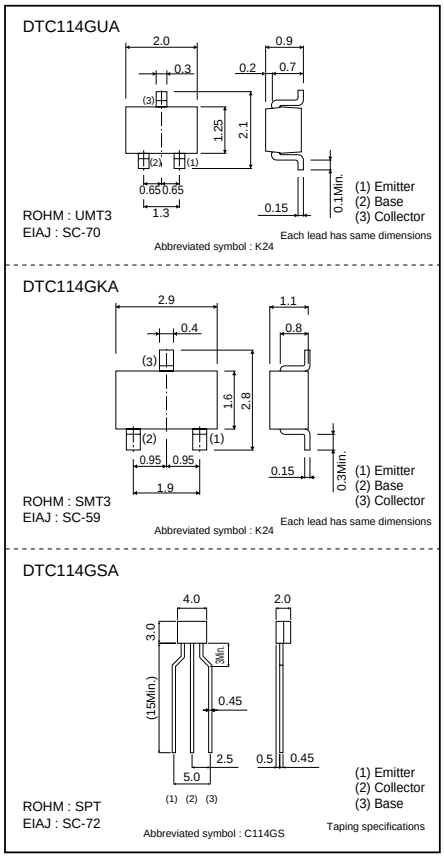
●Equivalent circuit



E : Emitter
C : Collector
B : Base

R=10kΩ

●External dimensions (Unit : mm)



●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	DTC114GUA / DTC114GKA	Pc	200	mW
	DTC114GSA		300	
Junction temperature		Tj	150	°C
Storage temperature		Tstg	–55 to +150	°C

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	50	–	–	V	I_C=50μA
Collector-emitter breakdown voltage	BV_{CEO}	50	–	–	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	5	–	–	V	I_E=720μA
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	kΩ	–
Transition frequency	f_T *	–	250	–	MHz	V_{CE}=10V, I_E= –5mA, f=100MHz

* Characteristics of built-in transistor

●**Electrical characteristic curves**

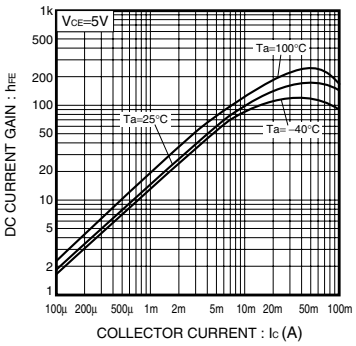


Fig.1 DC current gain vs. Collector current

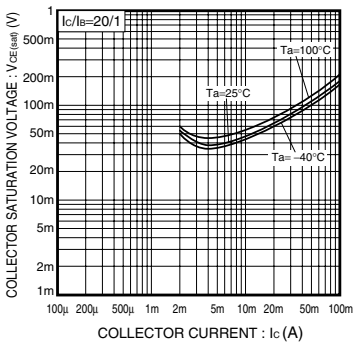


Fig.2 Collector-Emitter saturation voltage vs. Collector current

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