

Transistors

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

## DTC115GUA / DTC115GKA

●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

Part No.	Package	UMT3	SMT3
	Packaging type	Taping	Taping
	Code	T106	T146
	Basic ordering unit (pieces)	3000	3000
DTC115GUA		○	—
DTC115GKA		—	○

●Absolute maximum ratings (Ta=25°C)

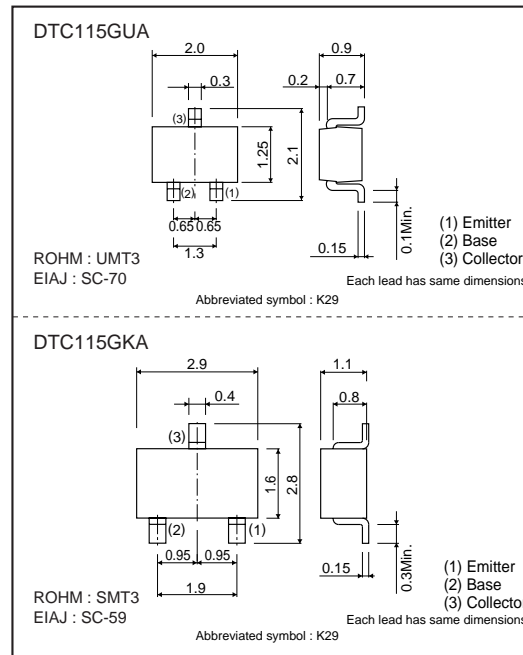
Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</sub>	50	V
Collector-emitter voltage	V <sub>CE0</sub>	50	V
Emitter-base voltage	V <sub>EB0</sub>	5	V
Collector current	I <sub>c</sub>	100	mA
Collector power dissipation	P <sub>c</sub>	200	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage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

●Electrical characteristics (Ta=25°C)

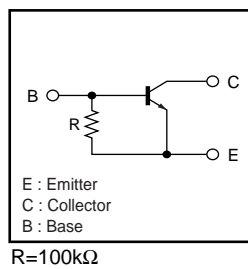
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CB0</sub>	50	—	—	V	I <sub>c</sub> =50μA
Collector-emitter breakdown voltage	BV <sub>CE0</sub>	50	—	—	V	I <sub>c</sub> =1mA
Emitter-base breakdown voltage	BV <sub>EB0</sub>	5	—	—	V	I <sub>E</sub> =72μA
Collector cutoff current	I <sub>CB0</sub>	—	—	0.5	μA	V <sub>CB</sub> =50V
Emitter cutoff current	I <sub>EB0</sub>	30	—	58	μA	V <sub>EB</sub> =4V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	—	—	0.3	V	I <sub>c</sub> =5mA, I <sub>B</sub> =0.25mA
DC current transfer ratio	h <sub>FE</sub>	82	—	—	—	I <sub>c</sub> =5mA, V <sub>CE</sub> =5V
Emitter-base resistance	R	70	100	130	kΩ	—
Transition frequency	f <sub>t</sub> *	—	250	—	MHz	V <sub>CE</sub> =10V, I <sub>E</sub> =-5mA, f=100MHz

\* Characteristics of built-in transistor

●External dimensions (Unit : mm)



●Equivalent circuit



Transistors

●Electrical characteristics curves

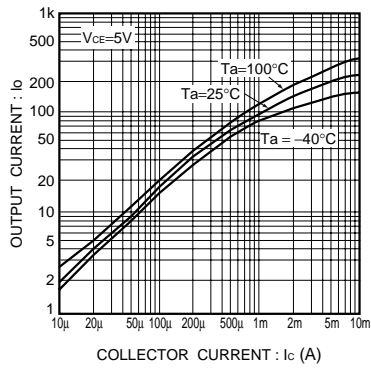


Fig.1 DC current transfer ratio vs. collector current characteristics

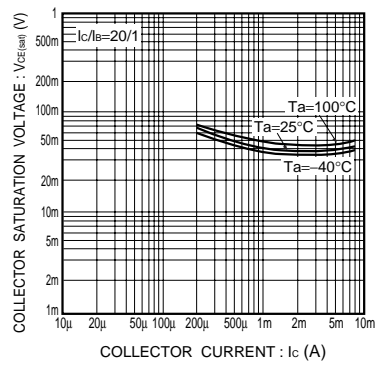


Fig.2 Collector-emitter saturation voltage vs. collector current characteristics

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