

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

DTC125TUA / DTC125TKA

● **Applications**

Inverter, Interface, Driver

● **Features**

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input, and parasitic effects are almost completely eliminated.
- 3) Only the on / off conditions need to be set for operation, making the device design easy.
- 4) Higher mounting densities can be achieved.

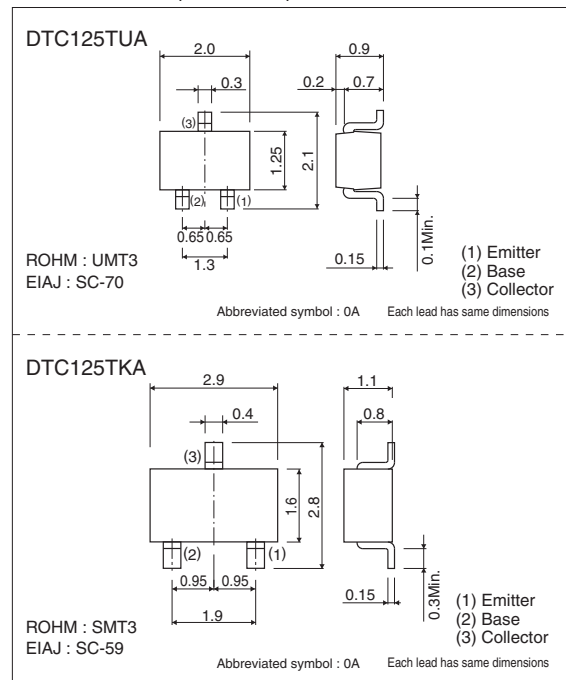
● **Structure**

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

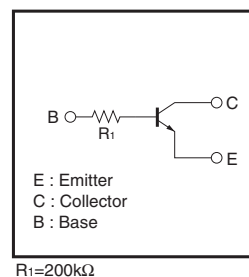
● **Packaging specifications**

Part No.	Package	UMT3	SMT3
		Packaging type	Taping
	Code	T106	T146
	Basic ordering unit (pieces)	3000	3000
DTC125TUA		○	—
DTC125TKA		—	○

● **Dimensions (Unit : mm)**



● **Inner circuit**



● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CBO</sub>	50	V
Collector-emitter voltage	V <sub>CEO</sub>	50	V
Emitter-base voltage	V <sub>EBO</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>CBO</sub>	50	-	-	V	I <sub>c</sub> =50μA
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	50	-	-	V	I <sub>c</sub> =1mA
Emitter-base breakdown voltage	BV <sub>EBO</sub>	5	-	-	V	I <sub>E</sub> =50μA
Collector cutoff current	I <sub>CBO</sub>	-	-	0.5	μA	V <sub>CB</sub> =50V
Emitter cutoff current	I <sub>EBO</sub>	-	-	0.5	μA	V <sub>EB</sub> =4V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	-	-	0.3	V	I <sub>c</sub> =0.5mA, I <sub>B</sub> =0.05mA
DC current transfer ratio	h <sub>FE</sub>	100	250	600	-	I <sub>c</sub> =1mA, V <sub>CE</sub> =5V
Input resistance	R <sub>1</sub>	140	200	260	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

● Electrical characteristic curves

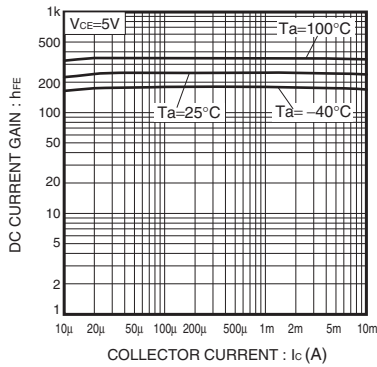


Fig.1 DC current gain vs. Collector current

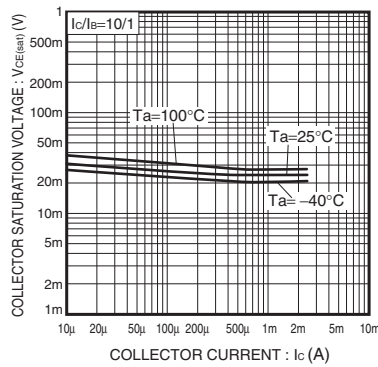


Fig.2 Collector-Emitter saturation voltage vs. Collector current

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