

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

## DTA113TKA

### ●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 positive 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.

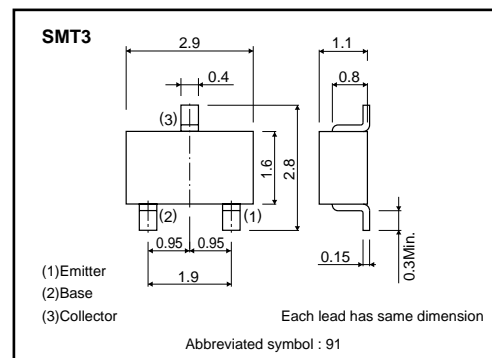
### ●Structure

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

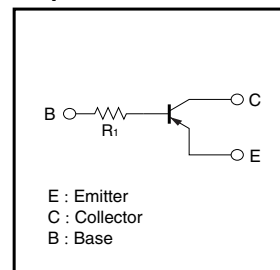
### ●Packaging specifications

Part No.	Package	SMT3
	Packaging type	Taping
	Code	T146
	Basic ordering unit (pieces)	3000
DTA113TKA		○

### ●External dimensions (Unit : mm)



### ●Equivalent circuit



$R_1 = 1\text{k}\Omega$

### ●Absolute maximum ratings ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CB0}$	-50	V
Collector-emitter voltage	$V_{CE0}$	-50	V
Emitter-base voltage	$V_{EB0}$	-5 to +10	V
Collector current	$I_c$	-100	mA
Collector Power dissipation	$P_c$	200	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Transistors

●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>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>CB0</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> /I <sub>B</sub> = -5mA / -0.25mA
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>	0.7	1	1.3	kΩ	-
Transition frequency	f <sub>T</sub> *	-	250	-	MHz	V <sub>CB</sub> = -10V , I <sub>E</sub> =5mA , f=100MHz

\* Characteristics of built-in transistor

●Electrical characteristics curves

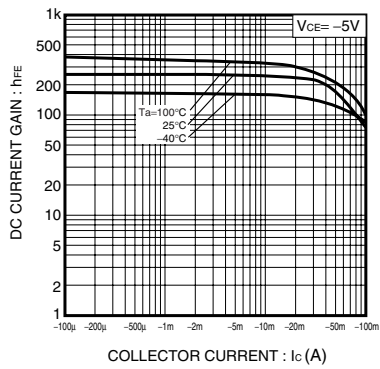


Fig.1 DC Current gain vs. Collector Current

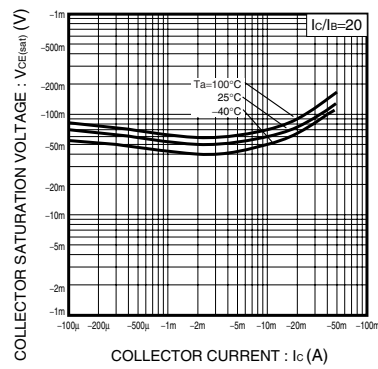


Fig.2 Collector-emitter saturation voltage vs. Collector Current

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