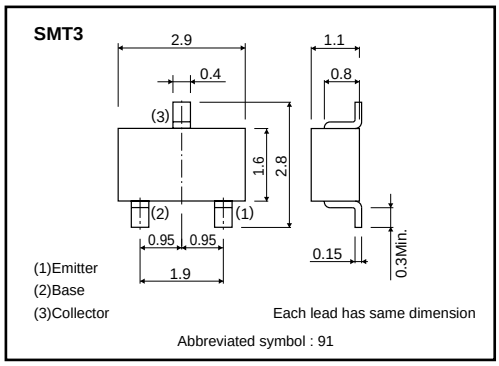
-100mA / -50V Digital transistor (with built-in resistor)

DTA113TKA

●Applications
Inverter, Interface, Driver

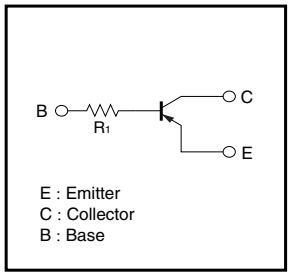
●Features
1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input, and parasitic effects are almost completely eliminated.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

●External dimensions (Unit : mm)



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

●Equivalent circuit



R_1=1kΩ

●Packaging specifications

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

●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 to +10	V
Collector current	I_C	−100	mA
Collector Power dissipation	Pc	200	mW
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= –50μA
Collector cutoff current	I_{CBO}	–	–	–0.5	μA	V_{CB}= –50V
Emitter cutoff current	I_{EBO}	–	–	–0.5	μA	V_{EB}= –4V
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–	–0.3	V	I_C/I_B= –5mA / –0.25mA
DC current transfer ratio	h_{FE}	100	250	600	–	I_C= –1mA , V_{CE}= –5V
Input resistance	R_1	0.7	1	1.3	kΩ	–
Transition frequency	f_T *	–	250	–	MHz	V_{CB}= –10V , I_E=5mA , f=100MHz

* Characteristics of built-in transistor

●**Electrical characteristics curves**

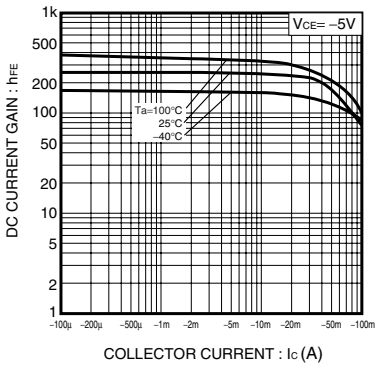


Fig.1 DC Current gain vs. Collector Current

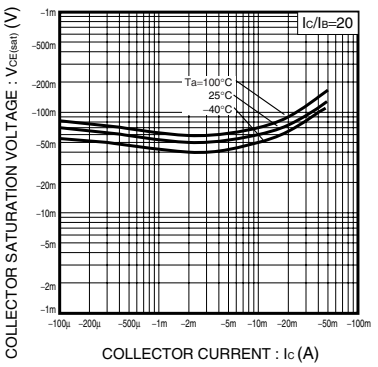


Fig.2 Collector-emitter saturation voltage vs. Collector Current

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