

Digital transistors (built in resistor)

DTA144TE / DTA144TUA / DTA144TKA / DTA144TCA / DTA144TSA

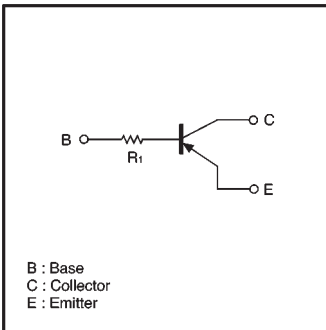
●Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- 3) Only the on/off conditions need to be set for operation, making device design easy.

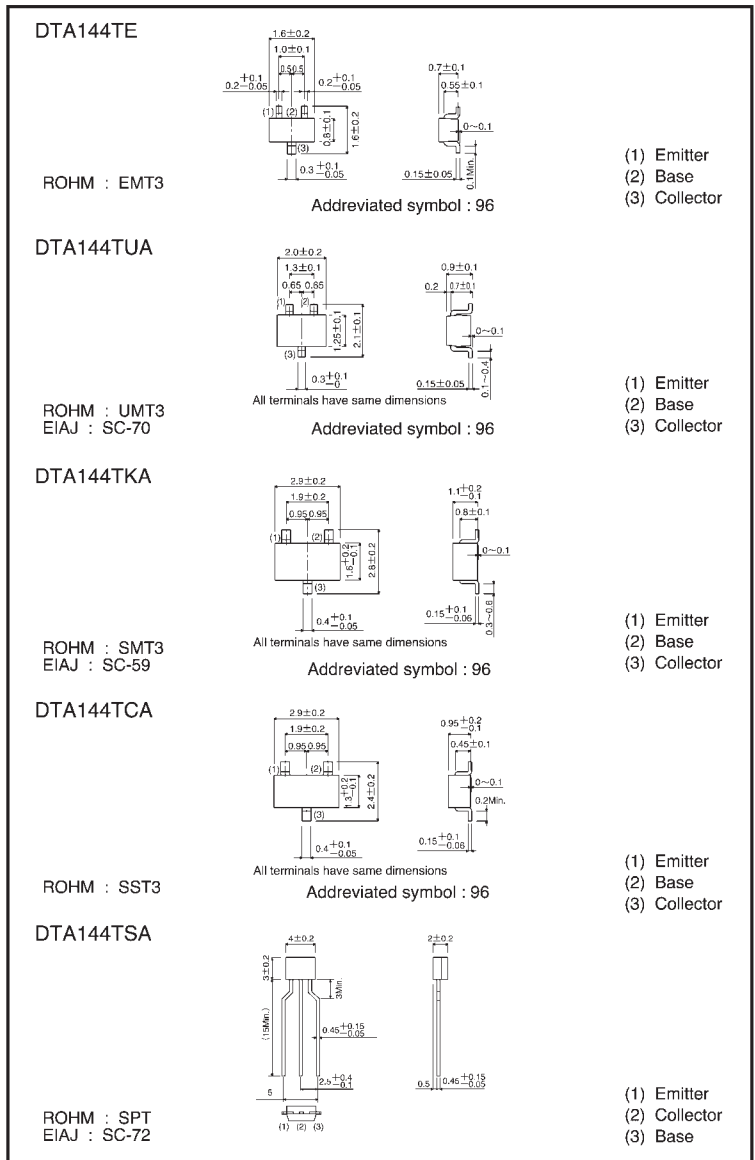
●Structure

PNP digital transistor
(Built-in resistor type)

●Equivalent circuit



●External dimensions (Units: mm)



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

Parameter	Symbol	Limits(DTA144T□)					Unit
		E	UA	KA	CA	SA	
Collector-base voltage	V_{CB0}	-50					V
Collector-emitter voltage	V_{CE0}	-50					V
Emitter-base voltage	V_{EB0}	-5					
Collector current	I_c	-100					mA
Collector power dissipation	P_c	150	200	300	300	mW	
Junction temperature	T_j	150					$^\circ\text{C}$
Storage temperature	T_{stg}	-55~+150					$^\circ\text{C}$

● Electrical characteristics ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CB0}	-50	—	—	V	$I_c = -50 \mu\text{A}$
Collector-emitter breakdown voltage	BV_{CE0}	-50	—	—	V	$I_c = -1\text{mA}$
Emitter-base breakdown voltage	BV_{EB0}	-5	—	—	V	$I_E = -50 \mu\text{A}$
Collector cutoff current	I_{CB0}	—	—	-0.5	μA	$V_{CB} = -50\text{V}$
Emitter cutoff current	I_{EB0}	—	—	-0.5	μA	$V_{EB} = -4\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	-0.3	V	$I_c/I_E = -5\text{mA}/-0.5\text{mA}$
DC current transfer ratio	h_{FE}	100	250	600	—	$V_{CE} = -5\text{V}$, $I_c = -1\text{mA}$
Input resistance	R_i	32.9	47	61.1	$\text{k}\Omega$	—
Transition frequency	f_T	—	250	—	MHz	$V_{CE} = -10\text{V}$, $I_E = 5\text{mA}$, $f = 100\text{MHz}$ *

* Transition frequency of the device

● Packaging specifications

Part No.	Package	EMT3	UMT3	SMT3	SST3	SPT
	Packaging type	Taping	Taping	Taping	Taping	Taping
	Code	TL	T106	T146	T116	TP
	Basic ordering unit (pieces)	3000	3000	3000	3000	5000
DTA144TE		○	—	—	—	—
DTA144TUA		—	○	—	—	—
DTA144TKA		—	—	○	—	—
DTA144TCA		—	—	—	○	—
DTA144TSA		—	—	—	—	○

●Electrical characteristic curves

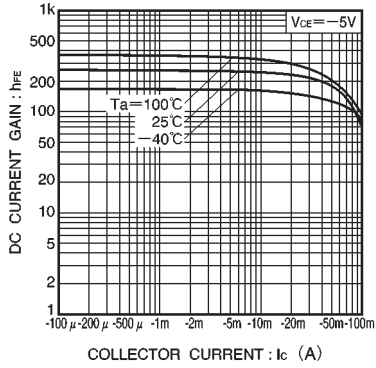


Fig.1 DC current gain vs.collector current

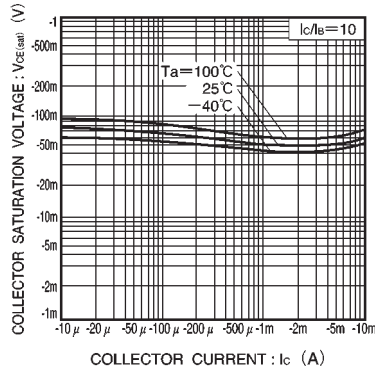


Fig.2 Collector-emitter saturation voltage vs.collector current