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Digital transistors (built in resistor)

DTA114TE / DTA114TUA / DTA114TKA / DTA114TSA

●Features

1) Built-in circuit enables the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).

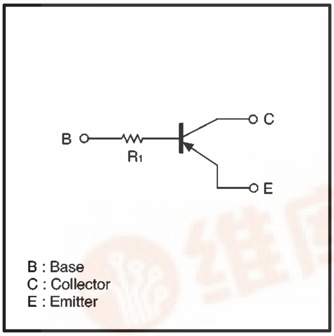
2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.

3) Only the on/off conditions need to be set for operation, making device design easy.

●Structure

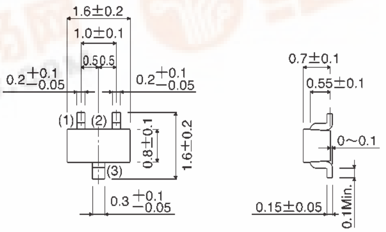
PNP digital transistor
(With single built in resistor)

●Equivalent circuit



●External dimensions (Units: mm)

DTA114TE

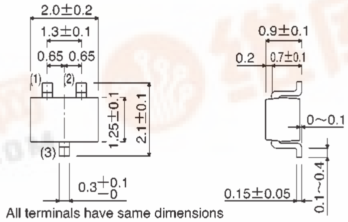


ROHM : EMT3

(1) Emitter
(2) Base
(3) Collector

Addreviated symbol : 94

DTA114TUA



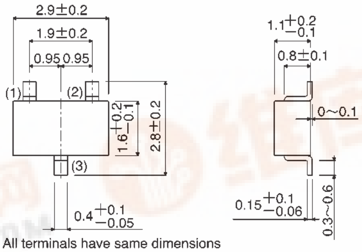
All terminals have same dimensions

ROHM : UMT3
EIAJ : SC-70

(1) Emitter
(2) Base
(3) Collector

Addreviated symbol : 94

DTA114TKA



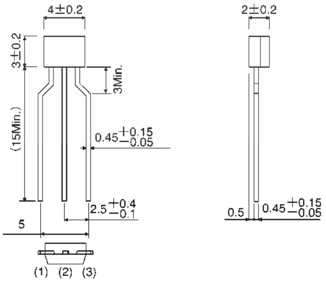
All terminals have same dimensions

ROHM : SMT3
EIAJ : SC-59

(1) Emitter
(2) Base
(3) Collector

Addreviated symbol : 94

DTA114TSA



ROHM : SPT
EIAJ : SC-72

(1) Emitter
(2) Collector
(3) Base

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●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits(DTA114T□)				Unit
		E	UA	KA	SA	
Collector-base voltage	V_{CBO}	−50				V
Collector-emitter voltage	V_{CEO}	−50				V
Emitter-base voltage	V_{EBO}	−5				V
Collector current	I_C	−100				mA
Collector power dissipation	P_C	150	200		300	mW
Junction temperature	Tj	150				℃
Storage temperature	Tstg	−55～+150				℃

●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	−50	—	—	V	$I_C=-50\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	−50	—	—	V	$I_C=-1mA$
Emitter-base breakdown voltage	BV_{EBO}	−5	—	—	V	$I_E=-50\mu A$
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	$I_C/I_B=-10mA/-1mA$
DC current transfer ratio	h_{FE}	100	250	600	—	$V_{CE}=-5V$, $I_C=-1mA$
Input resistance	R_1	7	10	13	kΩ	—
Transition frequency	f_T	—	250	—	MHz	$V_{CE}=-10V$, $I_E=5mA$, $f=100MHz$ ∗

∗ Transition frequency of the device

●Packaging specifications

	Package	EMT3	UMT3	SMT3	SPT
	Package type	Taping	Taping	Taping	Taping
	Code	TL	T106	T146	TP
Part No.	Basic ordering unit (pieces)	3000	3000	3000	5000
DTA114TE		○	—	—	—
DTA114TUA		—	○	—	—
DTA114TKA		—	—	○	—
DTA114TSA		—	—	—	○

●Electrical characteristic curves

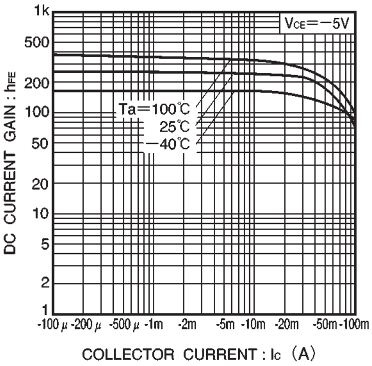

Fig.1 DC current gain vs. collector current

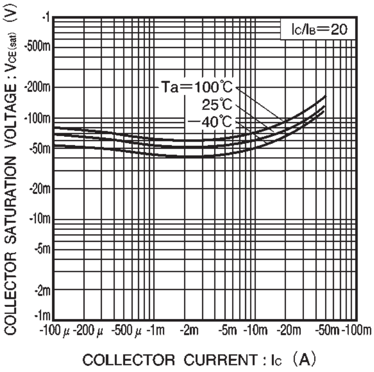

Fig.2 Collector-emitter saturation voltage vs. collector current