

# -100mA / -50V Digital transistors (with built-in resistors)

## DTA114TM / DTA114TE / DTA114TUA DTA114TKA / DTA114TSA

### ●Applications

Inverter, Interface, Driver

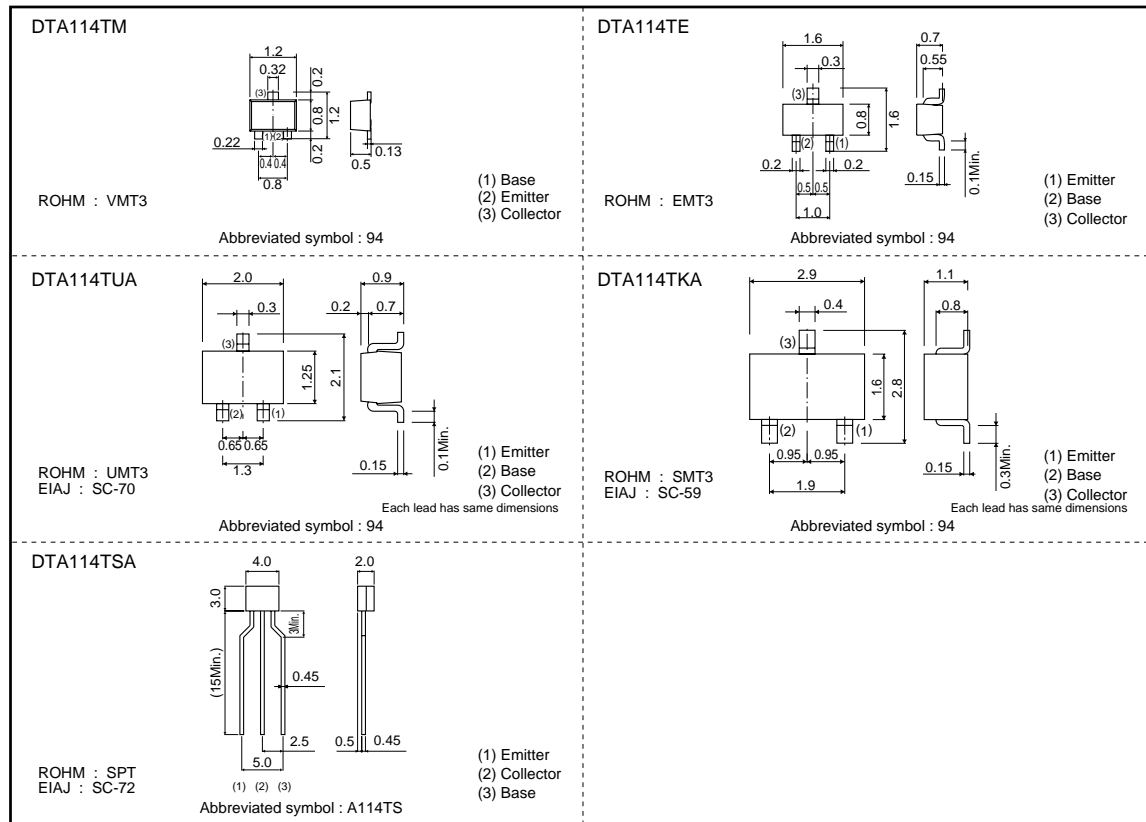
### ●Features

- 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 the device design easy.

### ●Structure

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

### ●External dimensions (Unit : mm)



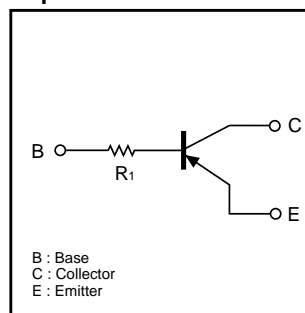
# DTA114TM / DTA114TE / DTA114TUA DTA114TKA / DTA114TSA

## Transistors

### ●Packaging specifications

Part No.	Package	VMT3	EMT3	UMT3	SMT3	SPT
	Package type	Taping	Taping	Taping	Taping	Taping
	Code	T2L	TL	T106	T146	TP
	Basic ordering unit (pieces)	8000	3000	3000	3000	5000
DTA114TM	○	-	-	-	-	-
DTA114TE	-	○	-	-	-	-
DTA114TUA	-	-	○	-	-	-
DTA114TKA	-	-	-	○	-	-
DTA114TSA	-	-	-	-	-	○

### ●Equivalent circuit



$R_1=10k\Omega$

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

Parameter	Symbol	Limits					Unit
		DTA114TM	DTA114TE	DTA114TUA	DTA114TKA	DTA114TSA	
Collector-base voltage	$V_{CB0}$	-50					V
Collector-emitter voltage	$V_{CE0}$	-50					V
Emitter-base voltage	$V_{EB0}$	-5					V
Collector current	$I_C$	-100					mA
Collector power dissipation	$P_C$	150		200		300	mW
Junction temperature	$T_j$	150					$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +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	$I_{CBO}$	-	-	-0.5	$\mu\text{A}$	$V_{CB}=-50\text{V}$
Emitter cutoff current	$I_{EBO}$	-	-	-0.5	$\mu\text{A}$	$V_{EB}=-4\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	-0.3	V	$I_C/I_B=-10\text{mA}/-1\text{mA}$
DC current transfer ratio	$h_{FE}$	100	250	600	-	$V_{CE}=-5\text{V}$ , $I_C=-1\text{mA}$
Input resistance	$R_1$	7	10	13	$k\Omega$	-
Transition frequency	$f_T$ *	-	250	-	MHz	$V_{CE}=-10\text{V}$ , $I_E=5\text{mA}$ , $f=100\text{MHz}$

\* Characteristics of built-in transistor

### ●Electrical characteristic curves

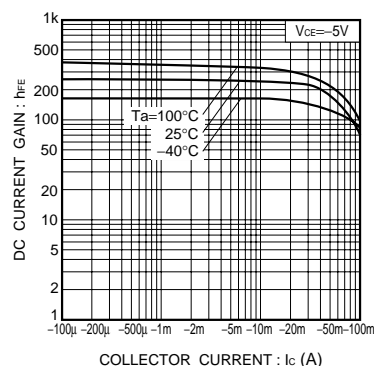


Fig.1 DC current gain vs. collector current

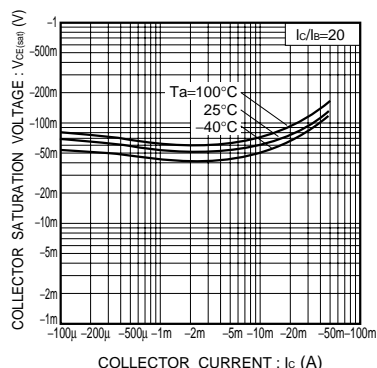


Fig.2 Collector-emitter saturation voltage vs. collector current

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