

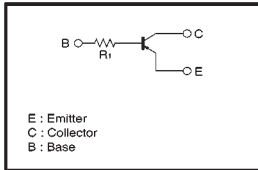
# Digital transistors (built-in resistor)

## DTA115TE / DTA115TUA / DTA115TKA / DTA115TSA

### ●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 device design easy.
- 4) Higher mounting densities can be achieved.

### ●Circuit schematic



### ●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	$I_C = -1 mA$
Emitter-base breakdown voltage	$BV_{EBO}$	-5	—	—	V	$I_E = -50 \mu A$
Collector cutoff current	$I_{CBO}$	—	—	-0.5	$\mu A$	$V_{CB} = -50V$
Emitter cutoff current	$I_{EBO}$	—	—	-0.5	$\mu A$	$V_{EB} = -4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	-0.3	V	$I_C/I_E = -1 mA / -0.1 mA$
DC current transfer ratio	$h_{FE}$	100	250	600	—	$I_C = -1 mA, V_{CE} = -5V$
Input resistance	$R_i$	70	100	130	k $\Omega$	—
Transition frequency	$f_T$	—	250	—	MHz	$V_{CE} = -10V, I_E = 5mA, f = 100MHz$ *

\* Transition frequency of the device.

(96-259-A115T)

### ●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	V
Collector current	$I_C$	-100	mA
Collector power dissipation	DTA115TE	150	mW
	DTA115TUA / DTA115TKA	200	
	DTA115TSA	300	
Junction temperature	$T_J$	150	°C
Storage temperature	$T_{stg}$	-55~+150	°C

### ●Package, marking, and packaging specifications

Part No.	DTA115TE	DTA115TUA	DTA115TKA	DTA115TSA
Package	EMT3	UMT3	SMT3	SPT
Marking	99	99	99	—
Packaging code	TL	T106	T146	TP
Basic ordering unit (pieces)	3000	3000	3000	5000

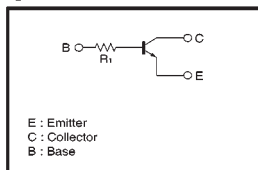
# Digital transistors (built-in resistor)

## DTC115TUA / DTC115TKA / DTC115TSA

### ●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 negative biasing of the input, and parasitic effects are almost completely eliminated.
- 3) Only the on / off conditions need to be set for operation, making device design easy.
- 4) Higher mounting densities can be achieved.

### ●Circuit schematic



### ●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	$I_C = 1 mA$
Emitter-base breakdown voltage	$BV_{EBO}$	5	—	—	V	$I_E = 50 \mu A$
Collector cutoff current	$I_{CBO}$	—	—	0.5	$\mu A$	$V_{CE} = 50V$
Emitter cutoff current	$I_{EBO}$	—	—	0.5	$\mu A$	$V_{EB} = 4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	0.3	V	$I_C/I_E = 1 mA / 0.1 mA$
DC current transfer ratio	$h_{FE}$	100	250	600	—	$I_C = 1 mA, V_{CE} = 5V$
Input resistance	$R_i$	70	100	130	k $\Omega$	—
Transition frequency	$f_T$	—	250	—	MHz	$V_{CE} = 10V, I_E = -5mA, f = 100MHz$ *

\* Transition frequency of the device.

### ●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	V
Collector current	$I_C$	100	mA
Collector power dissipation	DTC115TUA / DTC115TKA	200	mW
	DTC115TSA	300	
Junction temperature	$T_J$	150	°C
Storage temperature	$T_{stg}$	-55~+150	°C

### ●Package, marking, and packaging specifications

Part No.	DTC115TUA	DTC115TKA	DTC115TSA
Package	UMT3	SMT3	SPT
Marking	09	09	—
Packaging code	T106	T146	TP
Basic ordering unit (pieces)	3000	3000	5000

(96-317-C115T)