

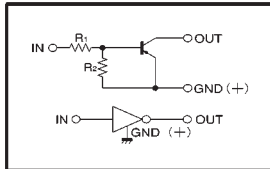
# Digital transistors (built-in resistors)

DTA114WE / DTA114WUA / DTA114WKA / DTA114WSA

### ●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
Input voltage	$V_{I(off)}$	—	—	-0.8	V	$V_{CC} = -50V, I_o = -100 \mu A$
	$V_{I(on)}$	-3	—	—		$V_o = -0.3V, I_o = -2mA$
Output voltage	$V_{O(on)}$	—	-0.1	-0.3	V	$I_o = -10mA, I_i = -0.5mA$
Input current	$I_i$	—	—	-0.88	mA	$V_i = -5V$
Output current	$I_{O(off)}$	—	—	-0.5	$\mu A$	$V_{CC} = -50V, V_i = 0V$
DC current gain	$G_i$	24	—	—	—	$I_o = -10mA, V_o = -5V$
Input resistance	$R_1$	7	10	13	k $\Omega$	—
Resistance ratio	$R_2/R_1$	0.37	0.47	0.57	—	—
Transition frequency	$f_r$	—	250	—	MHz	$V_{CE} = -10V, I_E = 5mA, f = 100MHz$ *

\* Transition frequency of the device.

(94S-516-A114W)

### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	$V_{CC}$	-50	V
Input voltage	$V_i$	-30 ~ +10	V
Output current	$I_o$	-100	mA
	$I_{C(Max.)}$	-100	
Power dissipation	DTA114WE	150	mW
	DTA114WUA / DTA114WKA	200	
	DTA114WSA	300	
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 ~ +150	°C

### ●Package, marking, and packaging specifications

Part No.	DTA114WE	DTA114WUA	DTA114WKA	DTA114WSA
Package	EMT3	UMT3	SMT3	SPT
Marking	74	74	74	—
Packaging code	TL	T106	T146	TP
Basic ordering unit (pieces)	3000	3000	3000	5000

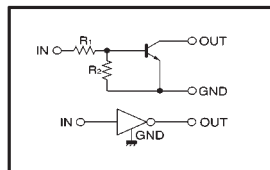
# Digital transistors (built-in resistors)

DTC114WE / DTC114WUA / DTC114WKA / DTC114WSA

### ●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
Input voltage	$V_{I(off)}$	—	—	0.8	V	$V_{CC} = 5V, I_o = 100 \mu A$
	$V_{I(on)}$	3	—	—		$V_o = 0.3V, I_o = 2mA$
Output voltage	$V_{O(on)}$	—	0.1	0.3	V	$I_o = 10mA, I_i = 0.5mA$
Input current	$I_i$	—	—	0.88	mA	$V_i = 5V$
Output current	$I_{O(off)}$	—	—	0.5	$\mu A$	$V_{CC} = 50V, V_i = 0V$
DC current gain	$G_i$	24	—	—	—	$I_o = 10mA, V_o = 5V$
Input resistance	$R_1$	7	10	13	k $\Omega$	—
Resistance ratio	$R_2/R_1$	0.37	0.47	0.57	—	—
Transition frequency	$f_r$	—	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
Supply voltage	$V_{CC}$	50	V
Input voltage	$V_i$	-10 ~ +30	V
Output current	$I_o$	100	mA
	$I_{C(Max.)}$	100	
Power dissipation	DTC114WE	150	mW
	DTC114WUA / DTC114WKA	200	
	DTC114WSA	300	
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 ~ +150	°C

### ●Package, marking, and packaging specifications

Part No.	DTC114WE	DTC114WUA	DTC114WKA	DTC114WSA
Package	EMT3	UMT3	SMT3	SPT
Marking	84	84	84	—
Packaging code	TL	T106	T146	TP
Basic ordering unit (pieces)	3000	3000	3000	5000

(94S-635-C114W)