

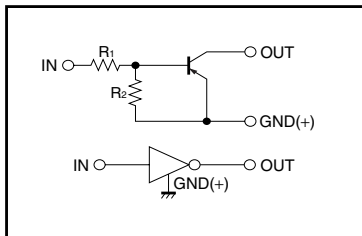
# Digital transistors (built-in resistor)

## DTA144WE/DTA144WUA/DTA144WKA/DTA144WSA

### ●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



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

Parameter	Symbol	Limits	Unit
Supply voltage	V <sub>cc</sub>	-50	V
Input voltage	V <sub>i</sub>	-40 to +10	V
Output current	I <sub>o</sub>	-30	mA
	I <sub>c(Max.)</sub>	-100	
Power dissipation	DTA144WE	150	mW
	DTA144WUA / DTA144WKA	200	
	DTA144WSA	300	
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

### ●Package, marking, and packaging specifications

Part No.	DTA144WE	DTA144WUA	DTA144WKA	DTA144WSA
Package	EMT3	UMT3	SMT3	SPT
Marking	76	76	76	-
Packaging code	TL	T106	T146	TP
Basic ordering unit (pieces)	3000	3000	3000	5000

# DTA144WE / DTA144WUA / DTA144WKA / DTA144WSA

## Transistors

### ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	-	-	-0.8	V	$V_{CC} = -5V, I_o = -100\mu A$
	$V_{I(on)}$	-4	-	-		$V_o = -0.3V, I_o = -2mA$
Output voltage	$V_{O(on)}$	-	-0.1	-0.3	V	$I_o = -10mA, I_i = -0.5mA$
Input current	$I_i$	-	-	-0.16	mA	$V_i = -5V$
Output current	$I_{O(off)}$	-	-	-0.5	$\mu A$	$V_{CC} = -50V, V_i = 0V$
DC current gain	$G_i$	56	-	-	-	$I_o = -5mA, V_o = -5V$
Input resistance	$R_1$	32.9	47	61.1	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.

### ●Electrical characteristics curves

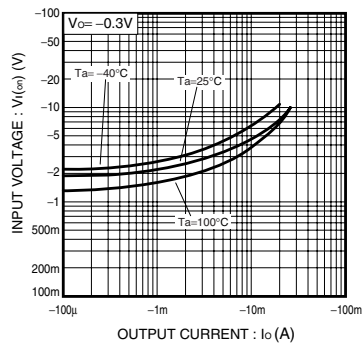


Fig.1 Input voltage vs. Output current (ON characteristics)

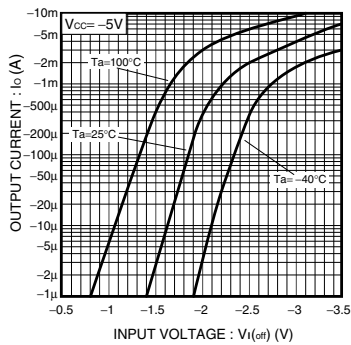


Fig.2 Output current vs. Input voltage (OFF characteristics)

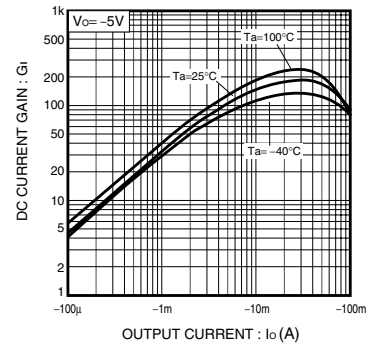


Fig.3 DC current gain vs. Output current

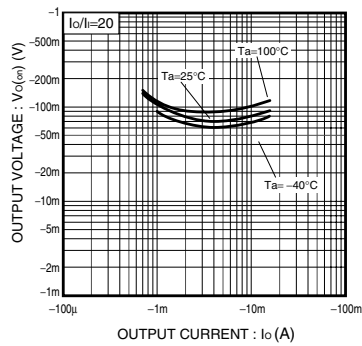


Fig.4 Output voltage vs. Output current

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