

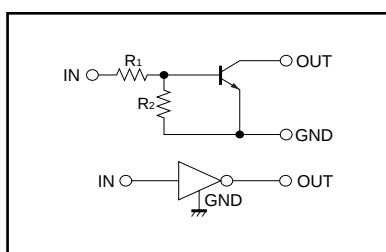
Digital transistors (built-in resistors)

DTC144WE/DTC144WUA/DTC144WKA/DTC144WSA

●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



●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Supply voltage		V_{CC}	50	V
Input voltage		V_I	-10 to +40	V
Output current		I_O	30	mA
		$I_{C(Max.)}$	100	
Power dissipation	DTC144WE	P_d	150	mW
	DTC144WUA / DTC144WKA		200	
	DTC144WSA		300	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	-55 to +150	°C

●Package, marking, and packaging specifications

Part No.	DTC144WE	DTC144WUA	DTC144WKA	DTC144WSA
Package	EMT3	UMT3	SMT3	SPT
Marking	86	86	86	—
Packaging code	TL	T106	T146	TP
Basic ordering unit (pieces)	3000	3000	3000	5000

DTC144WE / DTC144WUA / DTC144WKA / DTC144WSA

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	μA	$V_{CC}=50V$, $V_i=0V$
DC current gain	G_i	56	—	—	—	$I_o=5mA$, $V_o=5V$
Input resistance	R_i	32.9	47	61.1	$k\Omega$	—
Resistance ratio	R_2/R_1	0.37	0.47	0.57	—	—
Transition frequency	f_T	—	250	—	MHz	$V_{CE}=10V$, $I_E=-5mA$, $f=100MHz$ *

* Transition frequency of the device.

●Electrical characteristics curves

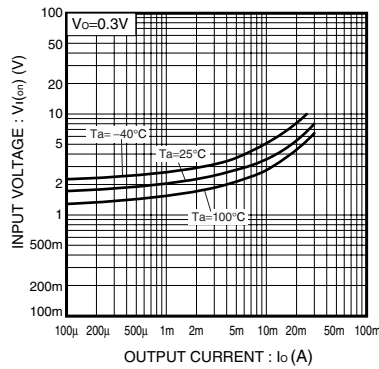


Fig.1 Input voltage vs. Output current (ON characteristics)

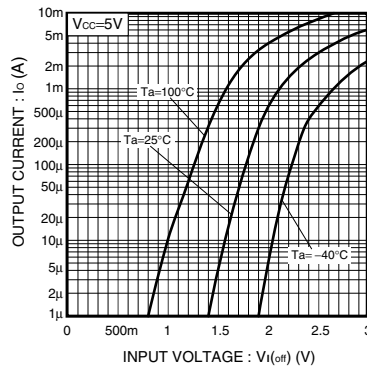


Fig.2 Output current vs. Input voltage (OFF characteristics)

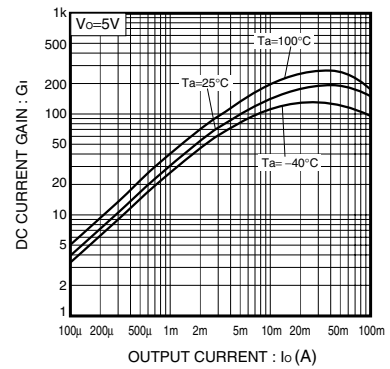


Fig.3 DC current gain vs. Output current

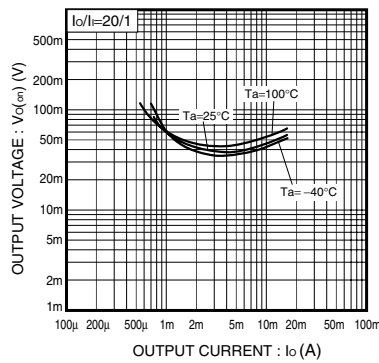


Fig.4 Output voltage vs. Output current

Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or otherwise dispose of the same, no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document are no antiradiation design.

The products listed in this document are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys).

Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

About Export Control Order in Japan

Products described herein are the objects of controlled goods in Annex 1 (Item 16) of Export Trade Control Order in Japan.

In case of export from Japan, please confirm if it applies to "objective" criteria or an "informed" (by MITI clause) on the basis of "catch all controls for Non-Proliferation of Weapons of Mass Destruction.