Low V_{CE} (sat) Digital transistors (with built-in resistors)

DTD543EE / DTD543EM

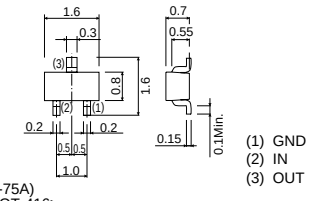
●Applications
Inverter, Interface, Driver

●Structure
NPN digital transistor (Built-in resistor type)

●Feature
1) V_{CE} (sat) is lower than conventional products.
2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
3) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
4) Only the on / off conditions need to be set for operation, making device design easy.

●External dimensions (Unit : mm)

DTD543EE

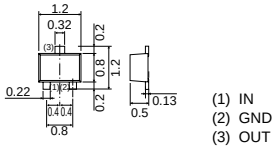


EMT3
JEITA No. (SC-75A)
JEDEC No. <SOT-416>

Each lead has same dimensions

Addreviated symbol : X23

DTD543EM



VMT3

Each lead has same dimensions

Addreviated symbol : X23

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits		Unit
		DTD543EE	DTD543EM	
Supply voltage	V_{CC}	12		V
Input voltage	V_{IN}	−10 to +12		V
Collector current *1	$I_{C\ (max)}$	500		mA
Power dissipation *2	PD	150		mW
Junction temperature	Tj	150		℃
Storage temperature	Tstg	−55 to +150		℃

*1 Characteristics of built-in transistor.
*2 Each terminal mounted on a recommended land.

●Packaging specifications

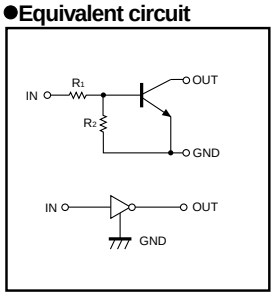
	Package	EMT3	VMT3
	Packaging type	Taping	Taping
	Code	TL	T2L
Part No.	Basic ordering unit (pieces)	3000	8000
DTD543EE		○	–
DTD543EM		–	○

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	0.5	V	V_{CC}= 5V, I_O= 100μA
	$V_{I(on)}$	2.5	–	–		V_O= 0.3V, I_O= 20mA
Output voltage	$V_{O(on)}$	–	60	300	mV	I_O/I_I= 100mA / 5mA
Input current	I_I	–	–	1.4	mA	V_I= 5V
Output current	$I_{O(off)}$	–	–	0.5	μA	V_{CC}= 12V, V_I=0V
DC current gain	G_I	115	–	–	–	V_O= 2V, I_O= 100mA
Transition frequency *	f_T	–	260	–	MHz	V_{CE}= 10V, I_E=−5mA, f=100MHz
Input resistance	R_1	3.29	4.7	6.11	kΩ	–
Resistance ratio	R_2/R_1	0.8	1.0	1.2	–	–

* Characteristics of built-in transistor.

●Equivalent circuit



R_1=4.7kΩ / R_2=4.7kΩ

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 with 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.