General purpose transistor (isolated transistors)

EMD28

DTB543X □ and DTC144E □ A are housed independently in a EMT6 package.

●Applications

DC / DC converter
Motor driver

●Features

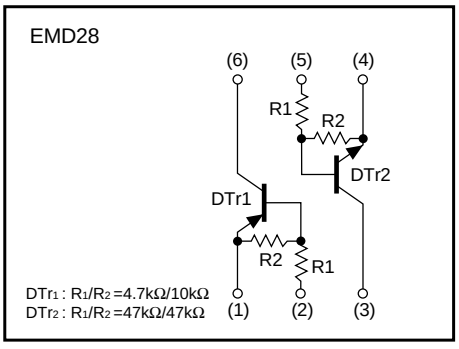
1) DTr_1 : PNP digital transistor
   DTr_2 : NPN digital transistor
2) Mounting possible with EMT3 automatic mounting machines.

●Structure

PNP / NPN Silicon epitaxial planar digital transistor

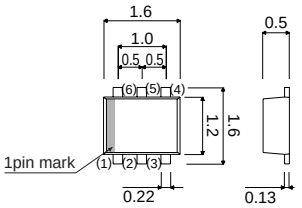
The following characteristics apply to both DTr1 and DTr2.

●Equivalent circuit



●External dimensions (Unit : mm)

EMT6



Each lead has same dimensions

Abbreviated symbol : D28

ROHM : EMT6

●Packaging specifications

Type	EMD28
Package	EMT6
Marking	D28
Code	T2R
Basic ordering unit (pieces)	8000

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

DTr1

Parameter	Symbol	DTr1	Unit
Supply voltage	V_{CC}	−12	V
Input voltage	V_{IN}	−12 to +7	V
Output current	$I_{C\ (MAX.)}$	−500	mA
Power dissipation	P_d	120	mW *
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55 to +150	°C

* Each terminal mounted on a recommended.

DTr2

Parameter	Symbol	DTr2	Unit
Supply voltage	V_{CC}	50	V
Input voltage	V_{IN}	−10 to +40	V
Output current	I_O	30	mA
	$I_{C\ (MAX.)}$	100	
Power dissipation	P_d	120	mW *
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55 to +150	°C

* Each terminal mounted on a recommended.

DTr1/Tr2

Parameter	Symbol	Limits	Unit
Power dissipation	P_d	150(TOTAL)	mW *
Storage temperature	Tstg	−55 to +125	°C

* Each terminal mounted on a recommended.

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

DTr1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	–0.3	V	V_{CC}= –5V / I_O= –100uA
	$V_{I(on)}$	–2.5	–	–	V	V_O= –0.3V / I_O= –20mA
Output voltage	$V_{O(on)}$	–	–70	–300	mV	I_O= –100mA, I_I= –5mA
Input current	I_I	–	–	–1.8	mA	V_I= –5V
Output current	$I_{O(off)}$	–	–	–0.5	μA	V_{CC}= –12V / V_I=0V
DC current gain	G_I	140	–	–	–	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	1.7	2.1	2.6	–	–

* Characteristics of built-in transistor.

DTr2

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	0.5	V	V_{CC}=5V / I_O=100uA
	$V_{I(on)}$	3	–	–	V	V_O=0.3V / I_O=2mA
Output voltage	$V_{O(on)}$	–	100	300	mV	I_O=10mA, I_I=0.5mA
Input current	I_I	–	–	0.18	mA	V_I=5V
Output current	$I_{O(off)}$	–	–	0.5	μA	V_{CC}=50V / V_I=0V
DC current gain	G_I	68	–	–	–	V_O=5V / I_O=5mA
Transition frequency *	f_T	–	250	–	MHz	V_{CE}=10V / I_E= –5mA, f=100MHz
Input resistance	R_1	32.9	47	61.1	kΩ	–
Resistance ratio	R_2/R_1	0.8	1	1.2	–	–

* Characteristics of built-in transistor.

●**Electrical characteristic curves**

DTr1

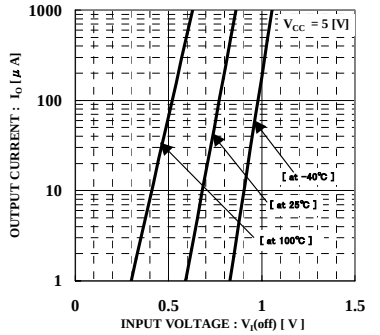


Fig.1 Output current vs. input voltage (OFF characteristics)

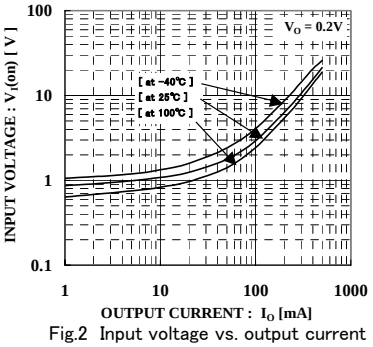


Fig.2 Input voltage vs. output current (ON characteristics) I

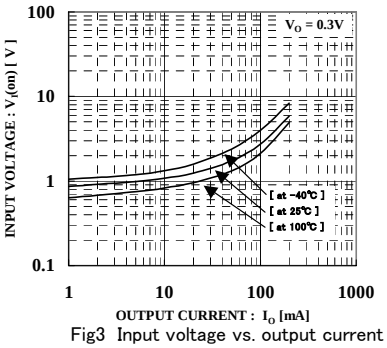


Fig3 Input voltage vs. output current (ON characteristics) II

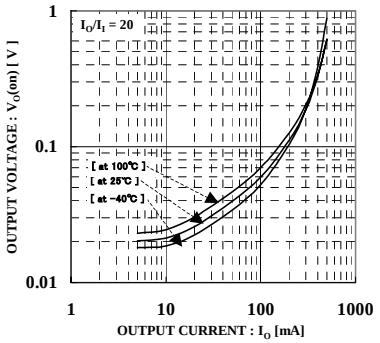


Fig.4 Output voltage vs. output current I

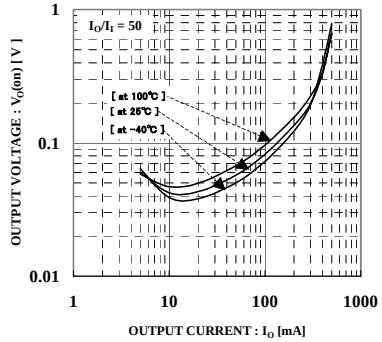


Fig.5 Output voltage vs. output current II

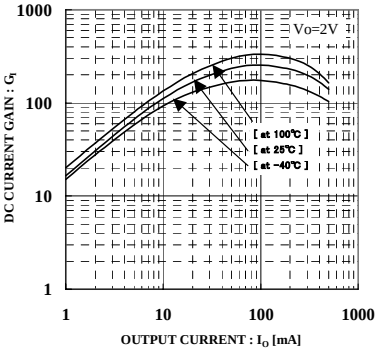


Fig.6 DC current gain vs. output curren

DTr2

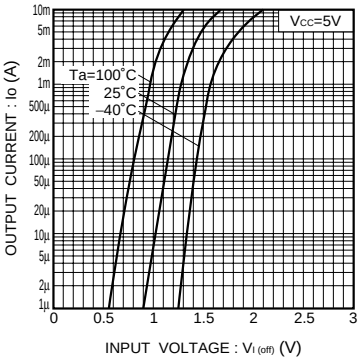


Fig.7 Output current vs. input voltage (OFF characteristics)

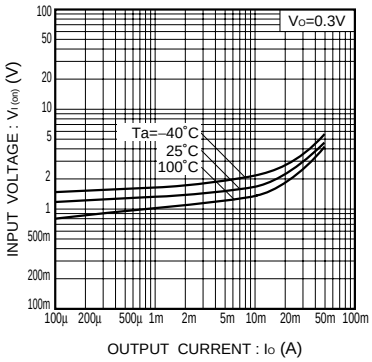


Fig.8 Input voltage vs. output current (ON characteristics)

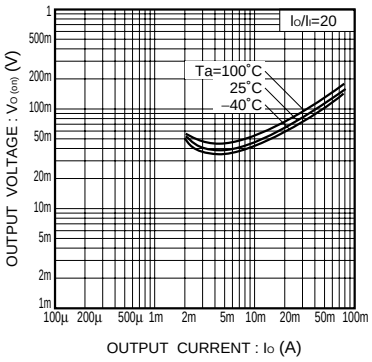


Fig.9 Output voltage vs. output current

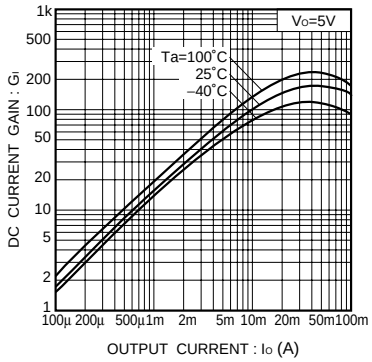


Fig.10 DC current gain vs. output current

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 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.