General purpose transistor (isolated transistors)

EMD29

DTB513Z □ and DTC114E □ A are housed independently in a EMT6 package.

●Applications

DC / DC converter
Motor driver

●Features

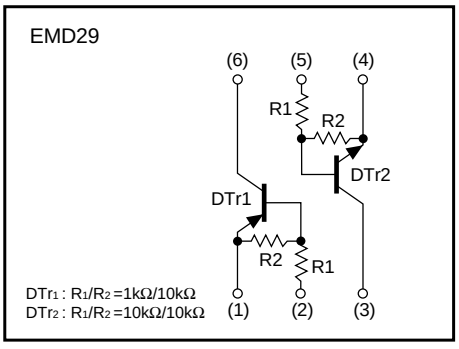
1) DTr_1 : PNP digital transistor
   DTr_2 : NPN digital transistor
2) Mounting possible with EMT3 automatic mounting machines.

●Structure

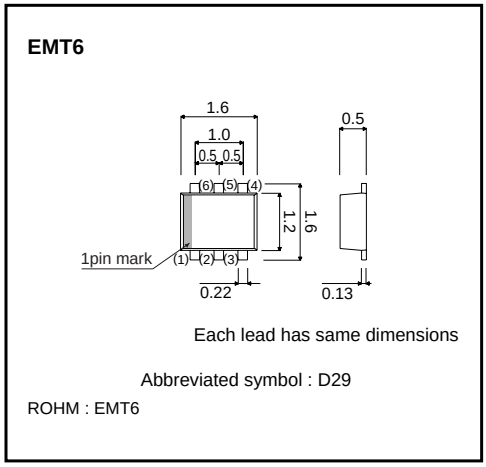
PNP / NPN Silicon epitaxial planar digital transistor

The following characteristics apply to both DTr1 and DTr2.

●Equivalent circuit



●External dimensions (Unit : mm)



●Packaging specifications

Type	EMD29
Package	EMT6
Marking	D29
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 +5	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	50	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/DTr2

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	$V_{O(on)}$	–	–60	–300	mV	I_O= –100mA, I_I= –5mA
Input current	I_I	–	–	–6.4	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	0.7	1.0	1.3	kΩ	–
Resistance ratio	R_2/R_1	8	10	12	–	–

* 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	–	–	880	μA	V_I=5V
Output current	$I_{O(off)}$	–	–	0.5	μA	V_{CC}=50V / V_I=0V
DC current gain	G_I	30	–	–	–	V_O=5V / I_O=5mA
Transition frequency *	f_T	–	250	–	MHz	V_{CE}=10V / I_E= –5mA, f=100MHz
Input resistance	R_1	7	10	13	kΩ	–
Resistance ratio	R_2/R_1	0.8	1	1.2	–	–

* Characteristics of built-in transistor.

●**Electrical characteristic curves**

DTr1

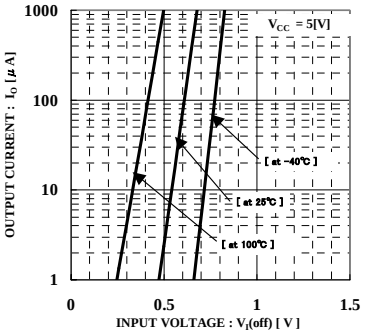


Fig.1 Output current vs. input voltage (OFF characteristics)

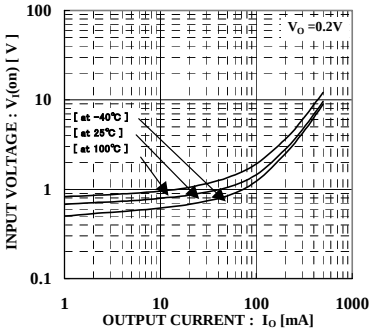


Fig.2 Input voltage vs. output current (ON characteristics) I

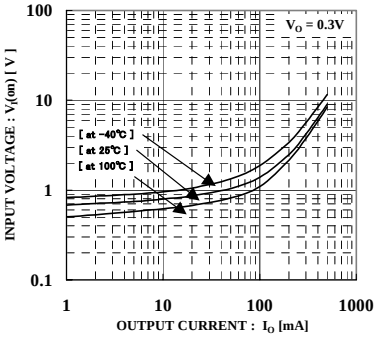


Fig3 Input voltage vs. output current (ON characteristics) II

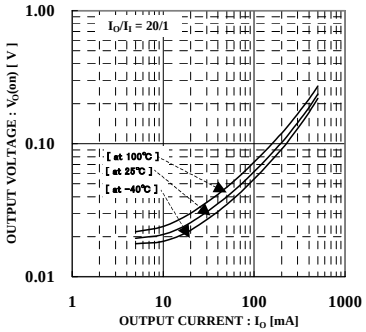


Fig.4 Output voltage vs. output current I

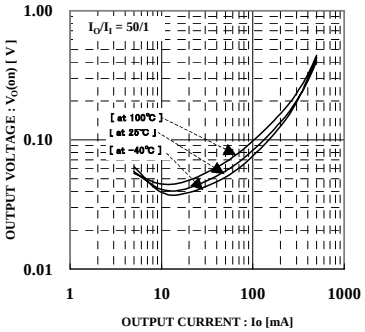


Fig.5 Output voltage vs. output current II

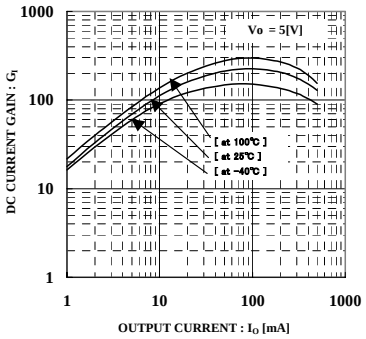


Fig.6 DC current gain vs. output curre

DTr2

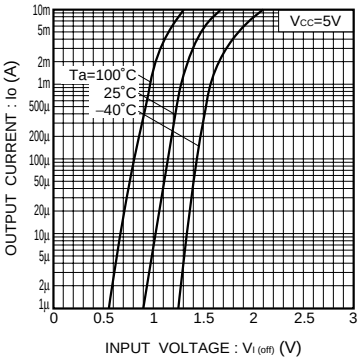


Fig.7 Output current vs. input voltage (OFF characteristics)

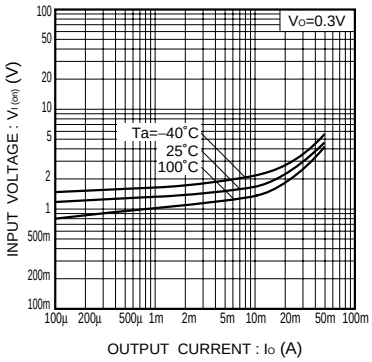


Fig.8 Input voltage vs. output current (ON characteristics)

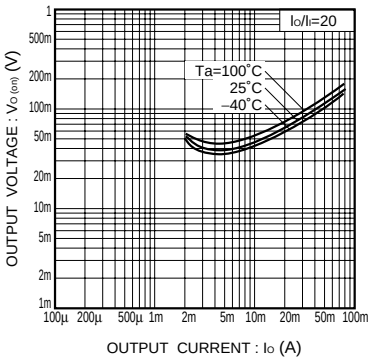


Fig.9 Output voltage vs. output current

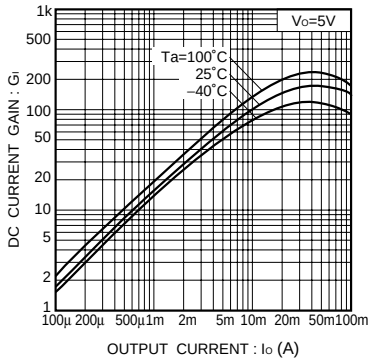


Fig.10 DC current gain vs. output current

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