

General purpose transistor (isolated transistors)

EMD38

DTC114Y □ and DTA113Z □ are housed independently in a EMT6 package.

●Applications

Driver

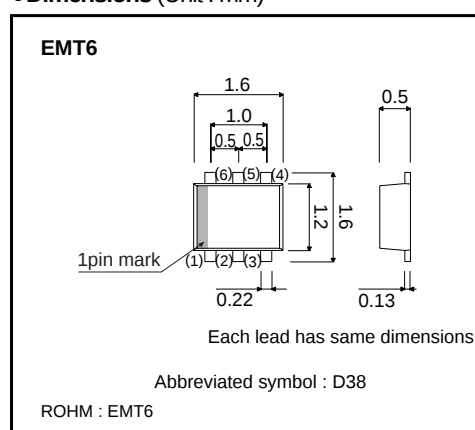
●Features

- 1) DTr₁ : NPN digital transistor
DTr₂ : PNP digital transistor
- 2) Mounting possible with EMT3 automatic mounting machines.

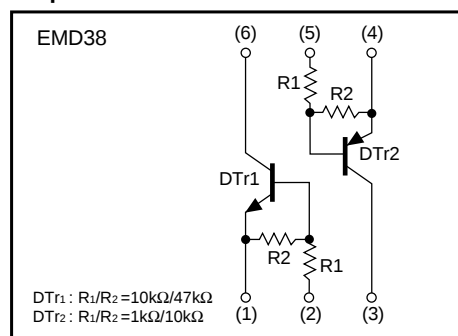
●Structure

NPN / PNP Silicon epitaxial planar digital transistor

●Dimensions (Unit : mm)



●Equivalent circuit



●Packaging specifications

Type	EMD38
Package	EMT6
Marking	D38
Code	T2R
Basic ordering unit (pieces)	8000

Transistors

●Absolute maximum ratings (Ta=25°C)

DTr1

Parameter	Symbol	DTr1	Unit
Supply voltage	V _{CC}	50	V
Input voltage	V _{IN}	−6 to +40	V
Output current	I _O	70	mA
	I _{C (Max.)} *1	100	
Power dissipation	P _d *2	120	mW
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

*1 Characteristics of built-in transistor

*2 Each terminal mounted on a recommended land, and only DTr1 is on duty.

DTr2

Parameter	Symbol	DTr2	Unit
Supply voltage	V _{CC}	−50	V
Input voltage	V _{IN}	−10 to +5	V
Output current	I _O	−100	mA
	I _{C (Max.)} *3	−100	
Power dissipation	P _d *4	120	mW
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

*3 Characteristics of built-in transistor

*4 Each terminal mounted on a recommended land, and only DTr2 is on duty.

DTr1/DTr2

Parameter	Symbol	Limits	Unit
Power dissipation	P _d	150(TOTAL)	mW *
Storage temperature	T _{stg}	−55 to +125	°C

* Each terminal mounted on a recommended land.

Transistors

●Electrical characteristics (Ta=25°C)

DTr1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	0.3	V	$V_{CC}=5V, I_o=100\mu A$
	$V_{I(on)}$	1.4	–	–	V	$V_o=0.3V, I_o=1mA$
Output voltage	$V_{O(on)}$	–	50	300	mV	$I_o=5mA, I_i=0.25mA$
Input current	I_i	–	–	880	μA	$V_i=5V$
Output current	$I_{O(off)}$	–	–	500	nA	$V_{CC}=50V, V_i=0V$
DC current gain	G_i	68	–	–	–	$V_o=5V, I_o=5mA$
Input resistance	R_1	7	10	13	k Ω	–
Resistance ratio	R_2/R_1	3.7	4.7	5.7	–	–
Transition frequency	f_T	–	250	–	MHz	$V_{CE}=10V, I_E=-5mA, f=100MHz$ *

* Characteristics of built-in transistor

DTr2

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	–0.3	V	$V_{CC}=-5V, I_o=-100\mu A$
	$V_{I(on)}$	–3	–	–	V	$V_o=-0.3V, I_o=-20mA$
Output voltage	$V_{O(on)}$	–	–80	–300	mV	$I_o=-10mA, I_i=-0.5mA$
Input current	I_i	–	–	–7.2	mA	$V_i=-5V$
Output current	$I_{O(off)}$	–	–	–500	nA	$V_{CC}=-50V, V_i=0V$
DC current gain	G_i	33	–	–	–	$V_o=-5V, I_o=-5mA$
Input resistance	R_1	0.7	1	1.3	k Ω	–
Resistance ratio	R_2/R_1	8	10	12	–	–
Transition frequency	f_T	–	250	–	MHz	$V_{CE}=-10V, I_E=5mA, f=100MHz$ *

* Characteristics of built-in transistor

Transistors

●Electrical characteristic curves

DTr1

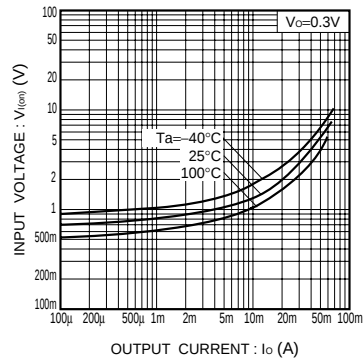


Fig.1 Input voltage vs. output current (ON characteristics)

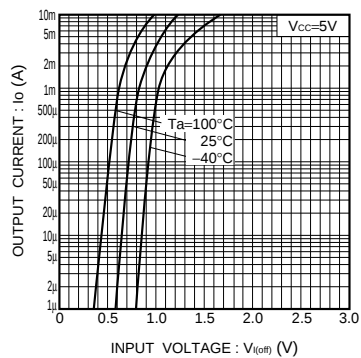


Fig.2 Output current vs. input voltage (OFF characteristics)

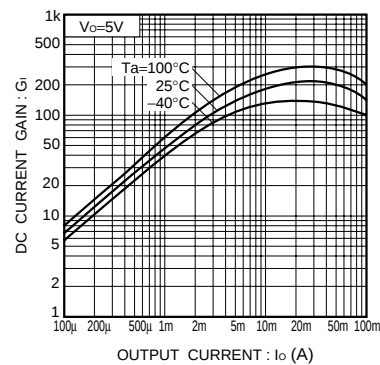


Fig.3 DC current gain vs. output current

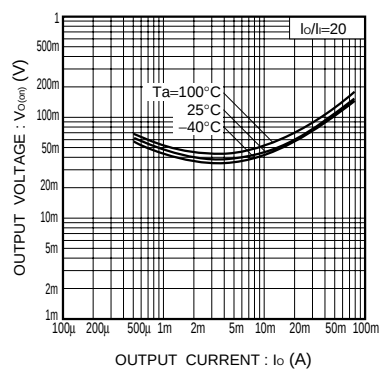


Fig.4 Output voltage vs. output current

Transistors

DTr2

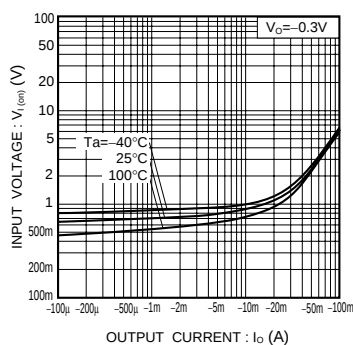


Fig.5 Input voltage vs. output current (ON characteristics)

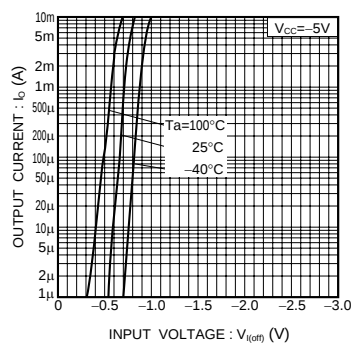


Fig.6 Output current vs. input voltage (OFF characteristics)

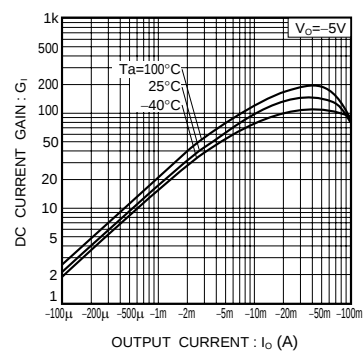


Fig.7 DC current gain vs. output current

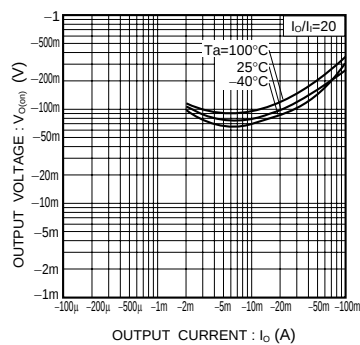


Fig.8 Output voltage vs. output current

Notes

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