General purpose transistor (isolated transistors)

EMD38

DTC114Y \square and DTA113Z \square are housed independently in a EMT6 package.

Applications

Driver

● Features

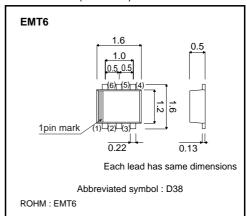
1) DTr₁: NPN digital transistor DTr₂: PNP digital transistor

2) Mounting possible with EMT3 automatic mounting machines.

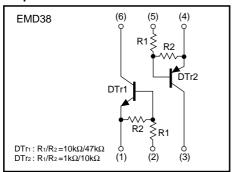
Structure

NPN / PNP Silicon epitaxial planar digital transistor

●Dimensions (Unit:mm)



●Equivalent circuit



Packaging specifications

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

● Absolute maximum ratings (Ta=25°C)

DTr1

Parameter	Symbol	DTr1	Unit		
Supply voltage	Vcc	50	V		
Input voltage	V _{IN} -6 to +40		V		
Output current	lo	70	mΛ		
Output current	Ic (Max.)*1	100	mA mA		
Power dissipation	Pd *2	120	mW		
Junction temperature	Tj	150	°C		
Storage temperature	Tstg	-55 to +150	°C		

^{*1} Characteristics of built-in transistor

DTr2

Parameter	Symbol	DTr2	Unit	
Supply voltage	Vcc	-50	V	
Input voltage	Vin	-10 to +5	V	
Output current	lo	-100	mA	
Output current	Ic (Max.)*3	-100		
Power dissipation	Pd *4	120	mW	
Junction temperature	Tj	150	°C	
Storage temperature	Tstg	-55 to +150	°C	

^{*3} Characteristics of built-in transistor

DTr1/DTr2

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

 * Each terminal mounted on a recommended land.

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

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

●Electrical characteristics (Ta=25°C)

DTr1

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Input voltage	VI(off)	_	_	0.3	V	Vcc= 5V, Io= 100uA
	VI(on)	1.4	_	_	V	Vo= 0.3V, Io= 1mA
Output voltage	Vo(on)	_	50	300	mV	lo= 5mA, l≔ 0.25mA
Input current	lı	_	_	880	μΑ	Vi= 5V
Output current	IO(off)	_	_	500	nA	Vcc= 50V, V⊫0V
DC current gain	Gı	68	_	_	_	Vo= 5V, Io= 5mA
Input resistance	R ₁	7	10	13	kΩ	_
Resistance ratio	R2/R1	3.7	4.7	5.7	_	_
Transition frequency	f⊤	_	250	_	MHz	Vc= 10V, I= -5mA, f= 100MHz *

^{*} Characteristics of built-in transistor

DTr2

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Input voltage	VI(off)	_	_	-0.3	V	Vcc= -5V, Io= -100uA
	VI(on)	-3	_	_	V	Vo= -0.3V, Io= -20mA
Output voltage	Vo(on)	_	-80	-300	mV	lo= −10mA, l= −0.5mA
Input current	lı	_	_	-7.2	mA	Vi= −5V
Output current	IO(off)	_	_	-500	nA	Vcc= -50V, Vi=0V
DC current gain	Gı	33	_	-	_	Vo= -5V, Io= -5mA
Input resistance	R ₁	0.7	1	1.3	kΩ	-
Resistance ratio	R ₂ /R ₁	8	10	12	_	-
Transition frequency	f⊤	_	250	-	MHz	Vc=-10V, I=5mA, f=100MHz *

^{*} Characteristics of built-in transistor

•Electrical characteristic curves

DTr1

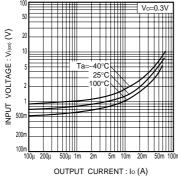


Fig.1 Input voltage vs. output current (ON characteristics)

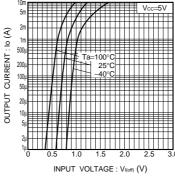


Fig.2 Output current vs. input voltage (OFF characteristics)

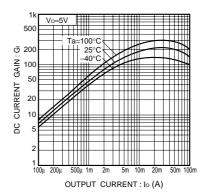


Fig.3 DC current gain vs. output current

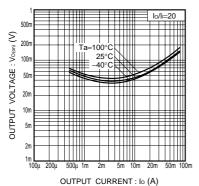


Fig.4 Output voltage vs. output current

DTr2

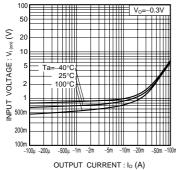


Fig.5 Input voltage vs. output current (ON characteristics)

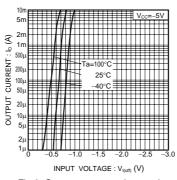


Fig.6 Output current vs. input voltage (OFF characteristics)

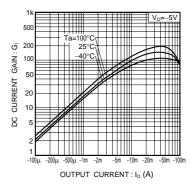


Fig.7 DC current gain vs. output current

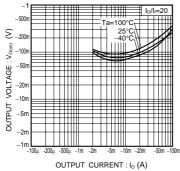


Fig.8 Output voltage vs. ouput current

Notes

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