

IMD23

Transistors

General purpose (dual digital transistors)

IMD23

●Features

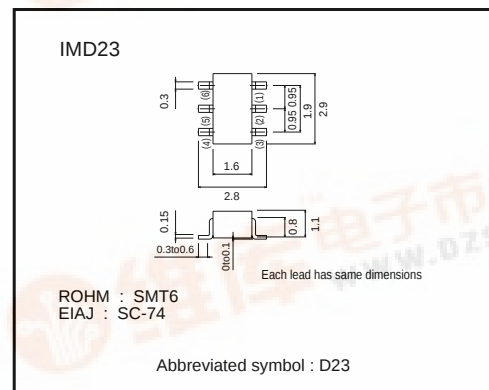
- 1) Both the DTB113Z chip and DTC114E chip in a SMT package.
- 2) Mounting possible with SMT3 automatic mounting machines.
- 3) Transistor elements are independent, eliminating interference.
- 4) Mounting cost and area can be cut in half.

●Structure

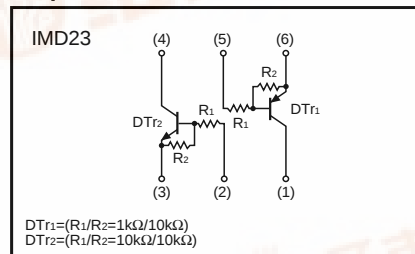
Epitaxial planar type

NPN / PNP silicon transistor (Built-in resistor type)

●External dimensions (Unit : mm)



●Equivalent circuits



●Absolute maximum ratings (Ta=25°C)

DTTr1

Parameter	Symbol	Limits	Unit
Supply voltage	V _{CC}	-50	V
Input voltage	V _{IN}	-10 to +5	V
Output current	I _C	-500	mA
Power dissipation	P _d	300(Total)	mW *
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

* 200mW per element must not be exceeded.

Transistors

DT_{r2}

Parameter	Symbol	Limits	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	300 (TOTAL)	mW *
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

* 200mW per element must not be exceeded.

●Electrical characteristics (T_a=25°C)DT_{r1}

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V _{I(off)}	−	−	−0.3	V	V _{CC} =−5V, I _O =−100μA
	V _{I(on)}	−3	−	−		V _O =−0.3V, I _O =−20mA
Output voltage	V _{O(on)}	−	−	−0.3	V	I _O /I _I =−50mA/−2.5mA
Input current	I _I	−	−	−7.2	mA	V _I =−5V
Output current	I _{O(off)}	−	−	−0.5	μA	V _{CC} =−50V, V _I =0V
DC current gain	G _I	56	−	−	−	V _O =−5V, I _O =−50mA
Input resistance	R ₁	0.7	1	1.3	kΩ	−
Resistance ratio	R ₂ /R ₁	8	10	12	−	−
Transition frequency	f _T	−	200	−	MHz	V _{CE} =−10V, I _E =50mA, f=100MHz *

* Transition frequency of the device

DT_{r2}

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V _{I(off)}	−	−	0.5	V	V _{CC} =5V, I _O =100μA
	V _{I(on)}	3	−	−		V _O =0.3V, I _O =10mA
Output voltage	V _{O(on)}	−	0.1	0.3	V	I _O =10mA, I _I =0.5mA
Input current	I _I	−	−	0.88	mA	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	−	−

* Transition frequency of the device

Transistors

●Packaging specifications

Type	Package	Taping
	Code	T110
	Basic ordering unit (pieces)	3000
IMD23		○

●Electrical characteristic curves

DTr1 (PNP)

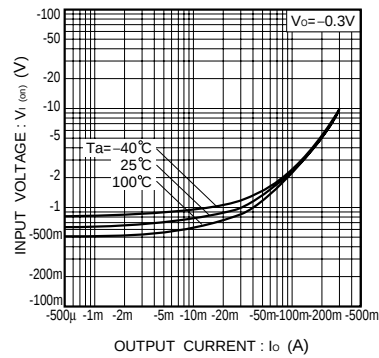


Fig.1 Input voltage vs. output current (ON characteristics)

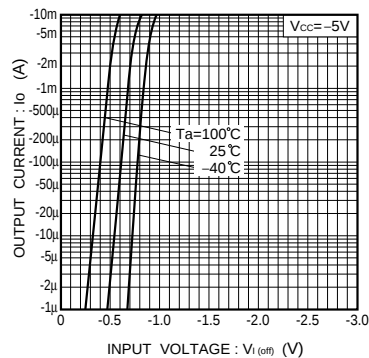


Fig.2 Output current vs. input voltage (OFF characteristics)

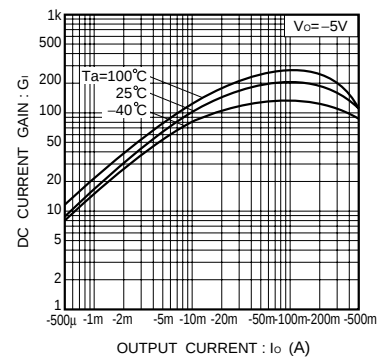


Fig.3 DC current gain vs. output current

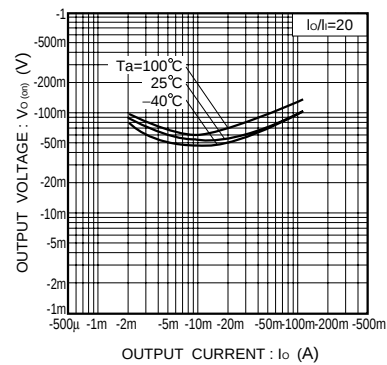


Fig.4 Output voltage vs. output current

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DTr2 (NPN)

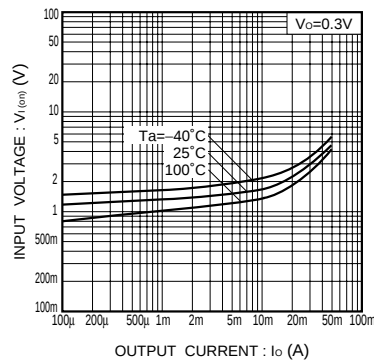


Fig.5 Input voltage vs. output current (ON characteristics)

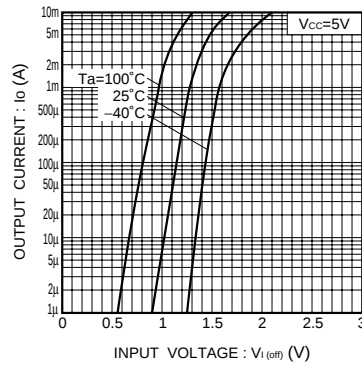


Fig.6 Output current vs. input voltage (OFF characteristics)

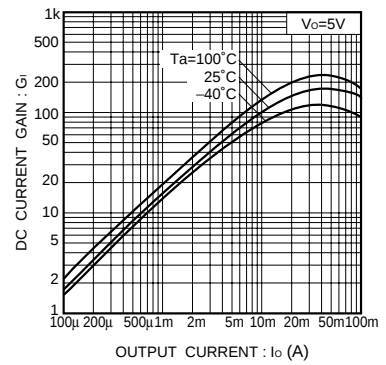


Fig.7 DC current gain vs. output current

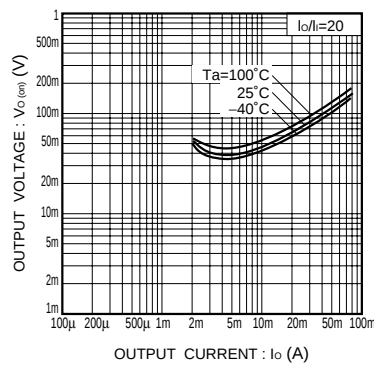


Fig.8 Output voltage vs. output current

Appendix

Notes

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