General purpose (dual digital transistors)

IMD23

●**Features**

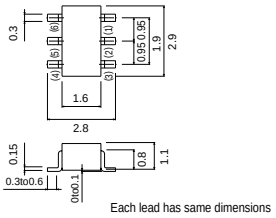
1) Both the DTB113Z chip and DTC114E chip in a SMT package.
2) Mounting possible with SMT3 automatic mounting machines.
3) Transistor elements are independent, eliminating interference.
4) Mounting cost and area can be cut in half.

●**Structure**

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

●**External dimensions** (Unit : mm)

IMD23

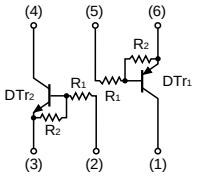


ROHM : SMT6
EIAJ : SC-74

Abbreviated symbol : D23

●**Equivalent circuits**

IMD23



DTr1=(R1/R2=1kΩ/10kΩ)
DTr2=(R1/R2=10kΩ/10kΩ)

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

DTr1

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	Pd	300(Total)	mW *
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55 to +150	°C

* 200mW per element must not be a exceeded.

DTr2

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	Pd	300 (TOTAL)	mW ✻
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55 to +150	°C

✻ 200mW per element must not be exceeded.

●**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=−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

DTr2

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

●Packaging specifications

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

●Electrical characteristic curves

DTr1 (PNP)

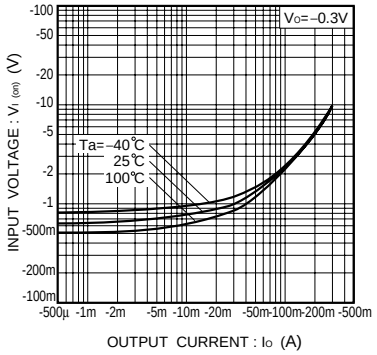


Fig.1 Input voltage vs. output current (ON characteristics)

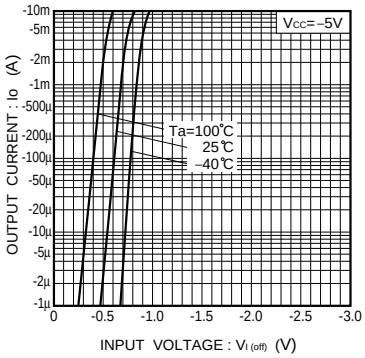


Fig.2 Output current vs. input voltage (OFF characteristics)

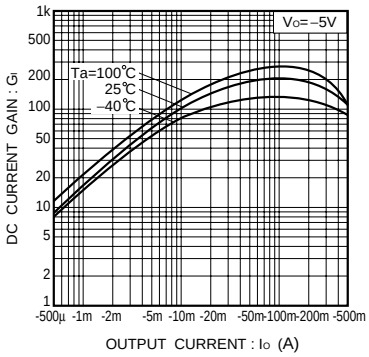


Fig.3 DC current gain vs. output current

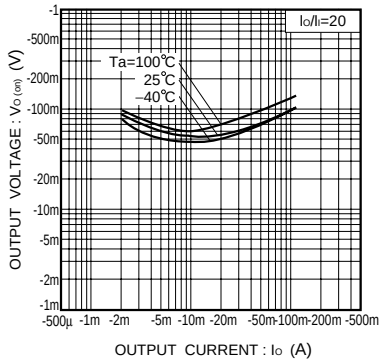


Fig.4 Output voltage vs. output current

DTr2 (NPN)

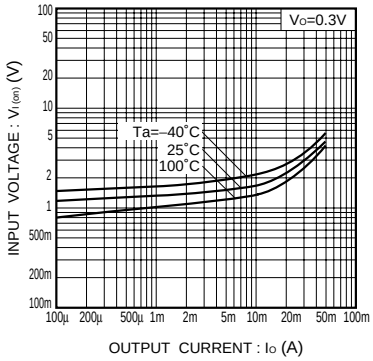


Fig.5 Input voltage vs. output current (ON characteristics)

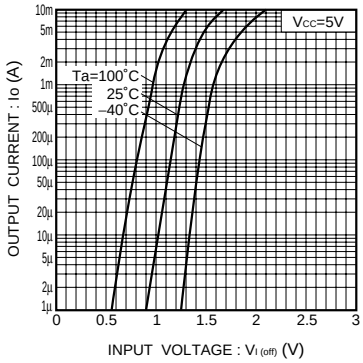


Fig.6 Output current vs. input voltage (OFF characteristics)

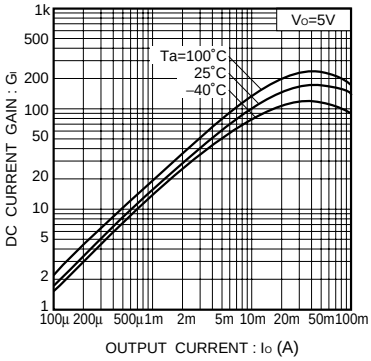


Fig.7 DC current gain vs. output current

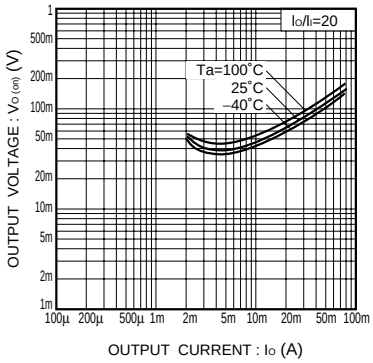


Fig.8 Output voltage vs. output current

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