

-100mA / -50V Digital transistors (with built-in resistors)

DTA123JM / DTA123JE / DTA123JUA / DTA123JKA

● Applications

Inverter, Interface, Driver

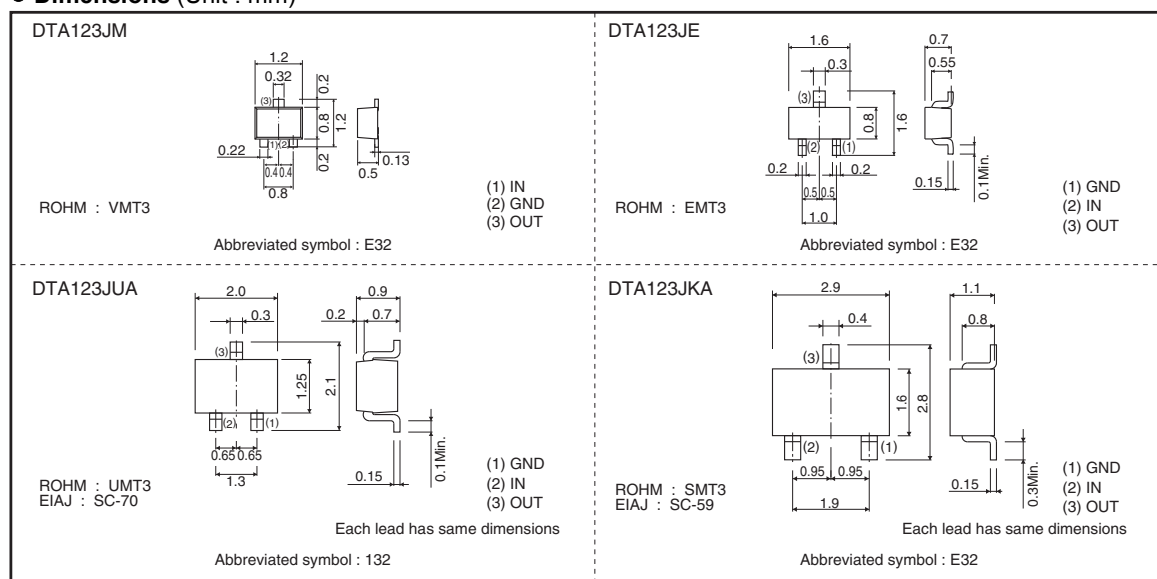
● Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- 3) Only the on/off conditions need to be set for operation, making the device design easy.

● Structure

PNP epitaxial planar silicon transistor (Resistor built-in type)

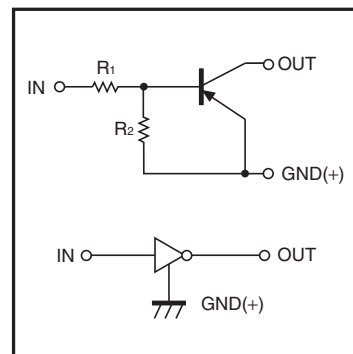
● Dimensions (Unit : mm)



● Packaging specifications

Part No.	Package	VMT3	EMT3	UMT3	SMT3
	Packaging type	Taping	Taping	Taping	Taping
	Code	T2L	TL	T106	T146
	Basic ordering unit (pieces)	8000	3000	3000	3000
DTA123JM		○	—	—	—
DTA123JE		—	○	—	—
DTA123JUA		—	—	○	—
DTA123JKA		—	—	—	○

● Inner circuit



R₁=2.2kΩ, R₂=47kΩ

● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits				Unit
		DTA123JM	DTA123JE	DTA123JUA	DTA123JKA	
Supply voltage	V _{CC}	-50				V
Input voltage	V _{IN}	-12 to +5				V
Output current	I _O	-100				mA
	I _{C(Max.)}	-100				
Power dissipation	P _D	150		200		mW
Junction temperature	T _j	150				°C
Storage temperature	T _{stg}	-55 to +150				°C

● Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	-	-	-0.5	V	$V_{CC}=-5V, I_O=-100\mu A$
	$V_{I(on)}$	-1.1	-	-		$V_O=-0.3V, I_O=-5mA$
Output voltage	$V_{O(on)}$	-	-0.1	-0.3	V	$I_O/I_I=-5mA/-0.25mA$
Input current	I_I	-	-	-3.6	mA	$V_I=-5V$
Output current	$I_{O(off)}$	-	-	-0.5	μA	$V_{CC}=-50V, V_I=0V$
DC current gain	G_I	80	-	-	-	$V_O=-5V, I_O=-10mA$
Input resistance	R_I	1.54	2.2	2.86	$k\Omega$	-
Resistance ratio	R_2/R_1	17	21	26	-	-
Transition frequency	f_T *	-	250	-	MHz	$V_{CE}=-10V, I_E=5mA, f=100MHz$

* Characteristics of built-in transistor

● Electrical characteristic curves

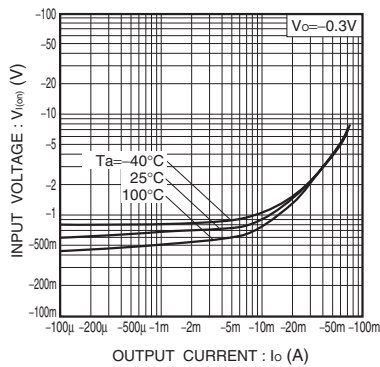


Fig.1 Input voltage vs. output current (ON characteristics)

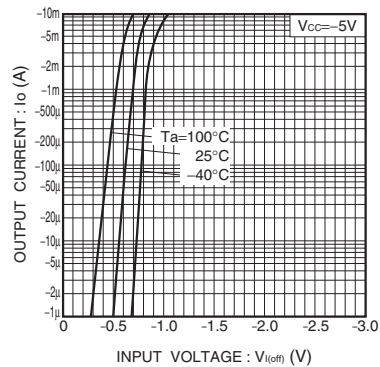


Fig.2 Output current vs. input voltage (OFF characteristics)

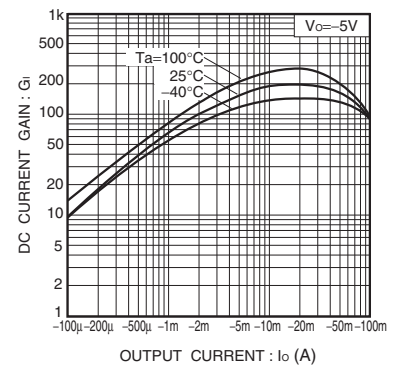


Fig.3 DC current gain vs. output current

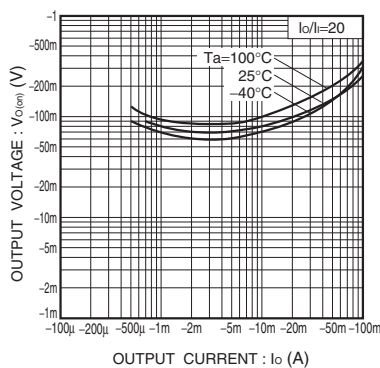


Fig.4 Output voltage vs. output current

Notes

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