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

DTA124EM / DTA124EE / DTA124EUA / DTA124EKA / DTA124ESA

●Applications

Inverter, Interface, Driver

●Features

1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see the 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.

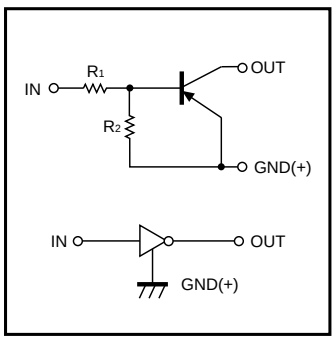
●Structure

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

●Packaging specifications

Type	Package	VMT3	EMT3	UMT3	SMT3	SPT
	Packaging type	Taping	Taping	Taping	Taping	Taping
	Code	T2L	TL	T106	T146	TP
	Basic ordering unit (pieces)	8000	3000	3000	3000	5000
DTA124EM		○	–	–	–	–
DTA124EE		–	○	–	–	–
DTA124EUA		–	–	○	–	–
DTA124EKA		–	–	–	○	–
DTA124ESA		–	–	–	–	○

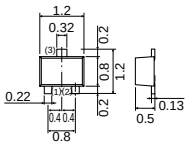
●Equivalent circuit



$R_1=R_2=22k\Omega$

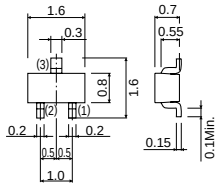
●External dimensions (Unit : mm)

DTA124EM



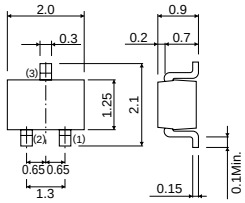
ROHM : VMT3
Abbreviated symbol : 15
(1) IN
(2) GND
(3) OUT

DTA124EE



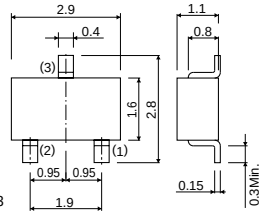
ROHM : EMT3
Abbreviated symbol : 15
(1) GND
(2) IN
(3) OUT

DTA124EUA



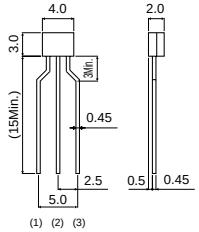
ROHM : UMT3
EIAJ : SC-70
Abbreviated symbol : 15
(1) GND
(2) IN
(3) OUT

DTA124EKA



ROHM : SMT3
EIAJ : SC-59
Abbreviated symbol : 15
(1) GND
(2) IN
(3) OUT

DTA124ESA



ROHM : SPT
EIAJ : SC-72
Abbreviated symbol : A124ES
(1) GND
(2) OUT
(3) IN

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits					Unit
		DTA124EM	DTA124EE	DTA124EUA	DTA124EKA	DTA124ESA	
Supply voltage	V_{CC}	−50					V
Input voltage	V_{IN}	−40 to +10					V
Output current	I_O	−30					mA
	$I_{C(Max.)}$	−100					
Power dissipation	P_D	150		200		300	mW
Junction temperature	Tj	150					°C
Storage temperature	Tstg	−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=−100μA
	$V_{I(on)}$	−3	–	–		V_O=−0.2V, I_O=−5mA
Output voltage	$V_{O(on)}$	–	−0.1	−0.3	V	I_O/I_I=−10mA/−0.5mA
Input current	I_I	–	–	−0.36	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=−5mA
Input resistance	R_1	15.4	22	28.6	kΩ	–
Resistance ratio	R_2/R_1	0.8	1	1.2	–	–
Transition frequency	f_T *	–	250	–	MHz	V_{CE}=−10V, I_E=5mA, f=100MHz

*Characteristics of built-in transistor.

●Electrical characteristic curves

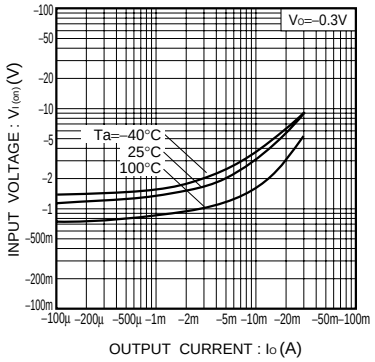


Fig.1 Input voltage vs. output current (ON characteristics)

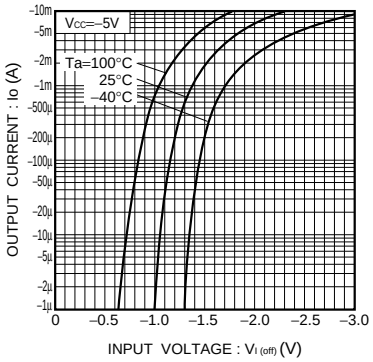


Fig.2 Output current vs. input voltage (OFF characteristics)

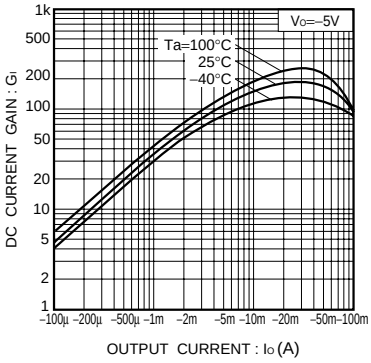


Fig.3 DC current gain vs. output current

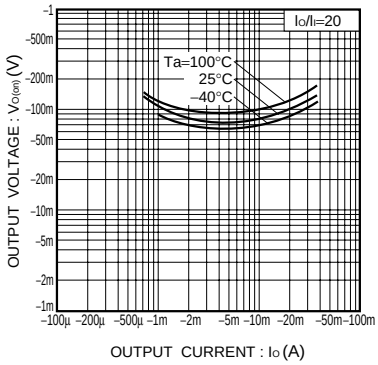


Fig.4 Output voltage vs. output current

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