Digital transistors (built-in resistors)

DTA124EE / DTA124EUA / DTA124EKA / DTA124ECA / DTA124ESA

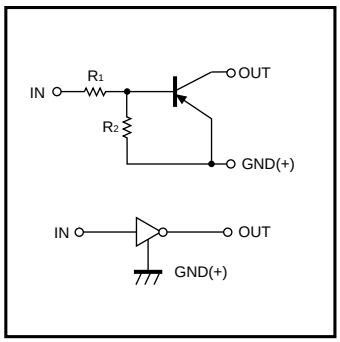
●Features

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 device design easy.

●Structure

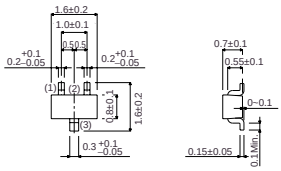
PNP digital transistor
(Built-in resistor type)

●Equivalent circuit



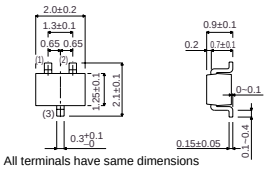
●External dimensions (Units : mm)

DTA124EE



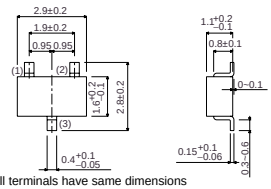
ROHM : EMT3
Abbreviated symbol : 15
(1) GND
(2) IN
(3) OUT

DTA124EUA



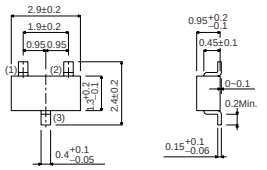
ROHM : UMT3
EIAJ : SC-70
All terminals have same dimensions
Abbreviated symbol : 15
(1) GND
(2) IN
(3) OUT

DTA124EKA



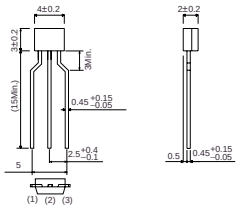
ROHM : SMT3
EIAJ : SC-59
All terminals have same dimensions
Abbreviated symbol : 15
(1) GND
(2) IN
(3) OUT

DTA124ECA



ROHM : SST3
All terminals have same dimensions
Abbreviated symbol : 15
(1) GND
(2) IN
(3) OUT

DTA124ESA



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

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits(DTA124E□)					Unit
		E	UA	KA	CA	SA	
Supply voltage	V_{CC}	-50					V
Input voltage	V_{IN}	-40~+10					V
Output current	I_O	-30					mA
	$I_{C(Max.)}$	-100					
Power dissipation	Pd	150	200			300	mW
Junction temperature	Tj	150					˚C
Storage temperature	Tstg	-55~+150					˚C

●Packaging specifications

	Package	EMT3	UMT3	SMT3	SST3	SPT
	Package type	Taping	Taping	Taping	Taping	Taping
	Code	TL	T106	T146	T116	TP
Part No.	Basic ordering unit (pieces)	3000	3000	3000	3000	5000
DTA124EE		○	-	-	-	-
DTA124EUA		-	○	-	-	-
DTA124EKA		-	-	○	-	-
DTA124ECA		-	-	-	○	-
DTA124ESA		-	-	-	-	○

●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 *

* Transition frequency of the device

●Electrical characteristics curves

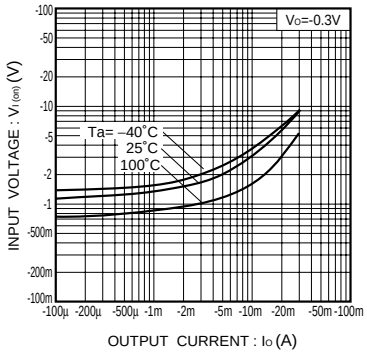


Fig.1 Input voltage vs. output current (ON characteristics)

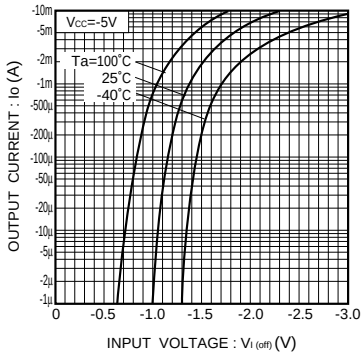


Fig.2 Output current vs. input voltage (OFF characteristics)

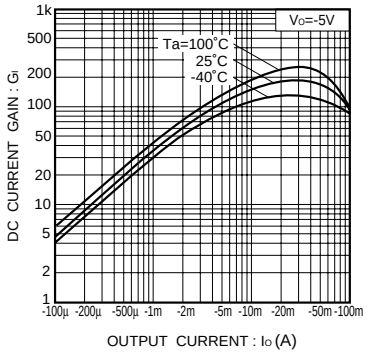


Fig.3 DC current gain vs. output current

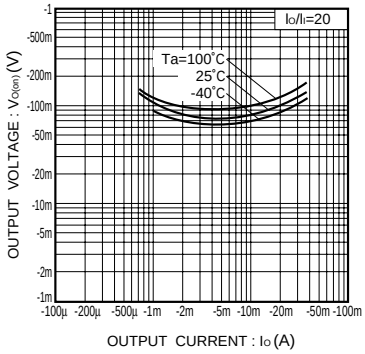


Fig.4 Output voltage vs. output current