ETL SEMICONDUCTOR

Digital transistors (built-in resistors)

DTA124EKA
DTA124ECA

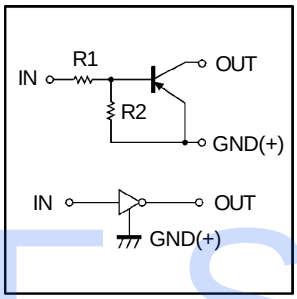
- **Features**

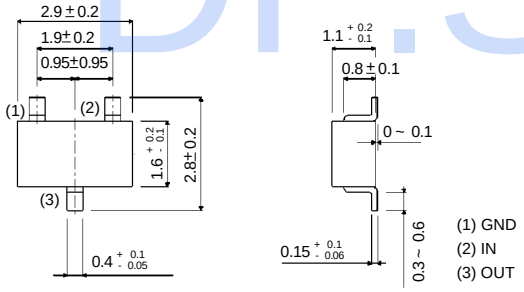
1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
2) The bias resistors consist of thinfilm resistors with complete isolation to allow positive biasing of the input. They also have the advantage of almost completely 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 resistors type)

- **Equivalent circuit**





All terminals have same dimensions

DTA124EKA

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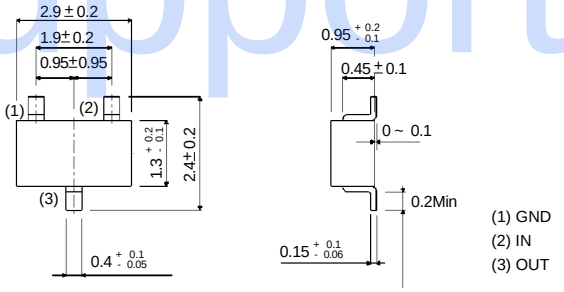

All terminals have same dimensions

DTA124ECA

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- Absolute maximum ratings(T_a=25 °C)

Parameter	symbol	limits (DTA124EKA DTA124ECA)	unit
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	P_d	200	mW
Junction temperature	T_j	150	℃
Storage temperature	T_{stg}	–55~+150	℃

DTA124EKA DTA124ECA

● Elecrical characteristics(T_a=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= 0 V
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= 5 mA,f=100MHz*

*Transition frequency of the device

ELECTRICAL CHARACTERISTIC CURVES

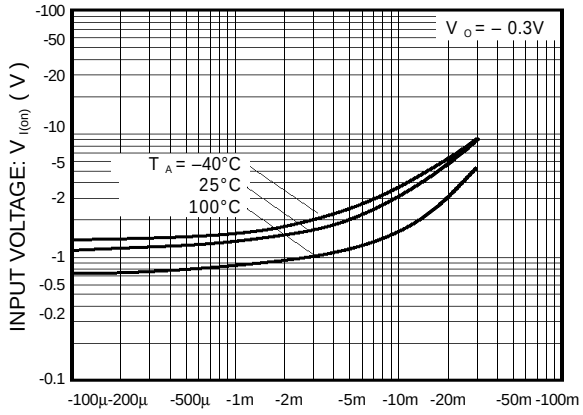

Figure 1. Input voltage vs.output current (ON characteristics)

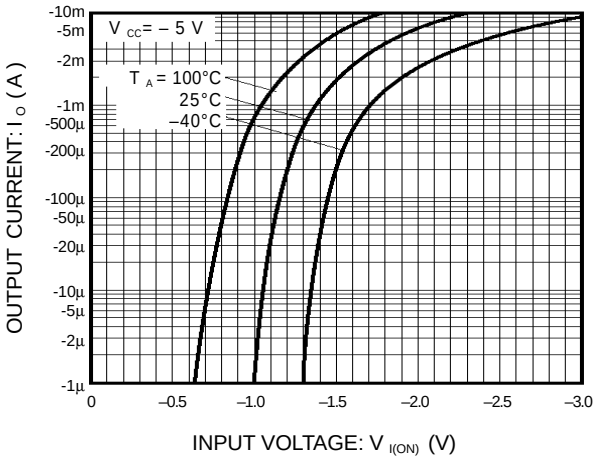

Figure 2. Output current vs.input voltage (OFF characteristics)

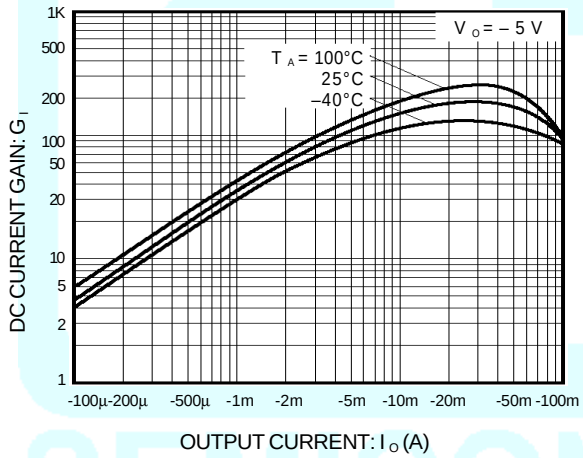

Figure 3. DC current gain vs.output current

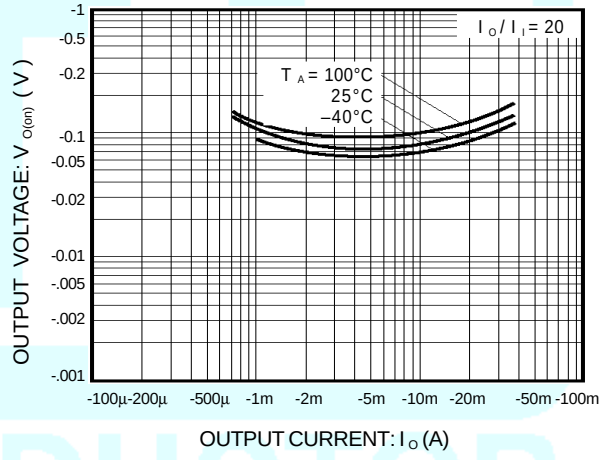

Figure 4. Output voltage vs.output current