DTD123EK

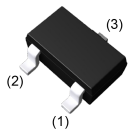
500mA/50V Digital transistor (with built-in resistors)

Datasheet

Parameter	Value
V_{CC}	50V
$I_{C(MAX.)}$	500mA
R_1	2.2kΩ
R_2	2.2kΩ

●Outline

SMT3



SOT-346

SC-59

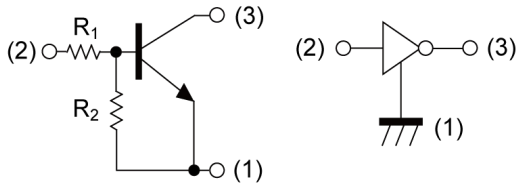
●Features

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 negative 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 desigh easy.

●Inner circuit



(1) GND (EMITTER)
(2) IN (BASE)
(3) OUT (COLLECTOR)

●Application

INVERTER, INTERFACE, DRIVER

●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
DTD123EK	SMT3	2928	T146	180	8	3000	F22

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●Absolute maximum ratings (T_a = 25°C)

Parameter	Symbol	Values	Unit
Supply voltage	V_{CC}	50	V
Input voltage	V_{IN}	-10 to 12	V
Collector current	$I_{C(MAX)}$ *1	500	mA
Power dissipation	P_D *2	200	mW
Junction temperature	T_j	150	℃
Range of storage temperature	T_{stg}	-55 to +150	℃

●Electrical characteristics (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Input voltage	$V_{I(off)}$	V_{CC} = 5V, I_O = 100μA	-	-	0.5	V
	$V_{I(on)}$	V_O = 0.3V, I_O = 20mA	3.0	-	-	
Output voltage	$V_{O(on)}$	I_O / I_I = 50mA / 2.5mA	-	100	300	mV
Input current	I_I	V_I = 5V	-	-	3.8	mA
Output current	$I_{O(off)}$	V_{CC} = 50V, V_I = 0V	-	-	500	nA
DC current gain	G_I	V_O = 5V, I_O = 50mA	39	-	-	-
Input resistance	R_1	-	1.54	2.2	2.86	kΩ
Resistance ratio	R_2/R_1	-	0.8	1.0	1.2	-
Transition frequency	f_T *1	V_{CE} = 10V, I_E = -50mA, f = 100MHz	-	200	-	MHz

*1 Characteristics of built-in transistor

*2 Each terminal mounted on a reference land

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●Electrical characteristic curves (T_a =25°C)

Fig.1 Input Voltage vs. Output Current (ON Characteristics)

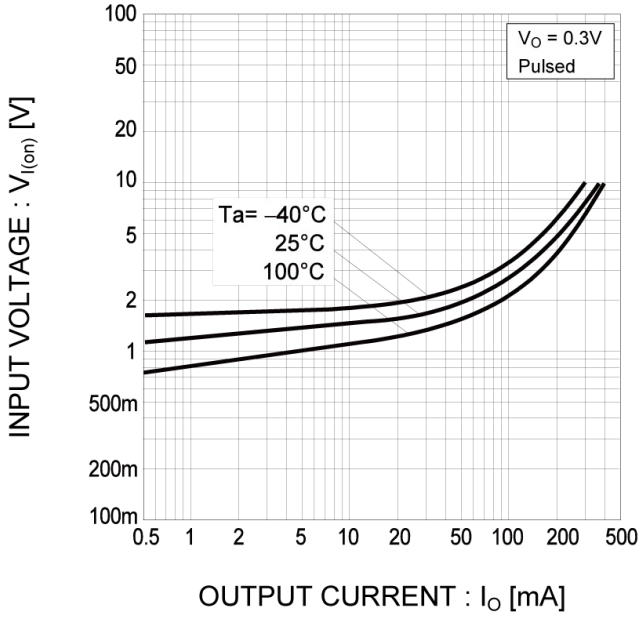


Fig.2 Output Current vs. Input Voltage (OFF Characteristics)

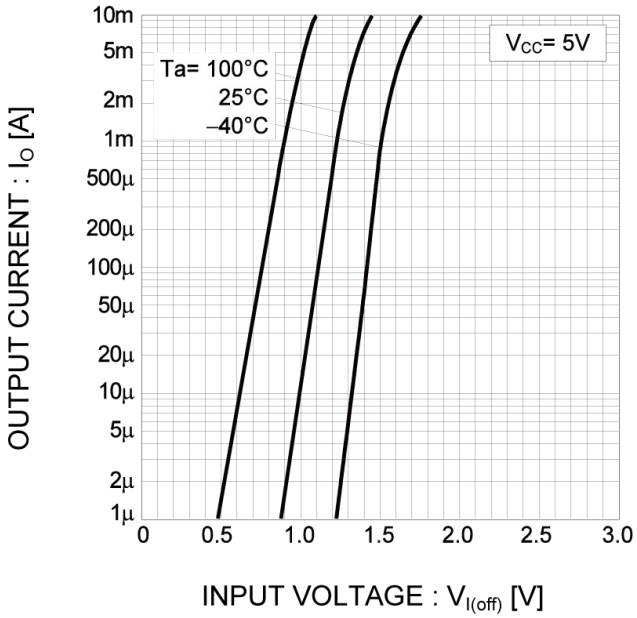


Fig.3 Output Current vs. Output Voltage

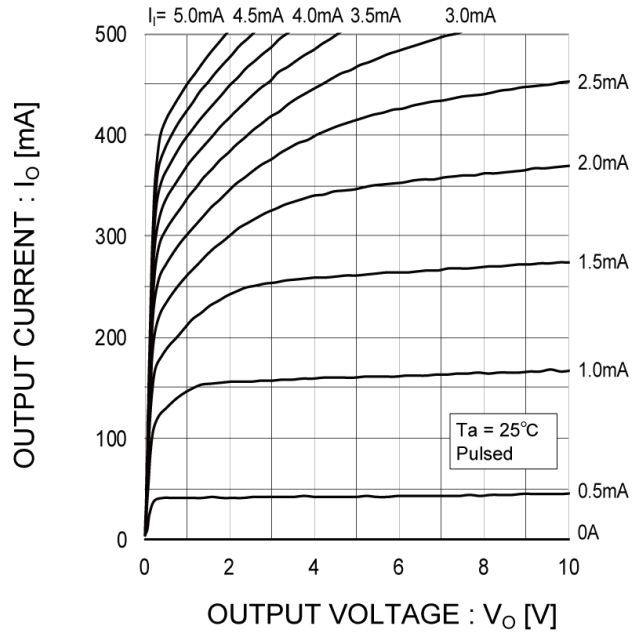
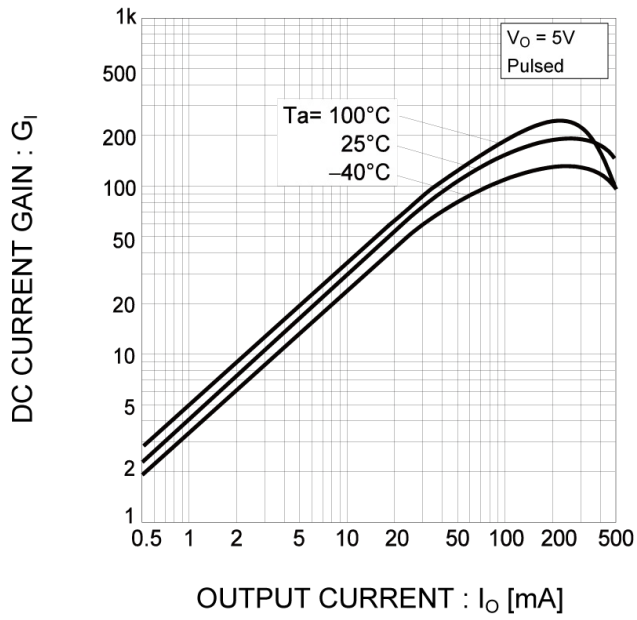


Fig.4 DC Current Gain vs. Output Current

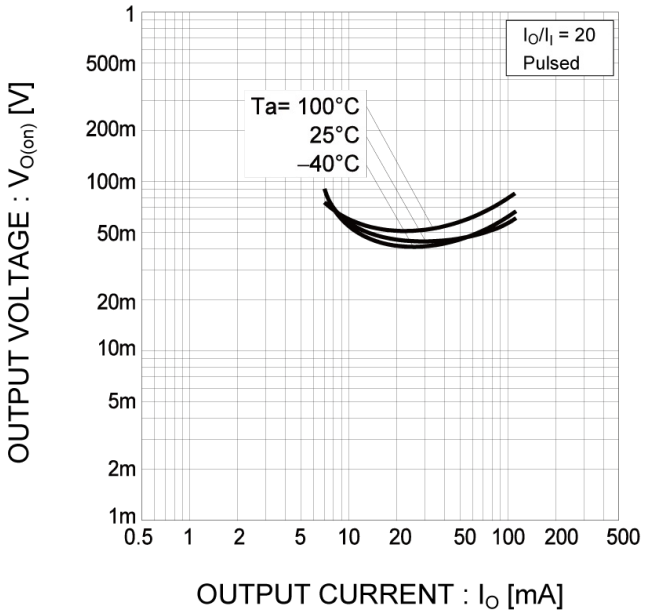


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●Electrical characteristic curves (T_a =25°C)

Fig.5 Output Voltage vs. Output Current

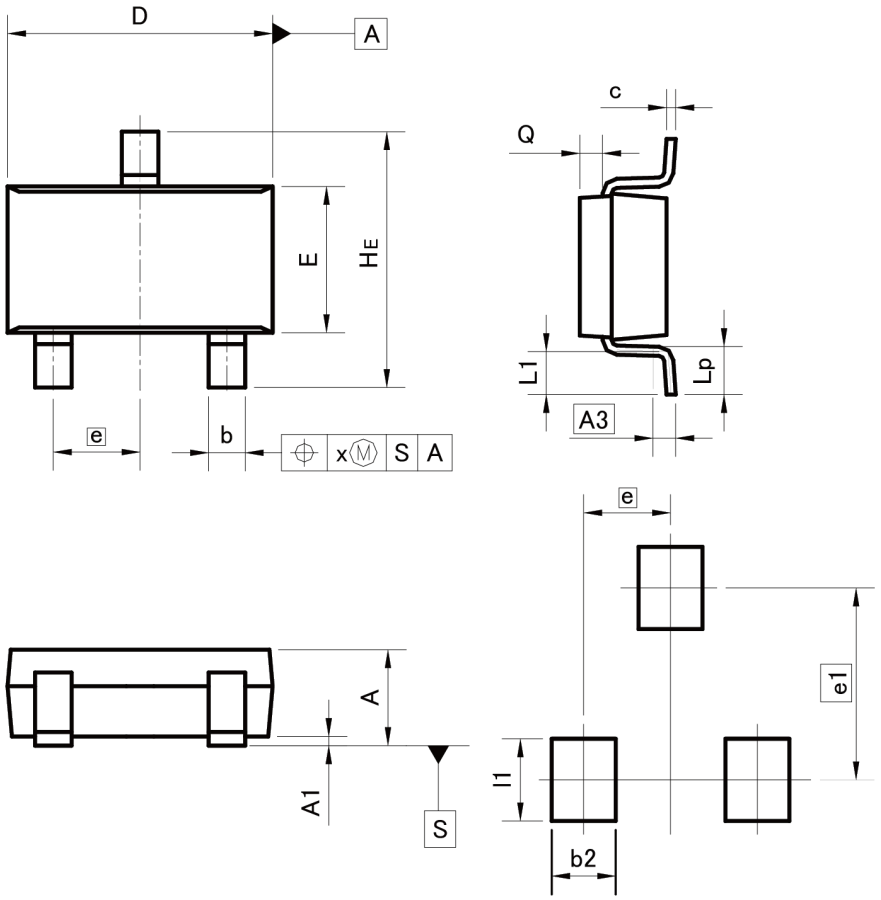


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●Dimensions

SMT3



Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.00	1.30	0.039	0.051
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.35	0.50	0.014	0.020
c	0.09	0.25	0.004	0.010
D	2.80	3.00	0.110	0.118
E	1.50	1.80	0.059	0.071
e	0.95		0.037	
HE	2.60	3.00	0.102	0.118
L1	0.30	0.60	0.012	0.024
Lp	0.40	0.70	0.016	0.028
Q	0.20	0.30	0.008	0.012
x	–	0.10	–	0.004
y	–	0.10	–	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	–	0.60	–	0.024
e1	2.10		0.083	
l1	–	0.90	–	0.035

Dimension in mm/inches

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Constitution Materials List	inquiry
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