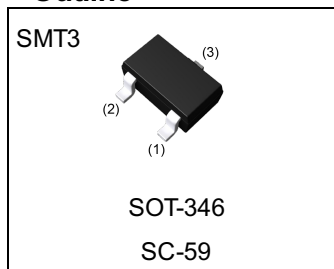


Parameter	Value
V_{CC}	50V
$I_{C(MAX.)}$	500mA
R_1	2.2k Ω
R_2	2.2k Ω

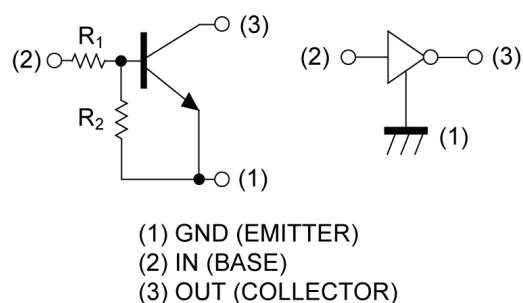
●Features

- 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 design easy.

●Outline



●Inner circuit



●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

● **Absolute maximum ratings** ($T_a = 25^\circ\text{C}$)

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	$^\circ\text{C}$
Range of storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

● **Electrical characteristics** ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Input voltage	$V_{I(off)}$	$V_{CC} = 5V, I_O = 100\mu\text{A}$	-	-	0.5	V
	$V_{I(on)}$	$V_O = 0.3V, I_O = 20\text{mA}$	3.0	-	-	
Output voltage	$V_{O(on)}$	$I_O / I_I = 50\text{mA} / 2.5\text{mA}$	-	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	$V_O = 5V, I_O = 50\text{mA}$	39	-	-	-
Input resistance	R_1	-	1.54	2.2	2.86	k Ω
Resistance ratio	R_2/R_1	-	0.8	1.0	1.2	-
Transition frequency	f_T^{*1}	$V_{CE} = 10V, I_E = -50\text{mA}, f = 100\text{MHz}$	-	200	-	MHz

*1 Characteristics of built-in transistor

*2 Each terminal mounted on a reference land

●Electrical characteristic curves ($T_a = 25^\circ\text{C}$)

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

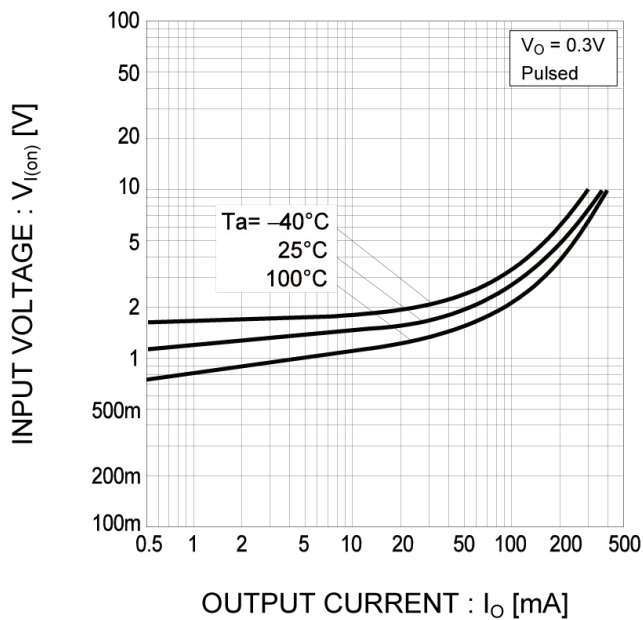


Fig.2 Output Current vs. Input Voltage
(OFF Characteristics)

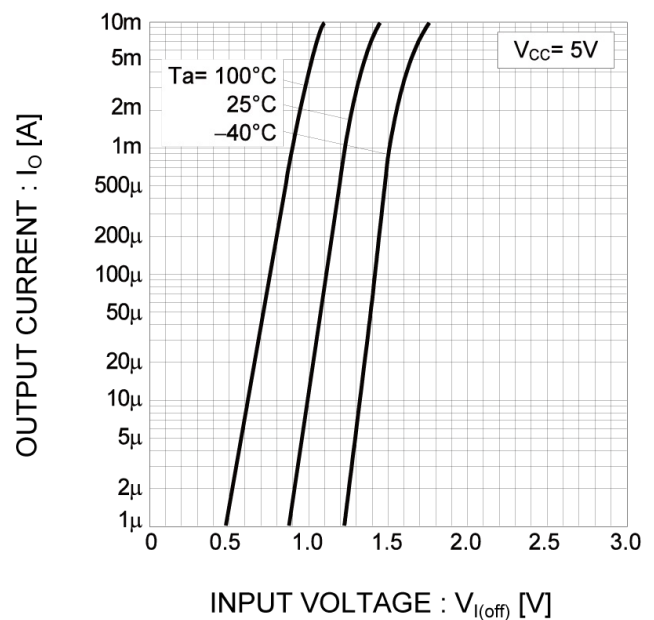


Fig.3 Output Current vs. Output Voltage

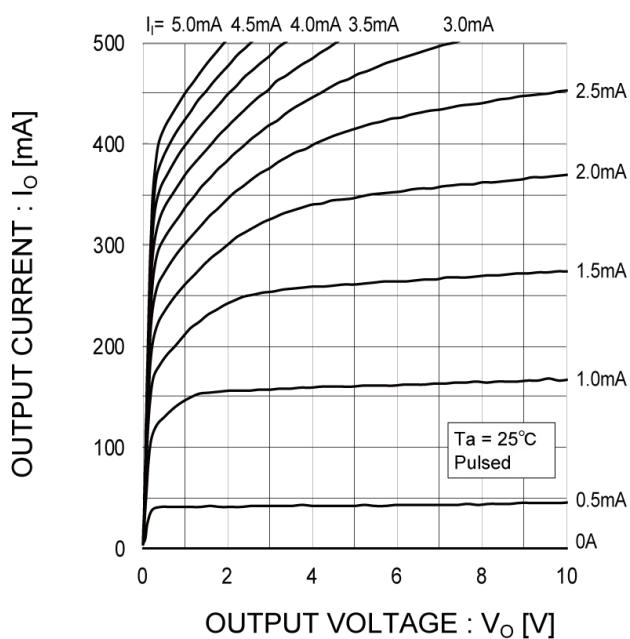
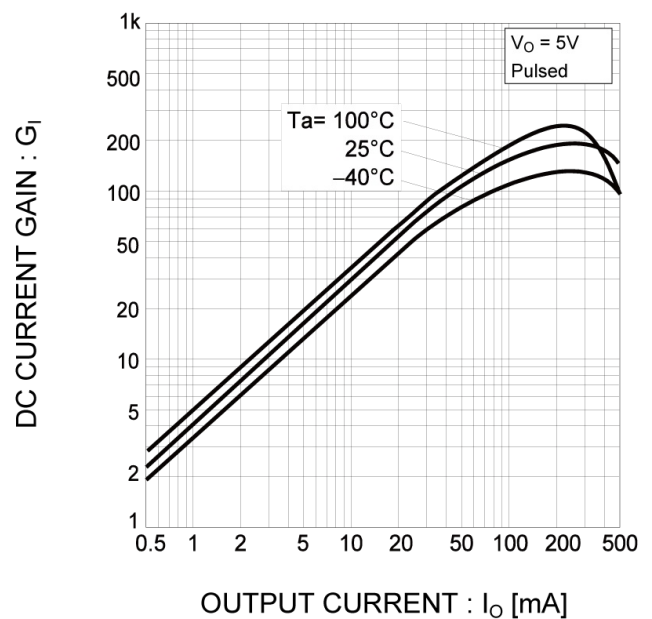
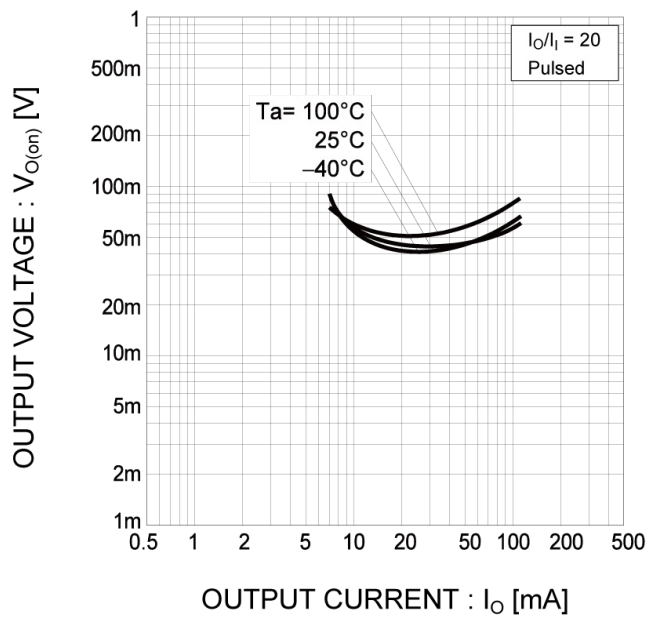


Fig.4 DC Current Gain vs. Output Current



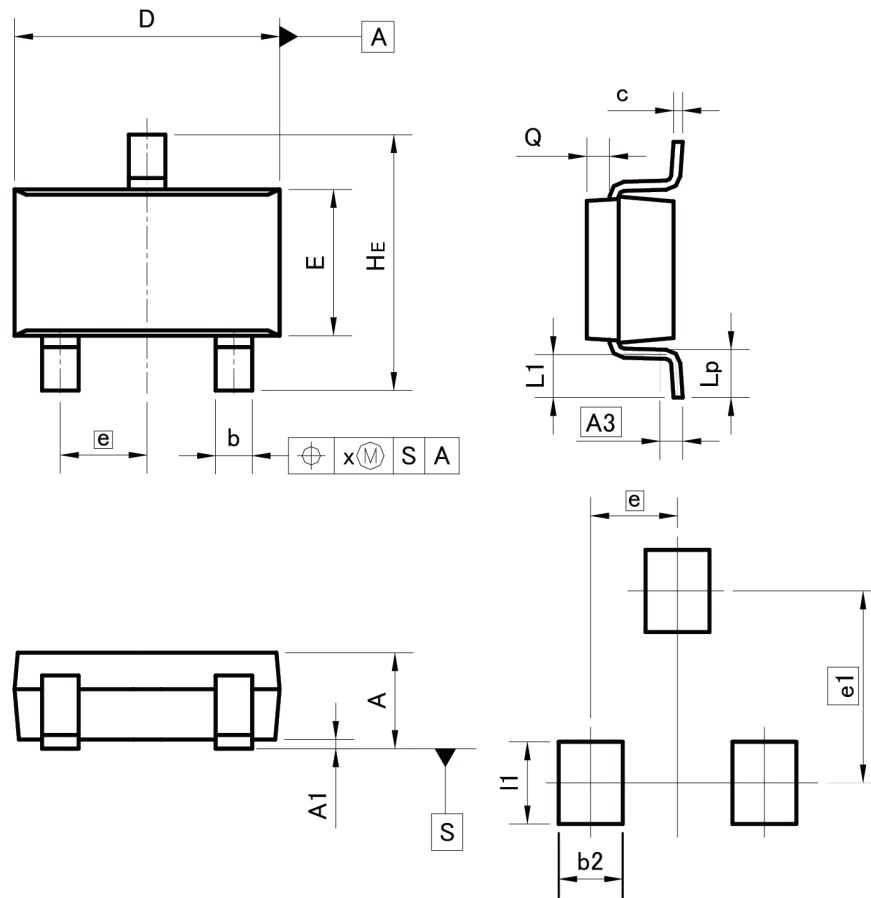
●Electrical characteristic curves ($T_a = 25^\circ\text{C}$)

Fig.5 Output Voltage vs. Output Current



●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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