

Parameter	Value
$V_{CC}$	50V
$I_{C(MAX.)}$	500mA
$R_1$	1k $\Omega$
$R_2$	1k $\Omega$

### ●Features

- 1) Built-In Biasing Resistors,  $R_1 = R_2 = 1k\Omega$ .
- 2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit).
- 3) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of completely eliminating parasitic effects.
- 4) Only the on/off conditions need to be set for operation, making the circuit design easy.
- 5) Complementary PNP Types :DTB113EK series
- 6) Lead Free/RoHS Compliant.

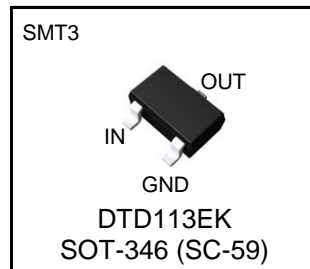
### ●Application

Switching circuit, Inverter circuit, Interface circuit, Driver circuit

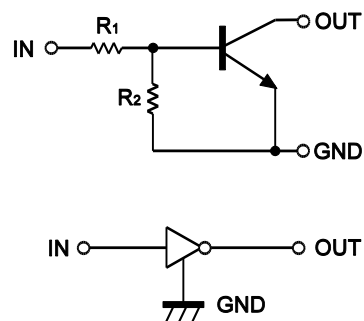
### ●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
DTD113EK	SMT3	2928	T146	180	8	3,000	F21

### ●Outline



### ●Inner circuit



**●Absolute maximum ratings (Ta = 25°C)**

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

**●Electrical characteristics (Ta = 25°C)**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input voltage	$V_{I(off)}$	$V_{CC} = 5V, I_O = 100\mu A$	-	-	0.5	V
	$V_{I(on)}$	$V_O = 0.3V, I_O = 20mA$	3.0	-	-	
Output voltage	$V_{O(on)}$	$I_O / I_I = 50mA / 2.5mA$	-	0.1	0.3	V
Input current	$I_I$	$V_I = 5V$	-	-	7.2	mA
Output current	$I_{O(off)}$	$V_{CC} = 50V, V_I = 0V$	-	-	0.5	$\mu A$
DC current gain	$G_I$	$V_O = 5V, I_O = 50mA$	33	-	-	-
Input resistance	$R_1$	-	0.7	1	1.3	k $\Omega$
Resistance ratio	$R_2/R_1$	-	0.8	1	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 footprint

●Electrical characteristic curves(Ta = 25°C)

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

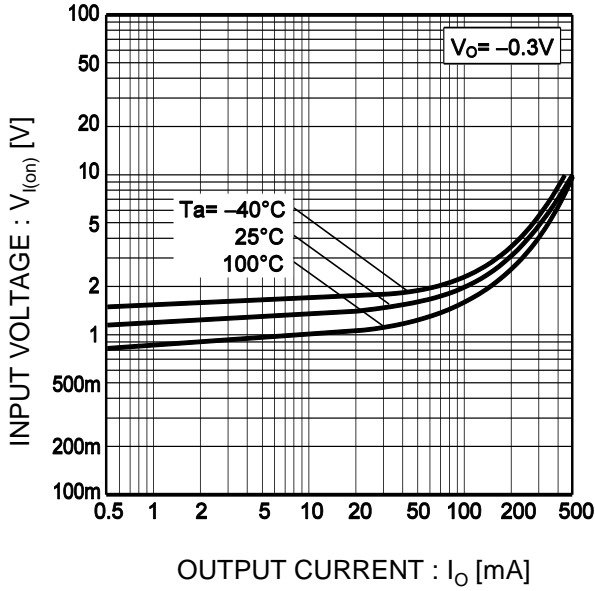


Fig.2 Output current vs. input voltage (OFF characteristics)

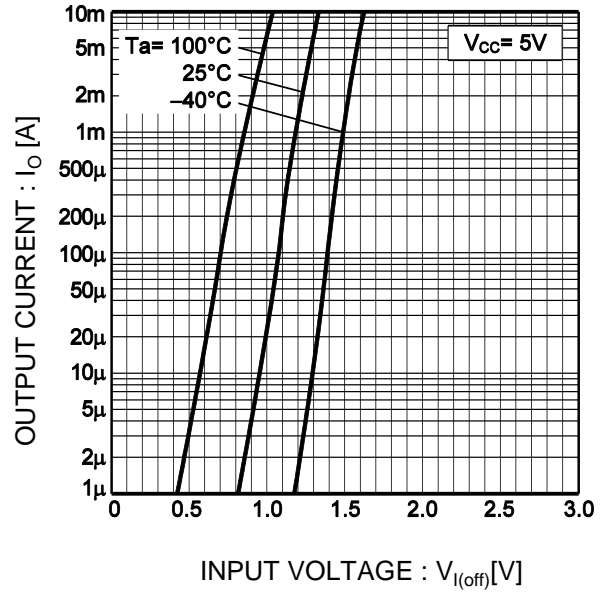


Fig.3 Output current vs. output voltage

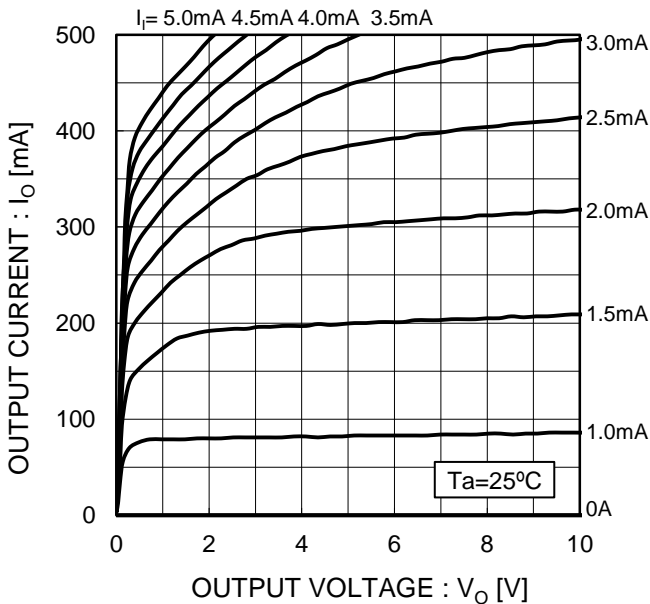
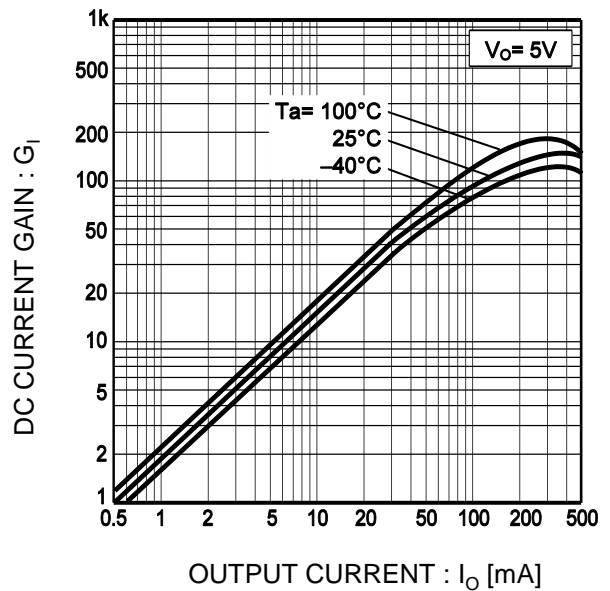
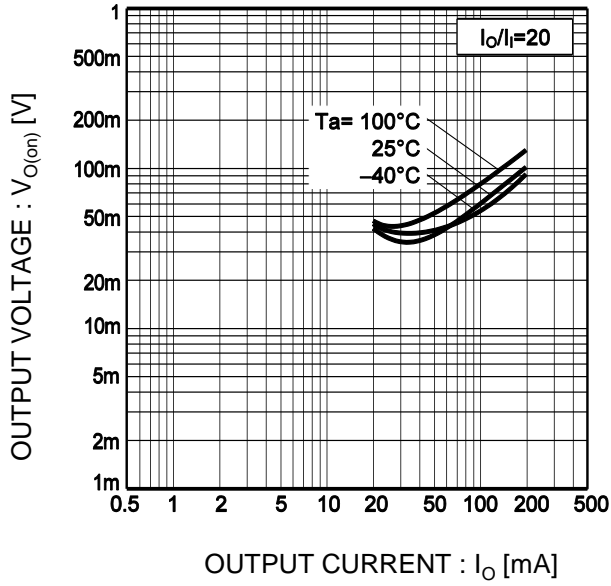


Fig.4 DC current gain vs. output current



●Electrical characteristic curves(Ta = 25°C)

Fig.5 Output voltage vs. output current





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