

Digital transistors (built-in resistors)

PNP Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

• **Applications**

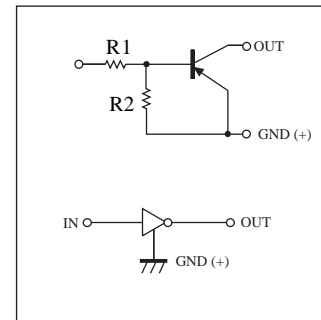
Inverter, Interface, Driver

• **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 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 the device design easy.
- We declare that the material of product compliance with RoHS requirements.



• **Equivalent circuit**



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

Parameter	Symbol	Limits	Unit
Supply voltage	V _{CC}	-50	V
Input voltage	V _{IN}	-30 to +10	V
Output current	I _C	-500	mA
Power dissipation	P _D	200	mW
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

DEVICE MARKING AND RESISTOR VALUES

Device	Marking	R1 (K)	R2 (K)	Shipping
DTB201	K6	4.7	4.7	3000/Tape & Reel
DTB201	K6	4.7	4.7	10000/Tape & Reel

● **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 =-0.3V, I _O =-20mA
Output voltage	V _{O(on)}	-	-0.1	-0.3	V	I _O /I _I =-50mA/-2.5mA
Input current	I _I	-	-	-1.8	mA	V _I =-5V
Output current	I _{O(off)}	-	-	-0.5	μA	V _{CC} =-50V, V _I =0V
DC current gain	G _I	47	-	-	-	V _O =-5V, I _O =-50mA
Input resistance	R ₁	3.29	4.7	6.11	kΩ	-
Resistance ratio	R ₂ /R ₁	0.8	1	1.2	-	-
Transition frequency	f _T □	-	200	-	MHz	V _{CE} =-10V, I _E =50mA, f=100MHz

□ Characteristics of built-in transistor

●Electrical characteristic curves

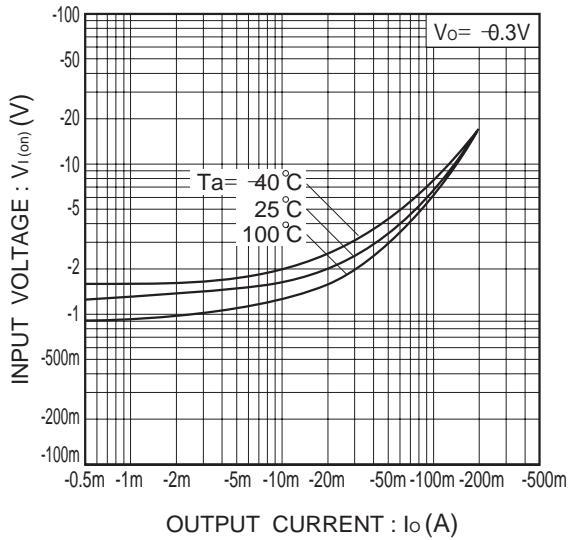


Fig.1 Input voltage vs. output current

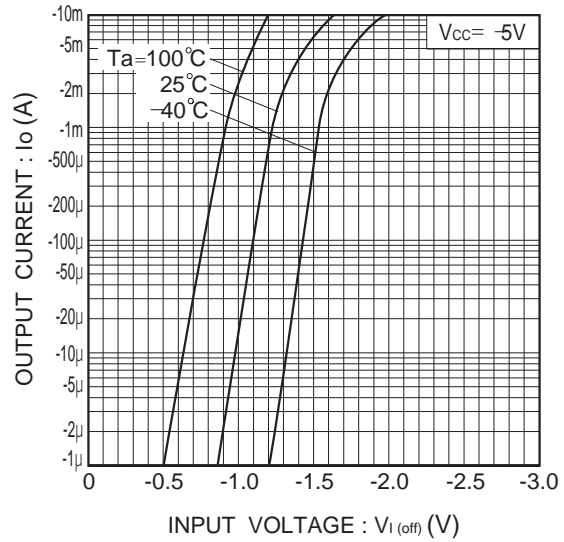


Fig.2 Output current vs. input voltage (OFF characteristics)

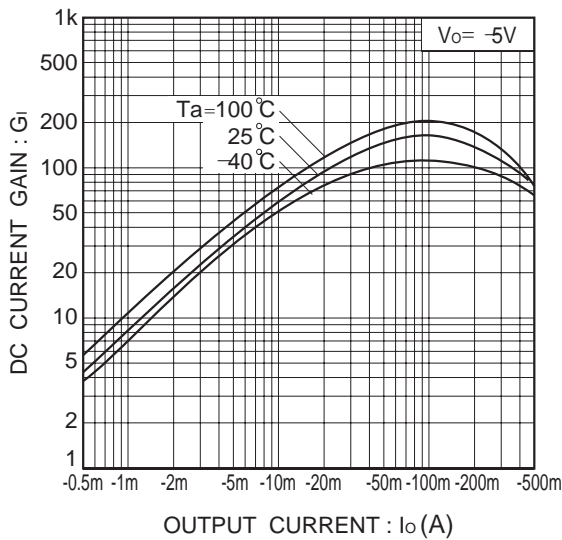


Fig.3 DC current gain vs. output current

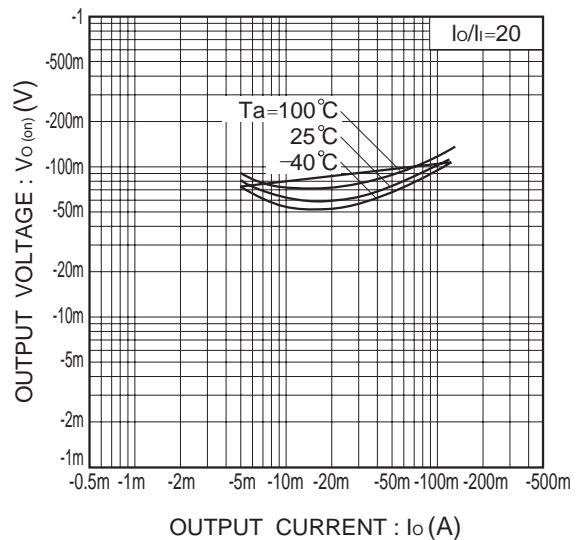
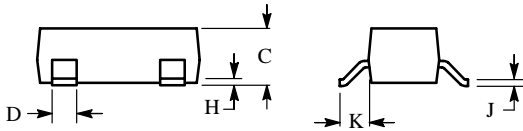
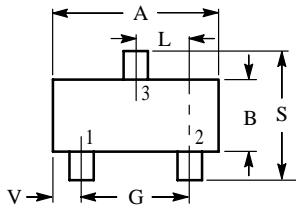


Fig.4 Output voltage vs. output current

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NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

PIN 1 BASE
 2 EMITTER
 3 COLLECTOR

