Digital transistors (built-in resistors)
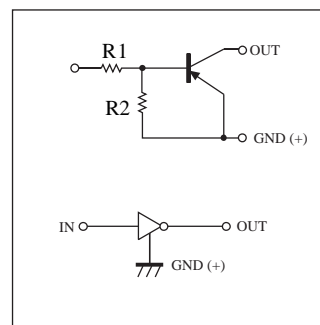
• **Features**

1) The built-in bias resistor allows the configuration of an inverter circuit without connecting any external in-put resistors (see Equivalent cir-cuit).

2) Each bias resistor is a thin-film re-sistor. Since they are completely in-sulated, the input can be positively biased. The insulation also elimi-nates most of the parasitic effects.

3) Circuit design is simplified since only the OFF and the ON conditionshave to be set.

• **Device Marking and Ordering Information**

Device	Marking	Shipping
DTA216LT1G	BA	3000/Tape&Reel
DTA216LT1G	BA	10000/Tape&Reel

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• **Abaolute maximum ratings** $(T_A = 25°C)$

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	−50	V
Input voltage	V_{IN}	−5~+10	V
Output current	I_O	−100	mA
	$I_{C(Max)}$	−100	
Power dissipation	Pd	225	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55~+150	°C

• **Electrical characteristics** $(T_A = 25°C)$

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	−0.3	V	$V_{CC} = −5V$, $I_O = −100μA$
	$V_{I(on)}$	−3	–	–		$V_O = −0.3V$, $I_O = −20mA$
Output voltage	$V_{O(on)}$	–	–	−0.3	V	$I_O/I_I = −10mA/−0.5mA$
Input current	I_I	–	–	−7.2	mA	$V_I=−5V$
Output current	$I_{O(off)}$	–	–	−0.5	μA	$V_{CC}=−50V$, $V_I=0V$
DC current gain	G_I	33	–	–	–	$V_O=5V$, $I_O=5mA$
Input resistance	$R1$	0.7	1	1.3	kΩ	–
Resistance ratio	$R2/R1$	8	10	12	–	–
Transition frequency	f_T	–	250	–	MHz	$V_{CE}=−10V$, $I_E=−5mA$, f=100MHz *

* Transition frequency of the device
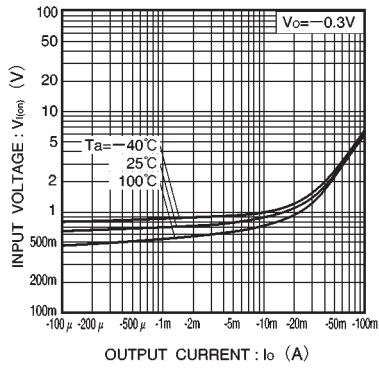
• **Electrical characteristic curves**

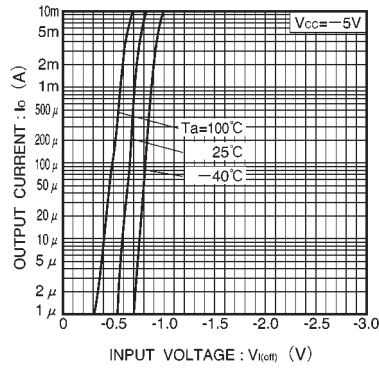Fig.1 Input voltage vs. output current (ON characteristics)

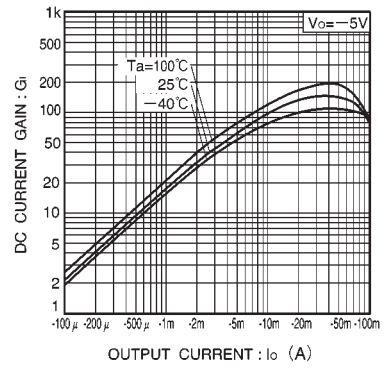Fig.2 Output current vs. input voltage (OFF characteristics)

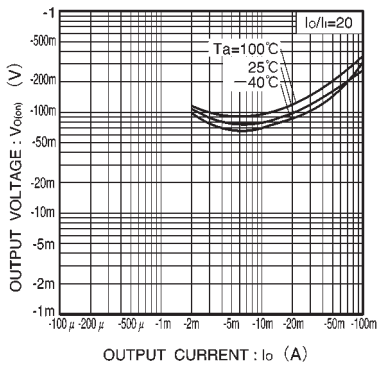Fig.3 DC current gain vs. output current
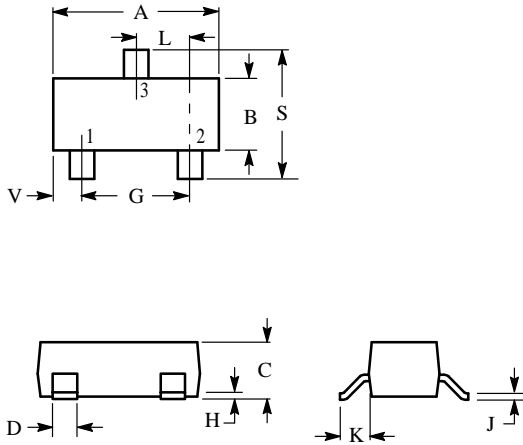

Fig.4 Output voltage vs. output current

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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