

Parameter	Value
$V_{CC}$	-50V
$I_{C(MAX.)}$	-100mA
$R_1$	2.2k $\Omega$
$R_2$	47k $\Omega$

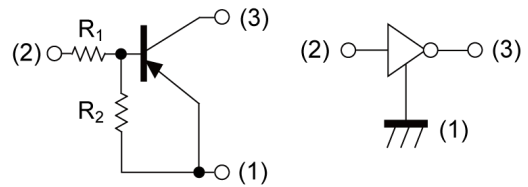
### ●Outline



### ●Features

- 1) Built-In Biasing Resistors
- 2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit).
- 3) Only the on/off conditions need to be set for operation, making the circuit design easy.
- 4) Complementary NPN Types: DTC123JU3 HZG

### ●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
DTA123JU3 HZG	SOT-323 (UMT3)	2021	T106	180	8	3000	132

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

Parameter	Symbol	Values	Unit
Supply voltage	$V_{CC}$	-50	V
Input voltage	$V_{IN}$	-12 to 5	V
Output current	$I_O$	-100	mA
Collector current	$I_{C(MAX)}^{*1}$	-100	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
	$V_{I(on)}$	$V_O = -0.3V, I_O = -5\text{mA}$	-1.1	-	-	
Output voltage	$V_{O(on)}$	$I_O = -5\text{mA}, I_I = -0.25\text{mA}$	-	-100	-300	mV
Input current	$I_I$	$V_I = -5V$	-	-	-3.6	mA
Output current	$I_{O(off)}$	$V_{CC} = -50V, V_I = 0V$	-	-	-500	nA
DC current gain	$G_I$	$V_O = -5V, I_O = -10\text{mA}$	80	-	-	-
Input resistance	$R_1$	-	1.54	2.2	2.86	k $\Omega$
Resistance ratio	$R_2/R_1$	-	17	21	26	-
Transition frequency	$f_T^{*1}$	$V_{CE} = -10V, I_E = 5\text{mA}, f = 100\text{MHz}$	-	250	-	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)

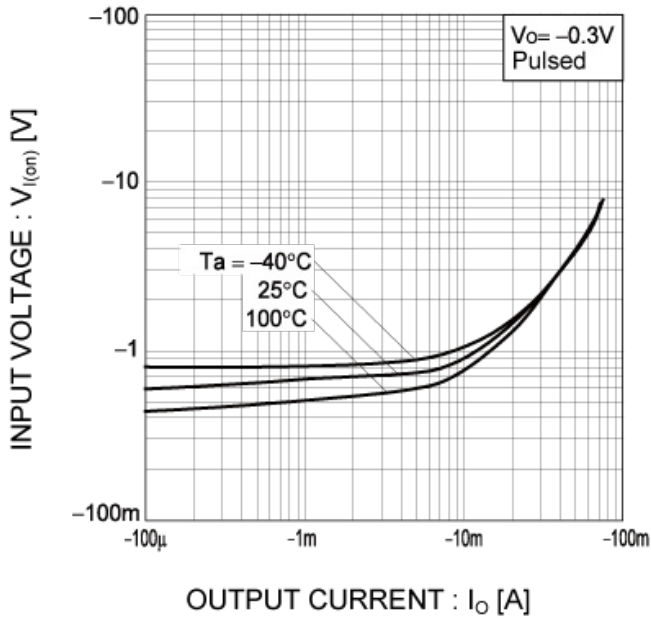


Fig.2 Output current vs. input voltage (OFF characteristics)

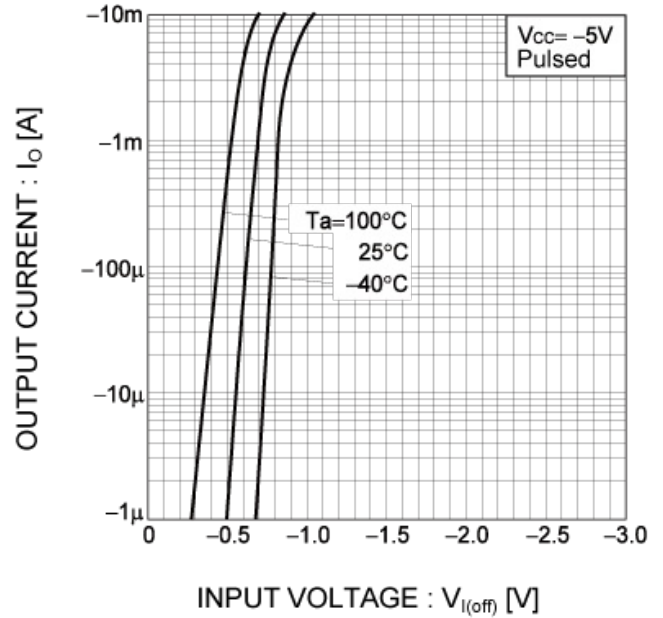


Fig.3 Output current vs. output voltage

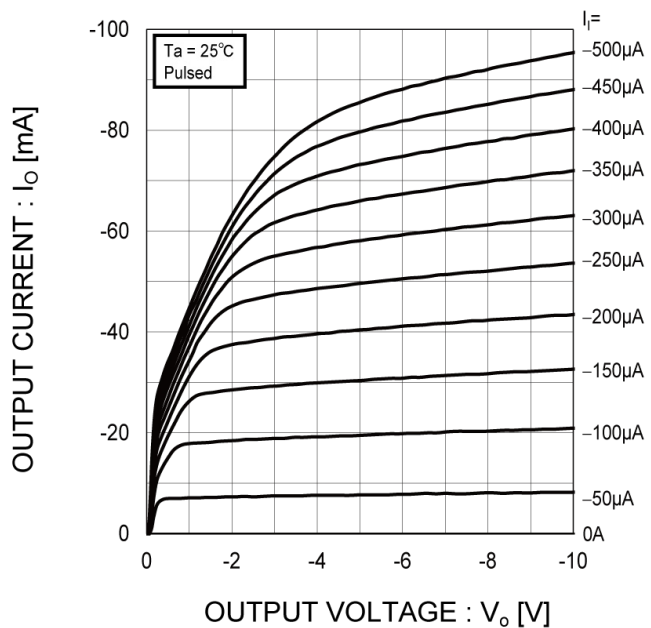
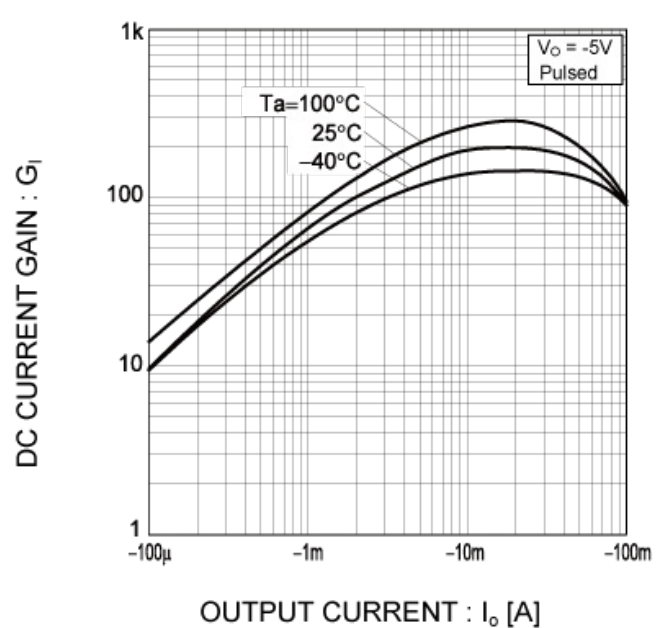
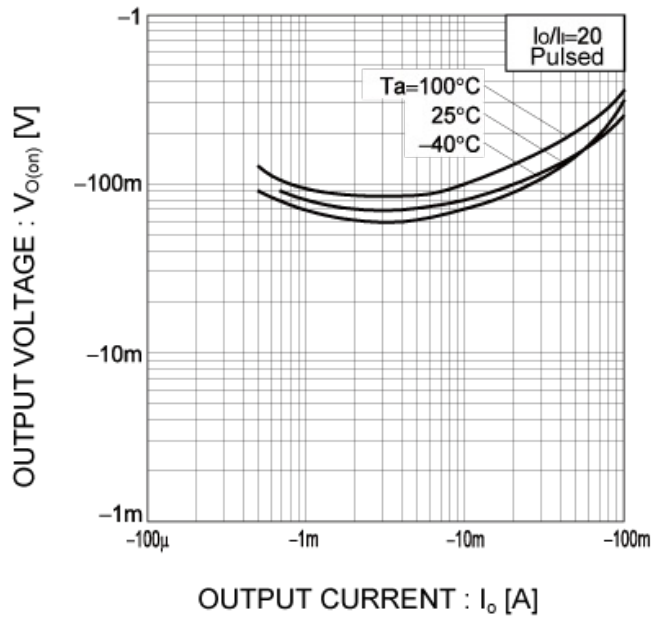


Fig.4 DC current gain vs. output current



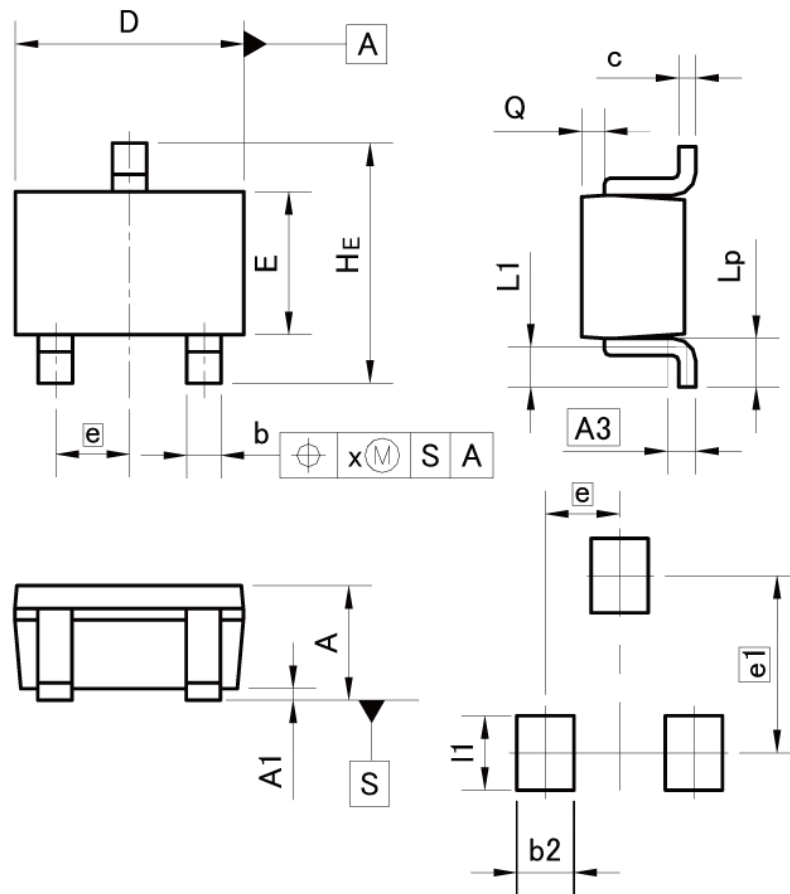
**● Electrical characteristic curves ( $T_a = 25^\circ\text{C}$ )**

Fig.5 Output voltage vs. output current



●Dimensions

SOT-323  
SC-70  
(UMT3)



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

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	1.00	0.031	0.039
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.25	0.40	0.010	0.016
c	0.10	0.20	0.004	0.008
D	1.90	2.10	0.075	0.083
E	1.15	1.35	0.045	0.053
e	0.65		0.026	
HE	2.00	2.20	0.079	0.087
L1	0.10	0.40	0.004	0.016
Lp	0.25	0.55	0.010	0.022
Q	0.10	0.30	0.004	0.012
x	-	0.10	-	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.50	-	0.020
e1	1.55		0.061	
l1	-	0.65	-	0.026

Dimension in mm/inches

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JAPAN	USA	EU	CHINA
CLASS III	CLASS III	CLASS II b	CLASS III
CLASS IV		CLASS III	

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  - [h] Use of the Products in places subject to dew condensation
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5. Please verify and confirm characteristics of the final or mounted products in using the Products.
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This Product is electrostatic sensitive product, which may be damaged due to electrostatic discharge. Please take proper caution in your manufacturing process and storage so that voltage exceeding the Products maximum rating will not be applied to Products. Please take special care under dry condition (e.g. Grounding of human body / equipment / solder iron, isolation from charged objects, setting of Ionizer, friction prevention and temperature / humidity control).

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1. Product performance and soldered connections may deteriorate if the Products are stored in the places where:
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  - [c] the Products are exposed to direct sunshine or condensation
  - [d] the Products are exposed to high Electrostatic
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