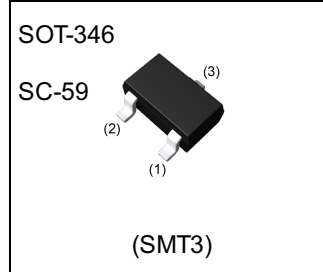


Parameter	Value
V_{CC}	-50V
$I_{C(MAX.)}$	-500mA
R_1	2.2k Ω
R_2	2.2k Ω

●Outline



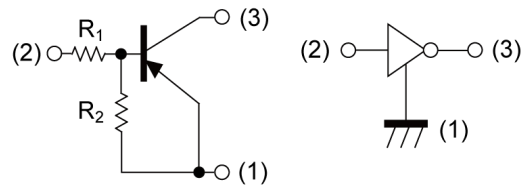
●Features

- 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.

●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
DTB123EK	SOT-346 (SMT3)	2928	T146	180	8	3000	F12

● **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 10	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	$V_{O(on)}$	$I_O = -50\text{mA}, I_I = -2.5\text{mA}$	-	-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^{*3}	$V_O = -5V, I_O = -50\text{mA}$	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

*3 Pulsed

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

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

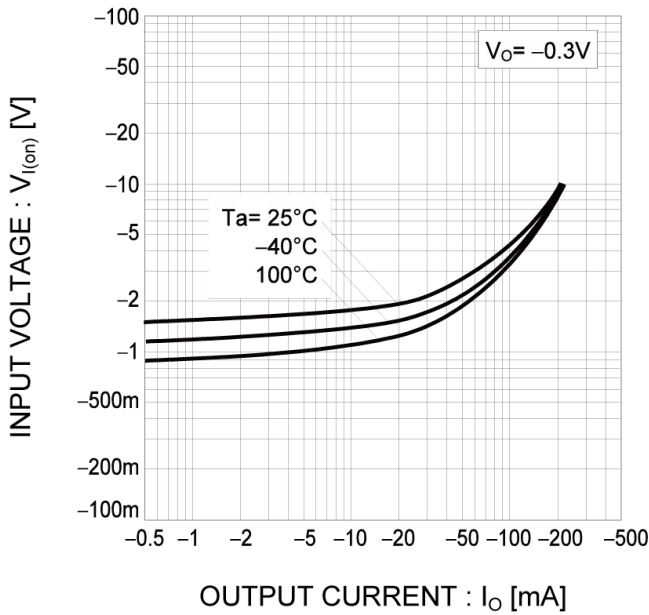


Fig.2 Output Current vs. Input Voltage (OFF Characteristics)

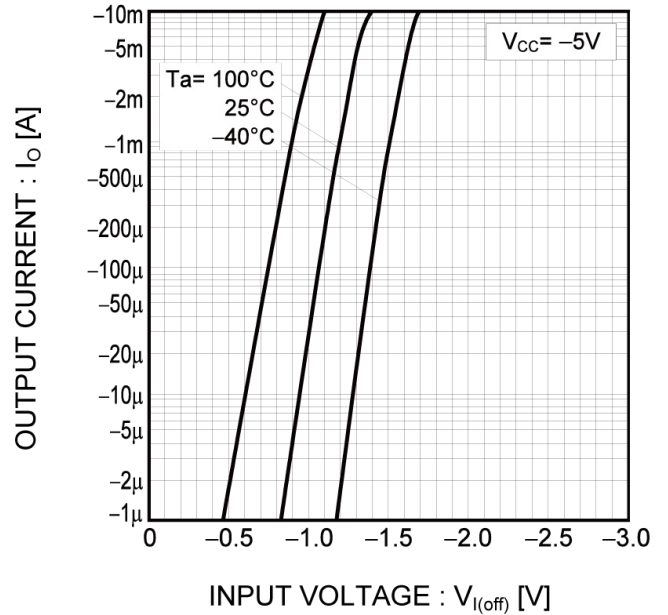


Fig.3 Output Current vs. Output Voltage

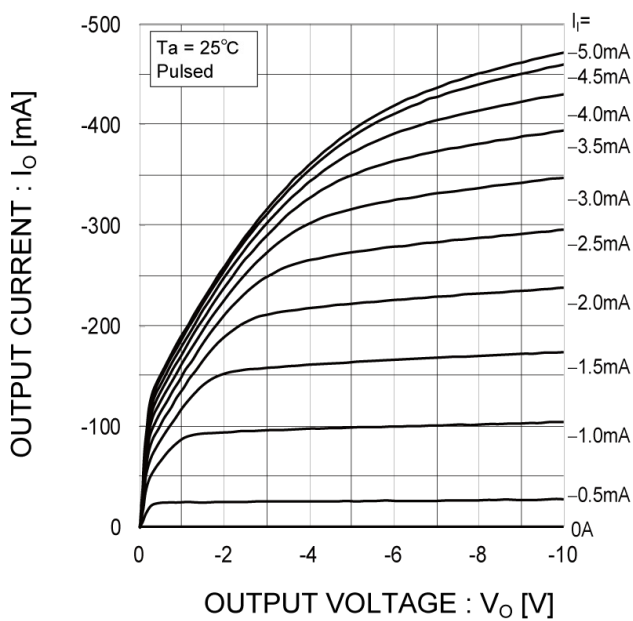
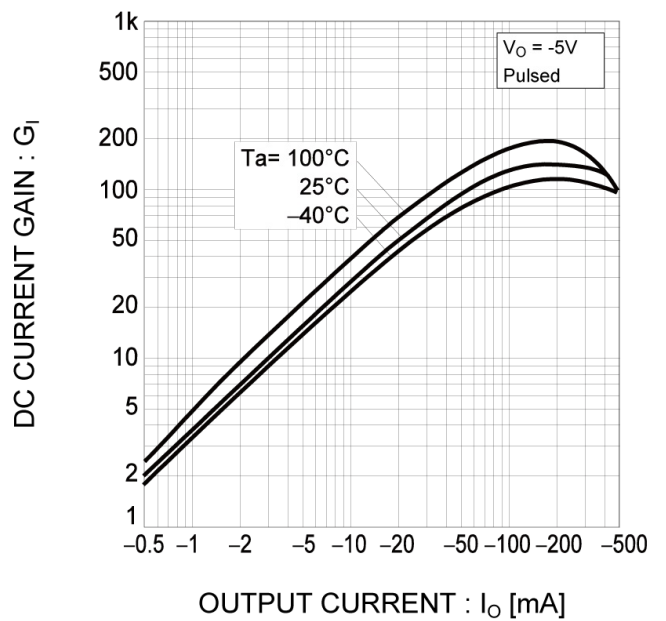
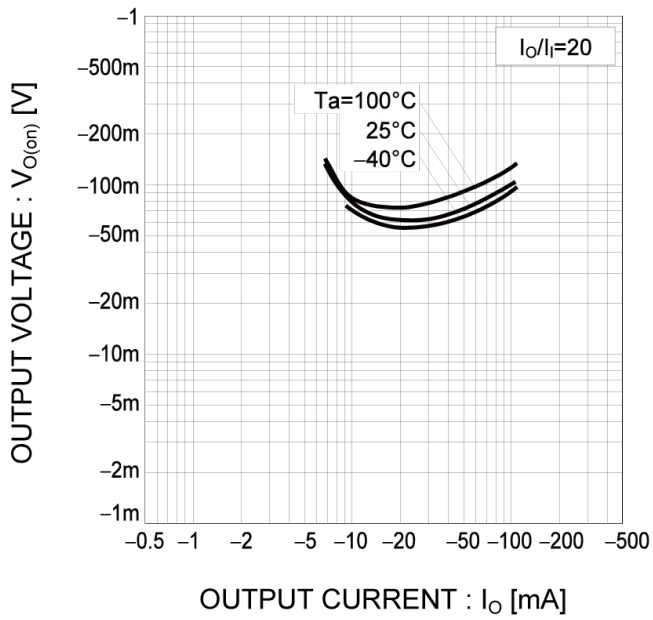


Fig.4 DC Current Gain vs. Output Current



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

Fig.5 Output Voltage vs. Output Current



●Dimensions

SOT-346
SC-59
(SMT3)



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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(Note1) Medical Equipment Classification of the Specific Applications

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

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 - Use of our Products in proximity to heat-producing components, plastic cords, or other flammable items
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 - Use of the Products in places subject to dew condensation
- The Products are not subject to radiation-proof design.
- Please verify and confirm characteristics of the final or mounted products in using the Products.
- In particular, if a transient load (a large amount of load applied in a short period of time, such as pulse. is applied, confirmation of performance characteristics after on-board mounting is strongly recommended. Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.
- De-rate Power Dissipation (Pd) depending on Ambient temperature (Ta). When used in sealed area, confirm the actual ambient temperature.
- Confirm that operation temperature is within the specified range described in the product specification.
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- In principle, the reflow soldering method must be used on a surface-mount products, the flow soldering method must be used on a through hole mount products. If the flow soldering method is preferred on a surface-mount products, please consult with the ROHM representative in advance.

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1. Product performance and soldered connections may deteriorate if the Products are stored in the places where:
 - [a] the Products are exposed to sea winds or corrosive gases, including Cl₂, H₂S, NH₃, SO₂, and NO₂
 - [b] the temperature or humidity exceeds those recommended by ROHM
 - [c] the Products are exposed to direct sunshine or condensation
 - [d] the Products are exposed to high Electrostatic
2. Even under ROHM recommended storage condition, solderability of products out of recommended storage time period may be degraded. It is strongly recommended to confirm solderability before using Products of which storage time is exceeding the recommended storage time period.
3. Store / transport cartons in the correct direction, which is indicated on a carton with a symbol. Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.
4. Use Products within the specified time after opening a humidity barrier bag. Baking is required before using Products of which storage time is exceeding the recommended storage time period.

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