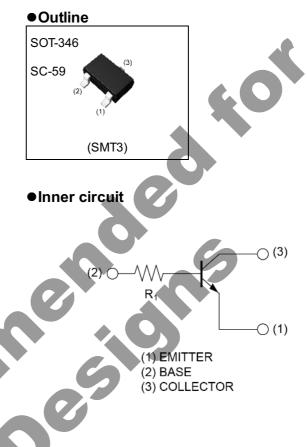
DTD143TK

500mA/40V Digital transistor (with built-in resistor)

Parameter	Value
V _{CEO}	40V
Ι _C	500mA
R ₁	4.7kΩ



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 negative 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 desigh easy.

Application

INVERTER, INTERFACE, DRIVER

Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
DTD143TK	SOT-346 (SMT3)	2928	T146	180	8	3000	F03

• Absolute maximum ratings ($T_a = 25^{\circ}C$)

Parameter	Symbol	Values	Unit
Collector-base voltage	V _{CBO}	50	V
Collector-emitter voltage	V _{CEO}	40	V
Emitter-base voltage	V _{EBO}	5	V
Collector current	I _C *1	500	mA
Power dissipation	P _D *2	200	mW
Junction temperature	Tj	150	°C
Range of storage temperature	T _{stg}	-55 to +150	°C

•Electrical characteristics (T_a = 25°C)

Deremeter	Sumbol	Condifiona	Values			1.1:4
Parameter	Symbol	Conditions	Min.	Тур.	Max.	Unit
Collector-base breakdown voltage	BV _{CBO}	Ι _C = 50μΑ	50	-	-	V
Collector-emitter breakdown voltage	BV _{CEO}	Ic = 1mA	40	-	-	V
Emitter-base breakdown voltage	BV _{EBO}	I _E = 50μA	5	-	-	V
Collector cut-off current	I _{CBO}	V _{CB} = 50V	-	-	500	nA
Emitter cut-off current	I _{EBO}	V _{EB} = 4V	-	-	500	nA
Collector-emitter saturation voltage	V _{CE(sat)}	I _C = 50mA, I _B = 2.5mA	-	-	300	mV
DC current gain	h _{FE} *3	V _{CE} = 5V, I _C = 50mA	100	250	600	-
Input resistance	R ₁	-	3.29	4.7	6.11	kΩ
Transition frequency	f _T *1	V _{CE} = 10V, I _E = -50mA, f = 100MHz	-	200	-	MHz

*1 Characteristics of built-in transistor.

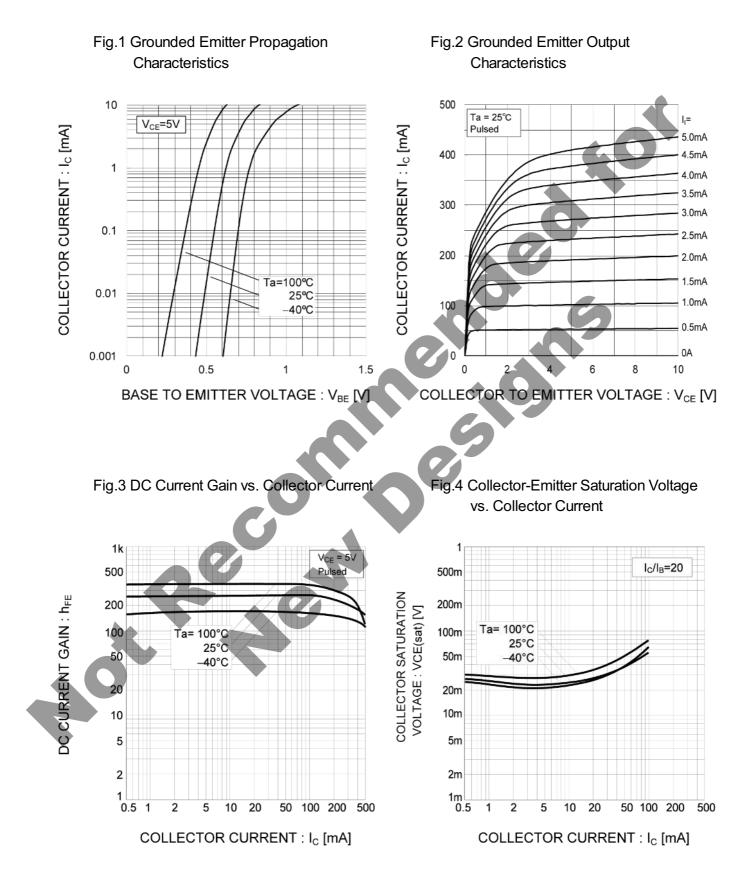
*2 Each terminal mounted on a reference land.

*3 Pulsed



C

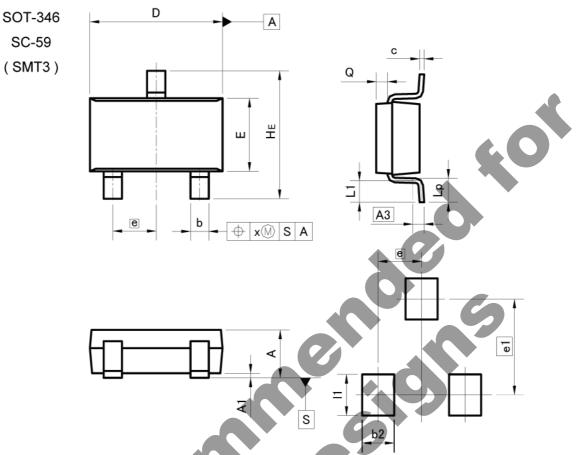
• Electrical characteristic curves (T_a =25°C)





DTD143TK

Dimensions



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

DIM	MILIM	ETERS	INC	HES
DIM	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	0.0	10
b	0.35	0.50	0.014	0.020
С	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
е	0.	95	0.0	37
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	16 1.	0.004
У	-8	0.10	(2 <u>01</u>	0.004

DIM	MILIM	ETERS	INCHES		
DIN	MIN	MAX	MIN	MAX	
b2		0.60	2.77	0.024	
e1	2.10		0.0	083	
11	<u>–</u> a	0.90	. 	0.035	

Dimension in mm/inches

20%



Notice

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(Note1) Medical E	quipment Classifi	cation of the Spec	ific Applications
		C 11	

JAPAN	USA	EU	CHINA
CLASSⅢ		CLASS II b	
CLASSⅣ	CLASSⅢ	CLASSⅢ	- CLASSII

- 2. ROHM designs and manufactures its Products subject to strict guality control system. However, semiconductor products can fail or malfunction at a certain rate. Please be sure to implement, at your own responsibilities, adequate safety measures including but not limited to fail-safe design against the physical injury, damage to any property, which a failure or malfunction of our Products may cause. The following are examples of safety measures:

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 - [c] Use of our Products in places where the Products are exposed to sea wind or corrosive gases, including Cl2, H2S, NH3, SO2, and NO2
 - [d] Use of our Products in places where the Products are exposed to static electricity or electromagnetic waves
 - [e] Use of our Products in proximity to heat-producing components, plastic cords, or other flammable items
 - [f] Sealing or coating our Products with resin or other coating materials
 - [g] Use of our Products without cleaning residue of flux (even if you use no-clean type fluxes, cleaning residue of flux is recommended); or Washing our Products by using water or water-soluble cleaning agents for cleaning residue after soldering
 - [h] Use of the Products in places subject to dew condensation
- 4. The Products are not subject to radiation-proof design.
- Please verify and confirm characteristics of the final or mounted products in using the Products. 5.
- 6. 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. 8.
- ROHM shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in 9. this document.

Precaution for Mounting / Circuit board design

- When a highly active halogenous (chlorine, bromine, etc.) flux is used, the residue of flux may negatively affect product performance and reliability.
- In principle, the reflow soldering method must be used on a surface-mount products, the flow soldering method must 2. 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.

For details, please refer to ROHM Mounting specification

7.

Precautions Regarding Application Examples and External Circuits

- 1. If change is made to the constant of an external circuit, please allow a sufficient margin considering variations of the characteristics of the Products and external components, including transient characteristics, as well as static characteristics.
- 2. You agree that application notes, reference designs, and associated data and information contained in this document are presented only as guidance for Products use. Therefore, in case you use such information, you are solely responsible for it and you must exercise your own independent verification and judgment in the use of such information contained in this document. ROHM shall not be in any way responsible or liable for any damages, expenses or losses incurred by you or third parties arising from the use of such information.

Precaution for Electrostatic

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 lonizer, friction prevention and temperature / humidity control).

Precaution for Storage / Transportation

- 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.

Precaution for Product Label

QR code printed on ROHM Products label is for ROHM's internal use only.

Precaution for Disposition

When disposing Products please dispose them properly using an authorized industry waste company.

Precaution for Foreign Exchange and Foreign Trade act

Since concerned goods might be fallen under listed items of export control prescribed by Foreign exchange and Foreign trade act, please consult with ROHM in case of export.

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