

# Digital transistors (built-in resistors)

## DTB133HK / DTB133HS

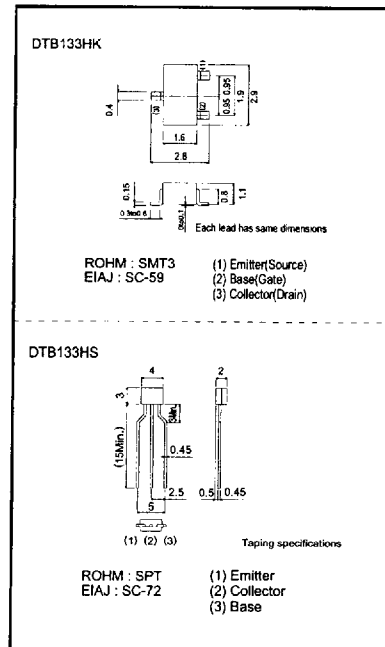
### ●Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input, and parasitic effects are almost completely eliminated.
- 3) Only the on/off conditions need to be set for operation, making device design easy.
- 4) Higher mounting densities can be achieved.

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

Parameter	Symbol	Limits	Unit
Supply voltage	V <sub>CC</sub>	-50	V
Input voltage	V <sub>I</sub>	-20	V
		6	
Output current	I <sub>C</sub>	-500	mA
Power dissipation	P <sub>d</sub>	200	mW
		300	
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55-150	°C

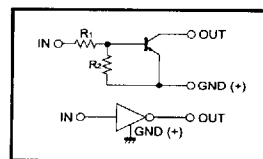
### ●External dimensions (Units : mm)



### ●Package, marking, and packaging specifications

Part No.	DTB133HK	DTB133HS
Package	SMT3	SPT
Marking	G98	-
Packaging code	T146	TP
Basic ordering unit (pieces)	3000	5000

### ●Circuit schematic



### ●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V <sub>I(off)</sub>	-	-	-0.3	V	V <sub>CC</sub> = -5V, I <sub>O</sub> = -100μA
	V <sub>I(on)</sub>	-2	-	-		V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA
Output voltage	V <sub>O(on)</sub>	-	-0.1	-0.3	V	I <sub>O</sub> = -50mA, I <sub>I</sub> = -2.5mA
Input current	I <sub>I</sub>	-	-	-2.4	mA	V <sub>I</sub> = -5V
Output current	I <sub>O(off)</sub>	-	-	-0.5	μA	V <sub>CC</sub> = -50V, V <sub>I</sub> = 0V
DC current gain	G <sub>I</sub>	56	-	-	-	I <sub>O</sub> = -50mA, V <sub>O</sub> = -5V
Input resistance	R <sub>1</sub>	2.31	3.3	4.29	kΩ	-
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	2.4	3	3.7	-	-
Transition frequency	f <sub>T</sub>	-	200	-	MHz	V <sub>CE</sub> = -10V, I <sub>E</sub> = 5mA, f = 100MHz *

\* Transition frequency of the device.

# ROHM