

STRUCTURE Silicon Monolithic Integrated Circuit

TYPE **BD1020 HFV**

PRODUCT Analog temperature sensor

- FEATURES
- 1) High accuracy(TYP $\pm 1.0^{\circ}\text{C}$ @ $T_a=30^{\circ}\text{C}$, TYP $\pm 2.0^{\circ}\text{C}$ @ $T_a=-30\sim 100^{\circ}\text{C}$)
 - 2) Low supply current(TYP $4.0\ \mu\text{A}$)
 - 3) Micro package(TYP $1.60 \times 1.60 \times 0.60\text{mm}$)
 - 4) Low thermal resistance package(TYP $187^{\circ}\text{C}/\text{W}$)
 - 5) Temperature sensitivity $-8.2[\text{mV}/^{\circ}\text{C}]$

● ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$)

PARAMETERS	SYMBOL	LIMIT	UNIT
Power Supply Voltage	V_{DD}	$-0.3\sim 7.0$ *1	V
Output Voltage	V_{OUT}	$-0.3\sim V_{DD}+0.3$	V
Output Current	I_{OUT}	± 1	mA
Power Dissipation	P_d	536 *2	mW
Storage Temperature Range	T_{stg}	$-55\sim 150$	$^{\circ}\text{C}$

*1. Not to exceed P_d

*2. Reduced by 5.36mW for each increase in T_a of 1°C over 25°C
(mounted on $70\text{mm} \times 70\text{mm} \times 1.6\text{mm}$ Glass-epoxy PCB)

● Recommended Operating Condition




PARAMETERS	SYMBOL	Min.	Typ.	Max.	UNIT
Power Supply Voltage	V_{DD}	2.40	3.00	5.50	V
Operation Temperature	T_{opr}	-30	-	100	$^{\circ}\text{C}$

• Status of this document

The Japanese version of this document is the formal specification. A customer may use this translation version only for a reference to help reading the formal version. If there are any difference in translation version of this document, formal version takes priority.

Application example

- ROHM cannot provide adequate confirmation of patents.
- The product described in this specification is designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys). Should you intend to use this product with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.
- ROHM assumes no responsibility for use of any circuits described herein, conveys no license under any patent or other right, and makes no representations that the circuits are free from patent infringement.

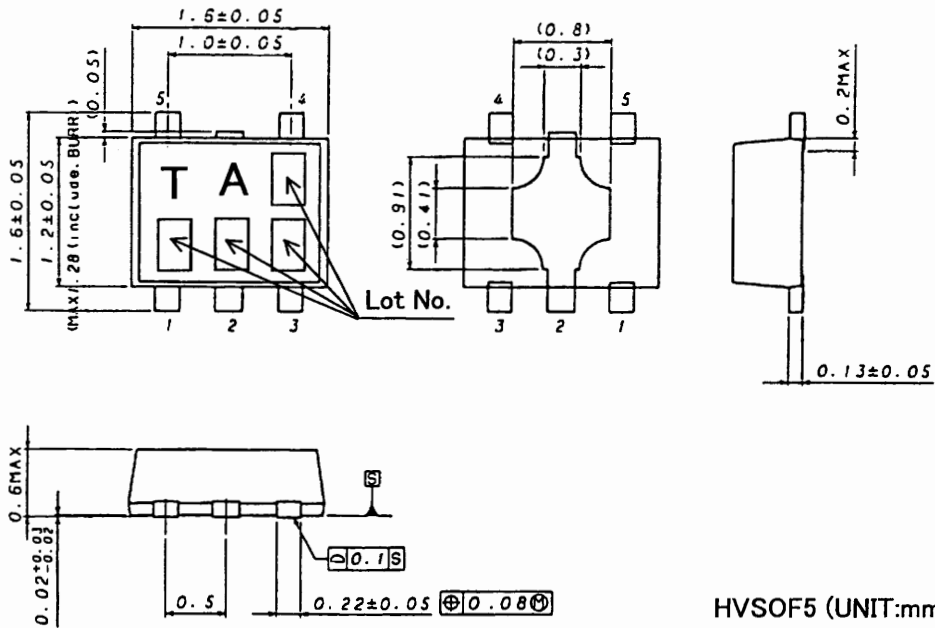
DESIGN	CHECK	APPROVAL	DATE: 5/Dec/2007	SPECIFICATION No. : TSZ02201-BD1020HFV-1-2
			REV. A	ROHM CO., LTD.

●ELECTRICAL CHARACTERISTICS, ACCURACY (Unless otherwise specified, $V_{DD}=3.0V$, $T_a=25^{\circ}C$)

PARAMETERS	SYMBOL	LIMIT			UNIT	CONDITIONS
		MIN	TYP	MAX		
Accuracy	T_{acc}	-	± 1.0	± 1.5	$^{\circ}C$	$T_a=30^{\circ}C$
		-	± 2.0	± 2.5		$T_a=100^{\circ}C$
		-	± 2.0	± 2.5		$T_a=-30^{\circ}C$
Temperature Sensitivity	V_{SE}	-8.4	-8.2	-8.0	mV/ $^{\circ}C$	
Supply Current	I_{DD}	-	4.0	7.0	μA	
Output Voltage	V_{OUT}	1.288	1.300	1.312	V	$T_a=30^{\circ}C$
Output Voltage Line Regulation	$\Delta V_{OUT} V_{DD}$	-	-	4	mV	$V_{DD}=2.4\sim 5.5V$
Output Voltage Load Regulation	$\Delta V_{OUT} R_L$	-	-	1	mV	$I_{OUT}:0\mu / 0.7\mu A, \text{Difference}$

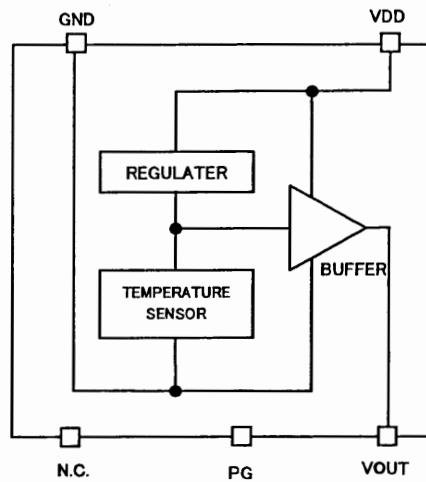
Radiation hardness is not designed.

● PACKAGE OUTLINES



● PIN DESCRIPTIONS

PIN No.	PIN NAME	FUNCTION	COMMENT
1	N.C.		Make it to OPEN .
2	PG	HEAT CONDUCTION	Connecting to Temperaturure Measurement Part.
3	VOUT	OUTPUT VOLTAGE for Reversely Proportional Temperature	
4	VDD	POWER SUPPLY	
5	GND	GROUND	



● CAUTIONS ON USE

1) Absolute Maximum Ratings

An excess in the absolute maximum ratings, such as supply voltage, temperature range of operating conditions, etc., can break down devices, thus making impossible to identify breaking mode such as a short circuit or an open circuit. If any special mode exceeding the absolute maximum ratings is assumed, consideration should be given to take physical safety measures including the use of fuses, etc.

2) GND voltage

Make setting of the potential of the GND terminal so that it will be maintained at the minimum in any operating state.

3) Pin short and mistake fitting

When mounting the IC on the PCB, pay attention to the orientation of the IC. If there is a placement mistake, the IC may be burned up.

4) Operation in strong electric field

Be noted that using ICs in the strong electric field can malfunction them.

5) Mutual impedance

Use short and wide wiring tracks for the power supply and ground to keep the mutual impedance as small as possible. Use a capacitor to keep ripple to a minimum.

6) Please connect it with the temperature measurement part (GND line usually) to make thermal conductivity with the mount board side the best though the PG pin (Pin NO.2) is hindered and doesn't exist about OPEN even if it connects it with GND.