

STRUCTURE Silicon Monolithic Integrated Circuit

TYPE **BDE1250G**

PRODUCT Thermostat Temperature Sensor

- FEATURES
- 1) Highly accurate thermostat ($\pm 4.0^{\circ}\text{C}$)
 - 2) Thermostat sensing temperature 125°C
 - 3) Open drain output
 - 4) Hysteresis temperature (TYP. 10°C)
 - 5) Low supply current (TYP. $16.0\mu\text{A}$)
 - 6) Small package (TYP. $2.90\text{mm} \times 2.80\text{mm} \times 1.25\text{mm}$)

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

PARAMETERS	SYMBOL	LIMIT	UNIT
Power Supply Voltage	V_{DD}	-0.3 to 7.0^{*1}	V
Input Voltage (CTRL)	V_{IN}	-0.3 to $V_{DD}+0.3$	V
Input Current (CTRL)	I_{IN}	-1.0, +0.1	mA
OS terminal Voltage	V_{OS}	-0.3 to 7.0	V
OS terminal Current	I_{OS}	5.0	mA
Power dissipation	P_d	540^{*2}	mW
Storage Temperature Range	T_{stg}	-55 to 150	$^{\circ}\text{C}$

*1. Not to exceed P_d

*2. Reduced by 5.40mW 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

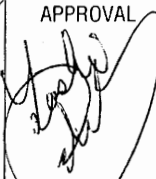
PARAMETERS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Power Supply Voltage	VDD	2.9	3.0	5.5	V
Operating Temperature Range	T_{opr}	-30	-	130	$^{\circ}\text{C}$

· Status of this document

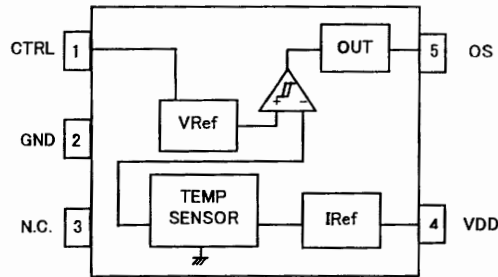
The Japanese version of this document is the formal specification. A customer may use this translation version only for a reference to help reading the formal version. If there are any difference in translation version of this document, formal version takes priority.

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 <i>T. Yamagawa</i>	CHECK	APPROVAL 	DATE : Apr/7/2008	SPECIFICATION No. : TSZ02201-BDE1250G-1-2
			REV. A	ROHM CO., LTD.

● BLOCK DIAGRAM



● PIN DESCRIPTION

PIN NO.	PIN NAME	FUNCTION	COMMENT
1	CTRL	Sensing temperature setting	Refer to page 3/4 (TEMPERATURE / OUTPUT FORMAT TABLE) for the sensing temperature setting.
2	GND	GROUND	
3	N.C.	N.C.	
4	VDD	POWER SUPPLY	
5	OS	Digital thermostat output	Open Drain type (Active L) Use the pull-up resistor more than 10kΩ.

● TEMPERATURE ACCURACY (unless otherwise specified, $V_{DD} = 3.0V$)

PARAMETER	SYMBOL	LIMIT			UNIT	CONDITIONS
		MIN.	TYP.	MAX.		
Thermostat						
Sensing Temperature Accuracy	T_{acc}	-	0	± 4.0	$^{\circ}C$	$T_a = 125^{\circ}C$
Sensing Temperature Hysteresis	T_{hys}	7.5	10.0	12.5	$^{\circ}C$	

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

PARAMETER	SYMBOL	LIMIT			UNIT	CONDITIONS
		MIN.	TYP.	MAX.		
Supply Current	I_{DD}	-	16.0	20.0	μA	CTRL = L
OS Output Open Drain						
OS Leakage Current	I_L	-	-	1.0	μA	OS : 5.0V
OS Output Voltage	V_{OL}	-	-	0.4	V	$I_{inos} = 1.2mA$
CTRL						
Input L Voltage	V_{IL}	GND	-	0.6	V	
Input H Voltage	V_{IH}	2.4	-	V_{DD}	V	

Radiation hardness is not designed.

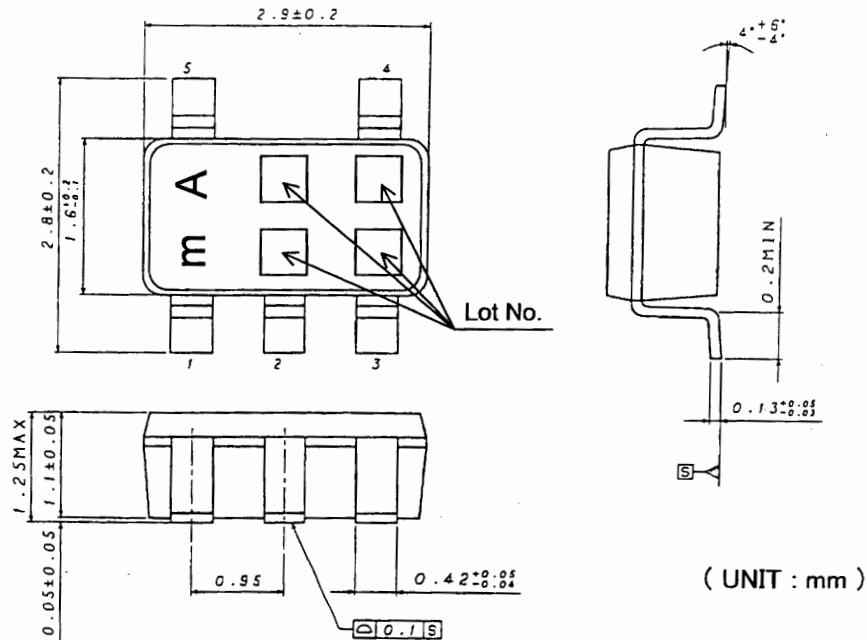
● BDE1250G TEMPERATURE / OUTPUT FORMAT TABLE

CTRL INPUT L : Low, O : Open, H : High

TYPE	SENSING TEMPERATURE (°C)			OS Output FORMAT		MARKING
	CTRL					
	L	H	O			
BDE1250G	125	-*3	-*3	Open Drain	Active L	mA

*3. Please use CTRL = "L" only. CTRL="H" and "O" are used in manufacturing test mode.

● PACKAGE OUTLINES (SSOP5)



● 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.