

STRUCTURE Silicon Monolithic Integrated Circuit

TYPE BU52015GUL

PRODUCT SERIES Hall effect Switch

FUNCTION

- 1) High sensitivity ( $B_{op}$  TYP 3.0mT)
- 2) Low supply current(TYP 5  $\mu$  A)
- 3) Small package(TYP 1.10×1.10×0.50mm)
- 4) CMOS output type

#### ●ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETERS	SYMBOL	LIMIT	UNIT
Power Supply Voltage	$V_{DD}$	-0.1～+4.5	V
Output Current	$I_{OUT}$	$\pm 0.5$	mA
Operating Temperature Range	$T_{opr}$	-40～+85	°C
Storage Temperature Range	$T_{stg}$	-40～+125	°C

#### ●OPERATING CONDITIONS (Ta=-40～+85°C)

PARAMETERS	SYMBOL	MIN	TYP	MAX	UNIT
Power Supply Voltage	$V_{DD}$	1.65	1.80	3.30	V

Radiation hardness is not designed.

#### • 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.

●MAGNETIC, ELECTRICAL CHARACTERISTICS (Unless otherwise specified,  $V_{DD}=1.80V$ ,  $T_a=25^{\circ}C$ )

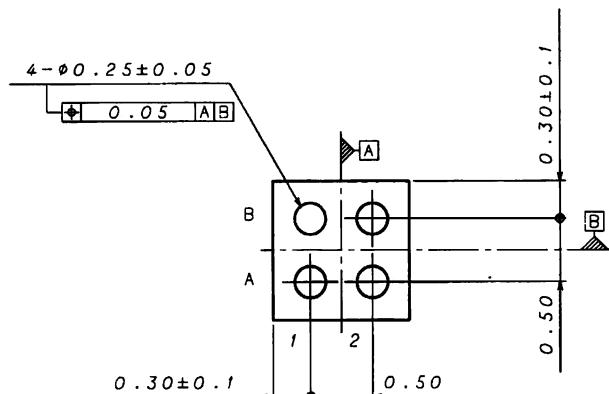
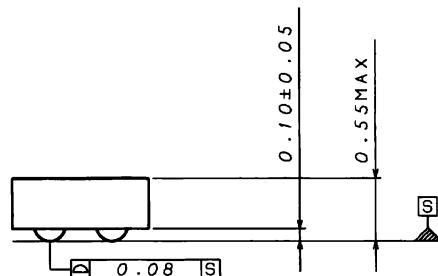
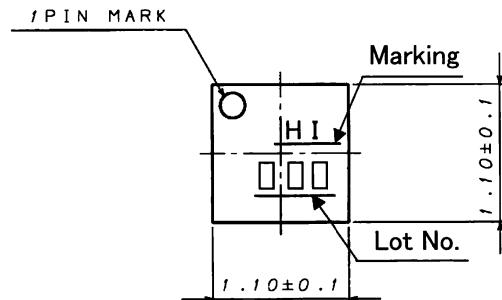
PARAMETERS	SYMBOL	LIMIT			UNIT	CONDITIONS
		MIN	TYP	MAX		
Operate Point	$B_{opS}$	-	3.0	5.0	mT	
	$B_{opN}$	-5.0	-3.0	-		
Release Point	$B_{rpS}$	0.6	2.1	-	mT	
	$B_{rpN}$	-	-2.1	-0.6		
Period	$T_p$	-	50	100	ms	
Output High Voltage	$V_{OH}$	$V_{DD}$ -0.2	-	-	V	OUT1: $B_{rpN} < B < B_{rpS}$ OUT2: $B < B_{opN}$ , $B_{opS} < B$ $I_{OUT} = -0.5mA$ $\times$
Output Low Voltage	$V_{OL}$	-	-	0.2	V	OUT1: $B < B_{opN}$ , $B_{opS} < B$ OUT2: $B_{rpN} < B < B_{rpS}$ $I_{OUT} = +0.5mA$ $\times$
Supply Current 1	$I_{DD1(AVG)}$	-	5	8	$\mu A$	$V_{DD}=1.8V$ , Average
Supply Current 2	$I_{DD2(AVG)}$	-	8	12	$\mu A$	$V_{DD}=2.7V$ , Average

 $\times$ B=Magnetic Flux Density

1mT=10Gauss

After applying power supply, it takes one cycle of period ( $T_p$ ) to become definite output.

## ●PACKAGE OUTLINES

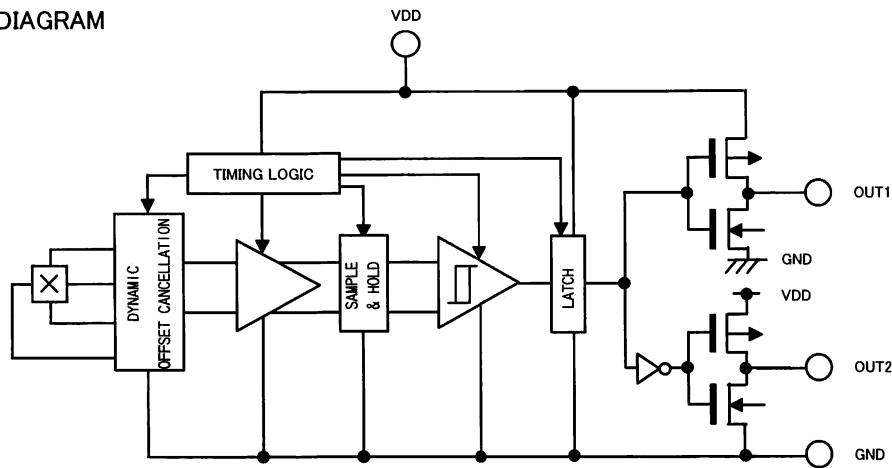


VCSP50L1 (UNIT:mm)

## ●PIN No.-PIN NAME

PIN No.	PIN NAME	FUNCTION	COMMENT
A1	OUT1	Output pin (Active Low)	
A2	OUT2	Output pin (Active High)	
B1	GND	GROUND	
B2	VDD	Power Supply Voltage	

## ● BLOCK DIAGRAM



## ● 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) Thermal design

Perform thermal design in which there are adequate margins by taking into account the permissible dissipation (Pd) in actual states of use.

## 4) 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.

## 5) Operation in strong electric field

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

## 6) 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.

## 7) Ground wiring pattern

If small-signal GND and large-current GND are provided, It will be recommended to separate the large-current GND pattern from the small-signal GND pattern and establish a single ground at the reference point of the set PCB so that resistance to the wiring pattern and voltage fluctuations due to a large current will cause no fluctuations in voltages of the small-signal GND. Pay attention not to cause fluctuations in the GND wiring pattern of external parts as well.

## 8) Actions under strong light

A strong light like a halogen lamp may be caused malfunction. In our testing, fluorescence light and white LED causes quite little effects for the IC. But infrared light that causes strong effects for the IC, the IC should be shielded from the light like a sunray or halogen lamp.

## Appendix

---

### Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or otherwise dispose of the same, no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document are no antiradiation design.

The products listed in this document are 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 these products 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.

It is our top priority to supply products with the utmost quality and reliability. However, there is always a chance of failure due to unexpected factors. Therefore, please take into account the derating characteristics and allow for sufficient safety features, such as extra margin, anti-flammability, and fail-safe measures when designing in order to prevent possible accidents that may result in bodily harm or fire caused by component failure. ROHM cannot be held responsible for any damages arising from the use of the products under conditions out of the range of the specifications or due to non-compliance with the NOTES specified in this catalog.

Thank you for your accessing to ROHM product informations.

More detail product informations and catalogs are available, please contact your nearest sales office.

**ROHM Customer Support System**

[THE AMERICAS / EUPOPE / ASIA / JAPAN](#)

[www.rohm.com](http://www.rohm.com)

Contact us : [webmaster@rohm.co.jp](mailto:webmaster@rohm.co.jp)