STRUCTURE Silicon Monolithic Integrated Circuit

TYPE **BU52040HFV**

PRODUCT Bipolar latch type Hall effect IC

FEATURES
1) Bipolar hall effect latch
2) High sensitivity (B_{op} TYP 3.0mT, B_{rp} TYP -3.0mT)
3) Small package(TYP 1.60×1.60×0.60mm)
4) CMOS output type

●ABSOLUTE MAXIMUM RATINGS (Ta=25℃)

PARAMETERS	SYMBOL	LIMIT	UNIT
Power Supply Voltage	V_{DD}	-0.1～+4.5 ※1	V
Output Current	I_{OUT}	±0.5	mA
Power dissipation	Pd	536 ※2	mW
Operating Temperature Range	T_{opr}	-40～+85	℃
Storage Temperature Range	T_{stg}	-40～+125	℃

※1. Not to exceed Pd
※2. Reduced by 5.36mW for each increase in Ta of 1℃ over 25℃
(mounted on 70mm × 70mm × 1.6mm Glass-epoxy PCB)

●OPERATING CONDITIONS (Ta=-40～+85℃)

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

Radiation hardiness is not designed.

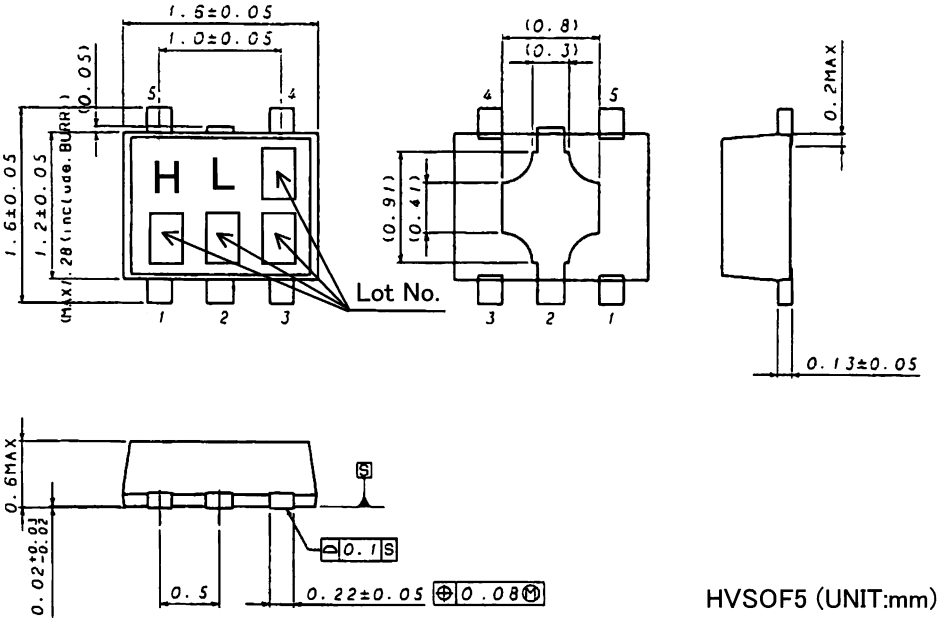
・Status of this document
The Japanese version of this document is the formal specification. A customer may use this translation version only for a reference to help reading the formal version. If there are any difference in translation version of this document, formal version takes priority.

●MAGNETIC, ELECTRICAL CHARACTERISTICS (Unless otherwise specified, V_{DD}=1.80V, Ta=25°C)

PARAMETERS	SYMBOL	LIMIT			UNIT	CONDITIONS
		MIN	TYP	MAX		
Operate Point	B_{op}	1.0	3.0	5.0	mT	
Release Point	B_{rp}	-5.0	-3.0	-1.0	mT	
Period	T_p	-	500	1200	μs	
Output High Voltage	V_{OH}	V_{DD} -0.2	-	-	V	B<B_{rp} ※3 I_{OUT}=-0.5mA
Output Low Voltage	V_{OL}	-	-	0.2	V	B_{op}<B ※3 I_{OUT}=+0.5mA
Supply Current1	$I_{DD1(AVG)}$	-	200	300	μA	V_{DD}=1.8V,Average
Supply Current2	$I_{DD2(AVG)}$	-	300	450	μA	V_{DD}=2.7V,Average

※3. B=Magnetic Flux Density
1mT=10Gauss
Positive ("+") polarity flux is defined as the magnetic flux from south pole which is direct toward to the branded face of the sensor.
After applying power supply, it takes one cycle of period (T_p) to become definite output.

●PACKAGE OUTLINES

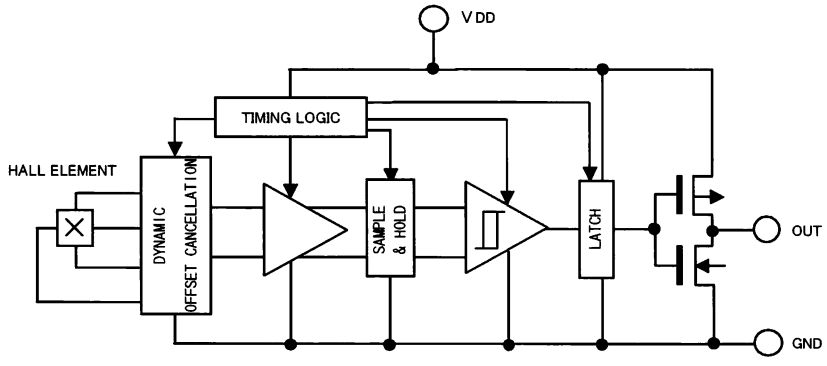


HVSOF5 (UNIT:mm)

●PIN No.･PIN NAME

PIN No.	PIN NAME	FUNCTION	COMMENT
1	N.C.		OPEN or Short to GND.
2	GND	GROUND	
3	N.C.		OPEN or Short to GND.
4	VDD	POWER SUPPLY	
5	OUT	OUTPUT	

●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) Power source design

Since the IC performs intermittent operation, it has peak current when it' s ON. Please taking that into account and under examine adequate evaluations when designing the power source.

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