

DEVICE NUMBER : DHI-092-007 REV : 1.0
ECN : _____ PAGE : 1/8

Infrared Remote-control Receiver Module

MODEL NO : _____ HI402 _____

■ Features :

- 4V to 20V operation.
- No need for reverse voltage.
- High reliability.
- Small size.
- Output compatible with all digital logic families.

■ Description :

- The HI402 is a magnetic sensor used in electric commutation of DC brushless motor applications mostly. The HI402 has a latching behavior and requires a magnetic north and south pole for correct function. The output does not change if the magnetic field is removed. The sensor is designed for industrial and automotive applications and operates at as low as 4 volts.

■ Applications :

- Brushless DC motor.
- Rotation detection.
- Displacement detection.
- Speed sensing.

PART	CHIP	COLOR
	MATERIAL	
HALL IC	SI	BLACK



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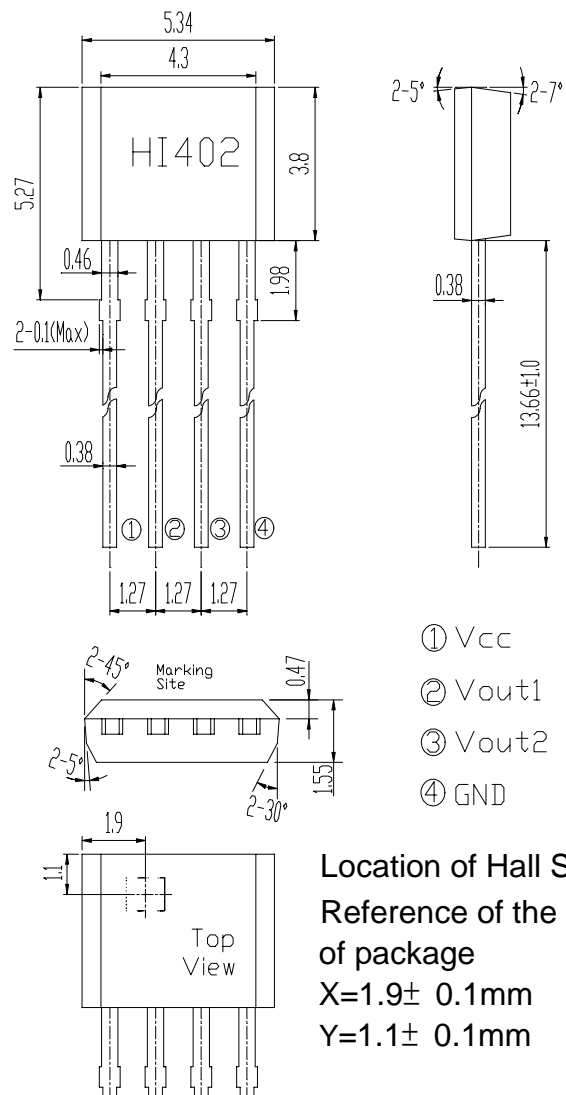
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NOTES :

1. This drawing measure is a standard value.
All dimensions are in millimeter.
2. In case of designation is toleranc \pm 0.3 mm.
3. Lead spacing is measured where the leads emerge from the package.
4. Protruded resin under flange 1.0mm Max.
5. Lens color: Black.
6. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
7. These specification sheets include materials protected under copyright of EVERLIGHT corporation. Please don't reproduce or cause anyone to reproduce them without EVERLIGHT consent.
8. When using this produce, please observe the absolute maximum ratings and the instructions for use outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.

Package Dimension :





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■ Absolute Maximum Ratings at $T_A = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit	Notice
Supply Voltage	V_{CC}	20	V	
Supply Current	I_{CC}	25	mA	
Output Current	I_{OUT}	Continuous 300 Hold 400 Peak(Start up) 700	mA	
Maximum Power Dissipation	P_D	500	mW	
Operating Ambient Temperature	T_A	-20 ~ +85	$^\circ\text{C}$	
Storage Temperature	T_{STG}	-55 ~ +120	$^\circ\text{C}$	
Soldering Temperature	T_{SOL}	260	$^\circ\text{C}$	1/16 inches from body for 5 seconds

■ Electronic Characteristics :

 $T_A = 25^\circ\text{C}$

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Supply Voltage	V_{CC}	4	---	20	V	Operating
Output Saturation Voltage	$V_{CE(SAT)}$	---	250	500	mV	$V_{CC}=14\text{V}$ $I_{OUT}=400\text{mA}$ $B > B_{OP}$
Supply Current	I_{CC}	---	18	25	mA	$V_{CC}=20\text{V}$ Output Open
Output Leakage Current	I_{LEAK}	---	---	10	μA	$V_{CE}=14\text{V}$ $V_{CC}=14\text{V}$
Output Rise Time	t_r	---	3.0	10	μS	$V_{CC}=14\text{V}$, $R_L=820\Omega$, $C_L=20\text{pF}$
Output Fall Time	t_f	---	0.3	1.5	μS	
Switch Time Differential	Δt	---	---	10	μS	

■ Magnetic Specification :

 $T_A = 25^\circ\text{C}$ Condition: $V_{CC}=20\text{V}$, $B_s = \text{MAX}[\text{ABS}(B_{OP}), \text{ABS}(B_{RP})]$

Unit: Gauss

Bin Number	Bin1	Bin2	Bin3	Bin4
B_s	<70	<100	<140	<200



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Typical Characteristics Curves:

Fig. 1 Supply Current V.S. Supply Voltage

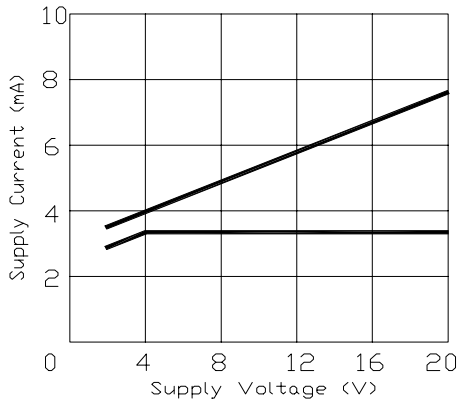


Fig. 2 Output Low Voltage V.S. Supply Voltage

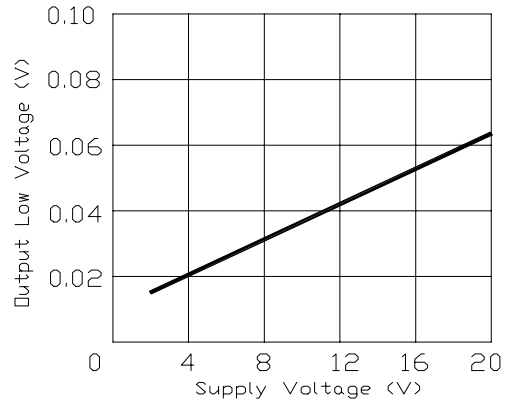


Fig. 3 Switch Points (Bop,Brp) V.S. Supply Voltage

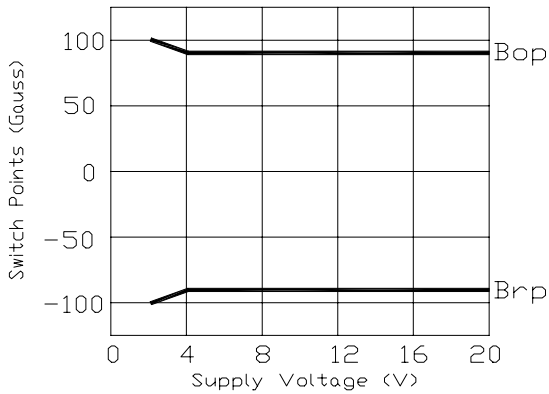


Fig. 4 Switch Points V.S. Ambient Temperature

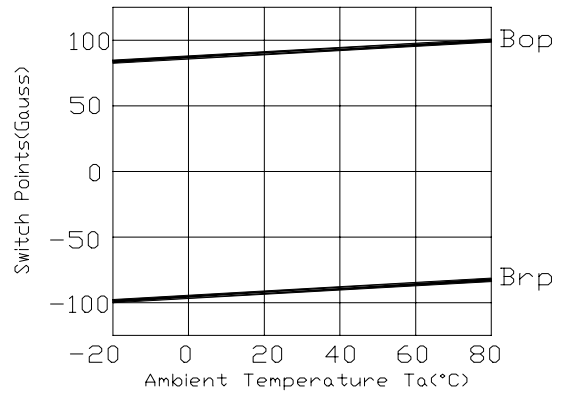


Fig. 5 Supply Current V.S. Ambient Temperature

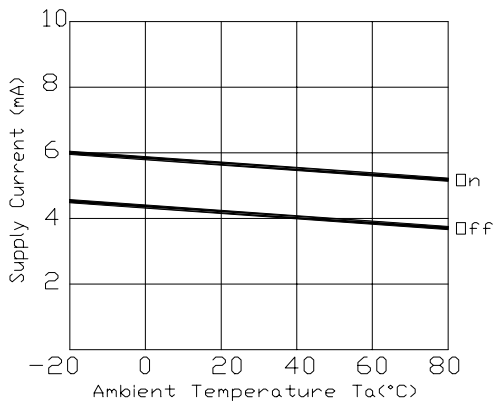
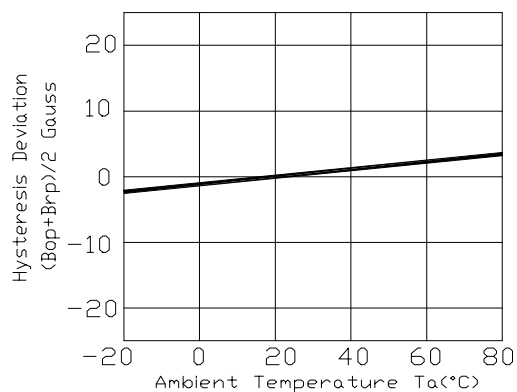


Fig. 6 Hysteresis Deviation V.S. Ambient Temperature





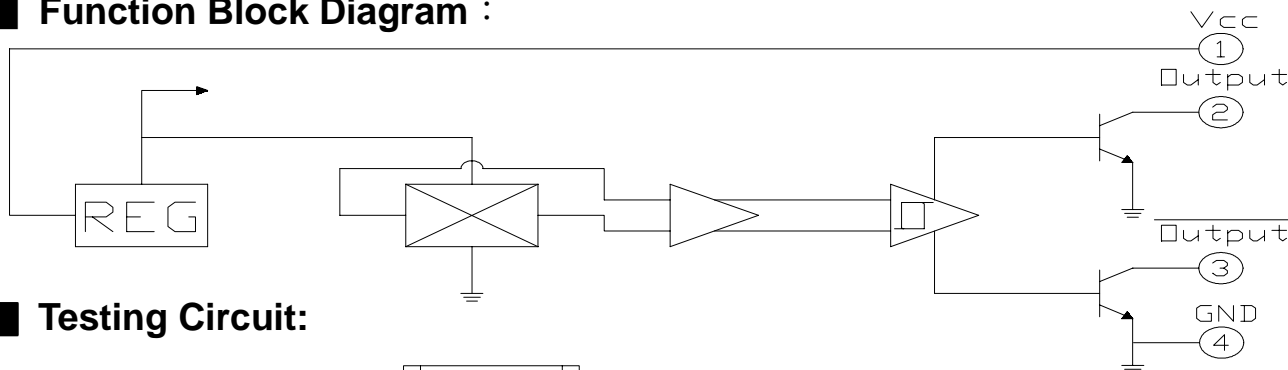
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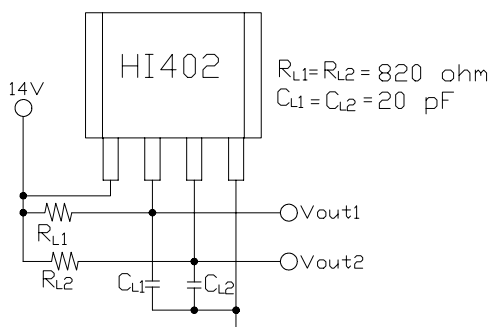
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Function Block Diagram :



Testing Circuit:



Reliability:

The reliability of products shall be satisfied with items listed below.

Confidence level : 90% ; LTPD : 10%

Test Items	Test Conditions	Failure Judgement Criteria	Samples(n)
			Defective(c)
Operation life	$V_{CC}=12V, T_a=25^{\circ}C$ 1000hrs		n=22 , c=0
Temperature cycle	1 cycle $-55^{\circ}C$ to $+85^{\circ}C$ (30min) (30min) 50 cycle test	$ Bop \leq \pm 20Gauss$ $ Brp \leq \pm 20Gauss$ $0.8 \cdot L < ICC < 1.2 \cdot U$	n=22 , c=0
Thermal shock	$-10^{\circ}C$ to $+100^{\circ}C$ (5min) (10sec) (5min) 50 cycle test	$VSAT < 1.5 \cdot U$ $I_{LEAK} < 1.5 \cdot U$	n=22 , c=0
High temperature storage	Temp : $+150^{\circ}C$ 1000hrs	L : Lower Specification Limit	n=22 , c=0
Low temperature storage	Temp : $-55^{\circ}C$ 1000hrs		n=22 , c=0
High temperature High humidity	TA : $85^{\circ}C$ RH : 85% 1000hrs	U : Upper Specification Limit	n=22 , c=0
Solder heat	Temp : $260 \pm 10^{\circ}C$ sec 4mm Form the bottom of the package		n=22 , c=0

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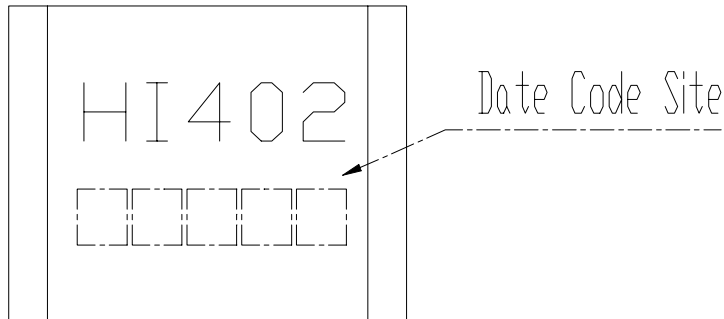
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■ Marking Color(Top View):

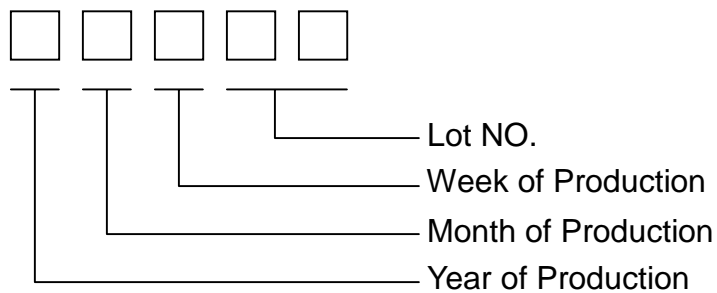
Color	Level
Red	Bin1
Blue	Bin2
Yellow	Bin3
Silver	Bin4

■ Indication:

1. Marking:



2. Date Code Explanation:





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Year of Production:

Symbol	Year
0	2000
1	2001
2	2002
3	2003
4	2004
5	2005
6	2006
7	2007
8	2008
9	2009

Month of Production:

Symbol	Month
1	1
2	2
3	3
:	:
:	:
:	:
9	9
A	10
B	11
C	12

Week of Production:

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Symbol	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Week	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
Symbol	W	X	Y	Z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r
Week	45	46	47	48	49	50	51	52	53													
Symbol	s	t	u	v	w	x	y	z	1													

Lot NO.:

Symbol	Year
00	The first wafer
01	The second wafer
02	The third wafer
:	:
:	:
97	The 98 th wafer
98	The 99 th wafer
99	The 100 th wafer

Symbol	Month
AA	The 101 th wafer
:	:
AZ	The 126 th wafer

BA	The 127 th wafer
:	:
BZ	The 152 th wafer



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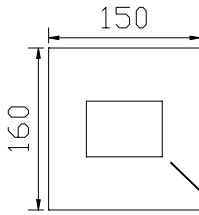
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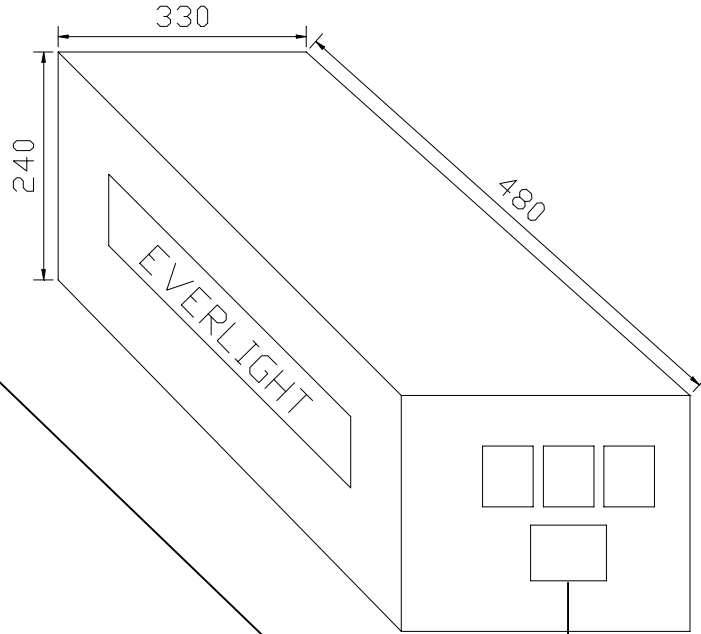
■ Packing Specifications:

(UNIT : mm)

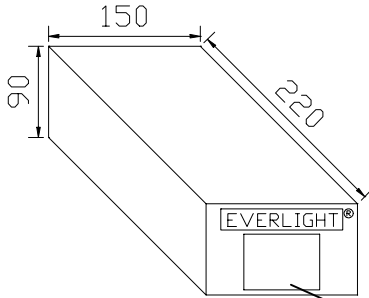
1.Bag:



3.Carton:



2.Box:



■ Packing Quantity Specification:

- 1.1000Pcs/1Bag,10Bags/1Box
- 2.10Boxes/1Carton

■ Label Specification:

- CPN : Customer's Production Number
- P/N : Production Number
- QTY : Packing Quantity
- CAT : Ranks
- HUE : Reference
- REF : Reference
- LOT NO : Lot Number
- MADE IN TAIWAN : Production Place

Label

EVERLIGHT

CPN:

P/N:



HI402

QTY:



CAT:

HUE:

REF:

LOT NO:

MADE IN TAIWAN