



EVERLIGHT ELECTRONICS CO., LTD.

DEVICE NUMBER : DHI-092-008 REV : 1.0
 ECN : _____ PAGE : 1/5

Infrared Remote-control Receiver Module

MODEL NO : HI301

■ Features :

- 3V to 20V operation.
- No need for reverse voltage.
- High reliability.
- Small size.
- Output compatible with all digital logic families.

■ Description :

- The HI301/D1 is a magnetic sensor used in electric commutation of DC brushless motor applications mostly. The HI301/D1 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 3 volts.

■ Applications :

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

PART	CHIP	COLOR
	MATERIAL	
HALL IC	SI	BLACK



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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}	8	mA	
Output Current	I_{OUT}	20	mA	
Maximum Power Dissipation	P_D	100	mW	
Operating Ambient Temperature	T_A	-20 ~ +85	$^\circ\text{C}$	
Storage Temperature	T_{STG}	-40 ~ +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}	3	---	20	V	Operating
Output Saturation Voltage	$V_{CE(SAT)}$	---	---	200	mV	$I_{OUT}=5\text{mA}$ $B > B_{OP}$
Supply Current	I_{CC}	---	3.5	6	mA	Operating
Output Leakage Current	I_{LEAK}	---	0.5	2	μA	$V_{OUT}=20\text{V}$ $B > B_{RP}$
Output Rise Time	t_r	---	0.4	---	μS	$V_{CC}=12\text{V}$, $R_L=4.7\text{K}\Omega$, $C_L=20\text{pF}$
Output Fall Time	t_f	---	0.4	---	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

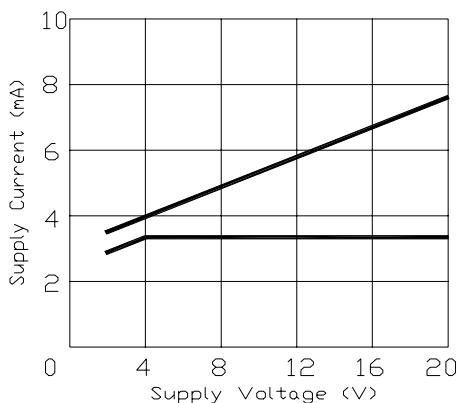


Fig. 2 Output Low Voltage V.S. Supply Voltage

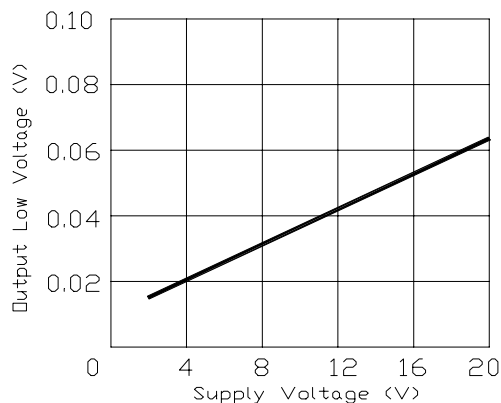


Fig. 3 Switch Points (Bop,Brp) V.S. Supply Voltage

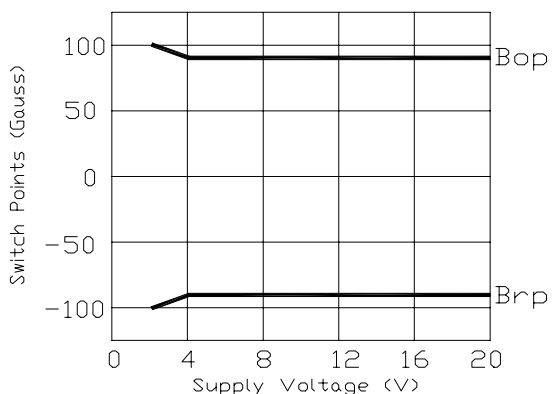


Fig. 4 Switch Points V.S. Ambient Temperature

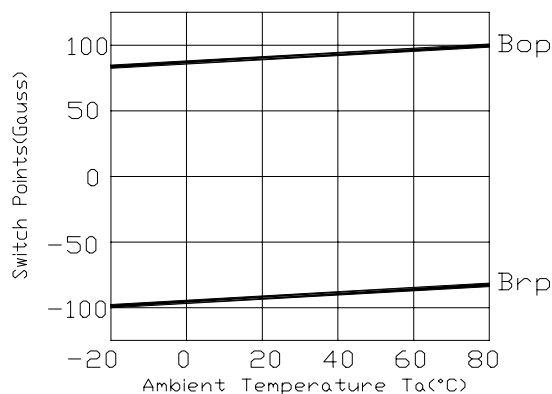


Fig. 5 Supply Current V.S. Ambient Temperature

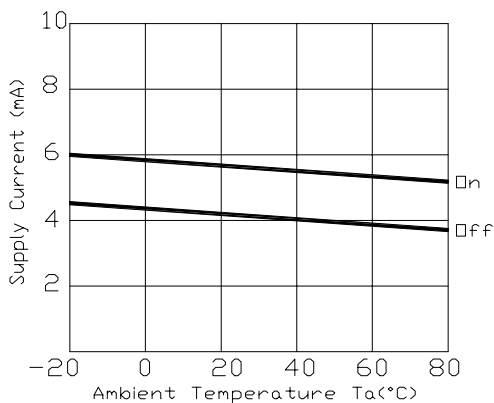
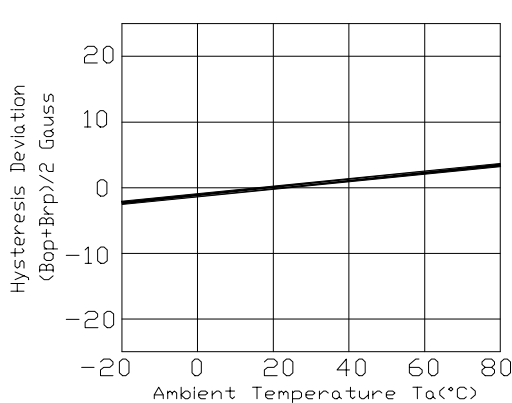


Fig. 6 Hysteresis Deviation V.S. Ambient Temperature





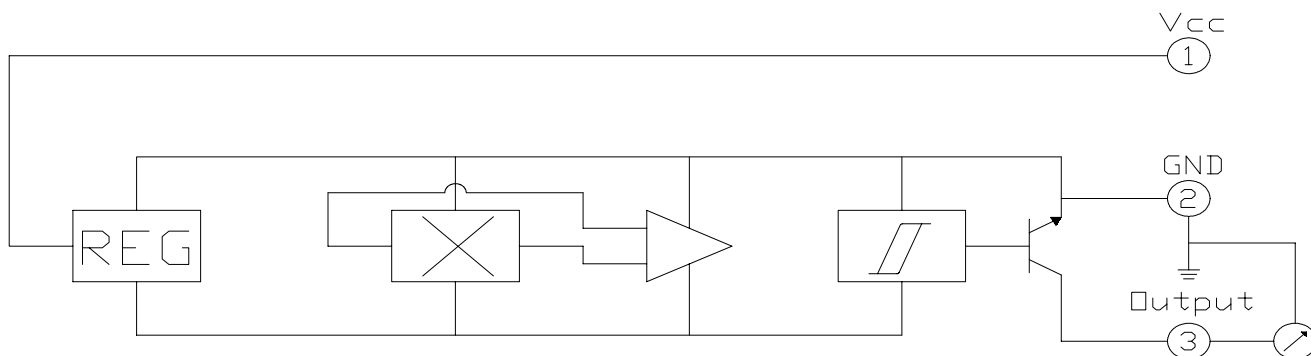
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■ Function Block Diagram :



■ 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	Vcc=12V, Ta=25°C 1000hrs	Bop <± 25Gauss Brp <± 25Gauss 0.8*L < ICC < 1.2*U VSAT < 1.5*U ILEAK < 1.5*U L : Lower Specification Limit U : Upper Specification Limit	n=22 , c=0
Temperature cycle	1 cycle -55°C to +85°C (30min) (30min) 50 cycle test		n=22 , c=0
Thermal shock	-10°C to +100°C (5min) (10sec) (5min) 50 cycle test		n=22 , c=0
High temperature storage	Temp : +150°C 1000hrs		n=22 , c=0
Low temperature storage	Temp : -55°C 1000hrs		n=22 , c=0
High temperature High humidity	TA : 85°C RH : 85% 1000hrs		n=22 , c=0
Solder heat	Temp : 260 ± 10°C sec 4mm Form the bottom of the package		n=22 , c=0