

High Sensitivity Hall Effect Latch CYD9611

Applications

- DC brushless motors
- CAM shaft sensors
- Magnetic Encoders
- Rotating Speed Measurement
- Home applications
- Home safety etc.

Features

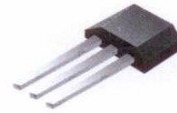
- 3.8V to 24V operation voltage
- High sensitivity
- Built-in dynamic offset cancellation
- Small size
- High balance and low thermal drift of magnetic sensing

Order Information

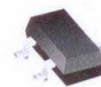
- CYD9611-PA-T
Package (PA): UA or LH or LT
Temperature (T): A or K

Package Type

TO92-3L (UA)



SOT23-3L (LH)



SOT89-3L (LT)



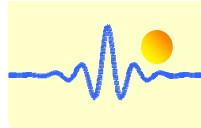
Specifications

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$)

Parameter	Symbol	Conditions	Rating	Unit
Maximum supply voltage	V_{DDMAX}		28	V
Allowable power dissipation	P_D	TO-92 (UA)	550*	mW
		SOT-23-3L(LH)	300*	mW
		SOT-89-3L(LT)	500*	mW
Operating temperature	T_A	Suffix 'A'	-40~+150	$^{\circ}\text{C}$
		Suffix 'K'	-40~+125	$^{\circ}\text{C}$
Storage temperature	T_S		-55~+150	$^{\circ}\text{C}$
Maximum output current	I_{OMAX}		50	mA

Electrical Characteristics ($T_A=25^{\circ}\text{C}$, $V_{DD}=12\text{VDC}$)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Supply voltage	V_{DD}		3.8		24	V
Output sink voltage	$V_{OL(ON)}$	@ $I_{OUT} = 20\text{mA}$		130	280	mV
Output leakage current	I_{OH}	Output switch off			0.1	μA
Output breakdown voltage	V_{BV}			28	30	V
Supply current	I_{DD}	Output open		4	6	mA



Magnetic Characteristics ($T_A=25^{\circ}\text{C}$, $V_{DD}=12\text{VDC}$)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Operating point	B_{OP}		10	26	45	G
Release point	B_{RP}		-45	-26	-10	G
Hysteresis	B_{HYS}		45	52	70	G

Magnetic Characteristics ($T_A=-40^{\circ}\text{C}\sim+150^{\circ}\text{C}$, $V_{DD}=12\text{VDC}$)

Operating point	B_{OP}		9		50	G
Release point	B_{RP}		-50		-9	G
Hysteresis	B_{HYS}		35		72	G

General Specifications

The CYD9611 is designed for magnetic actuating using a bipolar magnetic field. The built-in dynamic offset cancellation of pre-amplifier stage achieves optimal symmetrical magnetic sensing. This Hall Effect IC is suitable for DC brushless fan applications. The supply voltage range is from 3.8V to 24V and the maximum output current is 50mA. This Hall Effect switch IC integrates the sensor, pre-amplifier with dynamic offset cancellation and hysteresis comparator in single chip. The architecture block diagram is shown in Fig. 1.

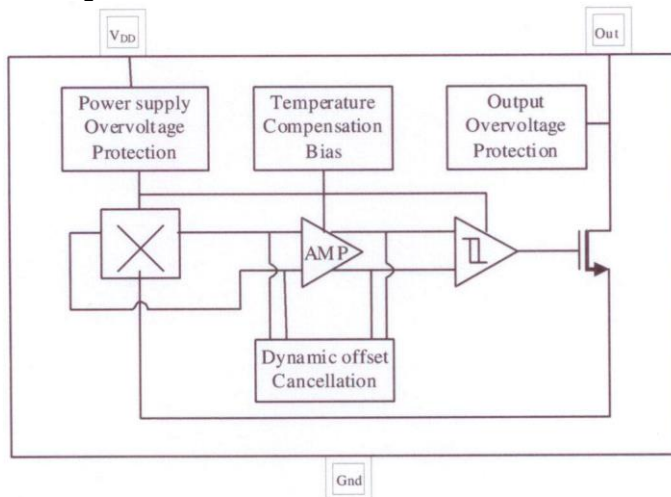
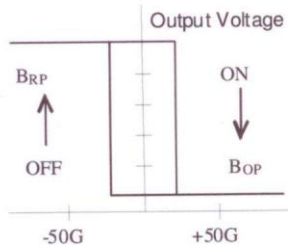
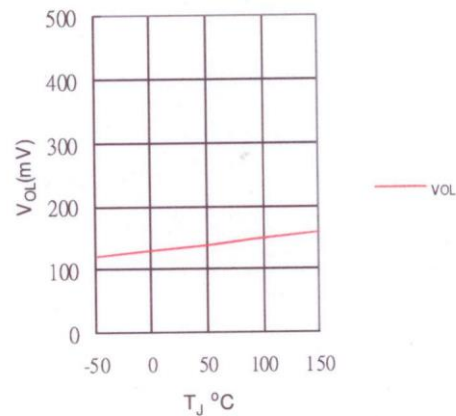


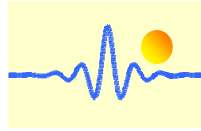
Fig. 1 Functional diagram

Magnetic Flux Density in

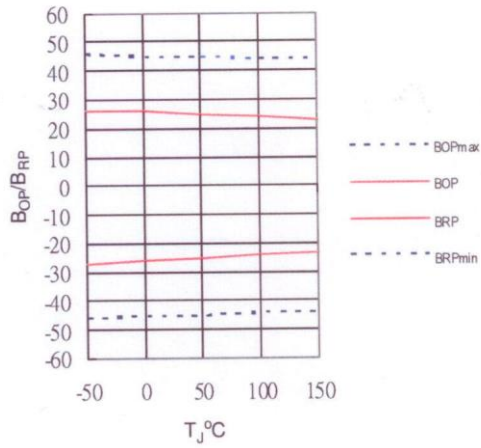


Output sink voltage versus temperature

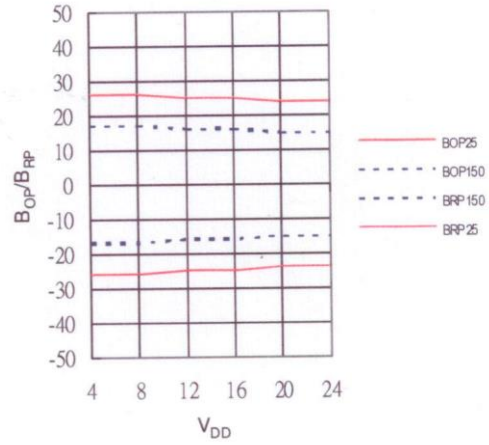




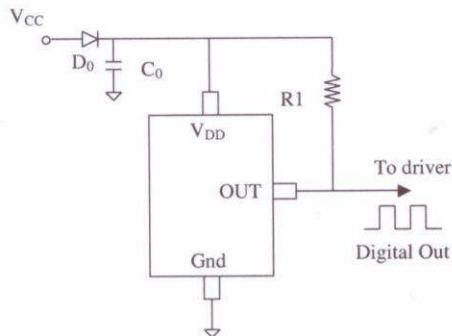
B_{OP}, B_{RP} versus temperature



B_{OP}, B_{RP} versus supply voltage



Application Circuit

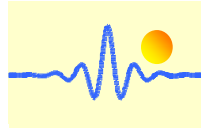


NOTE:

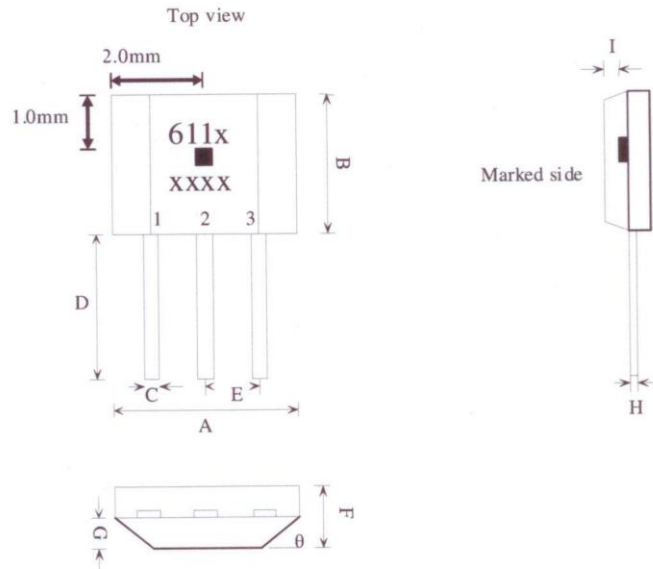
D0: general diode

C0: decoupling capacitor 1 μ F (recommended)

R1: 1k~10k Ω



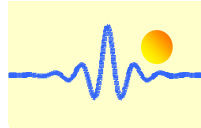
Package Outline
TO-92(UA)



Marking:
Part Number : 611 Temperature code : x
Date Code : xx(Year) xx(Week)

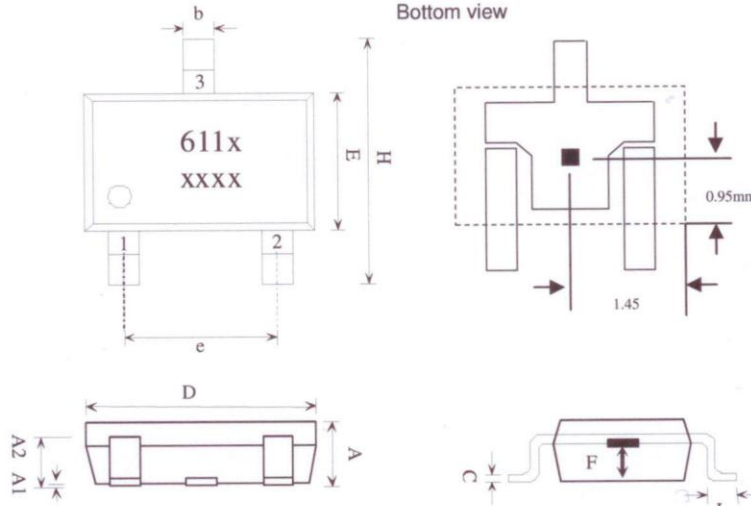
1. VDD/DC power supply
2. GND/DC ground
3. OUT/output pin

SYMBOLS	DIMENSIONS IN MILLIMETERS(mm)		
	MIN	NOM	MAX
A	3.80	4.00	4.20
B	2.90	3.10	3.30
C	0.38	0.45	0.52
D	15.10	15.30	15.50
E	1.24	1.27	1.30
F	1.45	1.50	1.55
G	0.68	0.73	0.78
H	0.36	0.43	0.50
I	0.41	0.43	0.45
θ		45°	



Package Outline
SOT-23(LH)

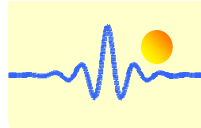
Sensor Location



Marking:
 Part Number : 611 Temperature code : x
 Date Code : xx(Year) xx(Week)

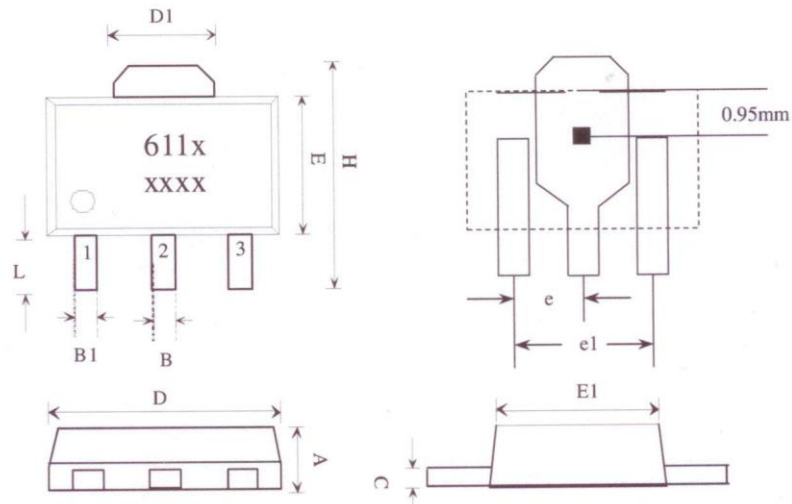
1. VDD/DC power supply
2. OUT/output pin
3. GND/DC ground

SYMBOLS	DIMENSIONS IN MILLIMETERS(mm)		
	MIN	NOM	MAX
A	1.00	1.10	1.30
A1	0.00	-	0.10
A2	0.70	0.80	0.90
b	0.35	0.40	0.50
C	0.10	0.15	0.25
D	2.70	2.90	3.10
E	1.40	1.80	2.00
F	0.35	0.50	0.65
H	2.60	2.8	3.00
e	1.7	1.9	2.1
L	0.20	-	-



Package Outline
SOT-89(LT)

Sensor Location



Marking:
Part Number : 611 Temperature code : x
Date Code : xx(Year) xx(Week)

1. VDD/DC power supply
2. GND/DC ground
3. OUT/output pin

SYMBOLS	DIMENSIONS IN MILLIMETERS(mm)		
	MIN	NOM	MAX
A	1.40	1.50	1.60
B	0.44	0.50	0.56
B1	0.36	0.42	0.48
C	0.35	0.40	0.44
D	4.40	4.50	4.60
D1	1.52	1.67	1.83
E	2.30	2.45	2.60
E1	2.13	2.21	2.29
e	-	1.50	-
e1	-	3.00	-
H	3.94	4.10	4.25
L	0.89	1.05	1.20