PROLIFIC TECHNOLOGY INC.

PT3612
Hi-sensitivity Hall-effect Latch

Applications

- DC brushless motors
- CAM shaft sensors
- Rotating speed measurement
- Magnetic encoders
- Automotive systems
- Home appliances
- Home safety

Features

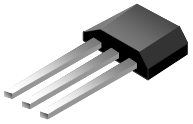
- 3.8V to 24V wide operation voltage
- High sensitivity
- Built-in dynamic offset cancellation
- Small size
- High balance and low thermal drift magnetic sensing
- Lead length 18.7mm (UL type)

Ordering information

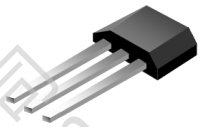
- PT3612-PA-T
  Package(PA):UA or UL or LH
  Temperature(T): A or K

P/N: PT3612-XX-X

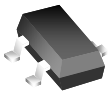
TO92-3L (UA)



TO92-3L (UL)



SOT23-3L (LH)



Specifications

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Conditions	Rating	Unit
Maximum supply voltage	V_{DDMAX}		28	V
Allowable power dissipation	P_D	TO-92(UA)	550*1	mW
		TO-92(UL)	550*1	mW
		SOT-23(LH)	500*1	mW
Operating temperature range	T_A	Suffix 'A'	-40~+150	℃
		Suffix 'K'	-40~+125	℃
Storage temperature range	T_S		-55~+150	℃
Relative Humidity	R_H		20~90	%
Max. output current	I_{OMAX}		50	mA

*1: On 50mm x 50mm x 1.6mm glass epoxy board

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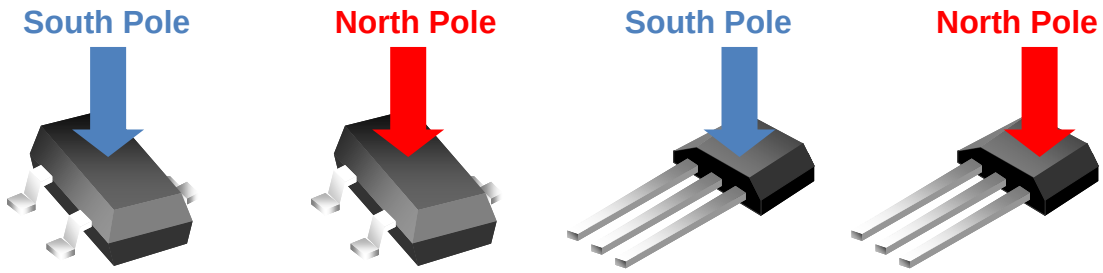
Electrical Characteristics (T_A=+25°C, V_{DD}=12V)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Units
Supply Voltage	V_{DD}		3.8		24	V
Output Sink Voltage	V_{OL}	@ I_{OUT} =20mA		130	280	mV
Output Leakage Current	I_{OH}	Output switch off			0.1	uA
Output Clamp Voltage	V_{BV}			28	30	V
Supply Current	I_{DD}	Output open		4	6	mA
Magnetic Characteristics (T_A=+25°C, V_{DD}=12V)						
Operate Point	B_{OP}		8	26	55	G
Release Point	B_{RP}		-55	-26	-8	G
Hysteresis	B_{HYS}		45	52	70	G
Magnetic Characteristics (T_A=-40°C~150°C, V_{DD}=5V)						
Operate Point	B_{OP}		9		60	G
Release Point	B_{RP}		-60		-9	G
Hysteresis	B_{HYS}		35		72	G
Magnetic Characteristics (T_A=-40°C~150°C, V_{DD}=12V)						
Operate Point	B_{OP}		9		60	G
Release Point	B_{RP}		-60		-9	G
Hysteresis	B_{HYS}		35		72	G

Output Behavior versus Polarity (T_A=-40°C~150°C, V_{DD}=3.8V~24V)

Parameters	Test Conditions(LH)	Output(LH)	Test Conditions(UA/UL)	Output(UA/UL)
South pole	**B<Brp**	**High**	**B>Bop**	**Low**
North pole	**B>Bop**	**Low**	**B<Brp**	**High**



Output = High **Output = Low** **Output =Low** **Output = High**

SOT-23(LH) Package **TO-92(UA/UL) Package**

General Specifications

The PT3612 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 optimal for DC brushless fan application. The supply voltage range is from 3.8V to 24V and the maximum output current is 50mA.

This Hall effect sensor IC integrate the sensor, pre-amplifier with dynamic offset cancellation and the hysteresis comparator in single chip. The architecture block diagram is shown in Fig. 1.

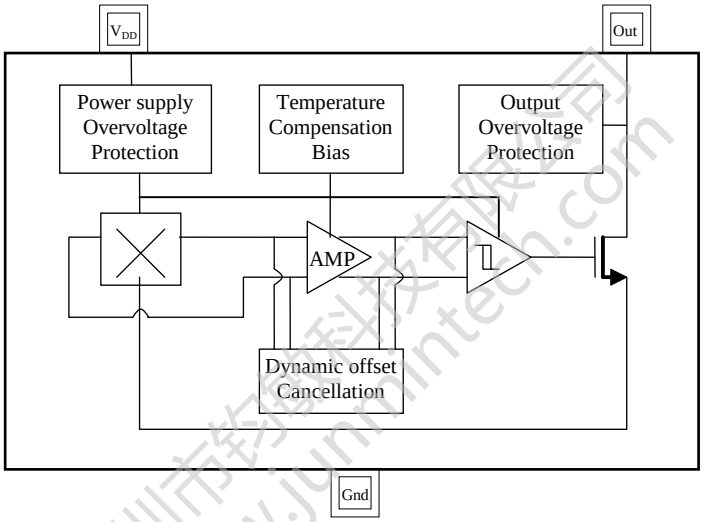
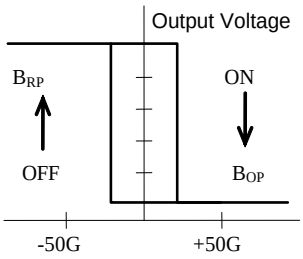
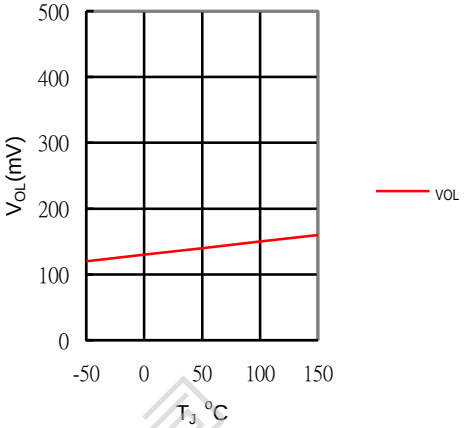


Fig. 1. Functional diagram

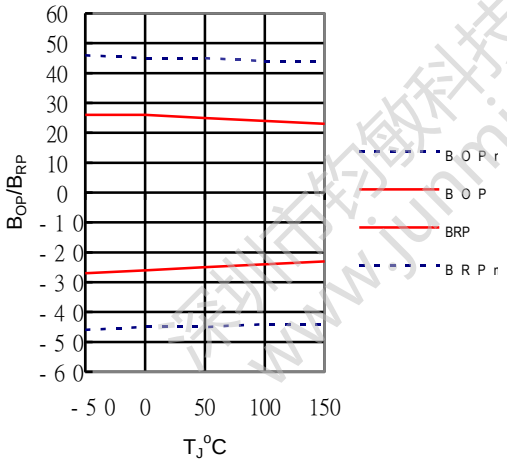
Magnetic Flux Density in



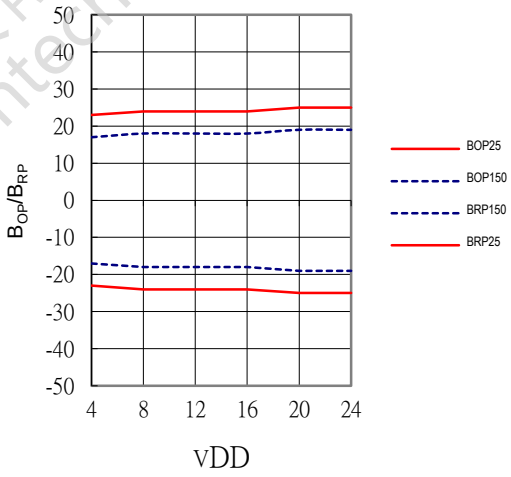
Output sink voltage versus temperature



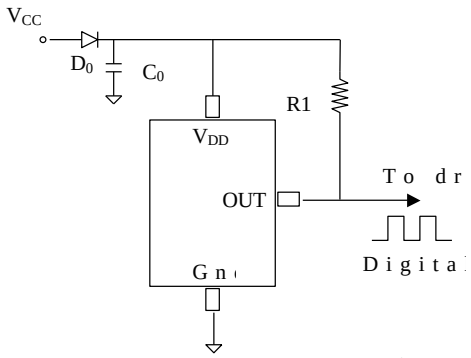
BOP, BRP versus temperature



BOP, BRP versus supply voltage



Application circuits



NOTE :

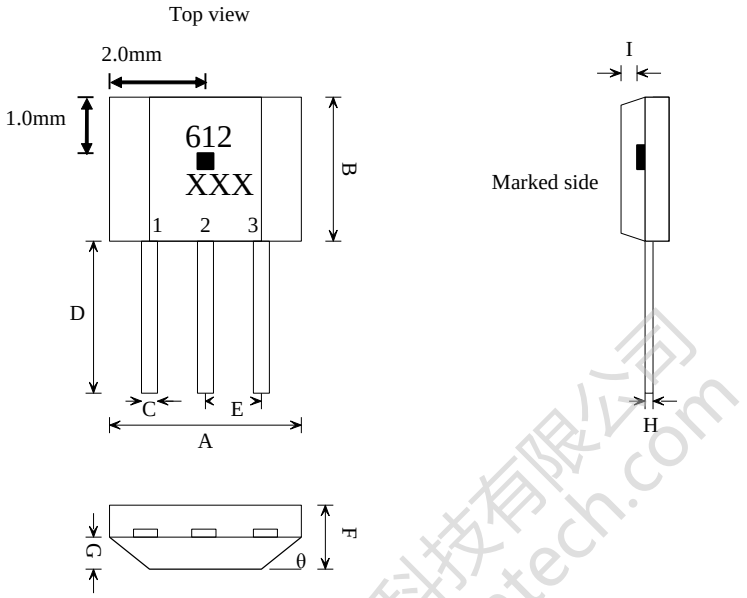
D0: general diode

C0: decoupling capacitor 0.1uF(recommended)

R1: 1K~10Kohm (recommended)

Package Outline

TO-92(UA)



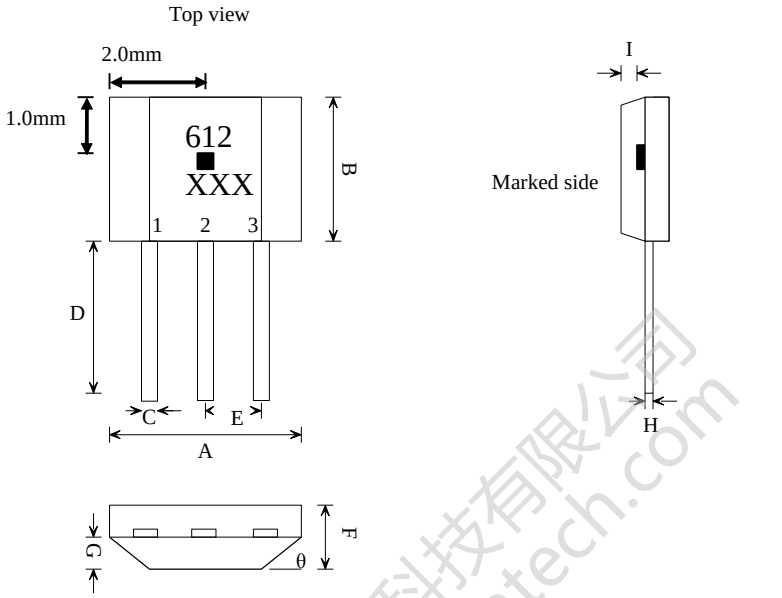
Marking:
Part Number : 611
Date Code : X(Year) XX(Week)

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	14.40	14.60	14.80
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

TO-92(UL)



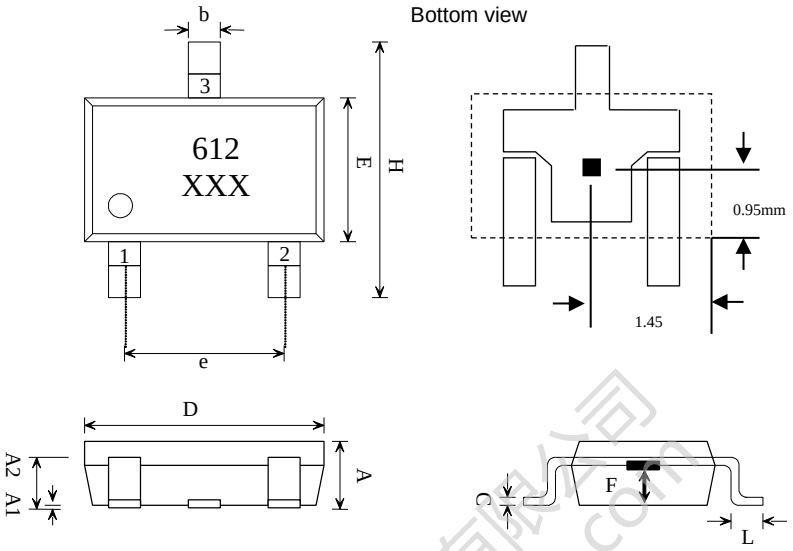
Marking:
Part Number : 612
Date Code : X(Year) XX(Week)

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	2.80	3.00	3.20
C	0.33	0.40	0.47
D	18.20	18.70	19.20
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	0.33	0.40	0.47
θ		45°	

Package Outline

SOT-23(LH)



Sensor Location

Marking:
Part Number : 612
Date Code : X(Year) XX(Week)

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

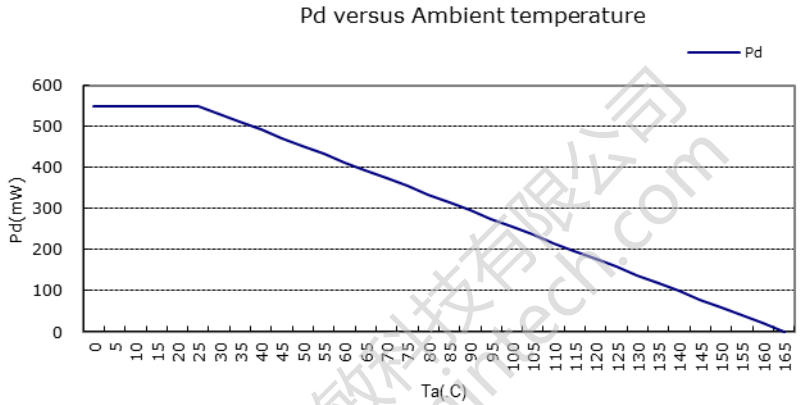
SYMBOLS	DIMENSIONS IN MILLIMETERS(mm)		
	MIN	NOM	MAX
A	1.00	1.10	1.30
A1	0.00	-	0.10
A2	0.70	0.80	0.90
b	0.35	0.40	0.50
C	0.10	0.15	0.25
D	2.70	2.90	3.10
E	1.40	1.80	2.00
F	0.35	0.50	0.65
H	2.60	2.8	3.00
e	1.7	1.9	2.1
L	0.20	-	-

Thermal resistance

TO92-3L

Parameter	Symbol	Conditions	Rating	Units
Allowable power dissipation	P_d		550*1	mW
Junction to ambient thermal resistance	θ_{JA}		255	℃/W
Junction to case thermal resistance	θ_{JC}		90	℃/W
Maximum junction temperature	T_J		165	℃

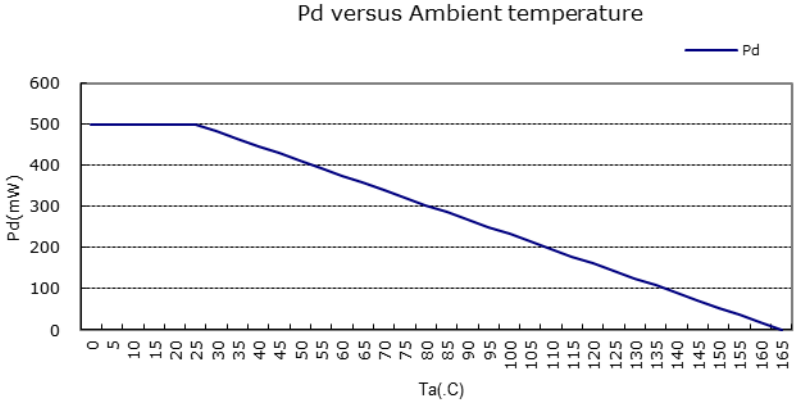
*1: Reduced by 14.3mW for each increase in Ta of 1°C over 25°C When mounted on 50mm x 50mm x 1.6mm glass epoxy board



SOT-23

Parameter	Symbol	Conditions	Rating	Units
Allowable power dissipation	P_d		500*1	mW
Junction to ambient thermal resistance	θ_{JA}		280	℃/W
Junction to case thermal resistance	θ_{JC}		110	℃/W
Maximum junction temperature	T_J		165	℃

*1: Reduced by 14.3mW for each increase in Ta of 1°C over 25°C When mounted on 50mm x 50mm x 1.6mm glass epoxy board



Order information

Part Number	Temperature Range	Package Type	Package Qty	Prolific Type Code
PT3612UAK	-40°C~+125°C	TO92-3L	1000pcs/Bulk	PT3612E1OAG7D1
PT3612ULK	-40°C~+125°C	TO92-3L	1000pcs/Bulk	PT3612E1RAG7D1
PT3612LHK	-40°C~+125°C	SOT23-3L	3000pcs/Reel	PT3612E1SAG8D1
PT3612UAA	-40°C~+150°C	TO92-3L	1000pcs/Bulk	PT3612E1OAG7D2
PT3612ULA	-40°C~+150°C	TO92-3L	1000pcs/Bulk	PT3612E1RAG7D2
PT3612LHA	-40°C~+150°C	SOT23-3L	3000pcs/Reel	PT3612E1SAG8D2

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