



PT3617

Hi-sensitivity Hall-effect Latch

Applications

- DC brushless motors
- Proximity Sensor
- Tachometers
- Magnetic encoders
- Automotive systems

Features

- 2.5V to 38V wide operation voltage
- High sensitivity
- Reverse polarity protection (up to -60V)
- Built-in dynamic offset cancellation
- Open drain output
- High balance and low thermal drift magnetic sensing
- Support 40V load dump test
-

Ordering information

- PT3617-PA-T
- Package(PA):UA & LH
- Temperature(T): A

Specifications

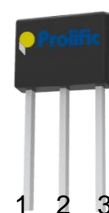
Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Conditions	Rating	Unit
Maximum supply voltage	V_{DDMAX}		40	V
Minimum supply voltage	V_{DDMIN}		-60	V
Allowable power dissipation	P_D	TO-92(UA)	550 ^{*1}	mW
		SOT-23(LH)	500 ^{*1}	mW
Operating temperature range	T_A	Suffix 'A'	-40~+150	°C
Storage temperature range	T_S		-65~+150	°C
Relative Humidity	R_H		20~90	%
Max. output current	I_{OMAX}		50	mA

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

P/N: PT3617-XX-X

TO92-3L (UA)



SOT23-3L (LH)



1 : VDD
2 : OUT
3 : GND

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Electrical Characteristics (T_A=+25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Units
Supply Voltage	V _{DD}		2.5		38	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}			40	42	V
Supply Current	I _{DD}	Output open		4	6	mA

Magnetic Characteristics (T_A=+25°C, V_{DD}=5V)

Operate Point	B _{OP}		10	22	45	G
Release Point	B _{RP}		-45	--22	-10	G
Hysteresis	B _{HYS}		25	44	62	G

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

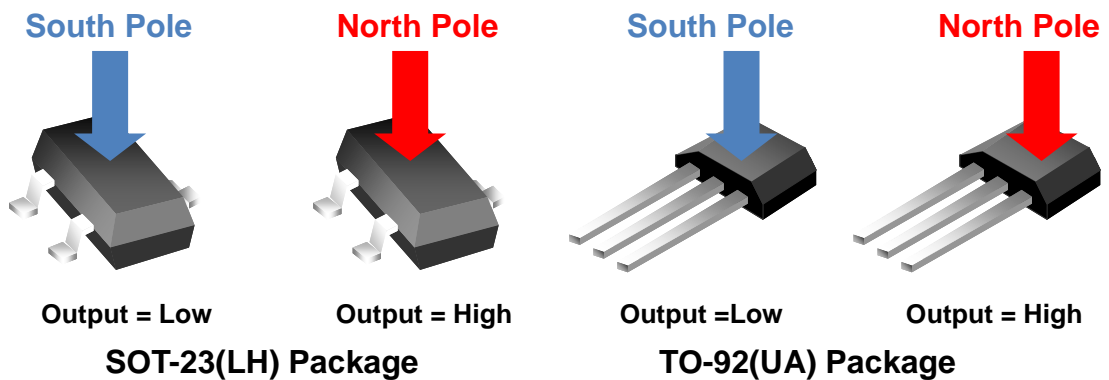
Operate Point	B _{OP}		10	22	42	G
Release Point	B _{RP}		-42	-22	-10	G
Hysteresis	B _{HYS}		28	44	60	G

Magnetic Characteristics (T_A=-40°C~150°C, V_{DD}=12V)

Operate Point	B _{OP}		10	22	50	G
Release Point	B _{RP}		-50	-22	-10	G
Hysteresis	B _{HYS}		35	44	72	G

Output Behavior versus Polarity (T_A=-40°C~150°C, V_{DD}=2.5V~38V)

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



General Specifications

The PT3617 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 2.5V to 38V and the maximum output current is 50mA. The internal protection device could benefit PT3617 to survive up to -32V in reversed battery situation.

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.

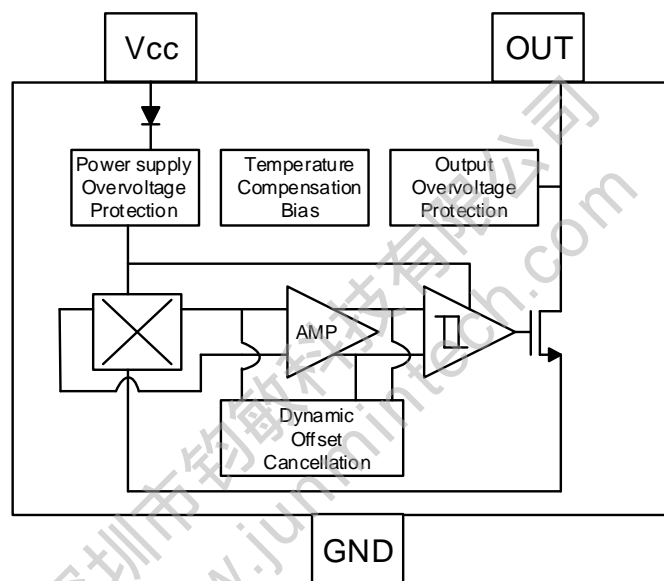


Fig. 1. Functional diagram

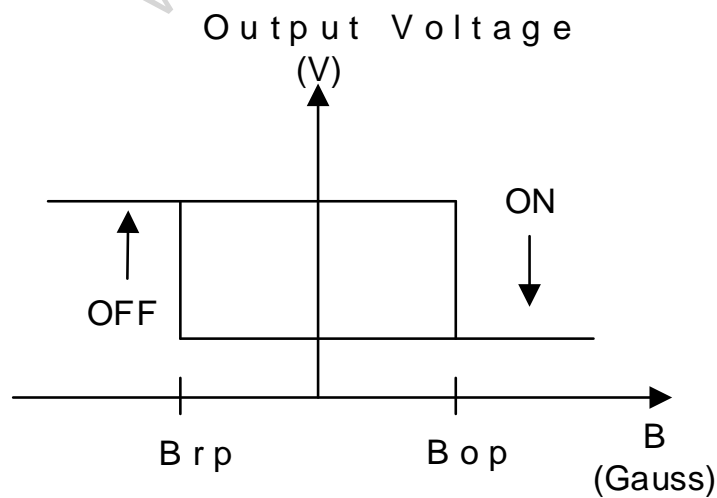
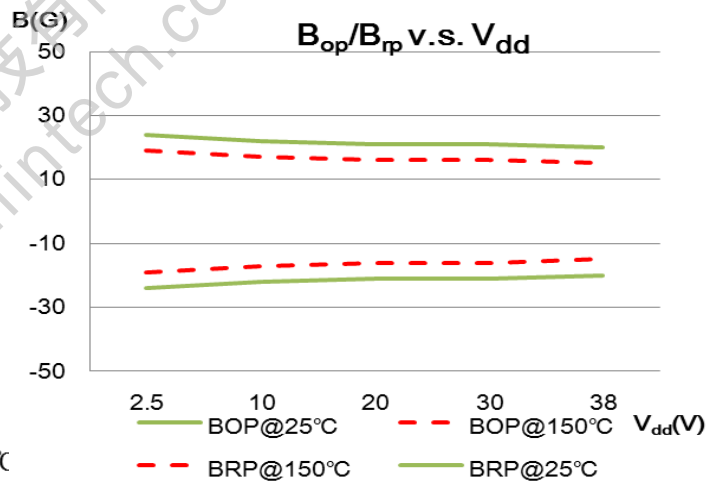
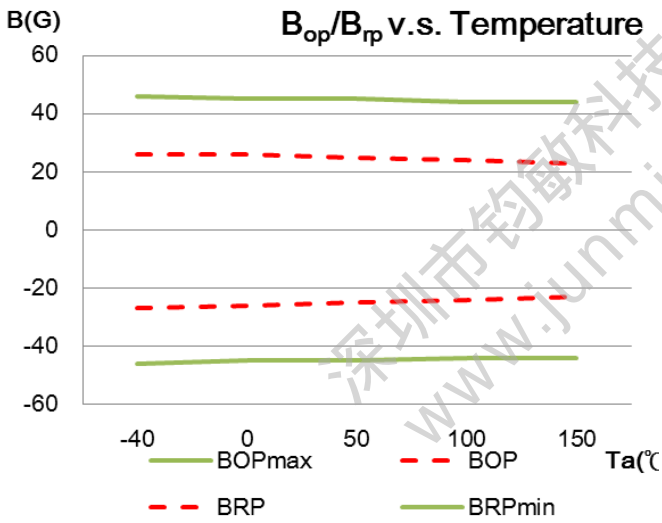
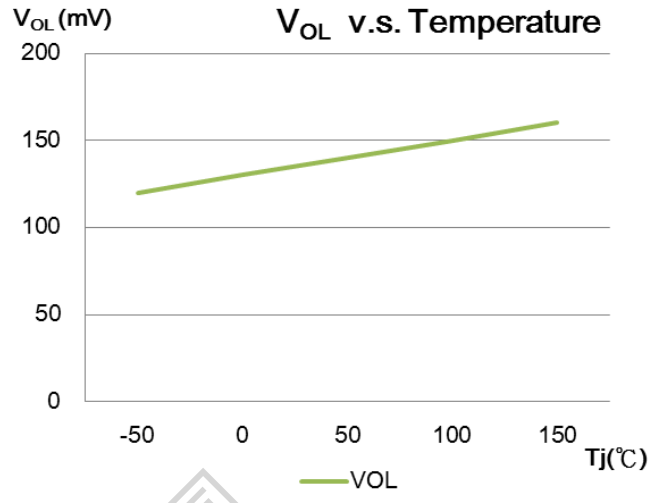
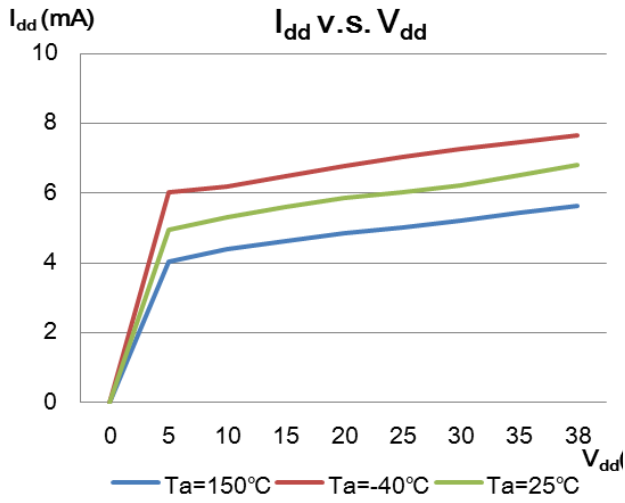
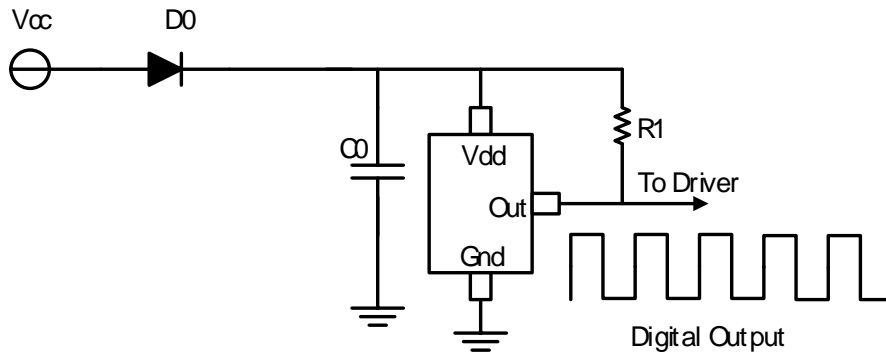


Fig. 2. Output behavior

General Characteristics



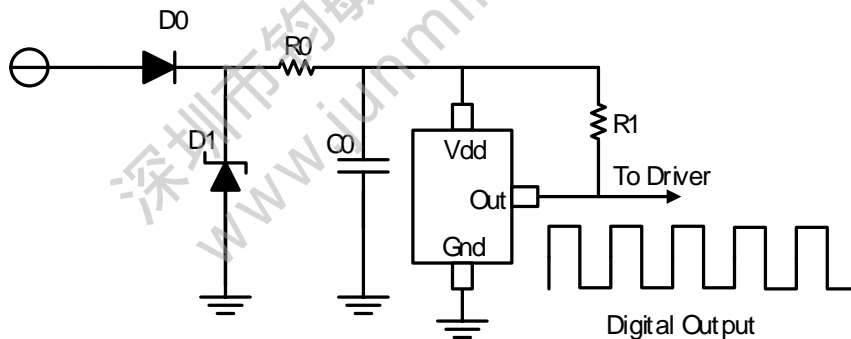


NOTE :

- D0: general diode
- C0: decoupling capacitor 0.1uF(recommended)
- R1: 1K~10Kohm (recommended)

EMC/ESD Application circuits

Following application circuit is recommended for EMC test (ISO 7637-1/2)



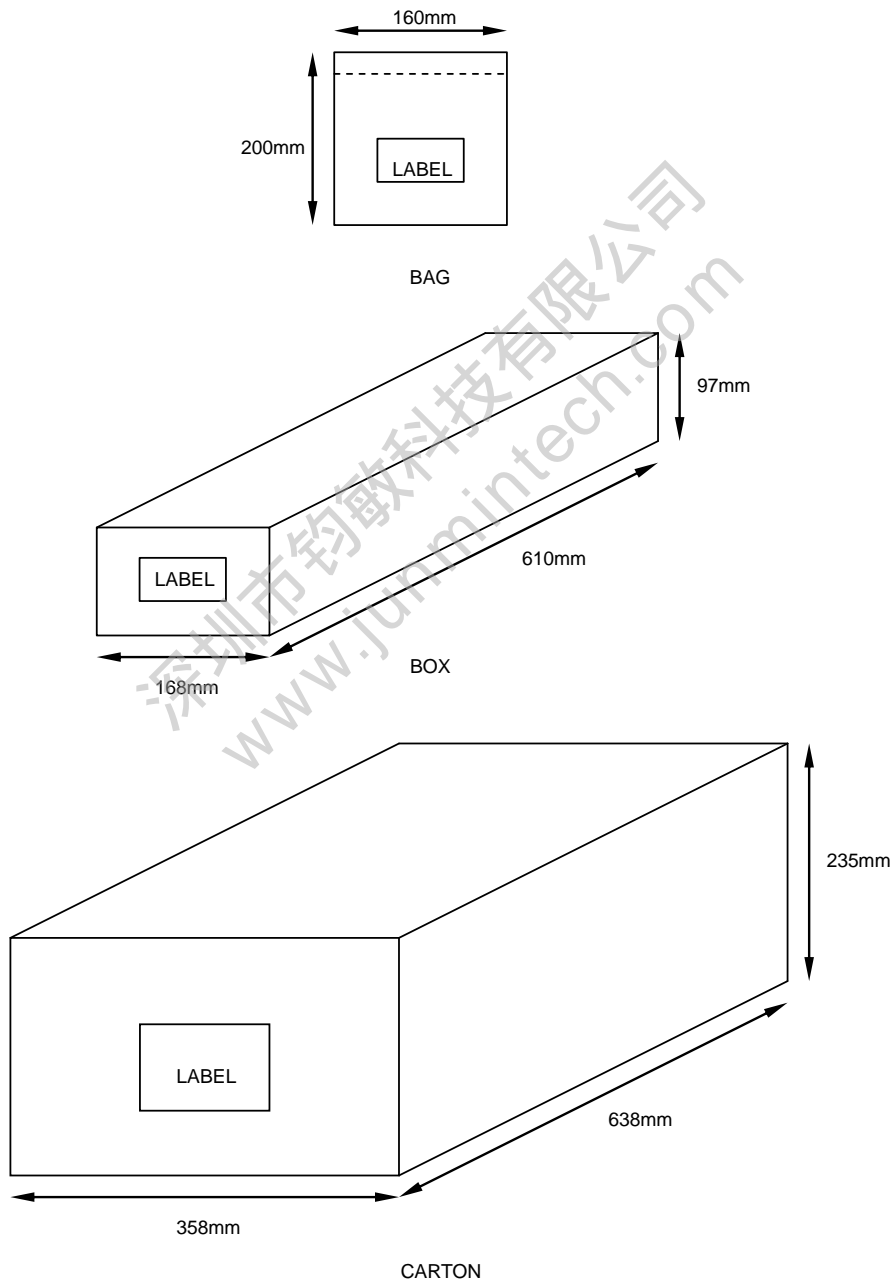
NOTE :

- D0: general diode (400V/1A)
- D1: zener diode (30V/5W)
- C0 :decoupling capacitor 0.1uF(recommended)
- R0 :150~270ohm
- R1: 1K~10Kohm (recommended)

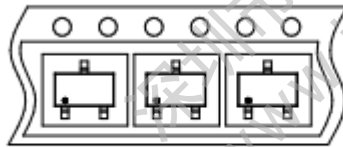
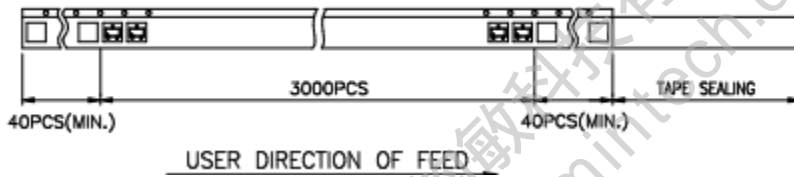
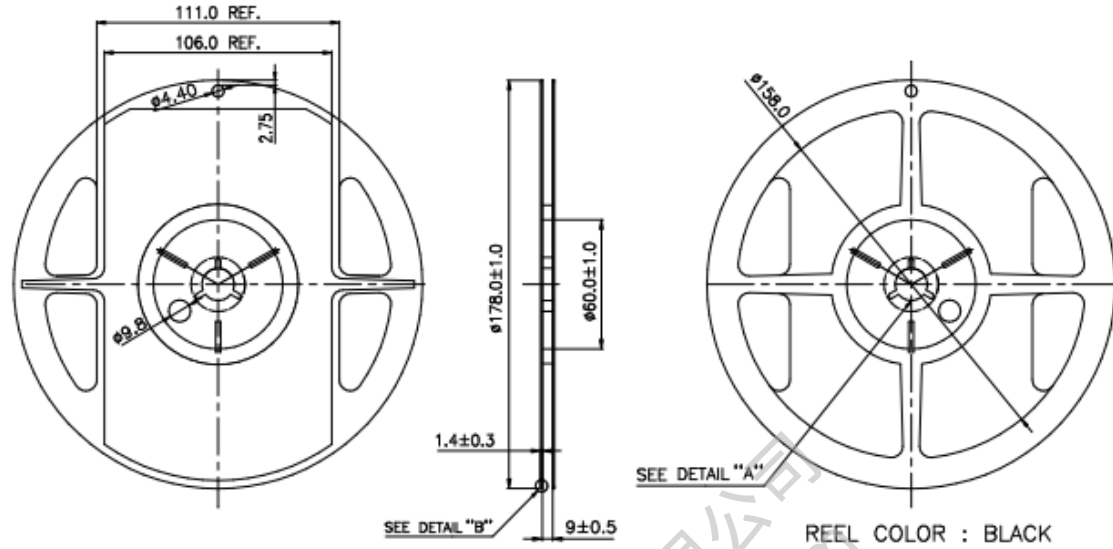
Type	Package	Packing Quantity (EA)	Quantity per Box (EA)	MOQ
TO-92	Box	1000	20000	80000
SOT-23	Reel	3000	12000	168000

Packing dimension

TO-92

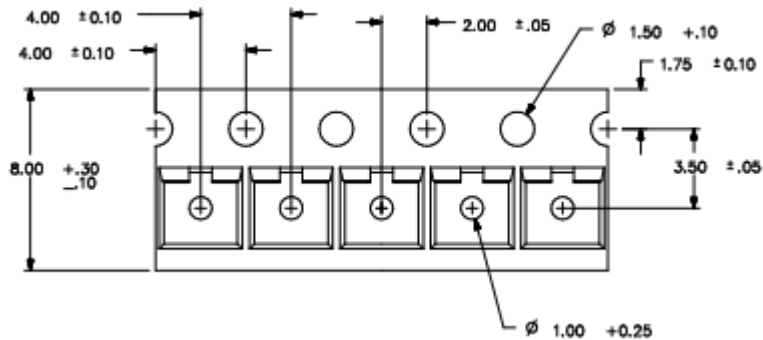


Packing dimension
SOT-23

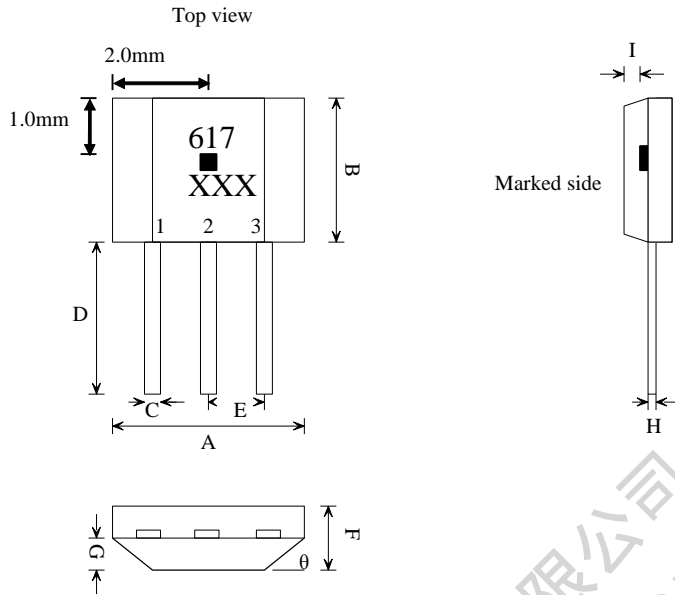


SOT-23

3000 EA/PER REEL 4 REEL/BOX



Package Outline
TO-92(UA)



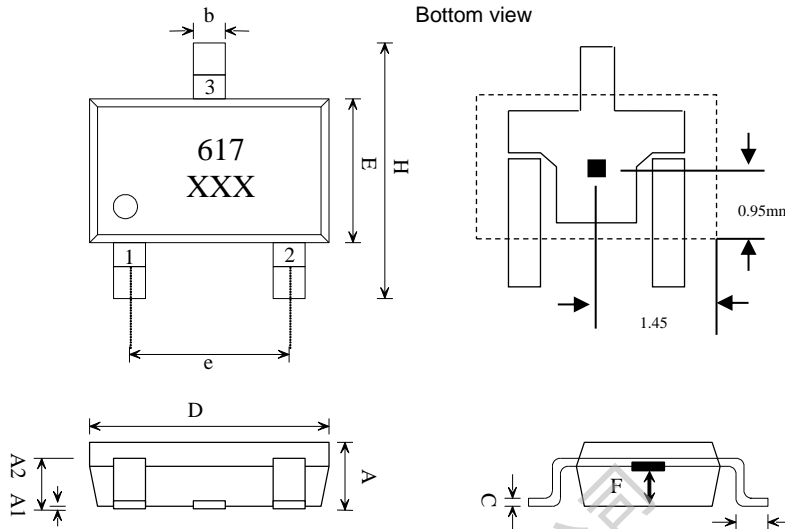
Marking:
 Part Number : 617
 Date Code : X(Year) XX(Week)

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
SOT-23(LH)

Sensor Location



Marking:
Part Number : 617
Date Code : X(Year) XX(Week)

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

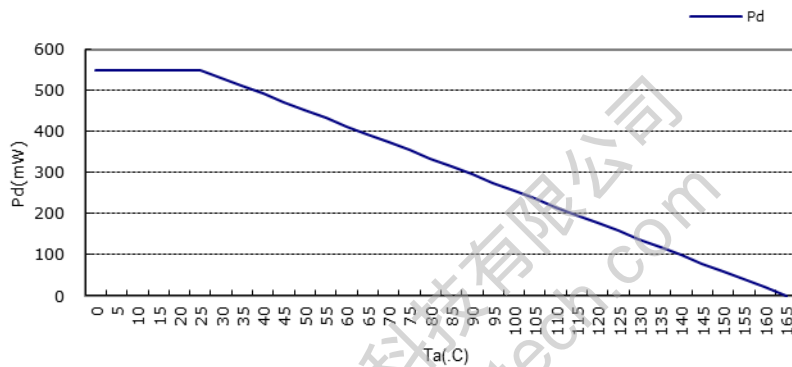
SYMBOLS	DIMENSIONS IN MILLIMETERS(mm)		
	MIN	NOM	MAX
A	1.00	1.10	1.30
A1	0.00	-	0.10
A2	0.70	0.80	0.90
b	0.35	0.40	0.50
C	0.10	0.15	0.25
D	2.70	2.90	3.10
E	1.40	1.80	2.00
F	0.35	0.50	0.65
H	2.60	2.8	3.00
e	1.7	1.9	2.1
L	0.20	-	-

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	°C/W
Junction to case thermal resistance	θ_{JC}		90	°C/W
Maximum junction temperature	T_J		165	°C

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

Pd versus Ambient temperature

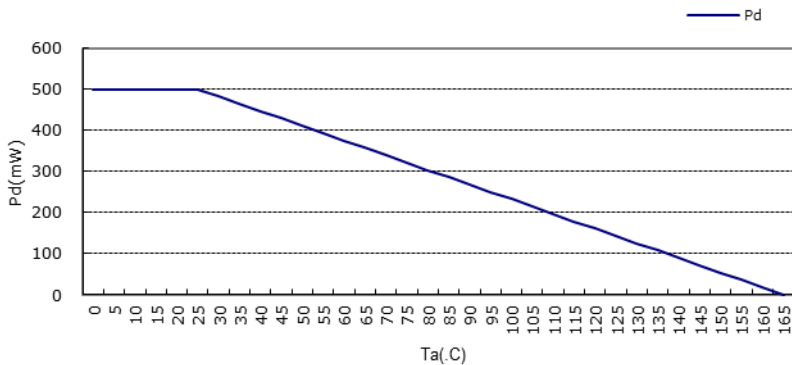


SOT-23

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

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

Pd versus Ambient temperature



Order information

Part Number	Temperature Range	Package Type	Package Qty	Prolific Type Code
PT3617UAA	-40°C~+150°C	TO92-3L	1000pcs/Bulk	PT3617E1OAG7D2
PT3617LHA	-40°C~+150°C	SOT23-3L	3000pcs/Reel	PT3617E1SAG8D2

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