



PT3639

Hi-sensitivity Unipolar Hall Switch

Applications

- Automotive Brake Pedal Position detection
- Proximity detection
- Weak magnets application
- Solid state switches

Features

- 3.8V to 24V wide operation voltage
- High accuracy unipolar switch
- Dynamic offset cancellation
- Open drain output
- Low thermal drift magnetic sensing

Ordering information

- PT3639-PA-T
Package(PA): UA or LH or LT
Temperature(T): A or K

Specifications

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Conditions	Rating	Unit
Maximum supply voltage	V_{DDMAX}		28	V
Allowable power dissipation	P_D	TO-92(UA)	550 ^{*1}	mW
		SOT-23(LH)	300 ^{*1}	mW
		SOT-89(LT)	500 ^{*1}	mW
Operating temperature range	T_A	Suffix 'A'	-40~+150	°C
		Suffix 'K'	-40~+125	°C
Storage temperature range	T_S		-55~+150	°C
Max. output current	I_{OMAX}		50	mA

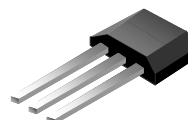
*1: On 50mm x 50mm x 1.6mm glass epoxy board

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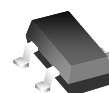
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P/N: PT3639-XX-X

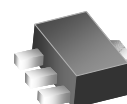
TO92-3L (UA)



SOT23-3L (LH)



SOT89-3L (LT)



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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}		-72	-55	-38	G
Release Point	B _{RP}		-50	-35	-20	G
Hysteresis	B _{HYS}		15	20	27	G

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

Operate Point	B _{OP}		-77		-34	G
Release Point	B _{RP}		-54		-18	G
Hysteresis	B _{HYS}		10		28	G

General Specifications

The PT3639 is a high sensitive unipolar Hall switch sensor. The built-in dynamic offset cancellation and temperature compensation of pre-amplifier stage achieves accuracy magnetic sensing. The wide supply voltage range is from 3.8V to 24V and the maximum output current is 50mA.

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

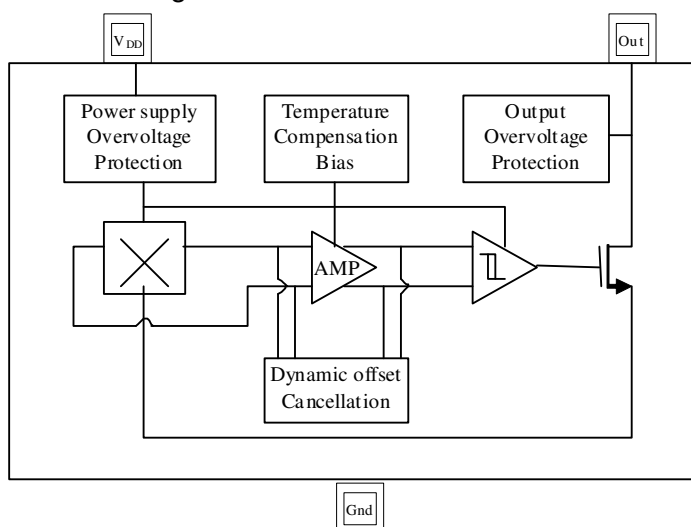
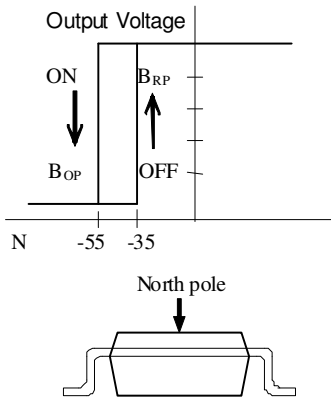
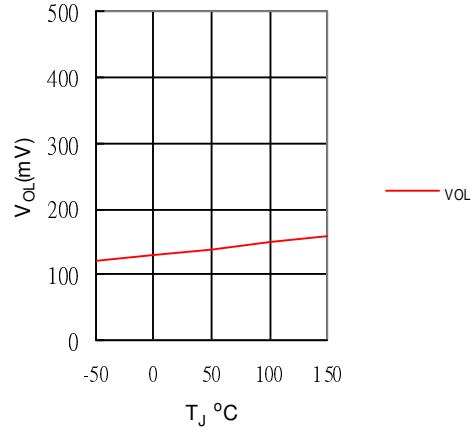
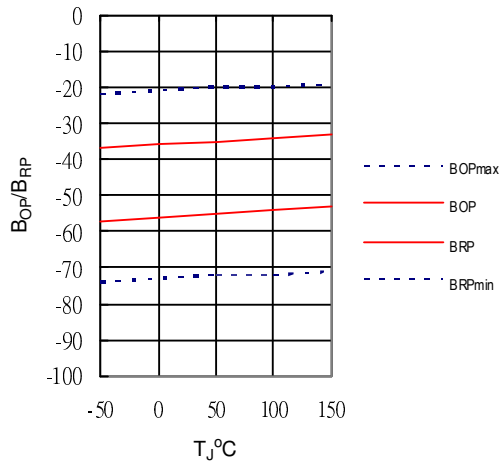
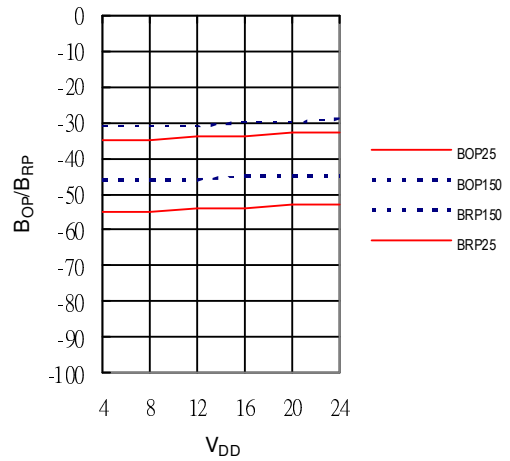


Fig. 1. Functional diagram

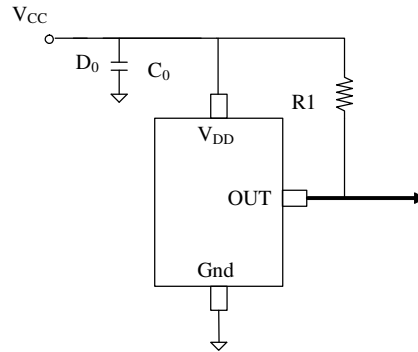
Magnetic Flux Density in G



Output sink voltage versus temperature


 B_{OP}, B_{RP} versus temperature

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


Application circuits

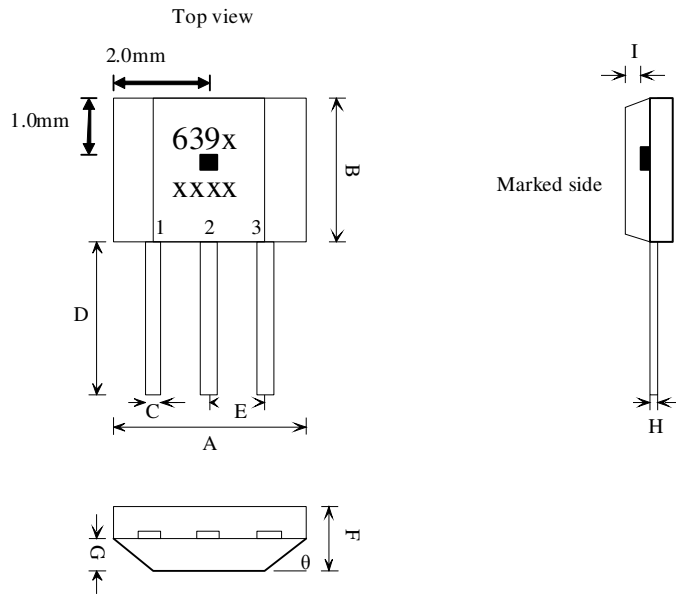


NOTE :

C0: decoupling capacitor 0.1uF(recommended)

R1: 1K~10Kohm (recommended)

**Package Outline
TO-92(UA)**



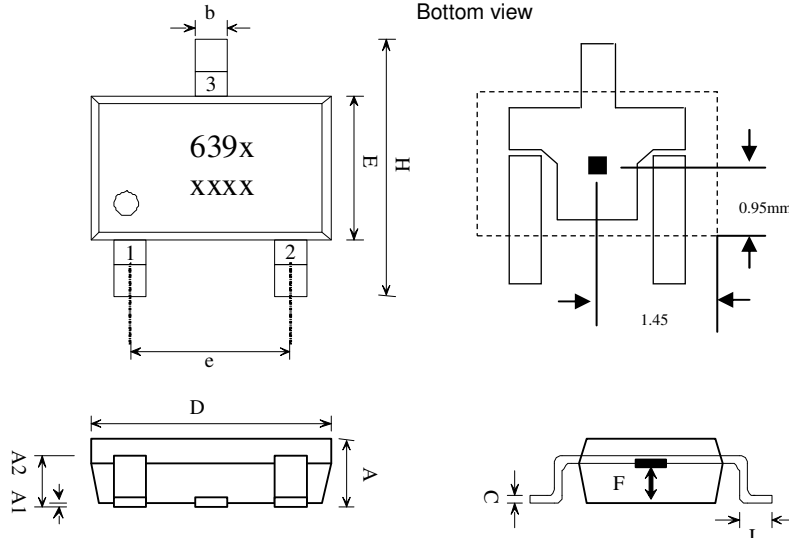
Marking:
Part Number : 639 Temperature code : x
Date Code : xx(Year) xx(Week)

- 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



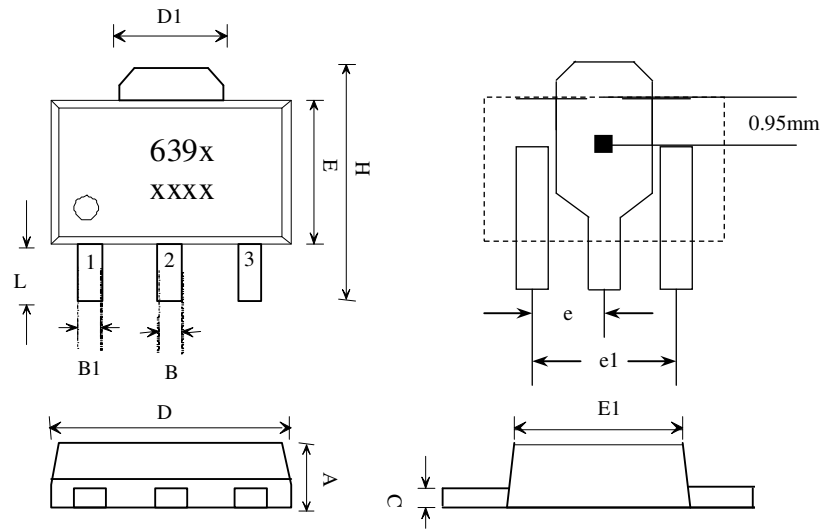
Marking:
Part Number : 639 Temperature code : x
Date Code : xx(Year) xx(Week)

- 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 : 639 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