

Features

- ◆ Pull-push output with $\pm 1\text{mA}$ current
- ◆ Omnipolar switch
- ◆ Low jitter
- ◆ High ESD performance of $\pm 8\text{ kV}$ (HBM)
- ◆ Background dynamic offset compensation suppressing package stress and lifetime drift
- ◆ Wide supply range 3.3V to 7V
- ◆ Stable switching points over temperature range: -40°C to 150°C

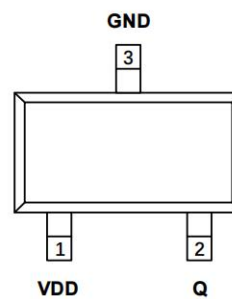
Applications

- ◆ Cover switches in phones, tablet PCs, PADs
- ◆ Doors, lids and tray position switch
- ◆ Home appliances
- ◆ Toys

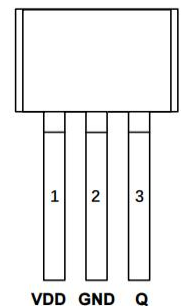
Description

The ITE294X are series of Hall-effect sensor ICs that feature with temperature stable Hall signal conditioning chains with background dynamic offset compensation, a comparator, configurable voltage references and an open-drain output stage.

The on-chip Hall sensor converts the magnetic flux through the chip to Hall signal voltage. The internal comparator compares the voltage with the predefined reference voltage. The open-drain output transistor is then switched on and off accordingly.



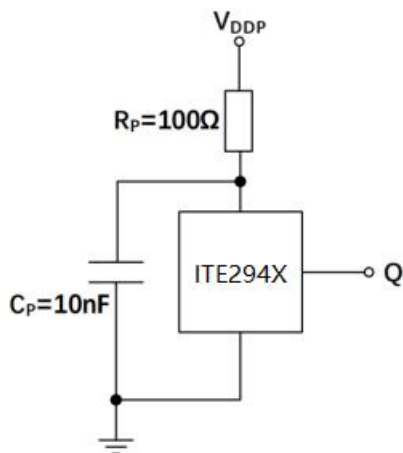
SOT23-3L



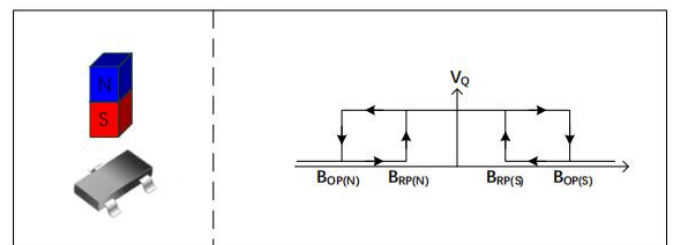
TO-92S

Package Type: SOT23-3L, TO-92S

Typical Application



Field Direction Definition

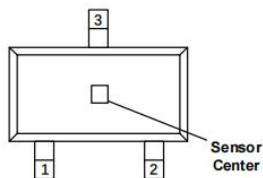


B_{OP} : Operating point of magnetic field

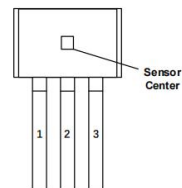
B_{RP} : Returning point of magnetic field

* Positive magnetic fields are defined with the south pole facing the branded side of the package.

Pin Description



SOT23-3L
ITE294XA3L

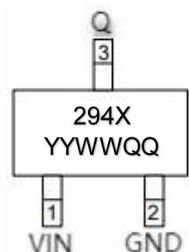


TO-92S
ITE294XA3T

PIN NO.		NAME	DESCRIPTION
ITE294XA3T	ITE294XA3L		
1	1	VIN	Supply voltage
2	3	GND	IC Ground
3	2	Q	Output

PARAMETER	OPERATING POINT			RELEASE POINT			UNIT
	MIN	TYP	MAX	MIN	TYP	MAX	
T _J 25°C	-	±3.4			±3.0	-	mT

Marking Information



As shown in the left figure:

First row:

294: Model code

X: Series and Version

Second row:

YYWWQQ: Production cycle and batch number



As shown in the left figure:

First row:

294: Model code

X: Series and Version

Second row:

YYWWQQ: Production cycle and batch number

Universal Naming Convention

ITE 294X A 3L
① ② ③ ④

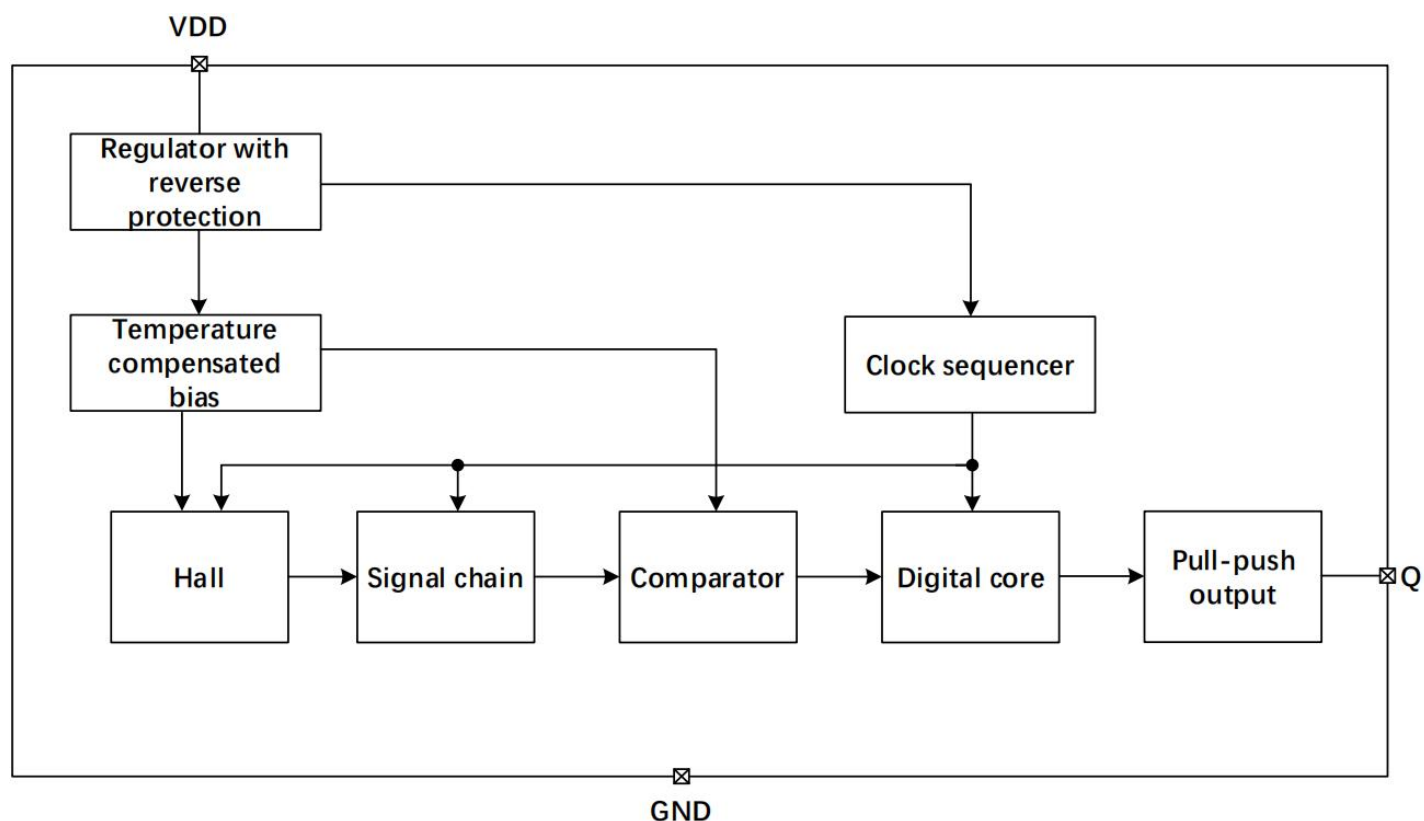
①: Abbreviation of product company name

②: Series model

③: Version

④: Package code (3L: SOT23-3L 3T: TO-92S)

Functional Block Diagram



The block diagram of the hall effect switch IC is shown in Fig. The main path comprises a hall probe, dynamic offset compensated signal chain, comparator and temperature compensated bias. The background dynamic offset compensation circuits in signal chain and hall probe continuously null out the hall offset and circuits offset. The dynamic offset compensation technique together with temperature compensate bias ensures the accuracy of the magnetic thresholds.

The supply voltage is regulated with internal regulator with reverse protection. Open-drain output is over current protected.

Absolute Maximum Ratings

SYMBOL	PARAMETER	MIN	MAX	UNIT	NOTE
V_{IN}	Supply Voltage	-0.3	7	V	t < 96h
V_Q	Output Voltage	-0.3	7	V	t < 96h
I_O	Output Current	-1	1	mA	
T_A	Junction Temperature Range	-40	190	°C	t < 96h
R_{THJA}	Thermal Resistance Junction Ambient	-	300	K/W	
R_{THJL}	Thermal Resistance Junction Lead	-	100	K/W	

Recommended Operating Conditions (Note 4)

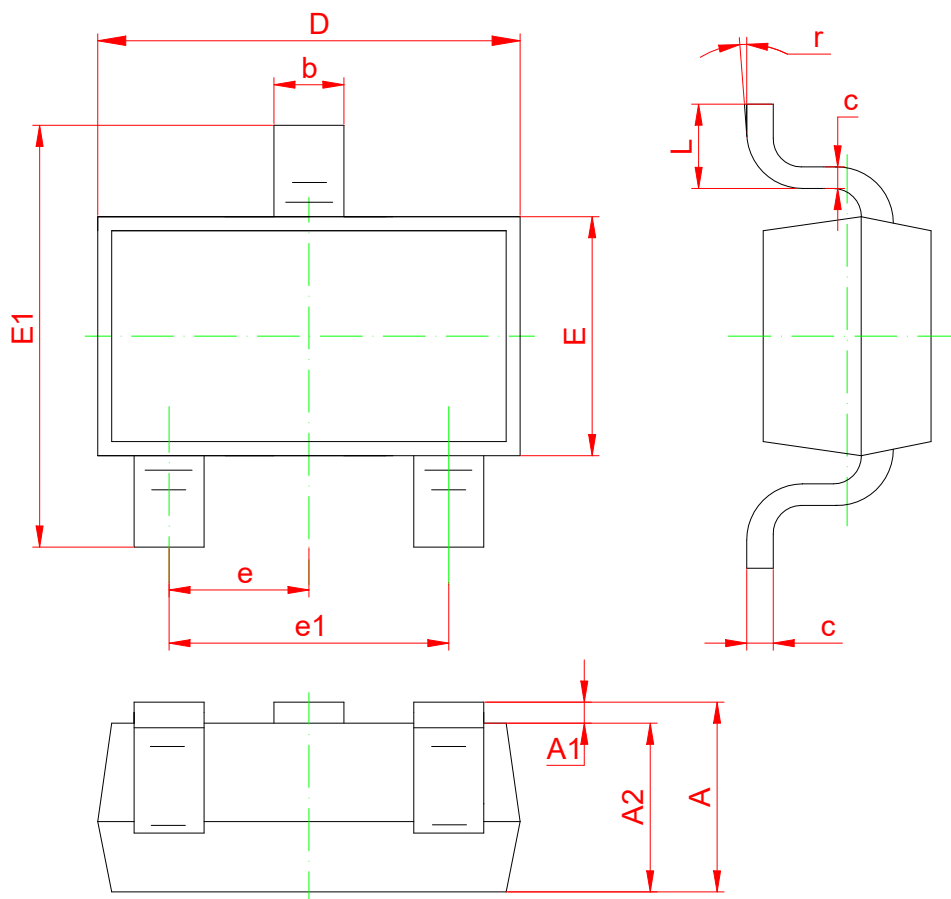
SYMBOL	PARAMETER	MIN	MAX	UNIT
V_{IN}	Supply Voltage	3.3	5	V
V_Q	Output Voltage	-0.6	5	V
I_Q	Output Current	-	1	mA
T_J	Junction Temperature Range	-40	150	°C

Electrical Characteristics

VDD=12V, all voltages are absolute voltages referenced to GND-potential, TA=25°C (unless otherwise specified).

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage						
I _S	Supply Current			2.5		mA
V _{UV}	Undervoltage Threshold		1.86	-	2.57	V
Output Voltage						
V _{QSAT}	Output Saturation Voltage	I _Q =1mA	-	0.2	0.3	V
I _{QLEAK}	Output Leakage Current		-	-	1	μA
T _{CHP}	Output Refresh Period		1.88	2.5	3.33	μS
F _{CHP}	Chopping Frequency	Internal Chopping Frequency	300	400	530	KHz

Package Information: SOT23-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 (BSC)		0.037 (BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
r	0°	8°	0°	8°

Package Information: TO-92S



最大单边

G 2:1

	COMMON DIMENSIONS CENTS MEASURE-MILLIMETER			
SYMBOL	PACKAGE	MIN	MID	MAX
A	TO-92S	1.40	1.50	1.60
	SIP3	1.42	1.52	1.62
	TO-M	1.44	1.54	1.64
A1	ALL	0.70	0.77	0.85
A2	TO-92S	0.63	0.73	0.83
	SIP3	0.65	0.75	0.85
	TO-M	0.67	0.77	0.87
b1	ALL	0.43	0.47	0.51
b2	ALL	0.40	0.44	0.48
c	ALL	0.36	0.38	0.40
D	TO-92S	3.95	4.05	4.15
	SIP3	3.80	3.90	4.00
	TO-M	3.98	4.08	4.18
e	ALL	-	1.27TYP	-
e1	ALL	2.44	2.54	2.64
E	TO-92S	2.90	3.00	3.10
	SIP3	2.90	3.00	3.10
	TO-M	3.10	3.20	3.30
L	ALL	14.0	14.5	15.0
L1	TO-92S	1.50	1.60	1.70
	SIP3	1.50	1.60	1.70
	TO-M	1.43	1.53	1.63

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