



### CST145A Unipolar Hall Effect Switch Sensor

#### ■ CST145A General Description

The CST145A is a unipolar hall effect switch sensor, which is for contact less switching applications. The device includes an on-chip Hall voltage generator for magnetic sensing, an amplifier that amplifies the Hall voltage, a Schmitt trigger to provide switching hysteresis for noise rejection, and an open-drain output. The bandgap regulator allows a wide operating voltage range. CST145A is rated for operating temperature range from -40°C to 150°C and voltage range from 2.7V to 24V.

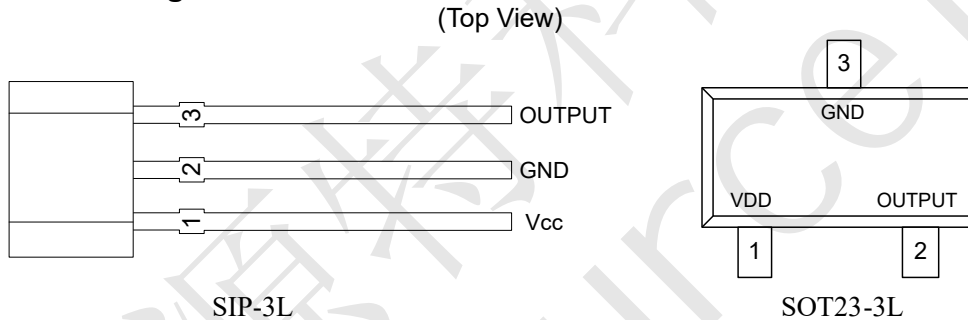
#### ■ CST145A Features

- Wide operating voltage range: 2.7V~24V
- Operating Temperature: -40°C~+150°C
- Maximum output sink current: 25mA
- Reverse polarity protection
- Open-Drain pre-driver output
- Package: SIP-3L、SOT23-3L

#### ■ CST145A Applications

- RPM Detection
- Speed measurement
- Non-Contact Switch
- Position Control
- Revolution Detection
- Textile Control System

#### ■ CST145A Pin Configuration



Name	PIN No.		Status	Description
	SIP-3L	SOT23-3L		
Vcc	1	1	P	IC Power Supply
GND	2	3	P	IC Ground
OUTPUT	3	2	O	Output PIN

#### ■ CST145A Application Circuit

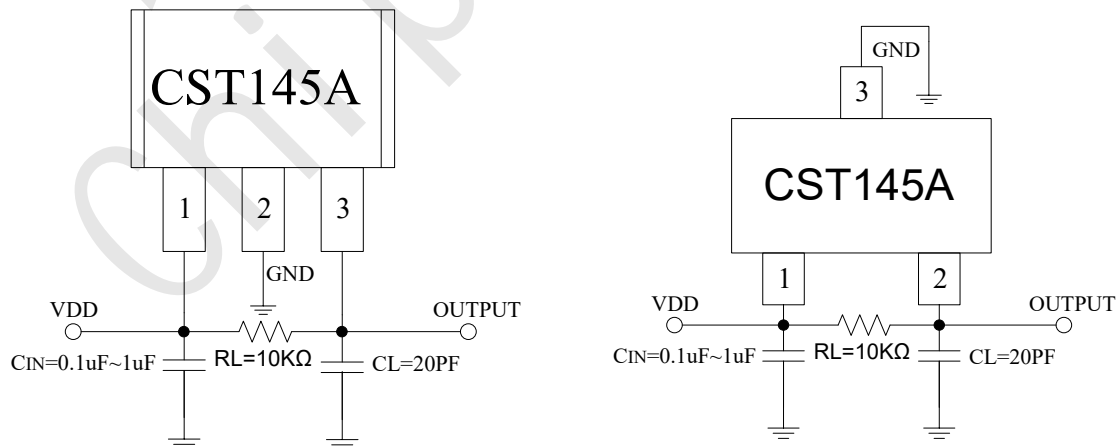


Figure 1, application circuit

Note:  $C_{IN}$  is for power stabilization and to strengthen the noise immunity, the recommended capacitance is 0.1~1uF.



## CST145A Unipolar Hall Effect Switch Sensor

### ■ CST145A Ordering Information

Part Number	Package Type	Packing Qty	B <sub>OP</sub> (Gauss)	B <sub>RP</sub> (Gauss)	Temperature	Eco Plan	Lead
CST145AMF	SIP-3L	1000pcs	90(Typ.)	55(Typ.)	-40 ~ 150°C	ROHS	Cu
CST145AWAF	SOT23-3L	3000pcs	90(Typ.)	55(Typ.)	-40 ~ 150°C	ROHS	Cu

### ■ CST145A Block Diagram

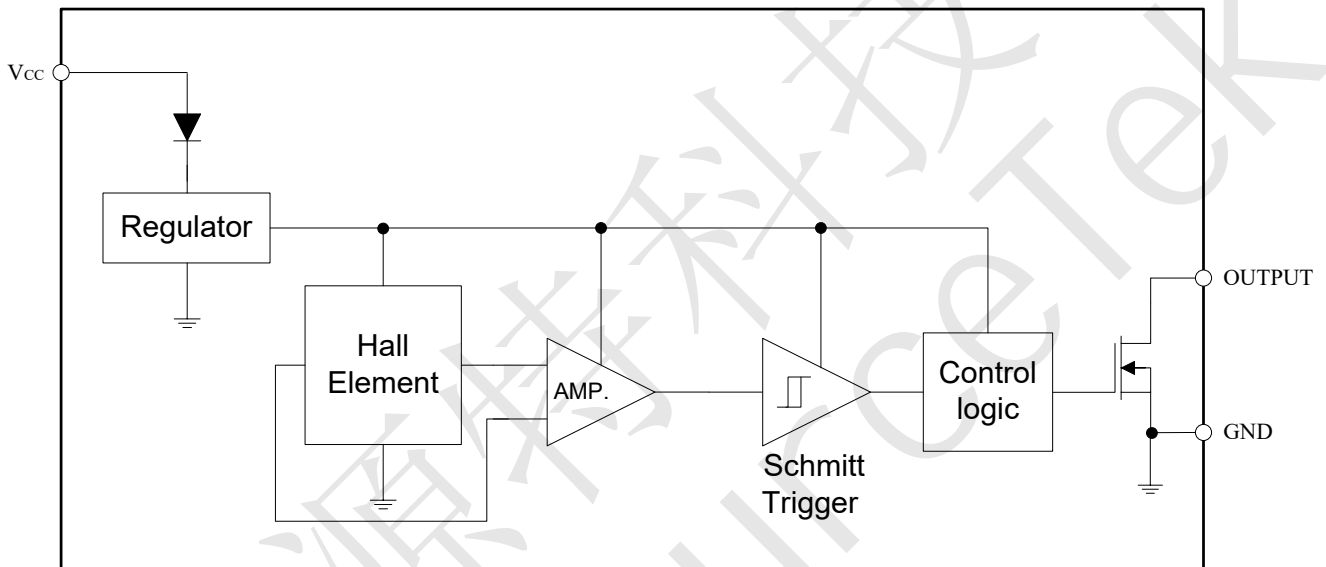


Figure 2, Block Diagram Of CST145A

### ■ CST145A Absolute Maximum Ratings

Supply Voltage		30V
Output OFF Voltage, V <sub>DS</sub>		30V
Output Maximum Sink Current (AVG)		25mA
Power Dissipation (SIP-3L)	T <sub>a</sub> =25°C	400mW
Power Dissipation (SOT23-3L)	T <sub>a</sub> =25°C	260mW
Thermal Resistance (SIP-3L)	T <sub>ja</sub>	0.34°C/mW
	T <sub>jc</sub>	0.42°C/mW
Thermal Resistance (SOT23-3L)	T <sub>ja</sub>	0.52°C/mW
	T <sub>jc</sub>	0.64°C/mW
Operating Temperature Range		-40°C ~+150°C
Storage Temperature Range		-65°C ~+150°C
Junction Temperature		+150°C
Lead Temperature(Soldering, 10 sec)		+260°C



### CST145A Unipolar Hall Effect Switch Sensor

#### ■ CST145A DC Electrical Characteristics (at Ta=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Operating Voltage	V <sub>DD</sub>		2.7	-	24	V
Supply current	I <sub>DD</sub>	No use pin is open V <sub>DD</sub> :2.7V~28V, OUT "H"	0.7	2.65	7	mA
Output Saturation Voltage	V <sub>SAT</sub>	V <sub>CC</sub> =5V, OUT "L", I <sub>o</sub> =15mA	-	0.3	0.5	V
Output drop voltage	V <sub>d</sub>	V <sub>CC</sub> =5V, OUT "H" I <sub>o</sub> =0mA	-	-	10	mV
Output current limitation	I <sub>L</sub>	Intenally limited	35	55	75	mA
Output rise time	t <sub>r</sub>	RL1=1.5KΩ, CL=50PF	0.1	0.5	1	uS
Output fall time	t <sub>f</sub>	RL1=1.5KΩ, CL=50PF	0.1	0.5	1	uS
ESD Voltage (HBM)	V <sub>ESD</sub>	R= 1.5KΩ, C=100pF	4			KV

#### ■ CST145A Magnetic Characteristics

CST145AMF-F、Ta=25°C					
Parameter	Symbol	Min.	Typ.	Max.	Unit
Operate point	B <sub>op</sub>	40	65	80	Gauss
Release point	B <sub>rp</sub>	25	35	50	Gauss
Hysteresis	B <sub>hys</sub>	15	30	50	Gauss

CST145AMF-G/CST145AWAF、Ta=25°C					
Parameter	Symbol	Min.	Typ.	Max.	Unit
Operate point	B <sub>op</sub>	80	90	115	Gauss
Release point	B <sub>rp</sub>	30	55	85	Gauss
Hysteresis	B <sub>hys</sub>	15	35	50	Gauss

CST145AMF-C、Ta=25°C					
Parameter	Symbol	Min.	Typ.	Max.	Unit
Operate point	B <sub>op</sub>	100	130	150	Gauss
Release point	B <sub>rp</sub>	65	85	105	Gauss
Hysteresis	B <sub>hys</sub>	15	45	50	Gauss

#### ■ CST145A Output VS Magnetic Pole

Part No.	Magnetic Pole	Test Conditions	Output
CST145A	South Pole	B > BOP	Low
CST145A	South Pole	B < BRP	High
CST145A	North Pole	B < BRP	High

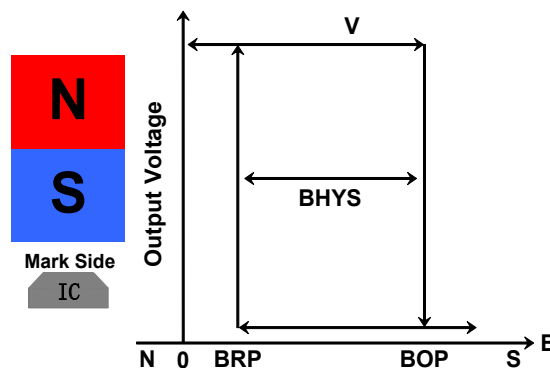


Figure 3, Magnetic Operational Characteristics Of CST145A



## CST145A Unipolar Hall Effect Switch Sensor

### ■ CST145A Hall Sensor Location

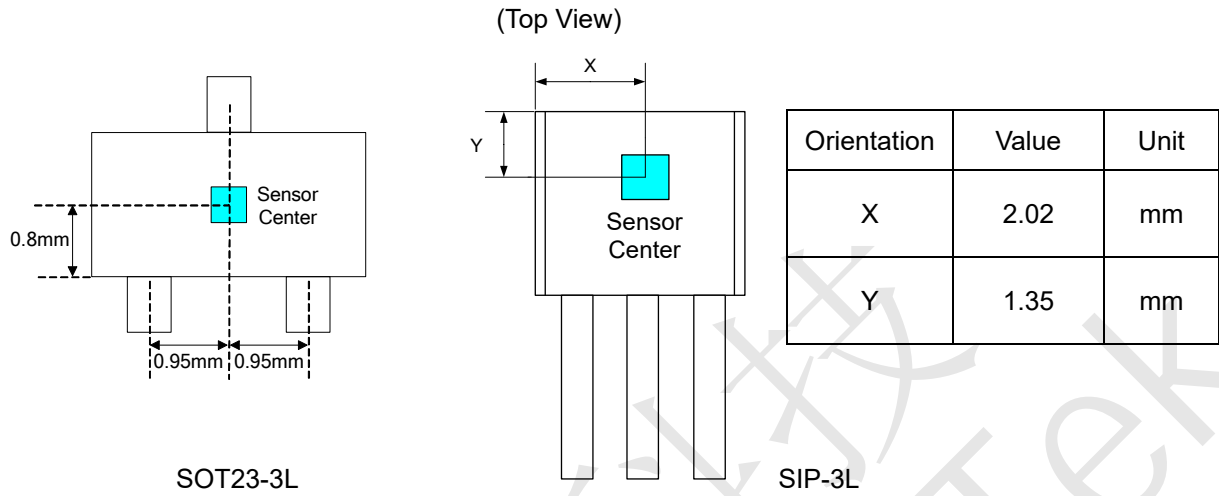


Figure 4, Hall Sensor Location

### ■ CST145A Land Pattern (for reference only)

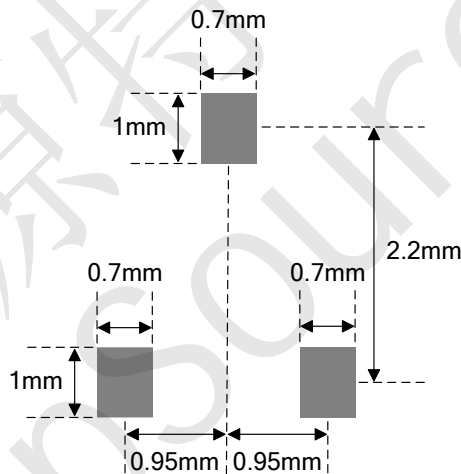
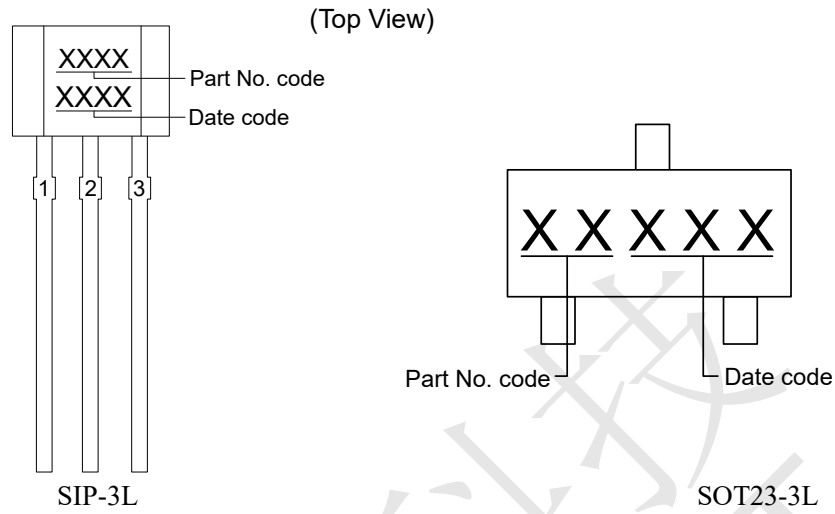


Figure 5, Land Pattern Dimension



**CST145A Unipolar Hall Effect Switch Sensor**

■ **CST145A Marking Information**

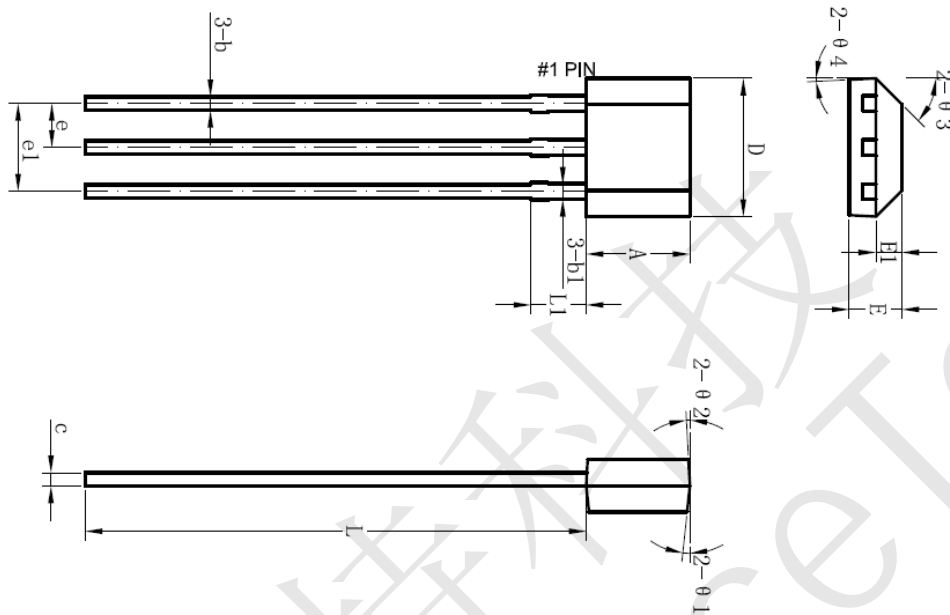




### CST145A Unipolar Hall Effect Switch Sensor

#### ■ CST145A Package Information

1) SIP-3L



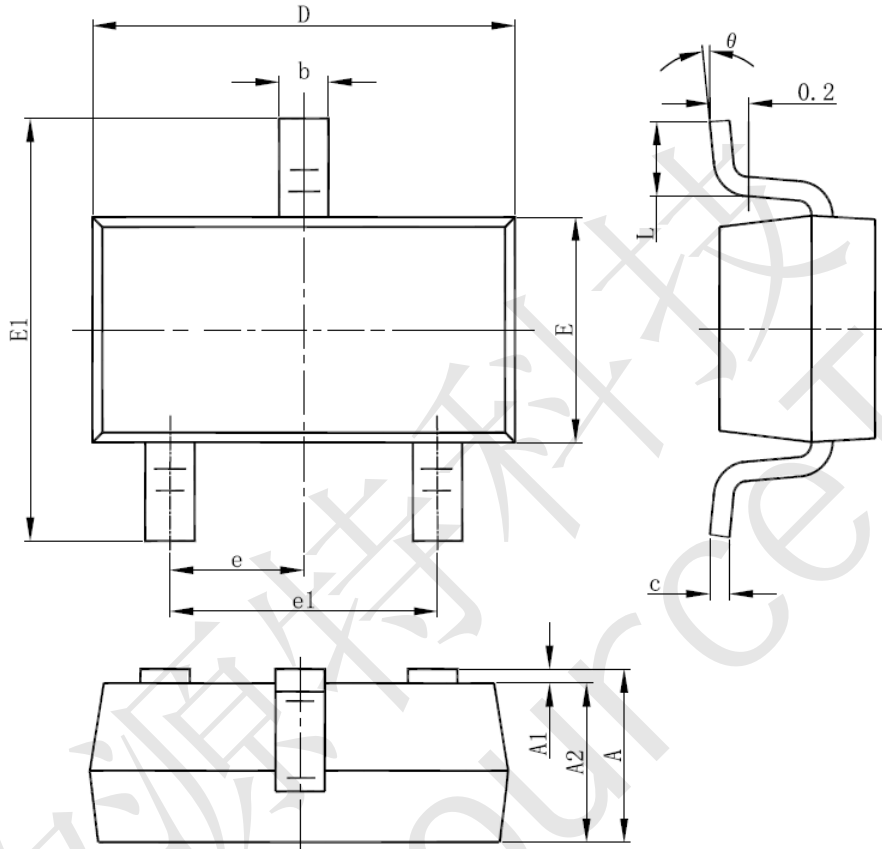
Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.90	3.00	3.10	0.11	0.12	0.12
b	0.35	0.39	0.56	0.01	0.02	0.02
b1		0.44			0.02	
c	0.36	0.38	0.51	0.01	0.01	0.02
D	3.9	4.0	4.2	0.15	0.16	0.16
E	1.42	1.52	1.62	0.06	0.06	0.06
E1		0.75			0.03	
e		1.27			0.05	
e1		2.54			0.10	
L	13.50	14.50	15.50	0.53	0.57	0.61
L1		1.60			0.06	
Θ1		6°			0.24°	
Θ2		3°			0.12°	
Θ3		45°			1.77°	
Θ4		3°			0.12°	



### CST145A Unipolar Hall Effect Switch Sensor

#### ■ CST145A Package Information

2) SOT23-3L



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.050	1.15	1.250	0.041	0.045	0.049
A1	0.000	0.050	0.100	0.000	0.002	0.004
A2	1.050	1.100	1.150	0.041	0.043	0.045
b	0.300	0.400	0.500	0.012	0.016	0.020
c	0.100	0.150	0.200	0.004	0.006	0.008
D	2.820	2.920	3.020	0.111	0.115	0.119
E	1.500	1.600	1.700	0.059	0.063	0.067
E1	2.650	2.800	2.950	0.104	0.110	0.116
e1	1.800	1.900	2.000	0.071	0.075	0.079
e	0.950 REF			0.037 REF		
L	0.300	0.450	0.600	0.012	0.018	0.024
θ	0°	4°	8°	0°	4°	8°

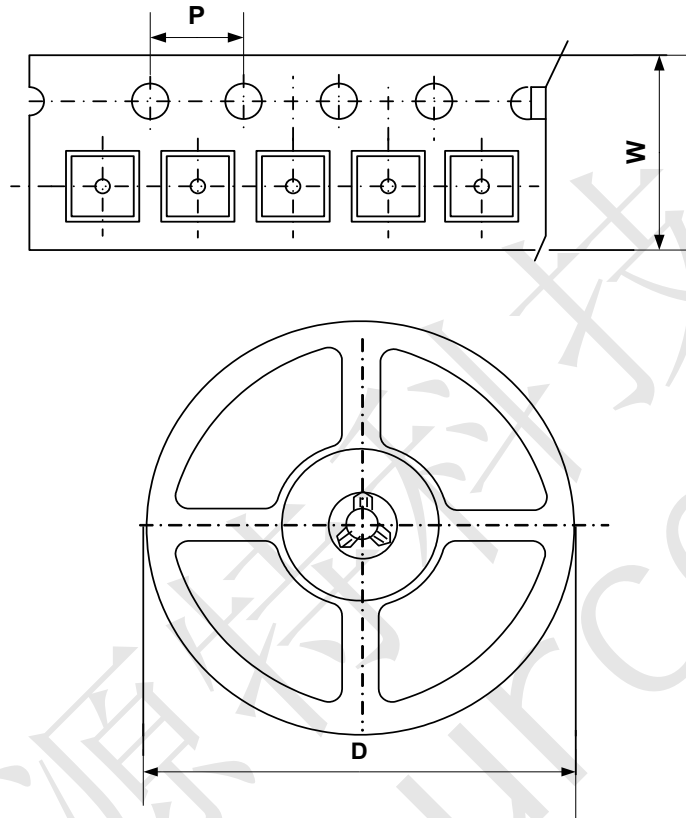




**CST145A Unipolar Hall Effect Switch Sensor**

■ **CST145A Packing Information**

1)SOT23-3L



Package Type	Carrier Width (W)	Pitch (P)	Reel Size(D)	Packing Minimum
SOT23-3L	8.0±0.1 mm	4.0±0.1 mm	180±1 mm	3000pcs

Note: Carrier Tape Dimension, Reel Size and Packing Minimum

2)SIP-3L

1. Packing Type: Bag
2. Packing minimum: 1000pcs/Bag





**CST145A Unipolar Hall Effect Switch Sensor**

IMPORTANT NOTICE

The company reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. These separate provision won't be provided.

矽源特科技  
ChipSourceTek