



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

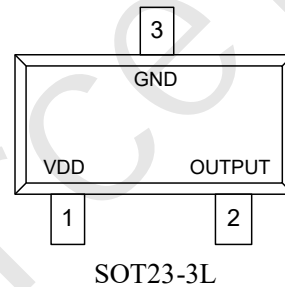
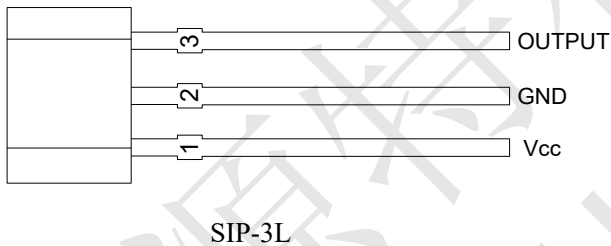
- Wide operating voltage range: 2.7V~24V
- Operating Temperature: -40°C~+150°C
- Maximum output sink current: 25mA
- Reverse polarity protection
- Open-Drain pre-driver output
- Package: SIP-3L、SOT23-3L

■ CST145A Applications

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

■ CST145A Pin Configuration

(Top View)



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

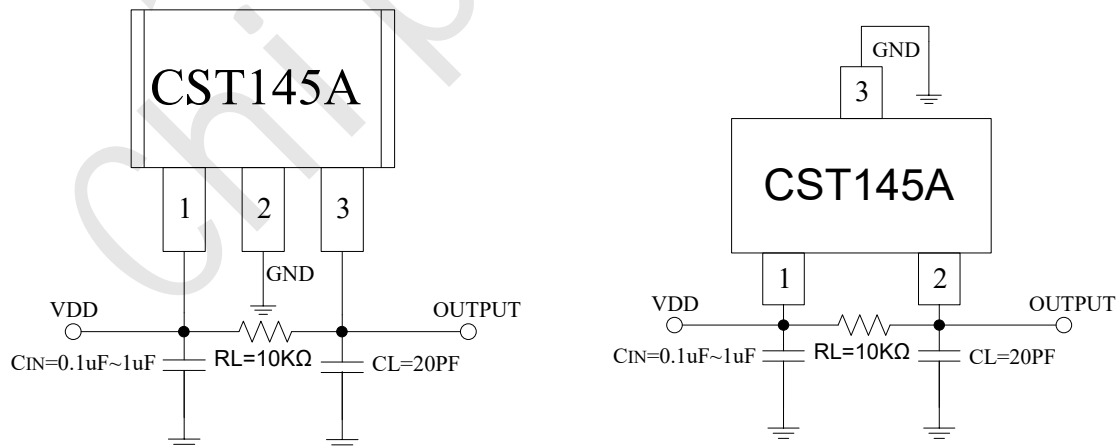


Figure 1, application circuit

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



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■ CST145A Ordering Information

Part Number	Package Type	Packing Qty	B _{OP} (Gauss)	B _{RP} (Gauss)	Temperature	Eco Plan	Lead
CST145AMF	SIP-3L	1000pcs	90(Typ.)	55(Typ.)	-40 ~ 150℃	ROHS	Cu
CST145AWAF	SOT23-3L	3000pcs	90(Typ.)	55(Typ.)	-40 ~ 150℃	ROHS	Cu

■ CST145A Block Diagram

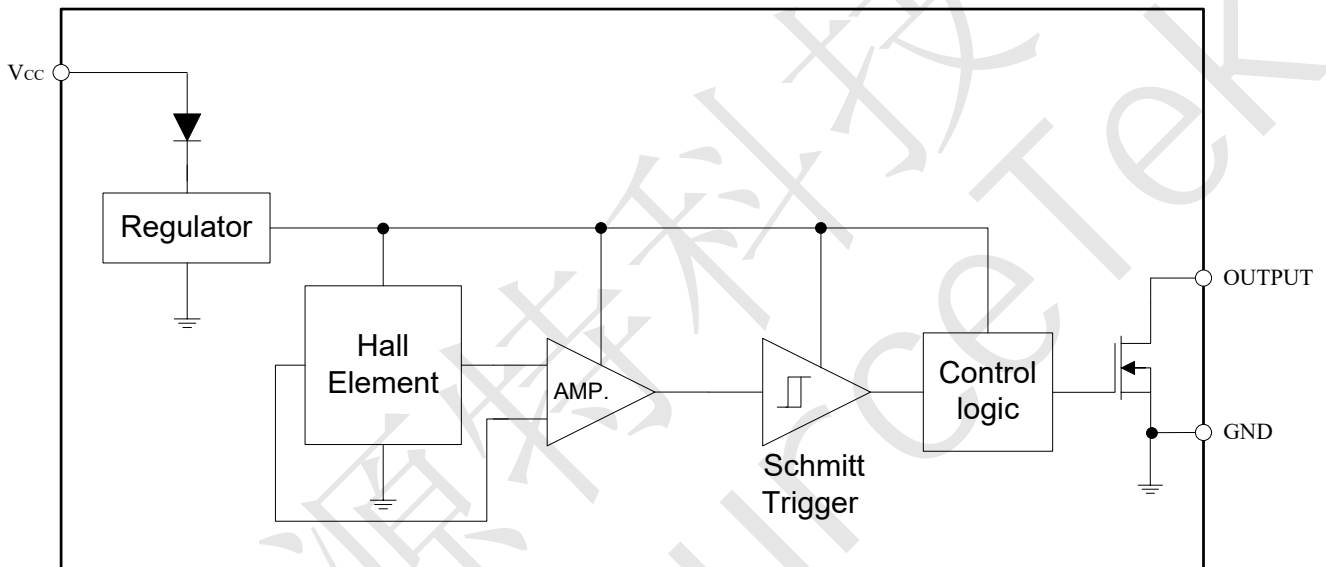


Figure 2, Block Diagram Of CST145A

■ CST145A Absolute Maximum Ratings

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



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

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

■ CST145A Magnetic Characteristics

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

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

CST145AMF-C、Ta=25°C					
Parameter	Symbol	Min.	Typ.	Max.	Unit
Operate point	B _{op}	100	130	150	Gauss
Release point	B _{rp}	65	85	105	Gauss
Hysteresis	B _{hys}	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

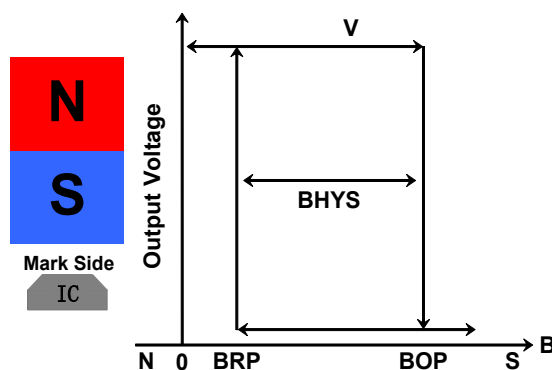


Figure 3, Magnetic Operational Characteristics Of CST145A



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■ CST145A Hall Sensor Location

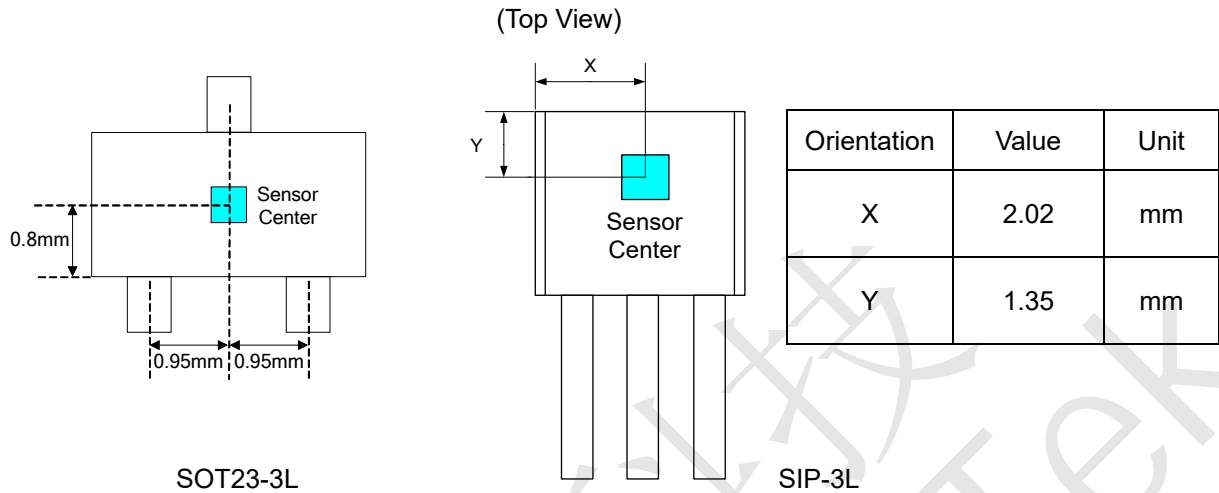


Figure4, Hall Sensor Location

■ CST145A Land Pattern (for reference only)

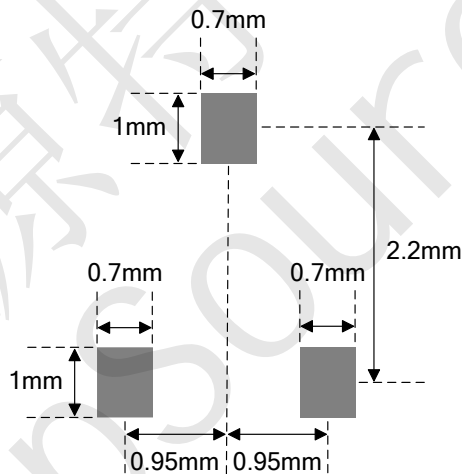


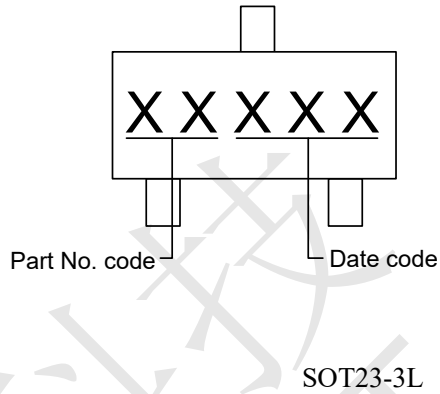
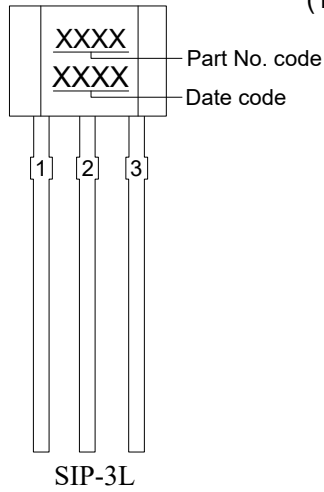
Figure 5, Land Pattern Dimension



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■ CST145A Marking Information

(Top View)

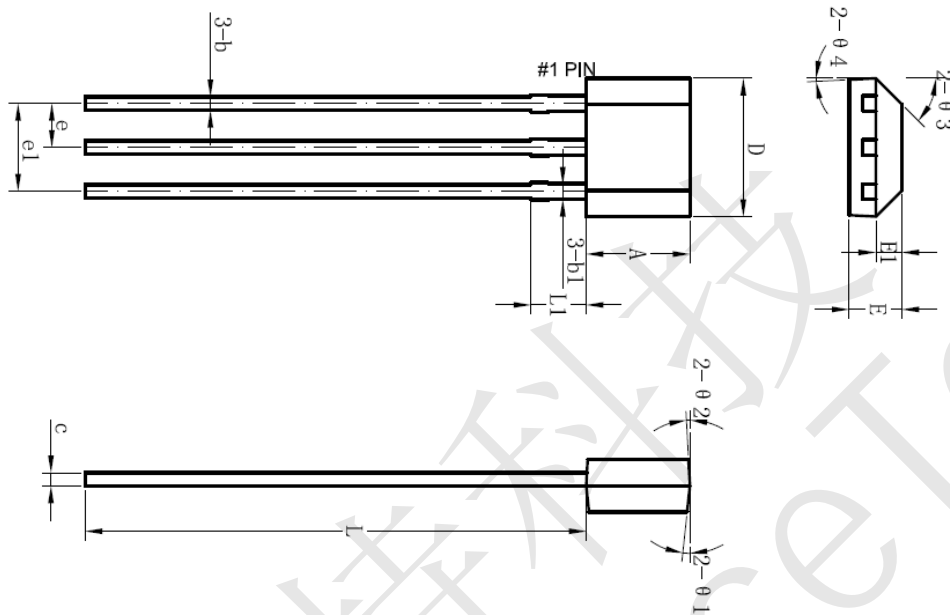




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■ CST145A Package Information

1) SIP-3L



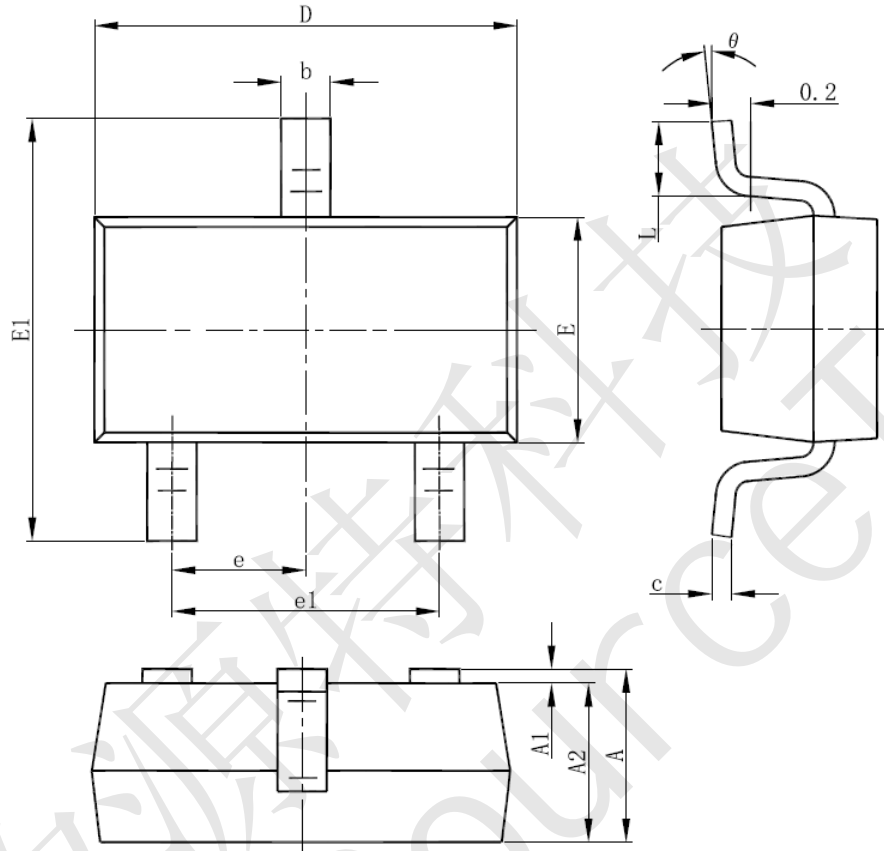
Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.90	3.00	3.10	0.11	0.12	0.12
b	0.35	0.39	0.56	0.01	0.02	0.02
b1		0.44			0.02	
c	0.36	0.38	0.51	0.01	0.01	0.02
D	3.9	4.0	4.2	0.15	0.16	0.16
E	1.42	1.52	1.62	0.06	0.06	0.06
E1		0.75			0.03	
e		1.27			0.05	
e1		2.54			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°	



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■ CST145A Package Information

2) SOT23-3L



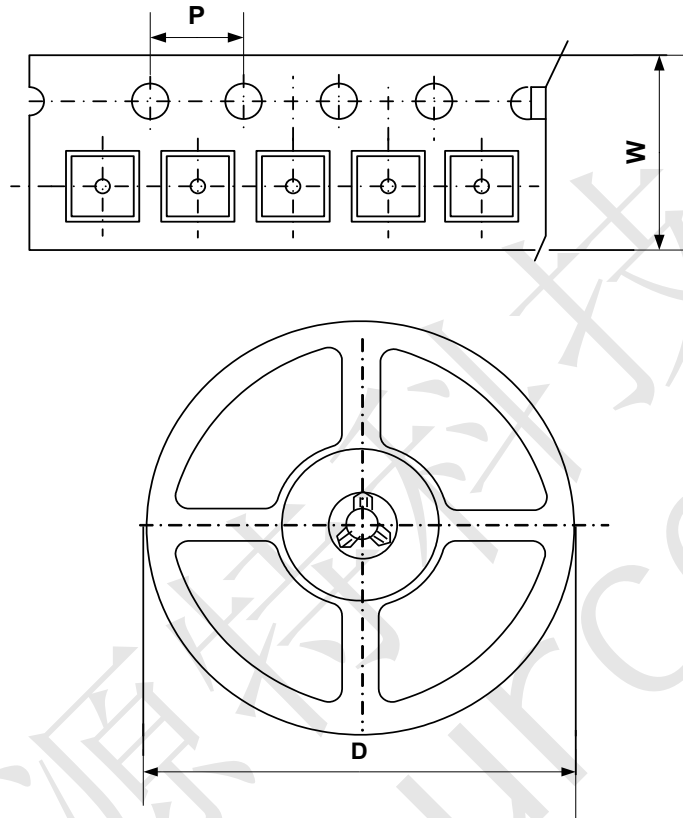
Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.050	1.15	1.250	0.041	0.045	0.049
A1	0.000	0.050	0.100	0.000	0.002	0.004
A2	1.050	1.100	1.150	0.041	0.043	0.045
b	0.300	0.400	0.500	0.012	0.016	0.020
c	0.100	0.150	0.200	0.004	0.006	0.008
D	2.820	2.920	3.020	0.111	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°



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■ 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



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