

General Description

The OCH1405 is a switched Hall-Effect IC, which is for contactless 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-collector output. The bandgap regulator allows a wideoperating voltage range. OCH1405 is rated for operating temperature range from -40°C to 150°C and voltage range from 3.8V to 24V. OCH1405 are capable of continuous 50mA sinking out and maybe cycled as high as 50mA maximum.

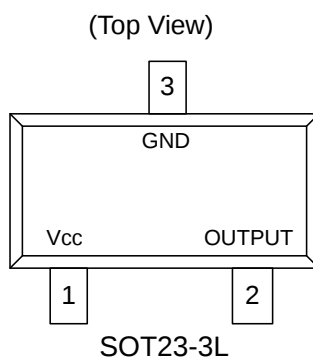
Features

- Unipolar Hall Effect Switch Sensor
- Wide operating voltage range: 3.8V~24V
- Operating Temperature: -40°C~+150°C
- Maximum output sink current: 50mA
- Open-Collector output
- Reverse polarity protection
- Package: SOT23-3L

Applications

- Intelligent Circuit Breaker
- RPM Detection
- Speed measurement
- Position Detection
- Safe Alarm Device

Pin Configuration



Name	PIN	Status	Description	
V _{CC}	1	P	IC Power Supply	
GND	2	P	IC Ground	
OUTPUT	3	O	OCH1405	It is low state during the S magnetic field
			OCH1405N	It is low state during the N magnetic field

Application Circuit

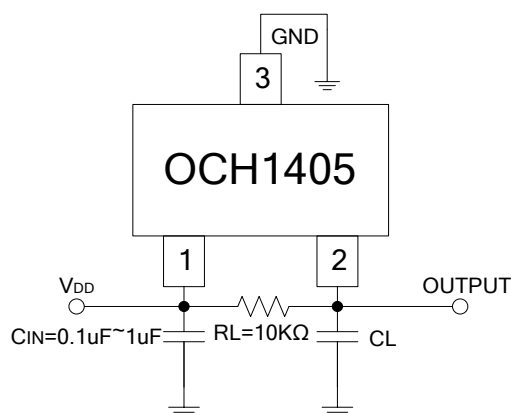


Figure 1, application circuit

Note: C_{IN} is for power stabilization and to strengthen the noise immunity, the recommended capacitance is 0.1uF. If the V_{DD} power supply is clean, the C_{IN} can be cancelled.



Ordering Information

Part Number	Package Type	Packing Qty	B _{OP} (Gauss)	B _{RP} (Gauss)	Temperature	Eco Plan	Lead
OCH1405WAF	SOT23-3L	3000pcs	120(Typ.)	65(Typ.)	-40~ +150℃	ROHS	Cu
OCH1405NWF	SOT23-3L	3000pcs	-120(Typ.)	-65(Typ.)	-40~ +150℃	ROHS	Cu

Block Diagram

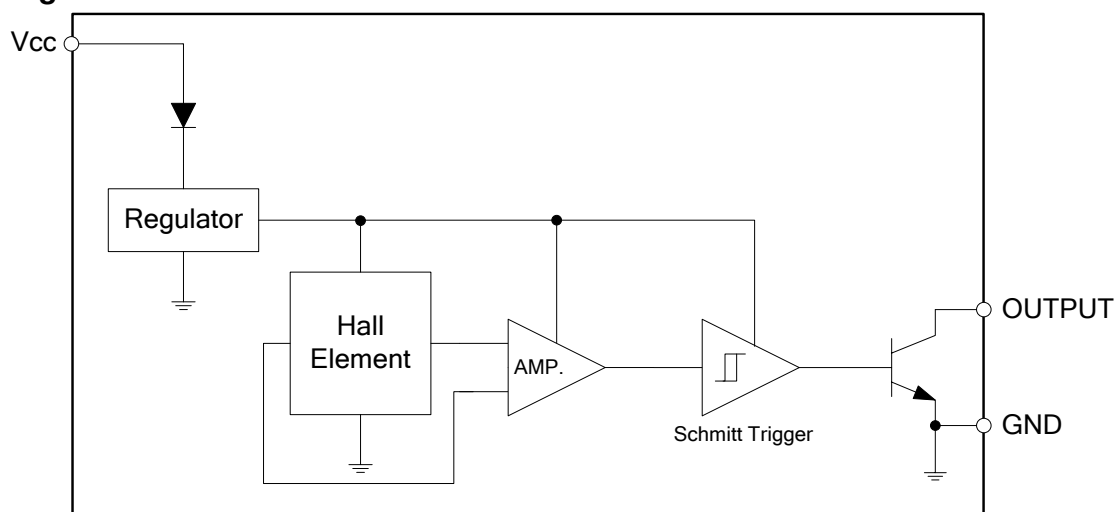


Figure 2, Block Diagram Of OCH1405

Absolute Maximum Ratings

Supply Voltage			28V
Output OFF Voltage, V _{DS}			28V
Output Maximum Sink Current (AVG)			50mA
Power Dissipation (SOT23-3L)	T _a =25℃		260mW
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℃

DC Electrical Characteristics(at T_a=25℃)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Operating voltage	V _{CC}		3.8	-	24	V
Supply current	I _{CC}	No use pin is open V _{DD} :3.8V~24V, OUTPUT "H"	-	1.9	6	mA
Output saturation voltage	V _{SAT}	V _{CC} =5V, OUT "L", I _O =25mA	-	0.15	0.4	V
Output Leakage Current	I _L	OUT "H"	-	0.01	5	uA
Output rise time	t _r	R _L =820Ω, C _L =20PF	-	145	1000	nS
Output fall time	t _f	R _L =820Ω, C _L =20PF	-	90	1000	nS



■ Magnetic Characteristics

OCH1405, Ta=25°C					
Parameter	Symbol	Min.	Typ.	Max.	Unit
Operate point	Bop	60	120	180	Gauss
Release point	Brp	20	65	-	Gauss
Hysteresis	Bhys	30	55	80	Gauss

OCH1405N, Ta=25°C					
Parameter	Symbol	Min.	Typ.	Max.	Unit
Operate point	Bop	-180	-120	-60	Gauss
Release point	Brp	-	-65	-20	Gauss
Hysteresis	Bhys	30	55	80	Gauss

■ Output VS Magnetic Pole

Part No.	Magnetic Pole	Test Conditions	Output
OCH1405	South Pole	$B > BOP$	Low
OCH1405	South Pole	$B < BRP$	High
OCH1405	North Pole	$B < BRP$	High
OCH1405N	North Pole	$B < BOP$	Low
OCH1405N	North Pole	$B > BRP$	High
OCH1405N	South Pole	$B > BRP$	High

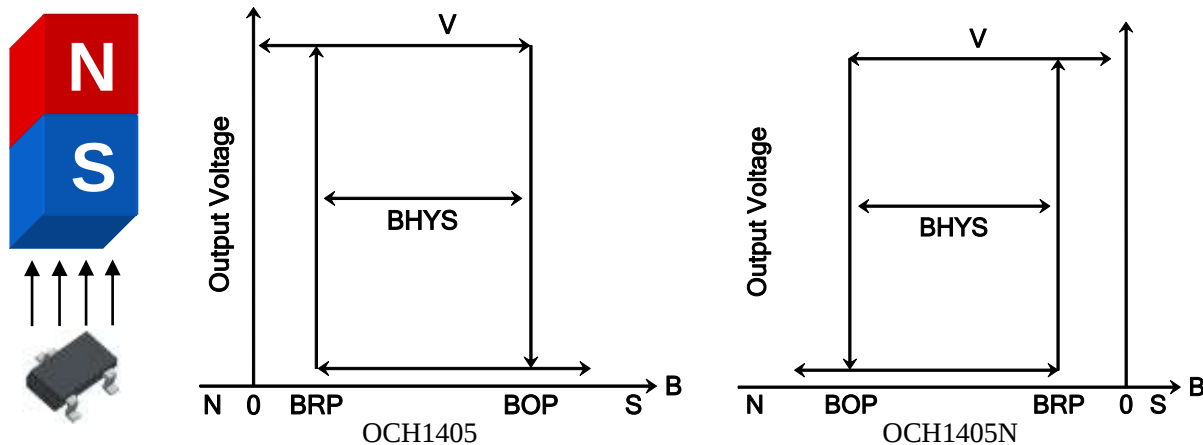
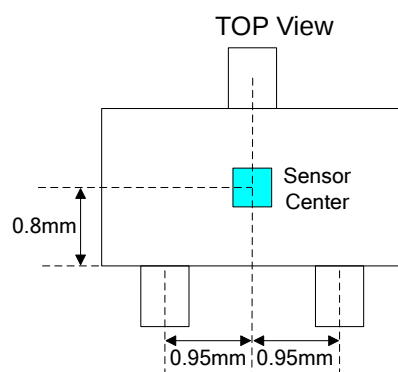


Figure 3, Operational Characteristics

■ Hall Sensor Location



SOT23-3L

Figure4, Hall Sensor Location

■ Land Pattern (for reference only)

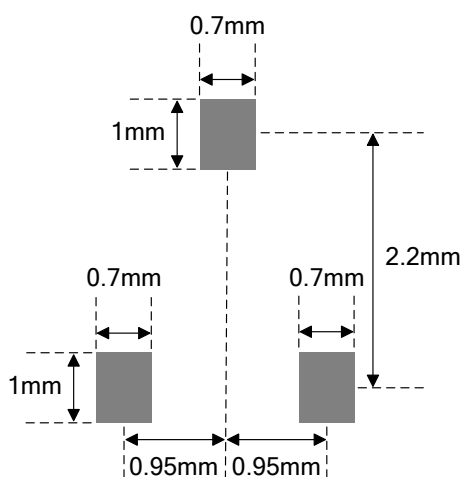
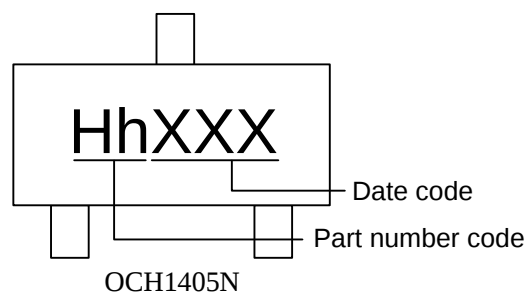
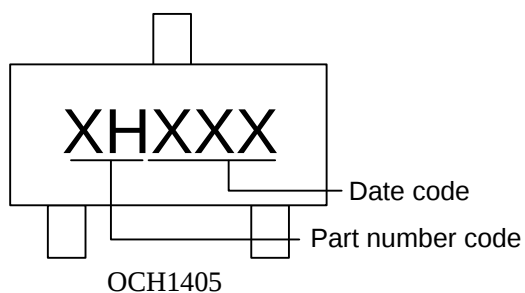


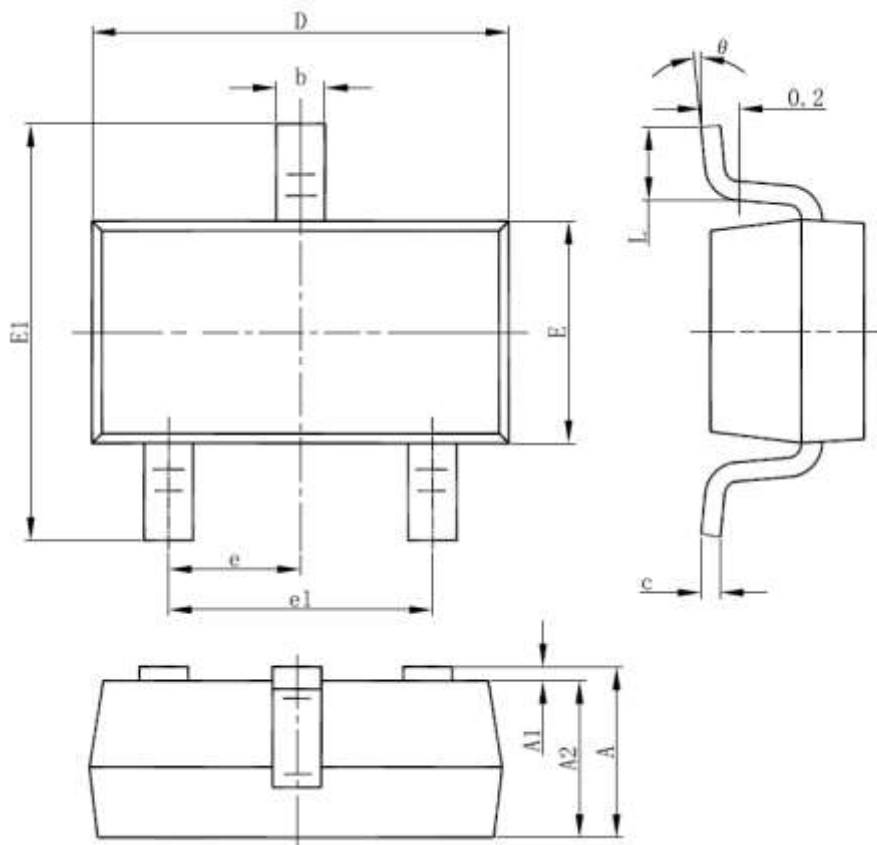
Figure 5, Land Pattern Dimension (SOT23-3L)

■ Marking Information



■ Package Information

1) SOT23-3L

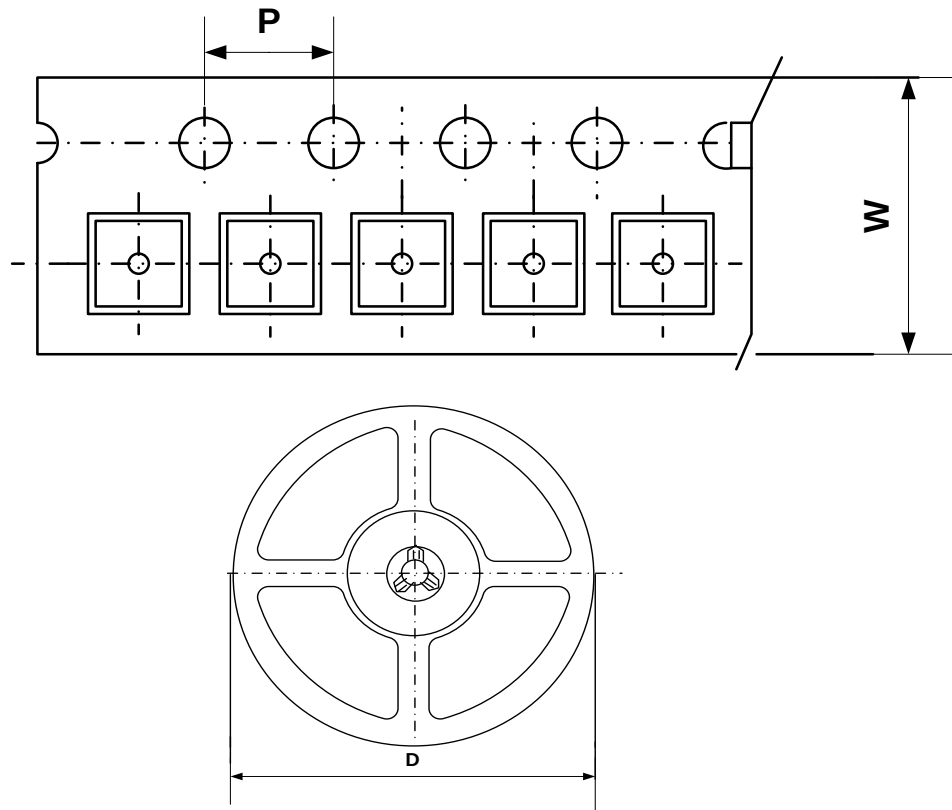


Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.050	1.15	1.250	0.041	0.045	0.049
A1	0.000	0.050	0.100	0.000	0.002	0.004
A2	1.050	1.100	1.150	0.041	0.043	0.045
b	0.300	0.400	0.500	0.012	0.016	0.020
c	0.100	0.150	0.200	0.004	0.006	0.008
D	2.820	2.920	3.020	0.111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



■ 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



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