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■ General Description

The OCH40171 is an integrated Hall effect latched sensor designed for electronic commutation of brush-less DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifiers the Hall voltage, and a Schmitt trigger to provide switching hysteresis for noise rejection, and open-collector output. An internal bandgap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range.

■ Features

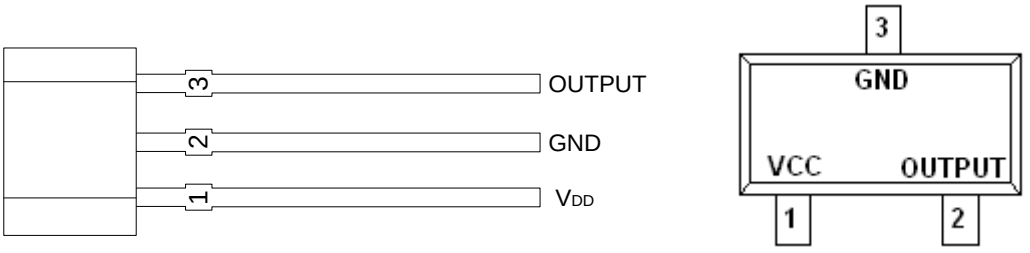
- AEC-Q100 qualified
- Wide operating voltage range: 3.8V~30V
- Wide operating temperature range: -40°C ~+150°C
- Reverse polarity protection
- Maximum output sink current 25mA
- Package: SIP3L 、SOT23-3L

■ Applications

- Rotor Position Sensing
- Brush-less DC Fan
- Brush-less DC Motor
- Speed measurement

■ Pin Configuration

(Top View)



SIP3L SOT23-3L

Pin Name	Pin No.		P/O	Pin Function
	SIP3L	SOT23-3L		
VCC	1	1	P	IC Power Supply
GND	2	3	P	IC Ground
Output	3	2	O	It is low state during the S magnetic field

■ Typical Application Circuit

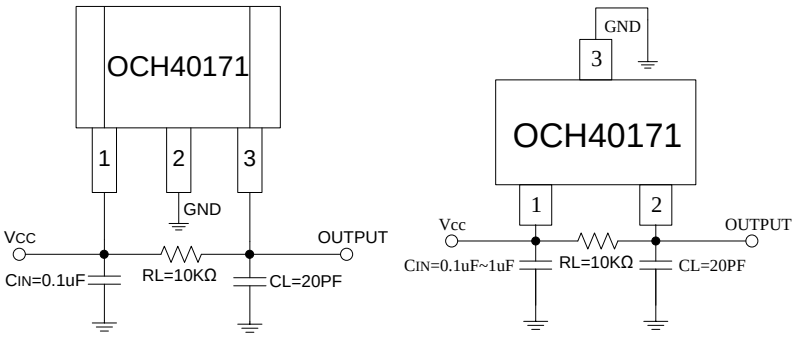


Figure 1, application circuit Of OCH40171

Note: C_{IN} is for power stabilization and to strengthen the noise immunity, the recommended capacitance is 0.1~1uF. If the V_{CC} power supply is clean, the C_{IN} can be cancelled.

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■ Ordering Information

Part Number	Package Type	Packing Qty	B_{OP} (Gauss)	B_{RP}(Gauss)	Temperature	Eco Plan	Lead
OCH40171MF	SIP-3L	1000pcs	+45 (Typ.)	-45(Typ.)	-40 ~ +150℃	ROHS	Cu
OCH40171SWAF	SOT23-3L	3000pcs	+45 (Typ.)	-45(Typ.)	-40~ +150℃	ROHS	Cu

■ Block Diagram

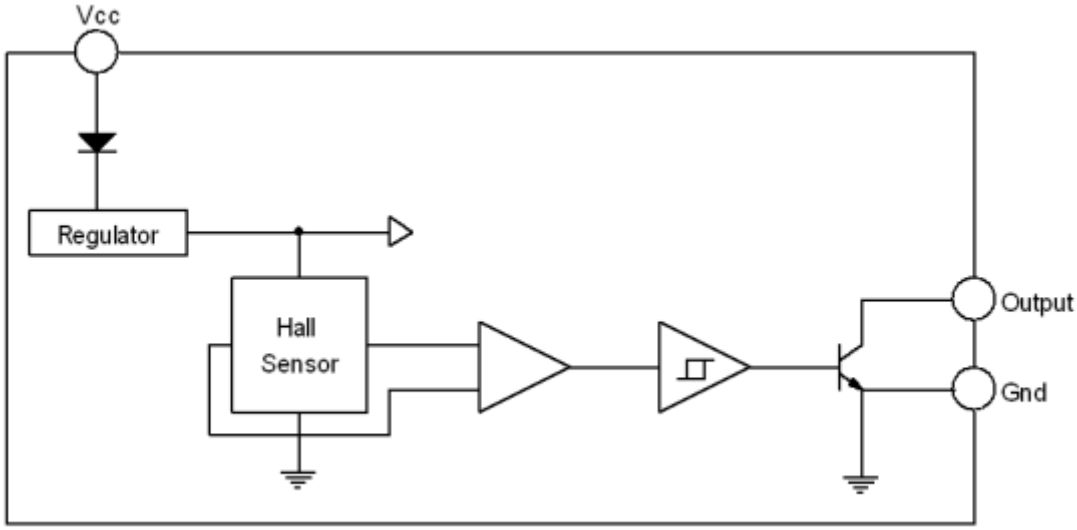


Figure 2, Block Diagram of OCH40171

■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
V_{CC} Pin Voltage	V_{CC}	-40~40	V
Output OFF Voltage, V_{CE}	V_{OUT}	40	V
Output Maximum Sink Current (AVE)	I_{SINK}	50	mA
Power Dissipation	P_D	260	mW
Operating Temperature Range	T_{OP}	-40 to +150	°C
Storage Temperature Range	T_S	-65 to+150	°C
Junction Temperature	T_J	+160	°C
Lead Temperature (Soldering,10 sec)	T_L	+260	°C
ESD Capability	HBM	8000	V
	MM	800	V

■ Electrical Characteristics(at Ta=25°C, V_{CC}=12V)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{CC}	Operating Voltage		3.8	-	30	V
Icc	Supply current	Vcc:4.0V~30V, OUT “H”	3.0	3.3	7	mA
V_{SAT}	Output Saturation Voltage	Vcc=12V, OUT “L”, I_{SINK}=25mA	-	-	0.4	V
t_r	Output Rise time	R_L=820Ω, C_L=20pF	-	0.1	0.7	uS
t_f	Output Fall time	R_L=820Ω, C_L=20pF	-	0.265	1	μS

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■ Magnetic Characteristics (V_{CC}=12V)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Operate point	Bop	Ta=25℃	+10	45	+80	Gauss
		Ta=-40~150℃	+5	-	+140	
Release Point	Brp	Ta=25℃	-80	-45	-10	Gauss
		Ta=-40~150℃	-140	-	-5	
Hysteresis	Bhys	Ta=25℃	30	90	150	Gauss
		Ta=-40~150℃	30	-	240	

■ Output VS Magnetic Pole

Part Number	Magnetic Pole	Test Conditions	Output
OCH40171	South Pole	B > BOP	Low
OCH40171	North Pole	B < BRP	High

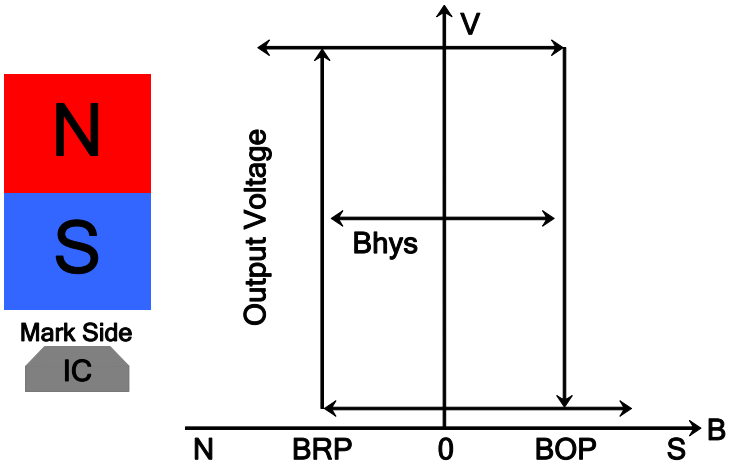
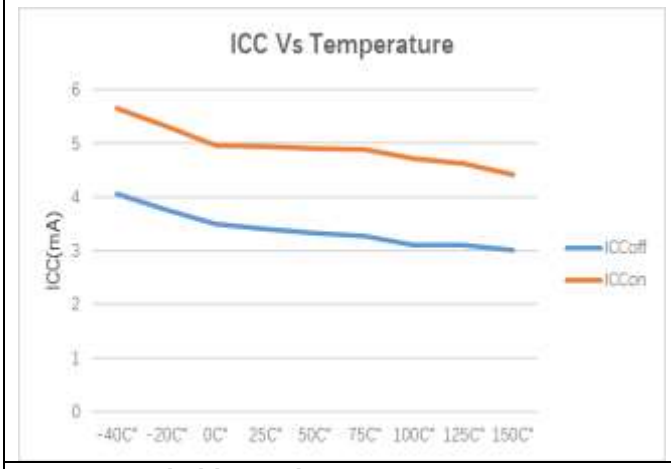
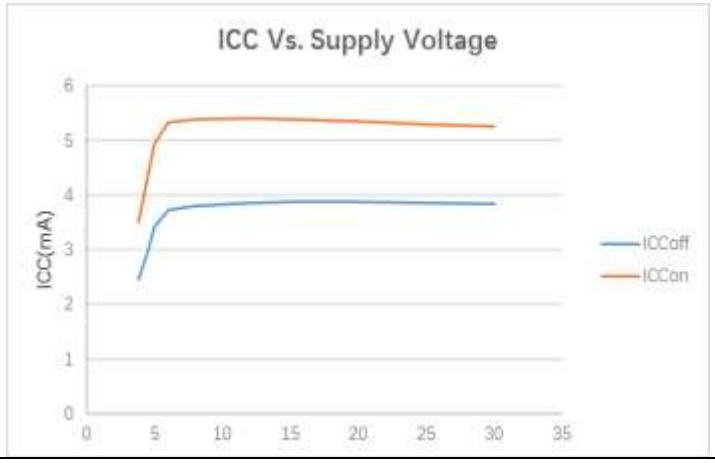
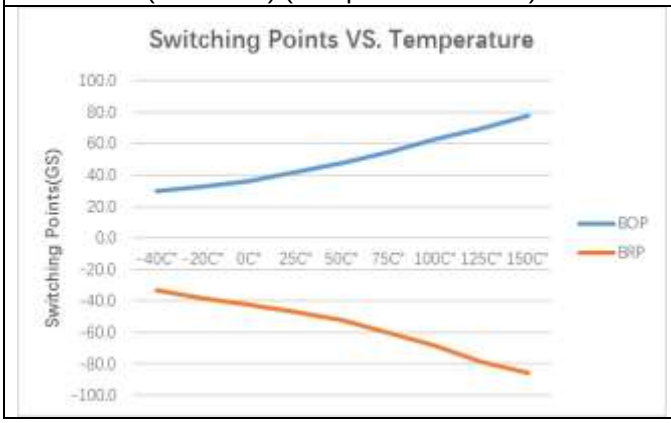
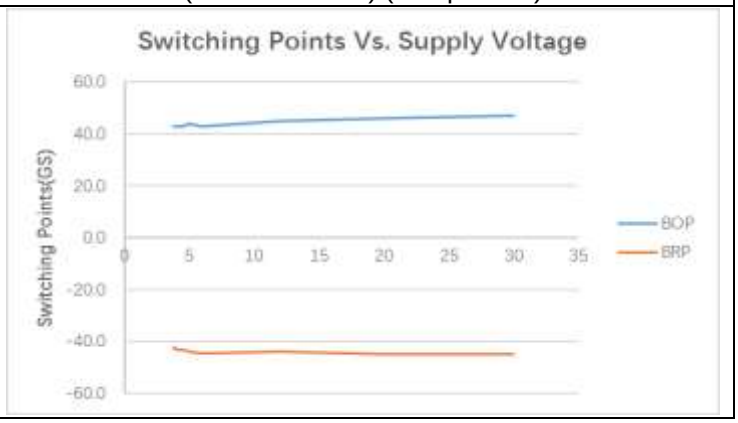


Figure 3, Magnetic Operational Characteristics Of OCH40171

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■ Typical Characteristics

(Unless otherwise noted, typical values are at T_A=25℃, V_{DD}=5.0V)

Supply Current I_{ON} vs. Temperature (V_{DD}=5.0V) (Temp=-40℃~150℃)	**Supply Current I_{ON} vs. Supply Voltage** (V_{DD}=3.5V~30V) (Temp=25℃)
	
Switching Points vs. Temperature (V_{DD}=5.0V) (Temp=-40℃~150℃)	**Switching Points vs. Supply Voltage** (V_{DD}=3.5V~30V) (Temp=25℃)
	

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Hall Sensor Location

The Figure4 is hall sensor location, where marks the IC number.

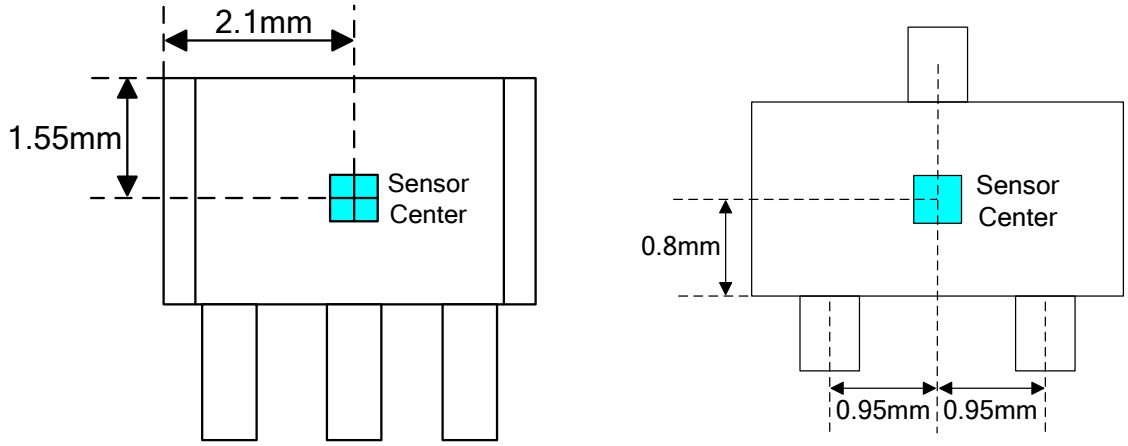


Figure4, OCH40171 Hall Sensor Location

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Land Pattern (for reference only)

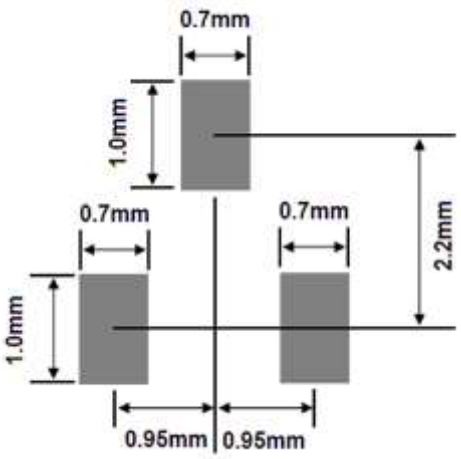
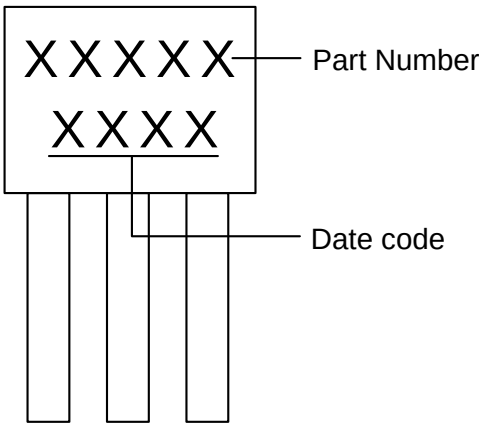


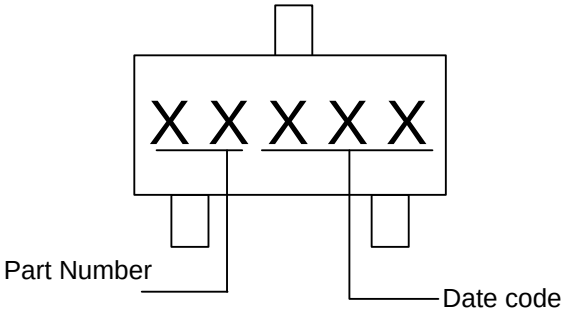
Figure 5, Land Pattern Dimension (SOT23-3L)

■ Marking Information

1）SIP-3L



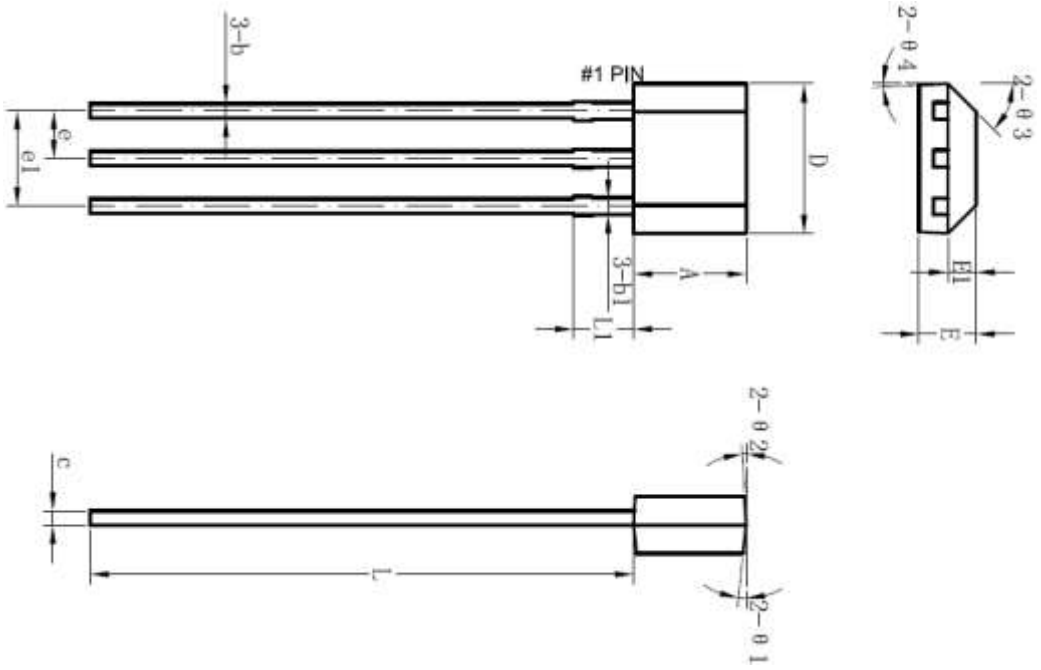
2）SOT23-3L



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Package Information

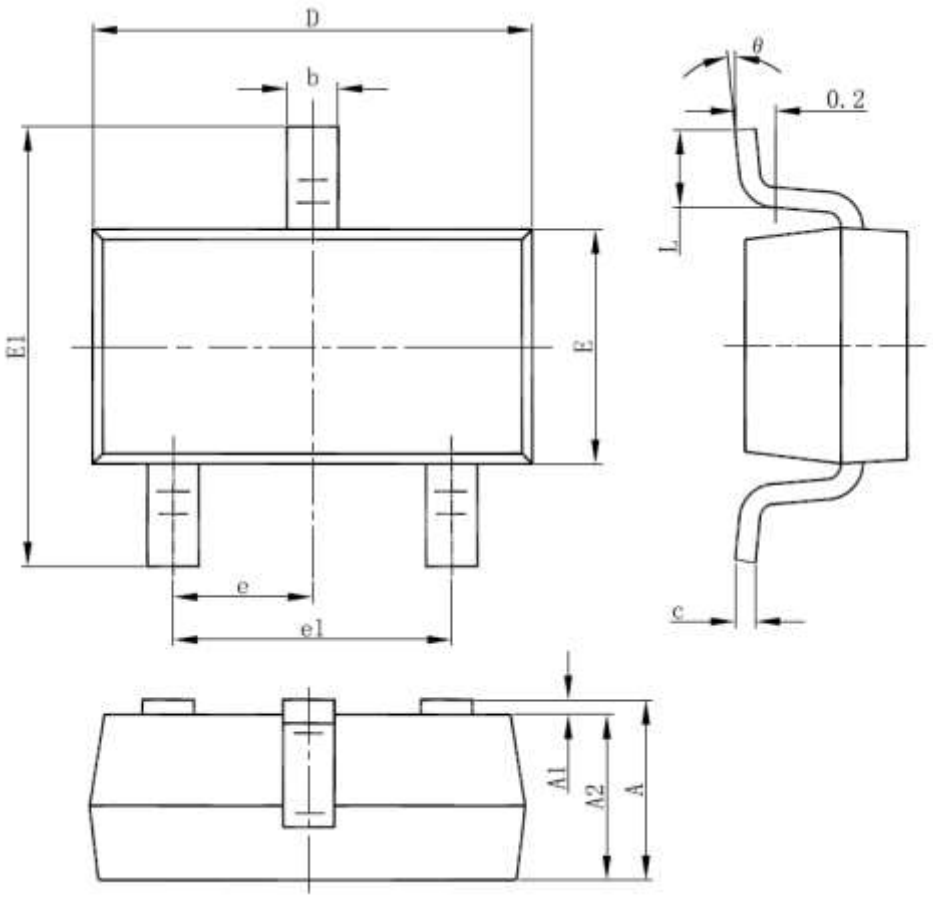
1）SIP-3L



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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2) SOT23-3L



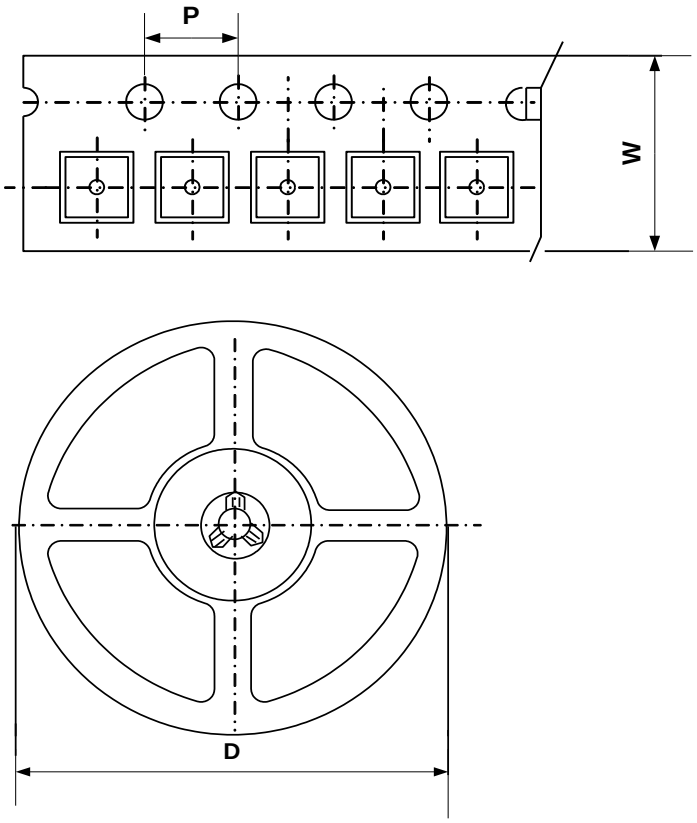
Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.050	1.15	1.250	0.041	0.045	0.049
A1	0.000	0.050	0.100	0.000	0.002	0.004
A2	1.050	1.100	1.150	0.041	0.043	0.045
b	0.300	0.400	0.500	0.012	0.016	0.020
c	0.100	0.150	0.200	0.004	0.006	0.008
D	2.820	2.920	3.020	0.111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

1)SIP-3L
1. Packing Type: Bag
2. Packing minimum: 1000pcs/Bag

2) 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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