

Magnetic Sensor ICs**Continuous-Time Ratio-metric
Linear Hall-Effect Sensor IC****AS1247****● General Description**

The AS1247 is small, versatile linear Hall effect devices which are operated by the magnetic field from a permanent magnet or an electromagnet. They are optimized to accurately provide a voltage output that is proportional to an applied magnetic field. These devices have a quiescent output voltage that is about 50% of the supply voltage.

The Hall-effect integrated circuit included in each device includes a Hall sensing element, a linear amplifier, and a CMOS Class AB output structure. Integrating the Hall sensing element and the amplifier on a single chip minimizes many of the problems normally associated with low voltage level analog signals.

High precision in output levels is obtained by internal gain and offset trim adjustments made at end-of-line during the manufacturing process.

The integrated circuitry provides increased temperature stability and sensitivity, for both linear target motion and rotational motion. These linear position sensors have an operating temperature range of -40°C to +150°C, appropriate for industrial environments. They respond to either positive or negative Gauss, monitoring either or both magnetic poles. The quad Hall sensing element minimizes the effects of mechanical or thermal stress on the output. The positive temperature coefficient of the sensitivity helps compensate for the negative temperature coefficients of low cost magnets, providing a robust design over a wide temperature range.

The AS1247 is available in SIP-3L, DFN1014-4L, DFN1616-6L and SSOT23-3L packages, and is rated over the -40°C to +150°C. These packages are available in a lead (Pb) free version.

● Features

- Input Voltage Range : 2.5V to 5.5V
- Fast Power-on Time: < 10uS
- Power consumption of 3.0mA/3.3V
- High Speed 100KHz Detection Bandwidth
- Quiescent Output Voltage with 50% * VCC
- Single Current Sinking or Current Sourcing Output
- Linear Output For Circuit Design Flexibility
- Temperature Stable Quiescent Output Voltage
- Quad Hall Sensing Element For Stable Output
- Responds to Either Positive or Negative Gauss
- Robust EMC Protection
- Small Solution Size
- RoHS & Green Compliant
- SIP-3L, DFN1014-4L, DFN1616-6L and SSOT23-3L Packages
- -40°C to +150 °C Temperature Range

● Applications

- Current Sensing
- Motor Control
- Keyboard
- Game Controllers and Peripherals
- Linear Position Sensing
- Magnetic Code Reading
- Rotary Position Sensing
- Ferrous Metal Detector
- Vibration Sensing

Ordering Information

AS1247XXX

Package:
D: DFN1014-4L
D6: DFN1616-6L
S2: SSOT23-3L
M: SIP-3L

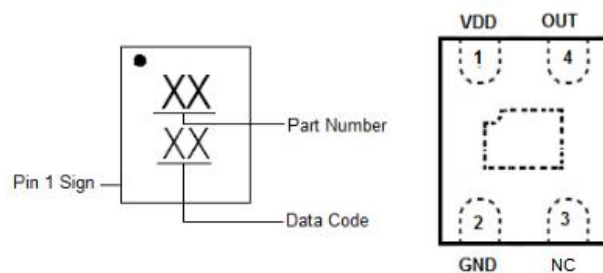
Packing:
R: Tape & Reel

Temperature Grade:
Y: -40°C~125°C
Z: -40°C~150°C

Part Number	Sensitivity (Typ. $V_{CC}=3.3V$)	Package Type	Package Qty	Temperature	Eco Plan
AS1247DRY	1.5mV/Gauss	DFN1014-4L	7-in reel 3000pcs/reel	-40~125°C	Green
AS1247D6RY	1.5mV/Gauss	DFN1616-6L	7-in reel 3000pcs/reel	-40~125°C	Green
AS1247S2RY	1.5mV/Gauss	SSOT23-3L	7-in reel 3000pcs/reel	-40~125°C	Green
AS1247MBY	1.5mV/Gauss	SIP-3L	1000pcs/package	-40~125°C	Rohs
AS1247DRZ	1.5mV/Gauss	DFN1014-4L	7-in reel 3000pcs/reel	-40~150°C	Green
AS1247D6RZ	1.5mV/Gauss	DFN1616-6L	7-in reel 3000pcs/reel	-40~150°C	Green
AS1247S2RZ	1.5mV/Gauss	SSOT23-3L	7-in reel 3000pcs/reel	-40~150°C	Green
AS1247MBZ	1.5mV/Gauss	SIP-3L	1000pcs/package	40~150°C	Rohs

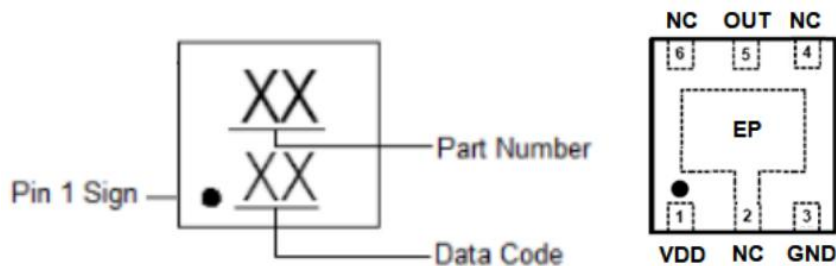
Marking & Pin Assignment

DFN1014-4L



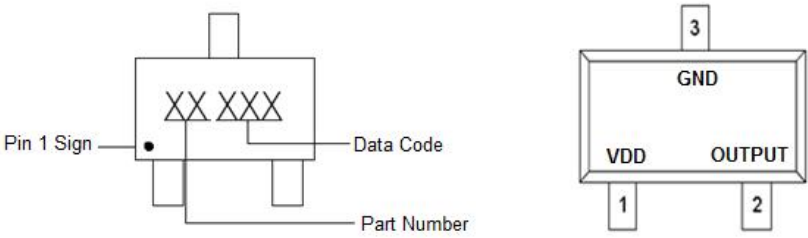
Pin Name	Pin No.	I/O	Pin Function
	DFN1014-4L		
VDD	1	P	Input Power Supply
GND	2	P	Ground
OUTPUT	4	O	Output Pin
NC	3	-	Not Connect

DFN1616-6L



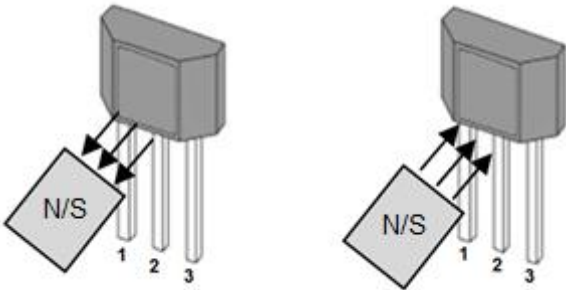
Pin Name	Pin No.	I/O	Pin Function
	DFN1616-6		
VDD	1	P	Input Power Supply.
GND	3	P	Ground.
OUT	5	O	Output Pin.
NC	2,4,6	-	Not Connected

SSOT23-3L:



Pin Name	Pin No.	I/O	Pin Function
	SSOT23-3L		
VDD	1	P	Input Power Supply
GND	3	P	Ground
OUTPUT	2	O	Output Pin

SIP-3L



Pin Name	Pin No.	I/O	Pin Function
	SIP-3L		
VDD	1	P	Input Power Supply
GND	2	P	Ground
OUTPUT	3	O	Output Pin.

■ Typical Application Circuit

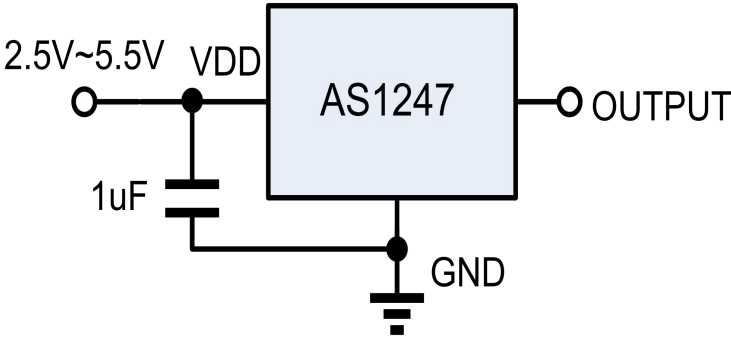
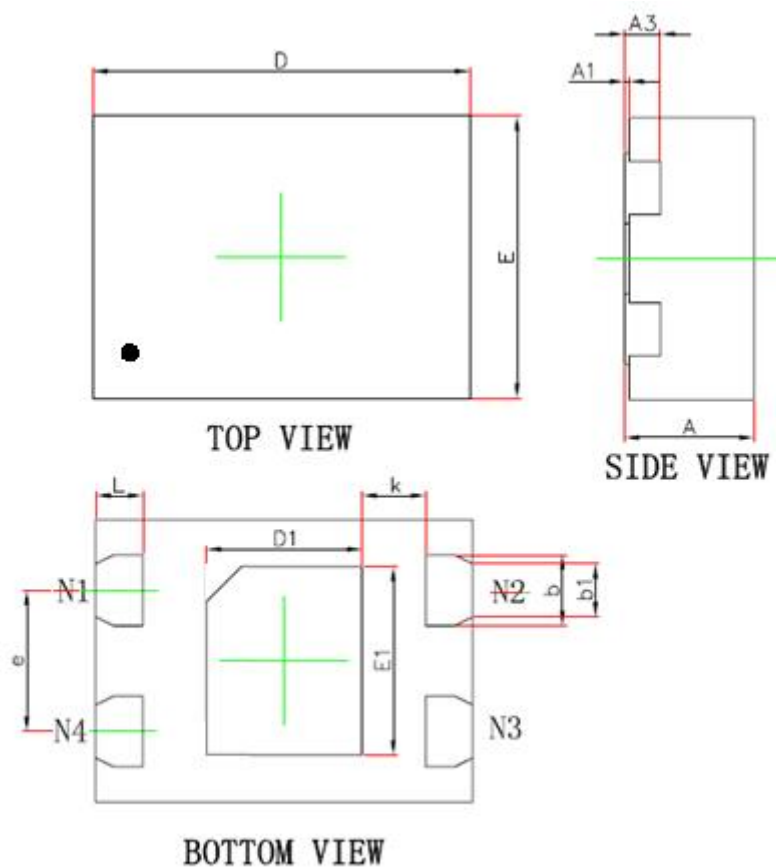


Figure 1, Typical Application Circuit of AS1247

Note: C is for power stabilization and to strengthen the noise immunity, the recommended capacitance is 1uF.

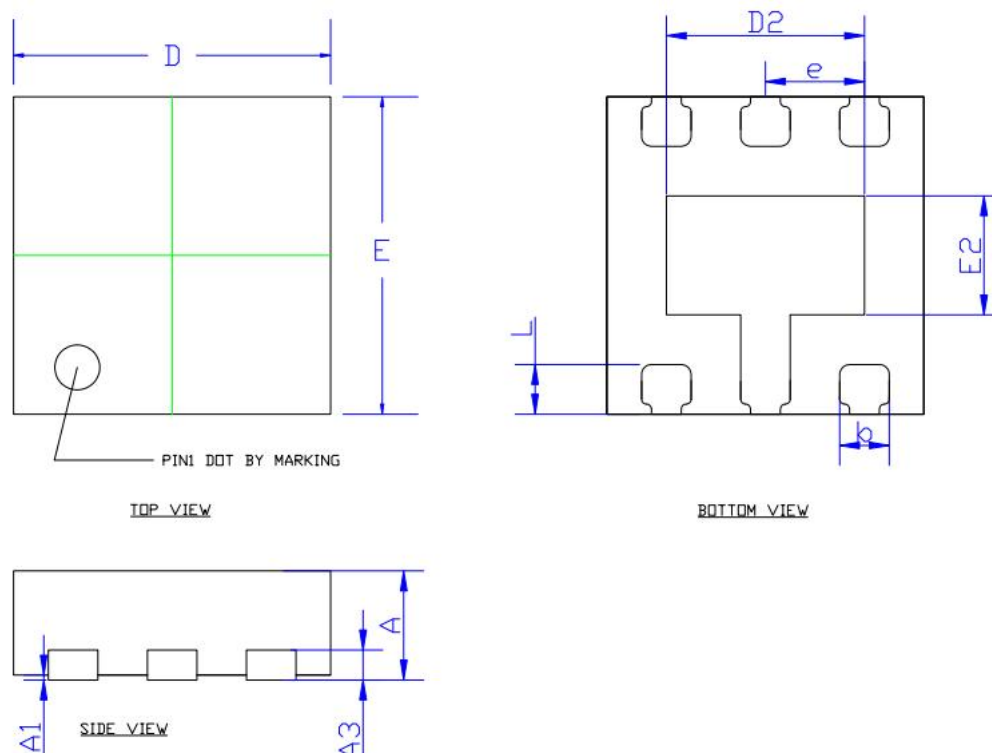
■ Package Information

DFN1014-4L:



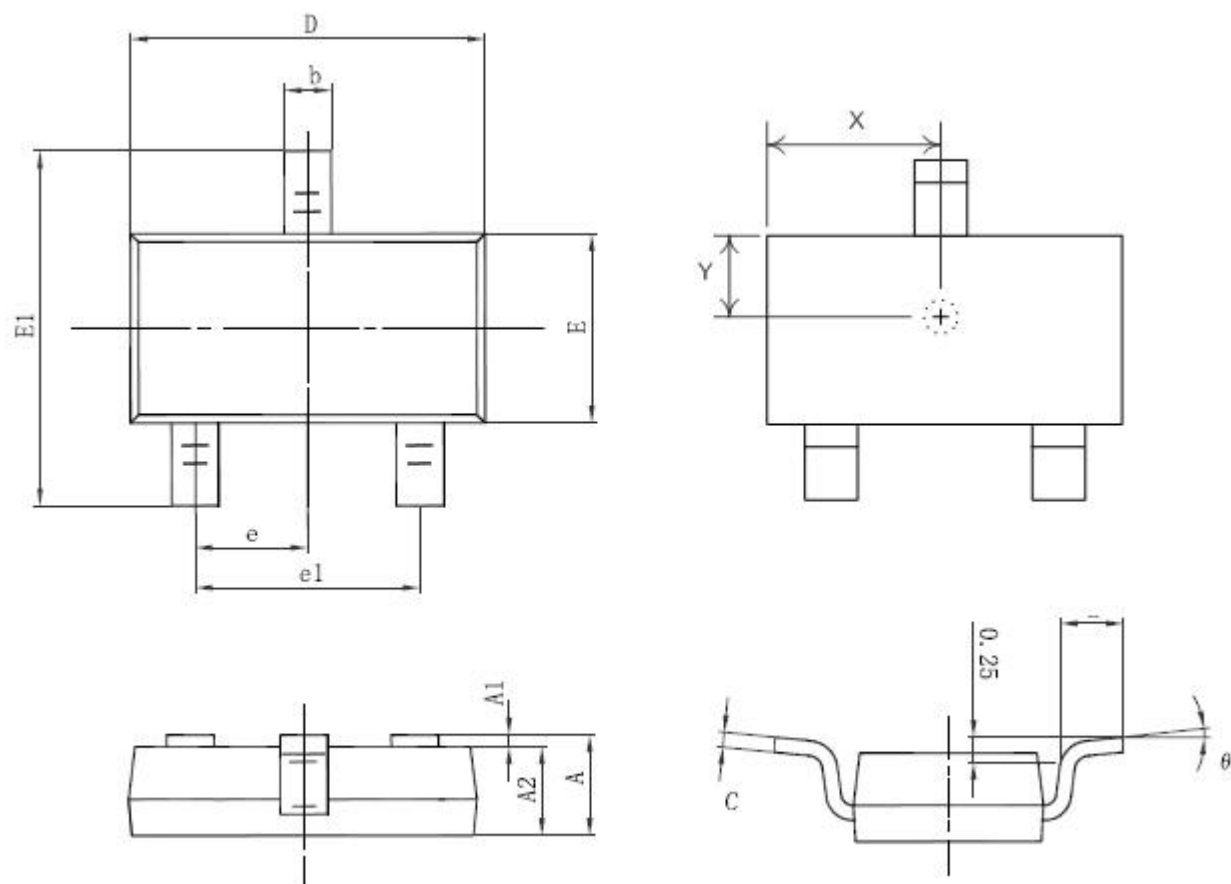
Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.320	0.370	0.400	0.013	0.014	0.016
A1	0.000	-	0.050	0.000	-	0.002
A3	0.102 (BSC)			0.004 (BSC)		
D	1.400 (BSC)			0.055 (BSC)		
E	1.000 (BSC)			0.039 (BSC)		
D1	0.500	0.600	0.700	0.020	0.024	0.028
E1	0.700	0.800	0.900	0.028	0.031	0.035
L	0.150	0.200	0.250	0.006	0.008	0.010
b	0.170	0.220	0.270	0.007	0.009	0.011
b1	0.170	0.220	0.270	0.007	0.009	0.011
e	0.500 (BSC)			0.020 (BSC)		
k	0.200 (BSC)			0.008 (BSC)		

DFN1616-6L:



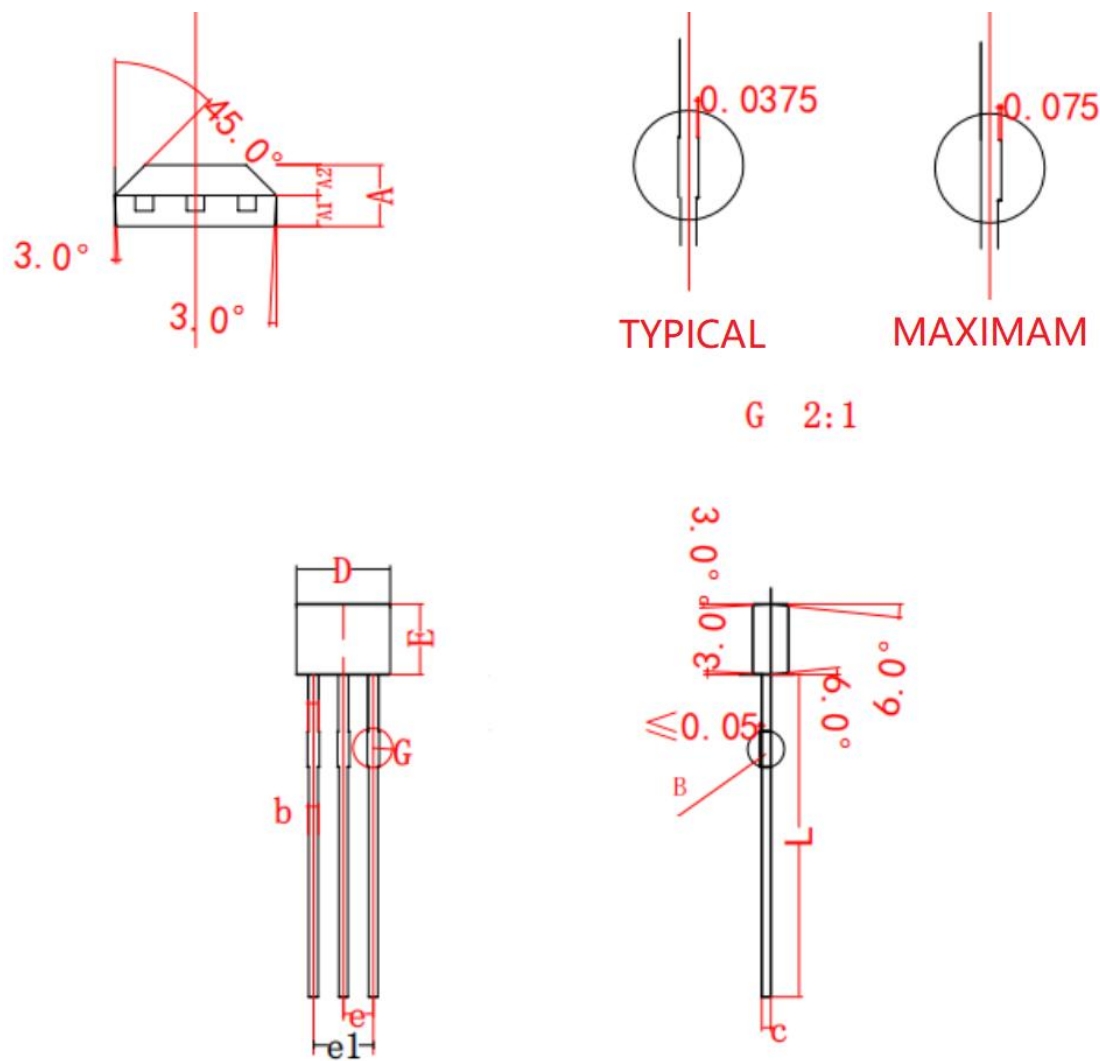
Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.500	0.550	0.600	0.020	0.022	0.024
A1	0.000	-	0.050	0.000	-	0.002
A3	0.152 (BSC)			0.006 (BSC)		
D	1.550	1.600	1.650	0.061	0.063	0.065
E	1.550	1.600	1.650	0.061	0.063	0.065
D2	0.850	1.000	1.100	0.033	0.039	0.043
E2	0.700	0.800	0.900	0.028	0.031	0.035
L	0.200	0.250	0.300	0.008	0.010	0.012
b	0.200	0.250	0.300	0.008	0.010	0.012
e	0.500 (BSC)			0.020 (BSC)		

SSOT23-3L:



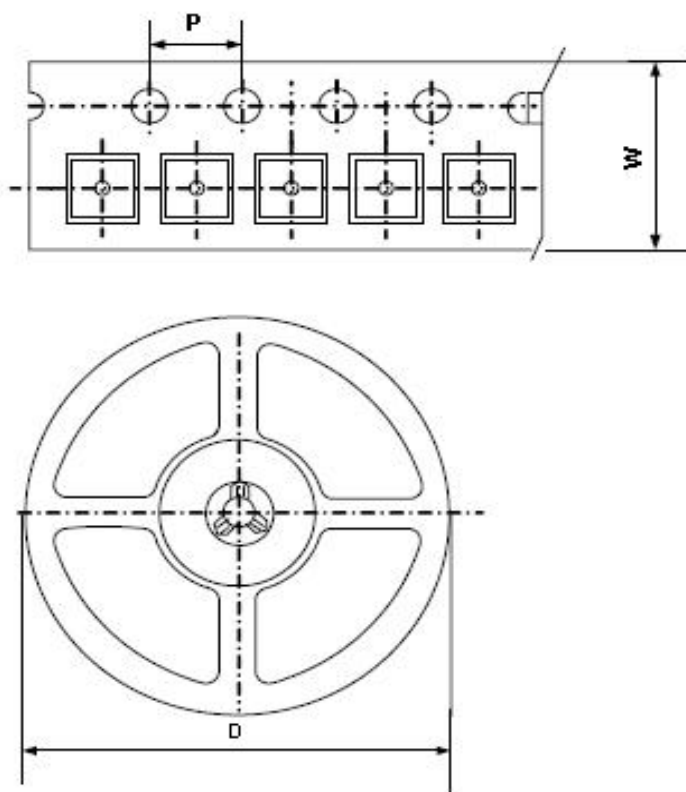
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950(TPY)		0.037 (TPY)	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
θ	0°	8°	0°	8°
X	1.450(TPY)		0.057 (TPY)	
Y	0.650(TPY)		0.026 (TPY)	

SIP-3L:



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.420	1.620	0.056	0.064
A1	0.700	0.850	0.028	0.033
A2	0.650	0.850	0.026	0.033
b	0.300	0.500	0.012	0.020
c	0.350	0.430	0.014	0.017
D	3.800	4.200	0.150	0.165
E	2.800	3.200	0.110	0.126
e	1.250	1.310	0.049	0.052
e1	2.500	2.620	0.098	0.103
L	14.000	15.000	0.551	0.591

■ Packing Information



Package Type	Carrier Width(W)	Pitch(P)	Reel Size(D)	Packing Minimum
DFN1014-4L	8.0±0.1 mm	4.0±0.1 mm	180±1 mm	3000pcs
DFN1616-6L	8.0±0.1 mm	4.0±0.1 mm	180±1 mm	3000pcs
SSOT23-3L	8.0±0.1 mm	4.0±0.1 mm	180±1 mm	3000pcs

Note: Carrier Tape Dimension, Reel Size and Packing Minimum

■ Packing Information

SIP-3L:

- 1, Packing type: Bag
- 2, Packing minimum: 1000pcs