

SHC6258A 24Bit 19.2-kSPS, Analog-To-Digital Converters With Programmable Gain Amplifier (PGA) For Sensor Measurement

1 Features

- Programmable Data Rates Up to 19.2 kSPS
- Up to 16/8 single end/differential channels
- Real Single-Cycle Settling (SINGLE_CYCLE bit =1)
- Automatic channel sequencer function
- Low-Noise PGA
- Dual 0.1% Matched Programmable Excitation Current Sources
- Precision 10 μ A IOUT0 special for NTC measurement
- Internal Reference: 8ppm/ $^{\circ}$ C
- Simultaneous 50Hz and 60Hz Rejection at 25 SPS(Single Cycle Settling)
- Sensor Burn-Out Detection and bias generator
- 4 General-Purpose I/Os
- Internal Temperature Sensor
- Analog Supply: Unipolar (2.7 V to 5.25 V) and Bipolar ($\pm$ 2.5 V) Operation
- Digital Supply: 2.7 V to 5.25 V

2 Applications

- Temperature Sensor Measurements:
 - RTDs, Thermocouples, and Thermistors
- Pressure Measurements
- Factory Automation and Process Controls
- Instrumentation

3 Description

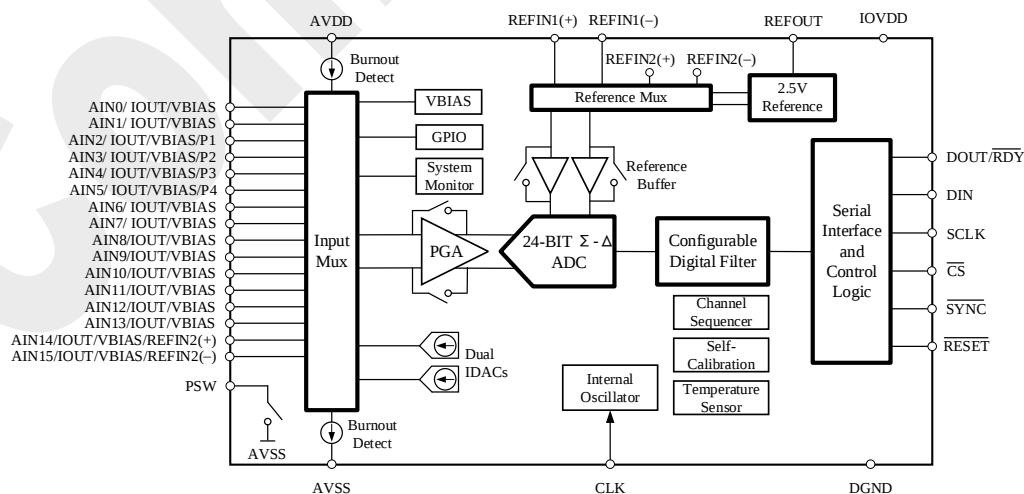
The SHC6258A device is a precision, 24-bit analog-to-digital converter (ADC) that include many integrated features to reduce system cost and component count for sensor measurement applications. The device features a low-noise, programmable gain amplifier (PGA), a precision delta-sigma ($\Delta\Sigma$) ADC with a single-cycle settling digital filter, and an internal oscillator. The SHC6258A device also provide a built-in, low-drift voltage reference, and two matched programmable excitation current sources (IOUTs). An input multiplexer supports eight differential inputs. In addition, the multiplexer integrates sensor burn-out detection, voltage bias for thermocouples, system monitoring, and general purpose digital I/Os. The PGA provides selectable gains up to 128V/V. These features provide a complete front-end solution for temperature sensor measurement applications including thermocouples, thermistors, and resistance temperature detectors (RTDs) and other small signal measurements including resistive bridge sensors.

The digital filter settles in a single cycle to support fast channel cycling when using the input multiplexer (SINGLE_CYCLE bit =1), and provides data rates up to 19.2 kSPS. For certain data rates, both 50Hz and 60Hz interference are rejected by the filter.

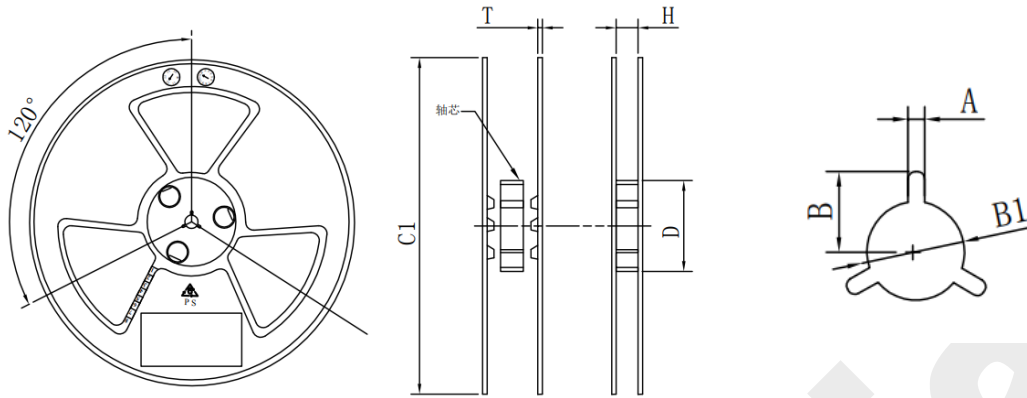
Device Information

DEVICE NAME	PACKAGE (PIN)	BODY SIZE
SHC6258A	QFN (32)	5.00 mm $\times$ 5.00 mm

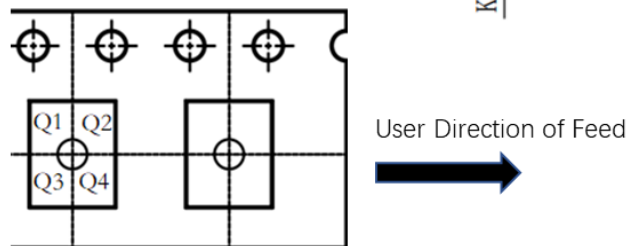
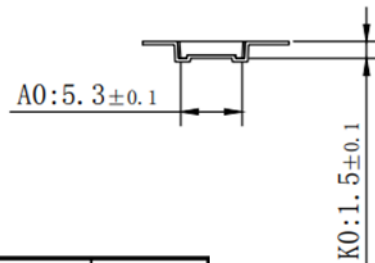
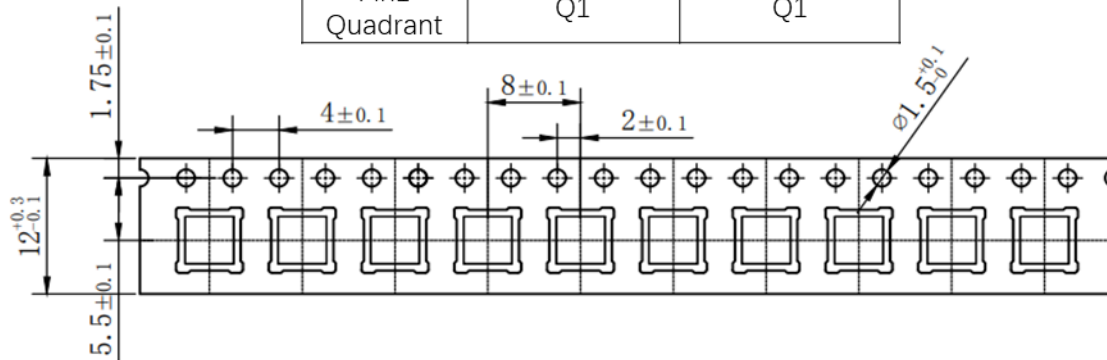
Simplified Schematics



10.2 Tape and Reel Information



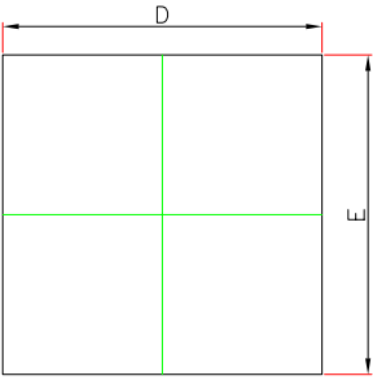
C1	330±3	178±3
H	12.5±0.5	12.8±0.5
A	2.3±0.3	2.6±0.3
B	10.75±0.3	22.5±0.3
B1	∅13.0+0.5/-0.2	∅13.5±0.3
T	2±0.2	1.2±0.2
D	∅100±1	∅60±0.5
SPQ	2000	300
Part Number	SHC6258ARTTIR	SHC6258ARTTIT
Pin1 Quadrant	Q1	Q1



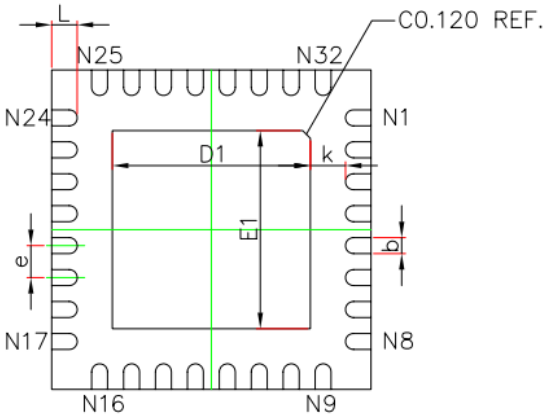
Note: Q1~Q4 is Pocket Quadrants

10.3 Package Information

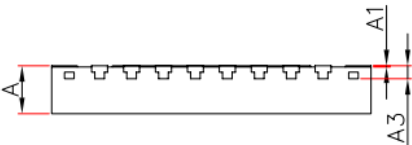
QFNWB5×5-32L-K (P0.50T0.75) PACKAGE OUTLINE DIMENSIONS



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	4.900	5.100	0.193	0.201
E	4.900	5.100	0.193	0.201
D1	3.000	3.200	0.118	0.126
E1	3.000	3.200	0.118	0.126
k	0.550REF.		0.022REF.	
b	0.200	0.300	0.008	0.012
e	0.500BSC.		0.020BSC.	
L	0.300	0.500	0.012	0.020

10.4 Ordering Guide

Orderable Device	Package	Package Qty	MSL-Peak-Temp	Lead Fish Plating	Op Temp (°C)	RoHS (Pb Free)
SHC6258ARTTIR	QFN-32	2000	Level 2-260°C	100%Sn	-40 to 125°C	Yes
SHC6258ARTTIT	QFN-32	300	Level 2-260°C	100%Sn	-40 to 125°C	Yes