

## THE ONLY 0.8V TO 5.5V, 0.6 $\mu$ A RAIL-TO-RAIL SINGLE OP AMP

### FEATURES

Single 0.8V to 5.5V Operation  
 Supply current: 0.6 $\mu$ A (typ)  
 Low Input Bias Current: 2pA  
 Low  $TCV_{OS}$ : 9 $\mu$ V/ $^{\circ}$ C (typ)  
 $A_{VOL}$  Driving 100k $\Omega$  Load: 90dB (min)  
 Gain-Bandwidth Product: 4kHz  
 Unity Gain Stable  
 Rail-to-rail Input and Output  
 No Output Phase Reversal  
 5-pin SC70 Packaging

### APPLICATIONS

Battery/Solar-Powered Instrumentation  
 Portable Gas Monitors  
 Low-voltage Signal Processing  
 Micropower Active Filters  
 Wireless Remote Sensors  
 Battery-powered Industrial Sensors  
 Active RFID Readers  
 Powerline or Battery Current Sensing  
 Handheld/Portable POS Terminals

### DESCRIPTION

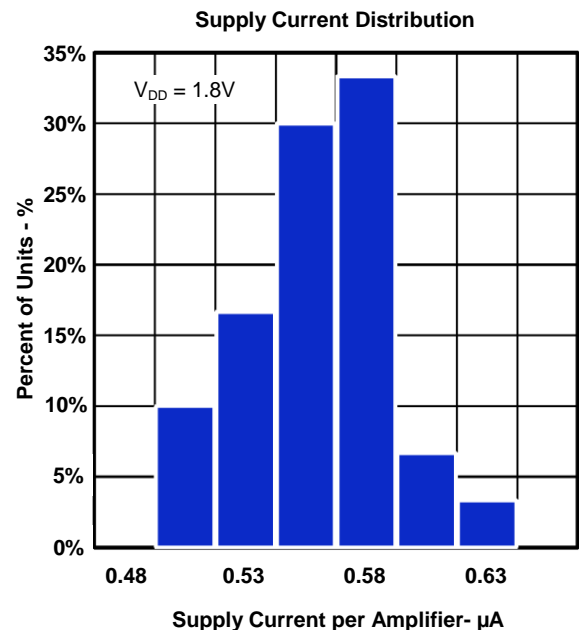
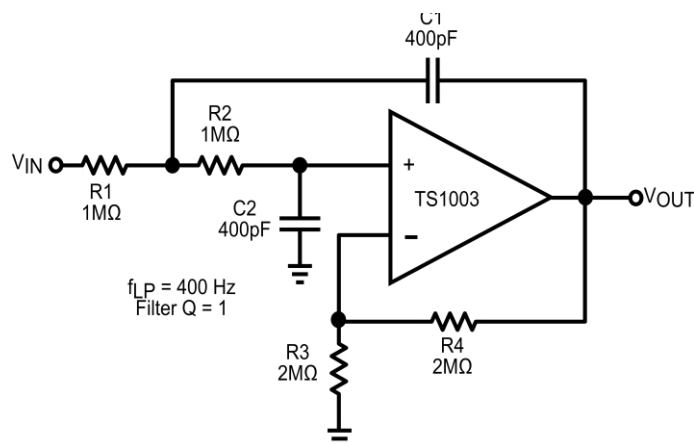
The TS1003 is the industry's first sub-1 $\mu$ A supply current, precision CMOS operational amplifier designed to operate over a supply voltage range from 0.8V to 5.5V. Fully specified at 1.8V, the TS1003 is optimized for ultra-long-life battery-powered applications. The TS1003 is Touchstone's fourth operational amplifier in its "NanoWatt Analog™" high-performance analog integrated circuits portfolio. The TS1003 exhibits a typical input bias current of 2pA and rail-to-rail input and output stages.

The TS1003's combined features make it an excellent choice in applications where very low supply current and low operating supply voltage translate into very long equipment operating time. Applications include: micropower active filters, wireless remote sensors, battery and powerline current sensors, portable gas monitors, and handheld/portable POS terminals.

The TS1003 is fully specified over the industrial temperature range ( $-40^{\circ}$ C to  $+85^{\circ}$ C) and is available in a PCB-space saving 5-lead SC70 package.

## TYPICAL APPLICATION CIRCUIT

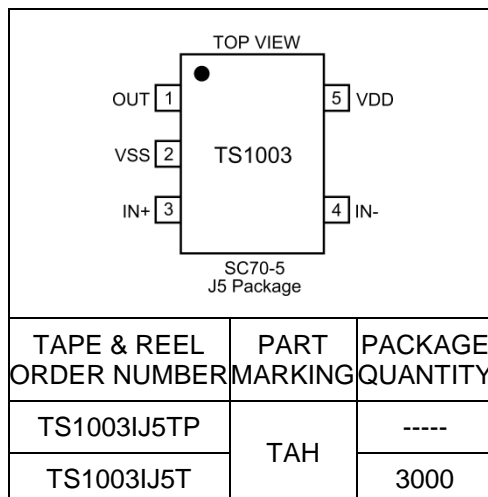
### A Microwatt 2-Pole Sallen-Key Low Pass Filter



#### Patent(s) Pending

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## PACKAGE/ORDERING INFORMATION



**Lead-free Program:** Touchstone Semiconductor supplies only lead-free packaging.

Consult Touchstone Semiconductor for products specified with wider operating temperature ranges.

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