

THE ONLY 0.8V/0.6µA RAIL-TO-RAIL DUAL/QUAD OP AMPS

FEATURES

- Single 0.65V to 2.5V Operation
- Supply current: 0.6µA per amplifier (typ)
- Offset voltage: 0.5mV (typ)
- Low TCV_{OS} : 10µV/°C (typ)
- A_{VOL} Driving 100kΩ Load: 90dB (min)
- Unity Gain Stable
- Rail-to-rail Input and Output
- No Output Phase Reversal
- Packaging: TS1002 – 8-pin MSOP
TS1004 – 14-pin TSSOP

APPLICATIONS

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

DESCRIPTION

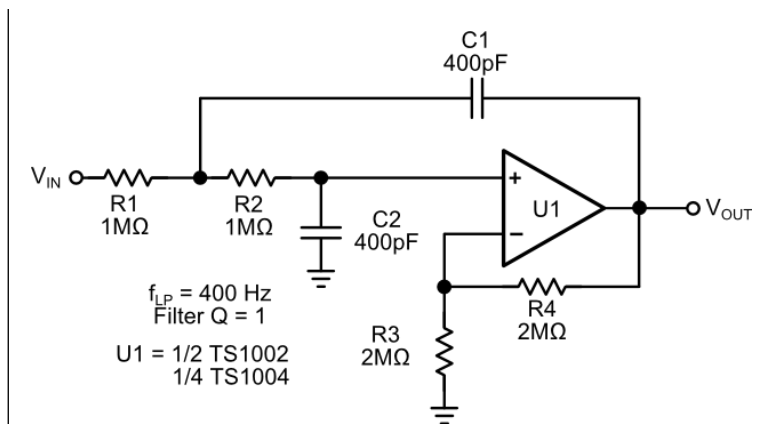
The TS1002 and the TS1004 are the industry's first only dual and quad single-supply, precision CMOS operational amplifiers fully specified to operate at 0.8V while consuming less than 0.6µA supply current per amplifier. Optimized for ultra-long-life battery-powered applications, the TS1002 and the TS1004 join Touchstone's TS1001 operational amplifier in the "NanoWatt Analog™" high-performance analog integrated circuits portfolio. Both op amps exhibit a typical offset voltage of 0.5mV, a typical input bias current of 25pA, and rail-to-rail input and output stages. The TS1002 and the TS1004 can operate from single-supply voltages from 0.65V to 2.5V.

The TS1002/TS1004's combined features make either an excellent choice in applications where very low supply current and low operating supply voltage translate into very long equipment operating time. Applications include: nanopower active filters, wireless remote sensors, battery and powerline current sensors, portable gas monitors, and handheld/portable POS terminals.

The TS1002 and the TS1004 are fully specified at $V_{DD} = 0.8V$ and over the industrial temperature range (-40°C to +85°C). The TS1002 is available in PCB-space saving 8-lead MSOP surface-mount packages. The TS1004 is available in a 14-pin TSSOP package.

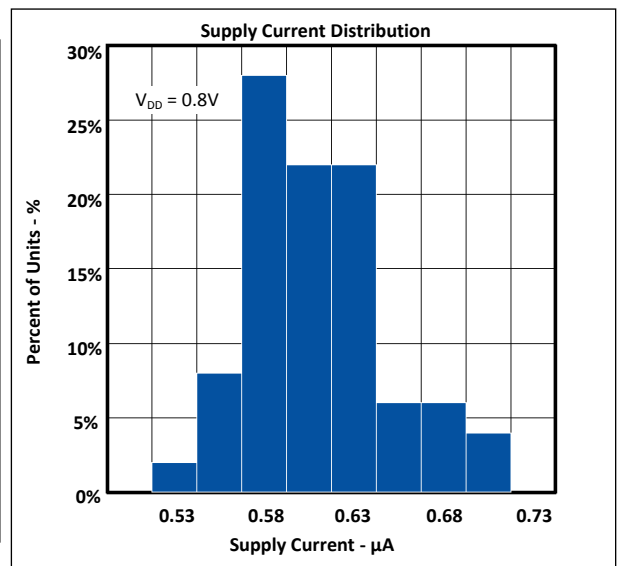
TYPICAL APPLICATION CIRCUIT

A NanoWatt 2-Pole Sallen-Key Low Pass Filter

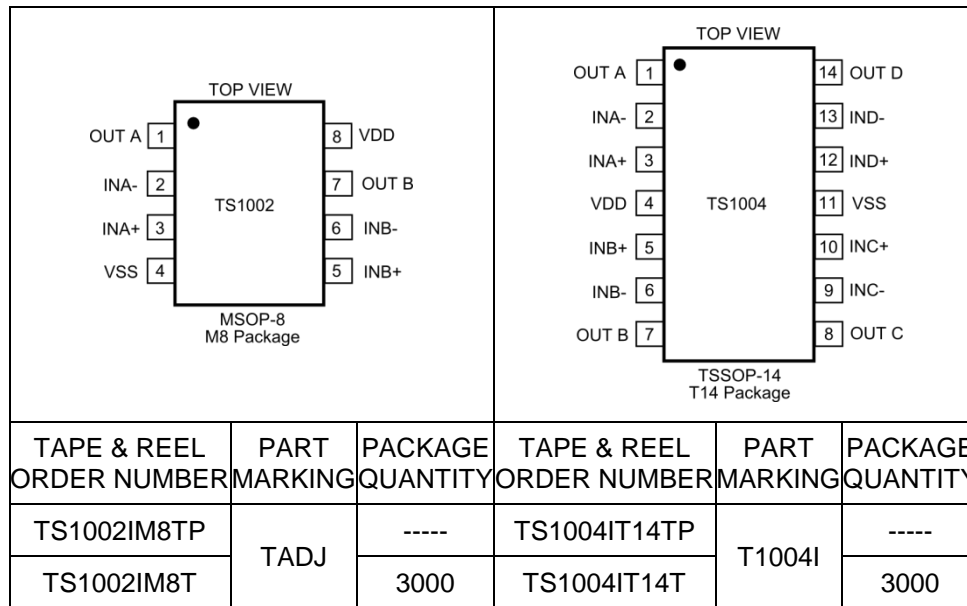


Patent(s) Pending

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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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