Precision Amplifiers
2 Single-supply op amps designed to drive 16-bit ADCs
   Industry’s lowest power zero-drift amplifier
3 RRI/O amplifier with no input crossover = lower distortion

Power Amplifier
3 2.4-A output op amp with the industry’s BEST swing to the rail

High-Speed Amplifiers
4 Wideband, low distortion, unity gain/medium gain, voltage-feedback op amps
   3.9-GHz GBW, ultra-low noise, voltage-feedback op amps
5 1.4-GHz, low-noise, unity gain stable, voltage-feedback op amp
   Fixed-gain op amp increases speed 3x, reduces noise—SiGe process enables enhanced performance
6 Wideband, fully differential, continuously variable gain amplifier

Audio Power Amplifiers
6 Class-D audio power amplifiers offer high efficiency and eliminate the need for large heat sinks
7 Stereo, Class-D audio power amplifiers with DC volume control

Temperature Sensors
7 Industry’s lowest power programmable digital output temperature sensor
Single supply op amp designed to drive 16-bit ADCs

**OPA300**

*Get samples, datasheets and EVMs at: [www.ti.com/sc/device/OPA300](http://www.ti.com/sc/device/OPA300)*

- Gain bandwidth product: 150MHz
- Settles to 16-bit accuracy in less than 150ns
- Low noise: 3nV/√Hz
- Low distortion: 0.003%
- Unity gain stable
- Single supply: 2.7V to 5.5V
- Rail-to-rail output: 100mV from rail
- Specified temperature range: −40°C to +125°C
- Packaging: SOT23-6, SO-8
- Suggested resale price starts at $1.25 each in quantities of 1,000

The OPA300 drives the 16-bit SAR ADS8401 on single-supply voltage.

**Applications include:**
- Single supply (+2.7 to +5V) 16-bit ADC input driver
- Low-noise preamplifiers
- IF/RF amplifiers
- Active filtering

Industry’s lowest power zero-drift amplifier

**OPA335**

*Get samples, datasheets and EVMs at: [www.ti.com/sc/device/OPA335](http://www.ti.com/sc/device/OPA335)*

- Super initial low-offset voltage: 5µV (max)
- Auto zero technique for low drift: 0.05µV/°C (max)
- Lowest IQ in the industry: 285µA
- Bandwidth: 2MHz
- Rail-to-rail output
- Single/dual supply: +2.7V (±1.35V) to +5.5V (±2.75V)
- Single and dual versions, also with shutdown
- Packaging: SOT23-5, SOT23-6, SO-8, MSOP-8 and MSOP-10 (dual version)
- Suggested resale price starts at $0.95 each in quantities of 1,000

OPA335 is ideal for circuits that require stability over temperature and time.

**Applications include:**
- Transducer applications
- Temperature measurement
- Weight scales
- Medical instrumentation
- Hand-held and battery-powered equipment
RRI/O amplifier with no input crossover = lower distortion

**OPA363 and OPA364**


- 1.8-V operation
- Supply range: 1.8V to 5.5V
- Bandwidth: 7MHz
- Slew rate: 5V/µs
- CMRR: 90dB (typ)
- Low offset: 500µV (max)
- Quiescent current: 750µA/channel (max)
- Low distortion: 0.002%
- Packaging: SOT23-5, SOT23-6, SO-8, duals in MSOP-8, MSOP-10, quads in TSSOP-14 and SO-14
- Suggested resale price starts at $0.55 (single) each in quantities of 1,000

**Applications include:**
- Signal conditioning
- Low voltage data correction driver
- Process control
- Active filters
- Test equipment

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2.4-A output op amp with the industry’s BEST swing to the rail!

**OPA569**

Get samples, datasheets, app reports and EVMs at: [www.ti.com/sc/device/OPA569](http://www.ti.com/sc/device/OPA569)

- High output current: 2.4A (max)
- Full power bandwidth: 100kHz
- Output swings to: 200mV of rails with I_O = 2A
- Low supply voltage: 2.7V (±1.35V) to 5.5V (±2.75V)
- Unity gain stable
- Thermal protection
- Adjustable current limit
- Two flags: Current limit and temperature warning
- Shutdown function with output disable
- Packaging: 20-lead SO PowerPAD™
- Suggested resale price starts at $2.90 each in quantities of 1,000

**Applications include:**
- Thermoelectric cooler driver
- Laser diode pump driver
- Valve, actuator driver
- Synchro, server driver
- Transducer excitation
- General linear power bootser for op amps

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**OPA363, OPA364 Rail-to-Rail Input Performance**

No input crossover improves offset voltage across the entire common-mode input voltage range.
High-Speed Amplifiers

Wideband, low distortion, unity gain/medium gain voltage-feedback op amps

OPA842 and OPA843

Get samples, datasheets, app reports and EVMs at: www.ti.com/sc/device/OPA842, www.ti.com/sc/device/OPA843

- Bandwidth:
  - OPA842: Unity-gain 400MHz
  - OPA843: 260MHz at G = +5
- Gain bandwidth product:
  - OPA842: 200MHz
  - OPA843: 800MHz
- Low input voltage noise: 2nV/√Hz
- Low distortion: –96dB (5MHz)
- High open-loop gain: 110dB
- Fast 12-bit settling: 10.5ns (0.01%)
- High slew rate: 1000V/µs (OPA843)
- Low input offset voltage: ±60mV
- Professional level diff gain/diff phase: 0.003%/0.008°
- Packaging: SOT23-5, SO-8
- Suggested resale price in quantities of 1,000:
  - OPA842 at $1.45 each
  - OPA843 at $1.49 each

Applications include:
- ADC/DAC buffer amplifier
- Wideband transimpedance applications
- Low distortion IF amplifiers
- High-resolution imaging
- Test instrumentation
- Professional audio

3.9GHz GBW, ultra-low noise, voltage-feedback op amps

OPA846 and OPA847


- Bandwidth:
  - OPA847: 350MHz at G = +20
  - OPA846: 400MHz at G = +10
- Gain bandwidth product:
  - OPA847: 3.9GHz
  - OPA846: 1.75GHz
- Low input voltage noise: 0.85nV/√Hz (OPA847)
- Low distortion: –105dB (5MHz)
- High slew rate: 950V/µs
- Low input offset voltage: ±100µV
- Low input offset current: ±100nA
- High output drive: ±60mA
- >90dB AOL, PSRR and CMRR
- Packaging: SOT23-5, SO-8
- Suggested resale price in quantities of 1,000:
  - OPA846 at $1.59 each
  - OPA847 at $1.89 each

Applications include:
- 12- to 16-bit ADC input drivers
- Wideband transimpedance applications
- Test and measurement equipment
- Security sensor frontends
- Ultrasound channel amplifiers
1.4-GHz, low-noise, unity gain stable, voltage-feedback op amps

THS4271 and THS4275

- Bandwidth: 1.4GHz
- Bandwidth at A_{CL}: 1400MHz
- Slew rate: 1000V/µs
- Unity gain stable
- THD: –92dBc at 30MHz
- Supply voltage: 5V, ±5V, +12V, +15V
- Differential gain/phase: 0.007%/0.004°
- Power-down capability: THS4275
- Packaging: MSOP-8 PowerPAD, 8-lead SOIC, leadless MSOP PowerPAD
- Suggested resale price starts at $2.69 each in quantities of 1,000

Applications include:
- Wireless communication receivers
- Active filtering
- DAC output buffer
- High-linearity ADC preamplifier
- Differential to single-ended conversion

Fixed-gain op amp increases speed 3x, reduces noise—SiGe process enables enhanced performance

THS4302

- EDN Product Innovation of the Year Winner, 2002
- Fixed-gain, closed loop: +5V/V (14dB)
- Wide bandwidth: 2.4GHz
- High slew rate: 5500V/µs
- Low total input referred noise: 2.8nV/√Hz
- Low distortion:
  - HD3: –81dBc at 70MHz
  - IMD3: –88dBc at 100MHz
  - OIP3: 39dBm at 100MHz
- High output drive: ±180mA
- Supply voltage: +3V or +5V
- Packaging: leadless MSOP-16
- Suggested resale price starts at $1.97 each in quantities of 1,000

Applications include:
- ADC preamplifiers or DAC output buffers
- Basestation receive channels
- IF amplifiers
- Test and measurement equipment
- Medical and industrial imaging
- Broadcast video
Wideband, fully differential, continuously variable gain amplifier

**THS7530**

- Wide bandwidth: 300MHz fixed over all gains
- Low noise: 1.1nV/√Hz
- Continuously variable gain range: 11.6dB to 46.5dB
- Gain slope: 38.8dB/V
- Low distortion:
  - HD2: –65dBc
  - HD3: –61dBc at 32MHz
  - IMD3: –64dBc
  - OIP3: +23dBm at 70MHz
- Fully differential input and output
- Output common-mode voltage control
- Output voltage limiting
- Supply voltage: +3V or +5V
- Power-down capability
- Packaging: 14-lead TSSOP PowerPAD
- Suggested resale price starts at $3.65 each in quantities of 1,000

**TPA2005D1**

- Maximum battery life and minimal heat
- 84% efficient at max output power into 8-Ω load
- Requires only three external components:
  - Optimized PWM output stage eliminates LC filter
  - Internally generated 250-kHz switching frequency eliminates capacitor and resistor
  - Improved CMRR eliminates two input capacitors
- Improved PSRR (-75 dB) and wide supply range (2.5V to 5.5V) for direct battery operation
- Packaging: 3mm2 QFN, 2.5mm2 MicroStar Junior™ BGA
- Suggested resale price starts at $0.49 each in quantities of 1,000

**Applications include:**
- Time gain amplifiers in ultrasound, sonar and radar
- Automatic gain control in communications and video
- System gain calibration in communications
- Variable gain in instrumentation

**Class-D audio power amplifier offers great performance in a small package**

**TPA2005D1 Block Diagram**
Audio Power Amplifiers

Class-D audio amplifiers operate 2x cooler than Class-AB—eliminating the need for heat sinks

**TPA3001D1, TPA3002D2, TPA3004D2**

Get samples, datasheets, app reports and EVMs at: [www.ti.com/sc/device/partnumber](http://www.ti.com/sc/device/partnumber)
Replace *partnumber* in URL with TPA3001D1, TPA3002D2, or TPA3004D2

**TPA3001D1**
- 20W into 8Ω from 18V
- Operating supply voltage range: 8V to 18V
- Four internal gain settings
- THD+N = 0.06% at 1kHz
- Suggested resale price starts at $2.82 each in quantities of 1,000

**TPA3002D2**
- 9W into 8Ω from 12V
- Operating supply voltage range: 8.5V to 14V
- 32-step DC volume control from –40dB to 36dB
- Direct connect to TPA6110A2 stereo headphone amplifier
- Suggested resale price starts at $3.49 each in quantities of 1,000

**TPA3004D2**
- 12W into 8Ω from 15V
- Operating supply voltage range: 8.5V to 18V
- 32-step DC volume control from –40dB to 36dB
- Direct connect to TPA6110A2 stereo headphone amplifier
- Suggested resale price starts at $3.60 each in quantities of 1,000

Class-D vs. Class AB Temperature Efficiency

Temperature Sensors

Industry’s lowest power programmable digital output temperature sensors

**TMP121, TMP122, TMP123, TMP100, TMP101**

Get samples, datasheets, app reports and EVMs at: [www.ti.com/sc/device/partnumber](http://www.ti.com/sc/device/partnumber)
Replace *partnumber* in URL with TMP121, TMP122, TMP123, TMP100 or TMP101

**TMP122**
- SPI-compatible interface
- Programmable high/low temperature alert set points
- Programmable resolution: 9- to 12-bit and Sign
- ±1.5°C accuracy -25°C to +85°C max
- 75-µA (max) Iq, Operation to +150°C
- Suggested resale price in quantities of 1,000: $0.99 each

**TMP121/TMP123**
- SPI-compatible interface and true 12-bit resolution
- ±1.5°C accuracy -25°C to +85°C max
- 50-µA (max) Iq, Operation to +150°C
- TMP121: drop-in for MAX6629/MAX6631
- TMP123: drop-in for MAX6630/MAX6632/AD7814
- Suggested resale price in quantities of 1,000: $0.90 each

**TMP100/TMP101**
- I2C-compatible interface
- ±2.0°C accuracy -25°C to +85°C max
- TMP100: Up to 8 devices per bus
- TMP101: SMBus alert function, 3 devices per bus
- Suggested resale price in quantities of 1,000: $0.75 (TMP100) and $0.80 (TMP101)

All products feature SOT23-6 and 2.7V to 5.5V operation.

Applications include:
- Power supply temperature monitoring
- Computer peripheral thermal protection
- Thermostat controls and office machines
- Environmental monitoring and HVAC
AN ANALOG PRODUCT CATALOG

Amplifiers

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Texas Instruments Incorporated
P.O. Box 954
Santa Clarita, CA 91380

Address service requested

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