

## Product Overview

### NCS333: Single Operational Amplifier, 10 $\mu\text{V}$ Offset, 0.07 $\mu\text{V}/^\circ\text{C}$ , Zero-Drift Precision, Low Power

For complete documentation, see the data sheet.

The NCS333 is a precision op amp with very low input offset voltage (10  $\mu\text{V}$  max) and near-zero drift over time and temperature. This high precision, low quiescent current amplifiers has high impedance inputs with a common-mode range 100 mV beyond the rails as well as rail-to-rail output swing within 50 mV of the rails. The NCS333 features a wide supply range from 1.8 V to 5.5 V ( $\pm 0.9$  V to  $\pm 2.75$  V for dual supplies). The NCS333 family exhibits outstanding CMRR without the crossover associated with traditional complementary input stages. This design results in superior performance for driving analog-to-digital converters (ADCs) without degradation of differential linearity. The NCS333 is available in compact SC70-5 and SOT23-5 packages and are specified for operation from  $-40^\circ\text{C}$  to  $+105^\circ\text{C}$ . The NCV333 is the automotive qualified version available in SOT23-5 and specified for operation from  $-40^\circ\text{C}$  to  $+125^\circ\text{C}$ .

### Features

- Low Offset Voltage: 10  $\mu\text{V}$  max (NCS333), 30 $\mu\text{V}$  max (NCV333A)
- Zero Drift Architecture with offset drift as low as 0.07  $\mu\text{V}/^\circ\text{C}$  max
- Quiescent Current: 17  $\mu\text{A}$  Typical at 3.3 V Supply
- Supply Voltage: 1.8 V to 5.5 V
- Rail-to-Rail Input and Output Voltage
- NCV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable

### Benefits

- Higher Accuracy Signal Conditioning
- Low error and better accuracy over temperature
- Low power consumption suited for battery powered devices
- Wide supply voltage compatible with a variety of applications
- Wide input and output signal range
- Meets automotive standards

### Applications

- Current Sensing
- Temperature Measurements
- Sensor Signal Conditioning
- Transducer Applications

### End Products

- Battery Powered Instruments
- Electronic Scales
- Medical Instrumentation
- Lighting

### Part Electrical Specifications

Product	Compliance	Status	Rail to Rail	Channels	V <sub>S</sub> Min (V)	V <sub>S</sub> Max (V)	I <sub>q</sub> Typ (mA)	V <sub>os</sub> Max (mV)	GB W Typ (MHz)	SR Typ (V/ $\mu\text{s}$ )	I <sub>o</sub> Typ (mA)	$\Delta V_{os}/\Delta T$ ( $\mu\text{V}/^\circ\text{C}$ )	e <sub>N</sub> (nV/ $\sqrt{\text{Hz}}$ )	I <sub>bias</sub> Typ (pA)	CMRR Typ (dB)	Architecture	Temperature Range ( $^\circ\text{C}$ )	Package Type
NCS333ASN2T1G	Pb-free	Active	Input /Output	1	1.8	5.5	0.021	0.01	0.35	0.1	6	0.03	62	60	123	CMOS	-40 to 125	TSO P-5 / SOT-23-5
	Halide free																	
NCS333ASQ3T2G	Pb-free	Active	Input /Output	1	1.8	5.5	0.021	0.01	0.35	0.1	6	0.03	62	60	123	CMOS	-40 to 125	SC-88A / SC-70-5
	Halide free																	
NCV333ASN2T1G	AEC Qualified	Active	Input /Output	1	1.8	5.5	0.028	0.03	0.35	0.1	6	0.03	62	60	123	CMOS	-40 to 125	TSO P-5 / SOT-23-5
	PPAP Capable																	
	Pb-free																	
	Halide free																	
NCV333ASQ3T2G	AEC Qualified	Active	Input /Output	1	1.8	5.5	0.028	0.03	0.35	0.1	6	0.03	62	60	123	CMOS	-40 to 125	SC-88A / SC-70-5
	PPAP Capable																	
	Pb-free																	
	Halide free																	

For more information please contact your local sales support at [www.onsemi.com](http://www.onsemi.com).

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