

Features

- Single Supply Operation
 - Input Voltage Range Extends to Ground
 - Output Swings to Ground while Sinking Current
- *Guaranteed* Offset Voltage: 50 μ V Max
- *Guaranteed* Low Drift: 1.3 μ V/ $^{\circ}$ C Max
- *Guaranteed* Offset Current: 0.5nA Max
- *Guaranteed* High Gain
 - 5mA Load Current: 1.5 Million Min
 - 17mA Load Current: 0.8 Million Min
- *Guaranteed* Low Supply Current: 520 μ A Max
- Supply Current can be Reduced by a Factor of 4
- Low Voltage Noise, 0.1Hz to 10Hz: 0.55 μ V_{P-P}
 - Low Current Noise—
 - Better than OP-07: 0.07pA/ \sqrt Hz at 10Hz
- High Input Impedance: 250M Ω Min
- Minimum Supply Voltage: 2.7V Min

Application

- Low Power Sample-and-Hold Circuits
- Battery-Powered Precision Instrumentation
 - Strain Gauge Signal Conditioners
 - Thermocouple Amplifiers
- 4mA to 20mA Current Loop Transmitters
- Active Filters

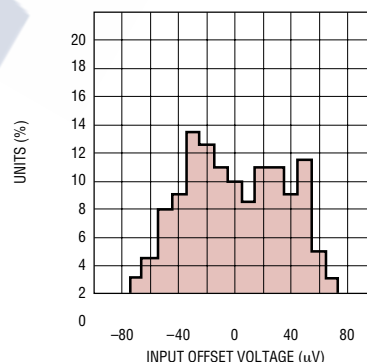
Description

The FT1006 is the first precision single supply operational amplifier. Its design has been optimised for single supply operation with a full set of specifications at 5V. Specifications at \pm 15V are also provided.

The FT1006 has a low offset voltage of 20 μ V, drift of 0.2 μ V/ $^{\circ}$ C, offset current of 120pA, gain of 2.5 million, common mode rejection of 114dB and power supply rejection of 126dB.

Although supply current is only 340 μ A, a novel output stage can source or sink in excess of 20mA while retaining high voltage gain. Common mode input range includes ground to accommodate low ground-referenced inputs from strain gauges or thermocouples, and output can swing to within a few millivolts of ground. If a higher slew rate (in excess of 1V/ μ s) or micropower operation (supply current down to 90 μ A) is required, the operating currents can be modified by connecting an external optional resistor to Pin 8.

For similar single supply precision dual and quad op amps, please see the FT1013/FT1014 data sheet. For micropower dual and quad op amps, please see the FT1078/FT1079 data sheet.



$V_S = 5V, 0V$
 $T_A = 25^{\circ}C$
 350 LT1006s TESTED
 FROM TWO RUNS
 J AND N PACKAGES

Absolute Maximum Ratings^(Note 1)

Supply Voltage	±22V	Operating Temperature Range	
Input Voltage	Equal to Positive Supply Voltage	FT1006AM/FT1006M	-55°C to 125°C
Input Voltage	5V Below Negative Supply Voltage	FT1006AC/FT1006C/FT1006S8	0°C to 70°C
Differential Input Voltage	30V	Storage Temperature Range	-65°C to 150°C
Output Short-Circuit Duration	Indefinite	Lead Temperature (Soldering, 10 sec)	300°C

Package/Order Information

<p>TOP VIEW</p> <p>ISY SET (NOTE 3)</p> <p>VOS TRIM (NOTE 4)</p> <p>V- (CASE)</p> <p>H PACKAGE 8-LEAD TO-5 METAL CAN</p> <p>T_{JMAX} = 150°C, θ_{JA} = 150°C/W, θ_{JC} = 45°C</p>	ORDER PART NUMBER	<p>TOP VIEW</p> <p>N8 PACKAGE 8-LEAD PDIP</p> <p>S8 PACKAGE 8-LEAD PLASTIC SO</p> <p>T_{JMAX} = 100°C, θ_{JA} = 130°C/W (N8) T_{JMAX} = 150°C, θ_{JA} = 200°C/W (S8)</p> <p>J8 PACKAGE 8-LEAD CERDIP T_{JMAX} = 100°C, θ_{JA} = 130°C/W</p>	ORDER PART NUMBER
	FT1006AMH FT1006MH FT1006ACH FT1006CH		FT1006CN8 FT1006S8
			S8 PART MARKING
			1006
			FT1006AMJ8 FT1006MJ8 FT1006ACJ8 FT1006CJ8

Electrical Characteristics

V_S = 5V, V_{CM} = 0V, V_{OUT} = 1.4V, T_A = 25°C, unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS	FT1006AM/AC			FT1006M/C			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
V _{OS}	Input Offset Voltage			20	50	30	80		μV
		FT1006S8				8	400		μV
ΔV _{OS} - ΔTime	Long-Term Input Offset Voltage Stability			0.4		0.5			μV/Mo
		FT1006S8				0			μV/Mo
I _{OS}	Input Offset Current			0.12	0.5	0.15	0.9		nA
I _B	Input Bias Current			9	15	10	25		nA
e _n	Input Noise Voltage	0.1Hz to 10Hz		0.55		0.55			μV _{rms}
		Input Noise Voltage Density	f ₀ = 10Hz	23	32	23	32		nV/√Hz
		f ₀ = 1000Hz	22	25	22	25		nV/√Hz	
i _n	Input Noise Current Density	f ₀ = 10Hz		0.07		0.08			pA/√Hz
	Input Resistance	(Note 2)							MΩ
	Differential Mode		180	400		100	300		GΩ
	Common Mode			5		4			GΩ



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