



Weltrend Semiconductor, Inc.

WT272C/WT274C

Dual/Quad Low Power CMOS OP Amplifiers

Data Sheet

REV. 1.1

December 31, 1999

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DESCRIPTION

The WT272C/WT274C is a dual/quad low power CMOS operational amplifiers IC. It provides high performance operation at low supply voltages. The basic amplifier can operate at supply voltage as low as 1.2V with very low power consumption and makes it perfect for battery-powered application. The input common-mode voltage extends to the negative rail. The output swings to both rails with light load. The input bias current is inherently low and the input impedance is extremely high. The devices are ideal upgrades for industrial standards OP amp.

FEATURES

- Low Power Replacement for Standard OP Amps
- Wide supply operating range (1.2V to 7V)
- Input common-mode voltage range includes negative rail
- Output swing to rail
- Low input bias current (typical 1pA)
- High input impedance
- Single supply operation
- Internal compensated
- Output short circuit protection

APPLICATIONS

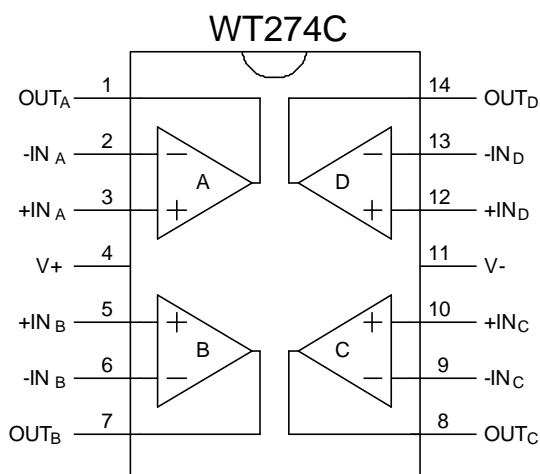
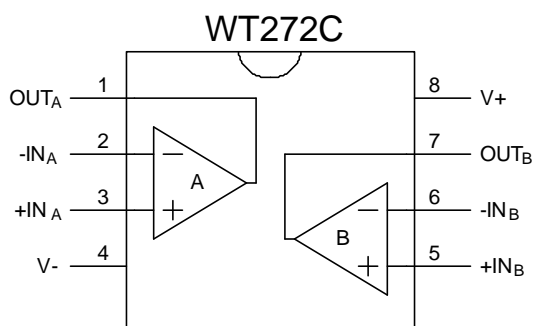
- Portable Instruments
- Battery-Powered Systems
- Transducer Interfacing
- Active Filter
- High Impedance Buffer

ORDERING INFORMATION

Part Number	Package
WT272C-N080	8 pin PDIP
WT272C-S080	8 pin SO

Part Number	Package
WT274C-N140	14 pin PDIP
WT274C-S140	14 pin SO

PIN CONFIGURATION



ABSOLUTE MAXIMUM RATINGS

Parameter	Min.	Max.	Units
DC supply voltage (V_+ - V_-)	0	8.5	V
Input and output voltage	$V_- - 0.3$	$V_+ + 0.3$	V
Storage temperature	-65	150	$^{\circ}\text{C}$
Ambient temperature with power applied	-20	100	$^{\circ}\text{C}$
Duration of output short circuit		Unlimited	

*Note: Stresses above those listed may cause permanent damage to the devices

RECOMMENDED OPERATING CONDITION

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
V_{SUPPLY}	Supply Voltage		1.2		7	V
I_{SOURCE}	Output Source Current				5	mA
I_{SINK}	Output Sink Current				9	μA
T_a	Ambient Temperature		0		85	$^{\circ}\text{C}$

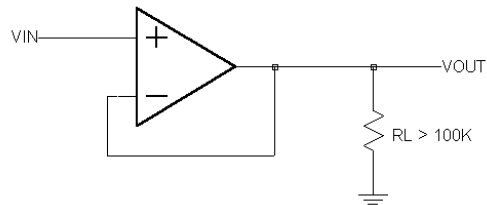
ELECTRICAL CHARACTERISTICS

($V_+ = 5\text{V}$, $V_- = 0\text{V}$, $T_a = +25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
V_{OS}	Input Offset Voltage			2	5	mV
$\Delta V_{\text{OS}}/\Delta T$	Average Temperature Coefficient of Input Offset Voltage			0.7		$\mu\text{V}/^{\circ}\text{C}$
I_{OS}	Input Offset Current			1		pA
I_{BIAS}	Input Bias Current	$T_a = 25^{\circ}\text{C}$		1		pA
V_{ICOM}	Input Common Mode Voltage		0		$V_+ - 1.3$	V
V_{OUT}	Output Voltage Swing	$V_{\text{in}} = 10\text{mV}$ $R_L = 1\text{M}\Omega$ connected to V_-	4.9	4.99		V
		$V_{\text{in}} = 10\text{mV}$ $R_L = 100\text{K}\Omega$ connected to V_-		4.95		V
		$V_{\text{in}} = 10\text{mV}$ $R_L = 10\text{K}\Omega$ connected to V_-		4.75		V
		$V_{\text{in}} = -10\text{mV}$ $R_L = 1\text{M}\Omega$, connected to V_+		0.5	0.7	V
		$V_{\text{in}} = -10\text{mV}$ $R_L = 100\text{K}\Omega$ connected to V_+		0.65		V
		$V_{\text{in}} = -10\text{mV}$ $R_L = 10\text{K}\Omega$ connected to V_+				V
A_{VOL}	Large Signal Voltage Gain	$V_{\text{O}} = 1\text{V}$ to 4V , $V_{\text{i}} = 1.4\text{V}$ $R_L = 1\text{M}\Omega$	20	100		V/mV
GBW	Unit Gain Bandwidth	$R_L = 1\text{M}\Omega$, $C_L = 50\text{pF}$		0.1		MHz
CMRR	Common Mode Rejection Ratio	$V_{\text{O}} = 1\text{V}$, $V_{\text{i}} = 0$ to 3.5V	60	80		dB
PSRR	Power Supply Rejection Ratio	$V_{\text{O}} = 1\text{V}$	60	90		dB
SR	Slew Rate	$A_{\text{VOL}} = 1$, $C_L = 100\text{pF}$ $V_{\text{IN}} = 5\text{V}_{\text{P-P}}$		0.03		V/ μs
I_{SUPPLY}	Supply Current (per amplifier)			5	9	μA
ϕ_m	Phase Margin at Unit Gain	$R_L = 1\text{M}\Omega$, $C_L = 50\text{pF}$		55		Degree
e_n	Input Equivalent Noise Voltage	$f = 1\text{KHz}$, $R_s = 100\Omega$		50		nV/ $\sqrt{\text{Hz}}$
$V_{\text{O1}}/V_{\text{O2}}$	Channel Separation	$A_{\text{VOL}} = 100$		120		dB

TYPICAL APPLICATION CIRCUIT

Voltage Follower



Instrument Amplifier

