



DAC-8412

QUAD, 12-BIT, VOLTAGE OUTPUT BiCMOS D/A CONVERTER

Precision Monolithics Inc.

PRELIMINARY

FEATURES

- Four 12-Bit DACs on One Chip
- +5 to ± 15 Volt Operation
- On-Chip Buffers for Voltage Output
- Low Drift Temperature Coefficient
- Sink/Source Output Circuit Drive
- Unipolar or Bipolar Operation
- Double-Buffered
- Read Back Registers

APPLICATIONS

- Automatic Test Equipment
- Digitally Controlled System Calibration
- Process Control Equipment

GENERAL INFORMATION

The DAC-8412 is a quad, 12-bit, voltage-output digital-to-analog converter.

Two reference inputs are available, a reference high and a reference low. The voltages on each of these inputs determines the

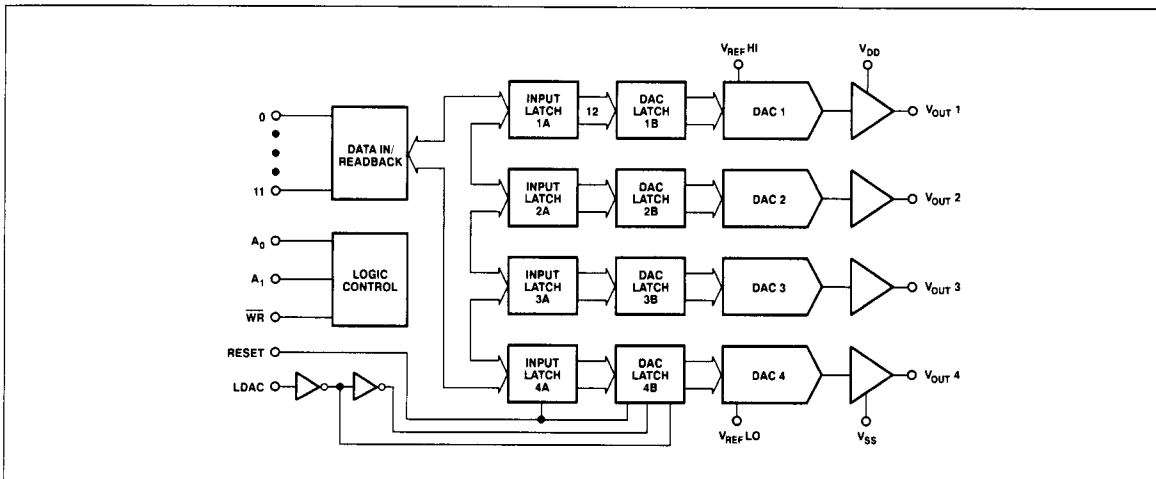
output range of the DACs. By setting the low reference at 0 volts and the reference high at any positive voltage within its usable range, the DAC will be unipolar. Similarly, by placing equal but opposite voltages on the references, the DAC will perform in a bipolar mode. This method of setting the output range is superior to previous methods because it is independent of resistor temperature coefficients.

Bidirectional digital interface allows the user to read-back data previously loaded into the DAC. This is useful in systems that are adjusted outside of processor control to determine the value of the output and for checking system errors. Bus access times are (90ns) suited for most processor interfaces. Double-buffering enables the updating of all DACs either individually or at the same time.

A RESET function is provided to set the DACs to bipolar zero either at power up or upon command.

The DAC-8412 is packaged in 28-pin, DIP, LCC, and PLCC packages. It can be powered from either single or dual supplies. Single +5V operation dissipates less than 60mW.

BLOCK DIAGRAM



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DIGITAL-TO-ANALOG CONVERTERS

This preliminary product information is based on testing of a limited number of devices. Final specifications may vary. Please contact local sales office or distributor for final data sheet.

**ELECTRICAL CHARACTERISTICS** at $V_{POS} = +15V$, $V_{NEG} = -15V$, $V_{REF+} = +10V$, $V_{REF-} = -10V$, $D_{GND} = 0V$, $-40 \leq T_A \leq +85^{\circ}C$.

PARAMETER	SYMBOL	CONDITIONS	DAC-8412			UNITS
			MIN	TYP	MAX	
Resolution	N		12	-	-	Bits
Integral Linearity	IL		-	-	$\pm 1/2$	LSB
Differential Nonlinearity	DNL		-	-	± 1	LSB
Full Scale Gain Error	G_{FSE}	$T_A = +25^{\circ}C$	-	-	1	LSB
Gain Tempco	TCG_{FSE}		-	-	5	ppm/ $^{\circ}C$
Settling Time	t_s		-	-	20	μs
Full Scale Output Voltage	V_{FS}	(Note 1)	-10	-	+10	V
Output Current	I_{OUT}		5	-	-	mA
Reference Input Current	I_{REF}		-	-	0.1	mA
Logic Input "0"	V_{INL}		-	-	0.8	V
Logic Input "1"	V_{INH}		2.0	-	-	V
Setup Time	t_{SETUP}		90	-	-	ns
Hold Time	t_{HOLD}		10	-	-	ns
Power Supply Sensitivity	PSS		-	-	10	ppm/V
Positive Supply Current	I+	$V+ = +15V$	-	6	-	mA
Positive Supply Current	I+	$V+ = +5V$	-	6	-	mA
Negative Supply Current	I-	$V- = -15V$	-	3	-	mA

NOTE:

- Maximum output voltage is limited to the Positive Supply -2.5V.