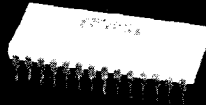


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**PCM1700U**  
**PCM1700P**

DEMO BOARD  
AVAILABLE  
See Appendix A for  
more information.

## Dual 18-Bit Monolithic Audio DIGITAL-TO-ANALOG CONVERTER

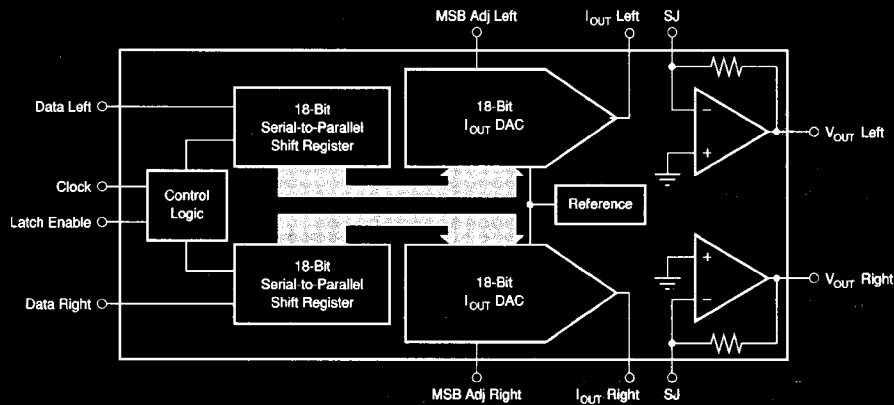
### FEATURES

- DUAL 18-BIT LOW-POWER MONOLITHIC AUDIO D/A CONVERTER
- VERY LOW MAX THD+N: -92dB Without External Adjust
- CO-PHASE, GLITCH-FREE  $\pm 3V$  OR  $\pm 670\mu A$  AUDIO OUTPUTS
- CAPABLE OF 16X PER CHANNEL OVERSAMPLING RATE
- COMPLETE WITH INTERNAL REFERENCE
- SERIAL INPUT FORMAT 100% COMPATIBLE WITH INDUSTRY STD PCM56P
- RUNS ON  $\pm 5V$  SUPPLIES AND DISSIPATES 300mW MAX
- COMPACT 28-PIN PLASTIC DIP OR SOIC

### DESCRIPTION

The PCM1700 is a low cost, high-performance, dual 18-bit digital-to-analog converter. The PCM1700 features true glitch-free, co-phase current and voltage outputs and only requires  $\pm 5V$  supplies. The PCM1700 comes complete with an internal reference and optional MSB adjustability for even greater THD performance. Total power dissipation is less than 400mW max. Low maximum Total Harmonic Distortion + Noise (-92dB max; PCM1700P-K) is 100% tested. The very fast PCM1700 is also capable of 16X oversampling rates on both channels simultaneously, providing freedom in output filter selection.

The PCM1700 comes in space-saving 28-pin plastic DIP and SOIC packages. PCM1700 accepts a serial data input format that is compatible with other Burr-Brown PCM products such as the industry standard PCM56P.



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Tel: (602) 746-1111 • Twx: 910-952-1111 • Cable: BBRCORP • Telex: 066-6491 • FAX: (602) 889-1510 • Immediate Product Info: (800) 548-6132



PDS-1035C

8.2.103

PCM1700

8.2

DIGITAL AUDIO PRODUCTS—D/A



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**PIN ASSIGNMENTS (Plastic PKG)**

PIN	DESCRIPTION	MNEMONIC
1	-5V Analog Supply	-V <sub>cc</sub>
2	Left Channel Servo-Amp Decoupling Point	CAP
3	Left Channel MSB Adjustment	MSB ADJ (L)
4	No Connect	NC
5	Left Channel Bipolar Offset Decoupling Point	CAP
6	Left Channel Current Output	I <sub>OUT</sub> (L)
7	Left Channel Analog Common	ACOM
8	Left Channel Summing Junction	SJ (L)
9	Left Channel Voltage Output	V <sub>OUT</sub> (L)
10	No Connect	NC
11	+5V Digital Supply	+V <sub>DD</sub>
12	Left Channel Data Input	DATA
13	Clock Input	CLOCK
14	-5V Logic Supply	-V <sub>DD</sub>
15	Latch Enable Input	LE
16	Right Channel Data Input	DATA (R)
17	Digital Common	DCOM
18	No Connect	NC
19	Right Channel Voltage Output	V <sub>OUT</sub> (R)
20	Right Channel Summing Junction	SJ (R)
21	Right Channel Analog Common	ACOM
22	Right Channel Current Output	I <sub>OUT</sub> (R)
23	Right Channel Bipolar Offset Decoupling Point	CAP
24	Right Channel MSB Adjustment	MSB ADJ (R)
25	Right Channel Servo-Amp Decoupling Point	CAP
26	MSB Adjustment Potentiometer Voltage Output	VPOT
27	+5V Analog Supply	+V <sub>cc</sub>
28	Digital Common	DCOM

**PIN ASSIGNMENTS (SOIC PKG)**

PIN	DESCRIPTION	MNEMONIC
9	-5V Analog Supply	-V <sub>cc</sub>
10	Left Channel Servo-Amp Decoupling Point	CAP
11	Left Channel MSB Adjustment	MSB ADJ (L)
19	No Connect	NC
12	Left Channel Bipolar Offset Decoupling Point	CAP
13	Left Channel Current Output	I <sub>OUT</sub> (L)
14	Left Channel Analog Common	ACOM
15	Left Channel Summing Junction	SJ (L)
16	Left Channel Voltage Output	V <sub>OUT</sub> (L)
17	No Connect	NC
18	+5V Digital Supply	+V <sub>DD</sub>
20	Left Channel Data Input	DATA
21	Clock Input	CLOCK
22	-5V Logic Supply	-V <sub>DD</sub>
23	Latch Enable Input	LE
24	Right Channel Data Input	DATA (R)
25	Digital Common	DCOM
26	No Connect	NC
27	Right Channel Voltage Output	V <sub>OUT</sub> (R)
28	Right Channel Summing Junction	SJ (R)
1	Right Channel Analog Common	ACOM
2	Right Channel Current Output	I <sub>OUT</sub> (R)
3	Right Channel Bipolar Offset Decoupling Point	CAP
4	Right Channel MSB Adjustment	MSB ADJ (R)
5	Right Channel Servo-Amp Decoupling Point	CAP
6	MSB Adjustment Potentiometer Voltage Output	VPOT
7	+5V Analog Supply	+V <sub>cc</sub>
8	Digital Common	DCOM

NOTE: In the SOIC (PCM1700U) package, the die is rotated 90°. Therefore, the pin assignments are different from the DIP. See pin assignments on page 4 for details.

**ORDERING INFORMATION**



**ABSOLUTE MAXIMUM RATINGS**

DC Supply Voltages	±7.5VDC
Input Logic Voltage	-1V to +V <sub>cc</sub>
Power Dissipation	500mW
Operating Temperature	-25°C to +70°C
Storage Temperature	-60°C to +100°C
Lead Temperature (soldering, 10s)	+300°C

**PACKAGE INFORMATION<sup>(1)</sup>**

MODEL	PACKAGE	PACKAGE DRAWING NUMBER
PCM1700U	28-Pin SOIC	217
PCM1700U,J	28-Pin SOIC	217
PCM1700U,K	28-Pin SOIC	217
PCM1700P	28-Pin Plastic DIP	126
PCM1700P,J	28-Pin Plastic DIP	126
PCM1700P,K	28-Pin Plastic DIP	126

NOTE: (1) For detailed drawing and dimension table, please see end of data sheet, or Appendix D of Burr-Brown IC Data Book.

PCM1700

8.2

DIGITAL AUDIO PRODUCTS—D/A



For Immediate Assistance, Contact Your Local Salesperson

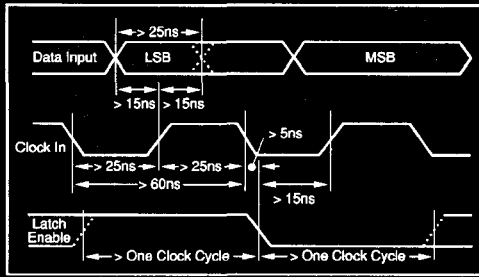


FIGURE 1. PCM1700P Setup and Hold Timing Diagram.

DIGITAL INPUT		ANALOG OUTPUT	
Binary Two's Complement (BTC)	DAC Output	Voltage (V) V <sub>OUT</sub> Mode	Current (mA) I <sub>OUT</sub> Mode
1FFFF Hex	+ FS	+2.99997711	-0.66989489
00000 Hex	BPZ	0.00000000	0.00000000
3FFFF Hex	BPZ - 1LSB	-0.00002289	+0.00000511
20000 Hex	- FS	-3.00000000	+0.67000000

TABLE I. PCM1700 Input/Output Relationships.

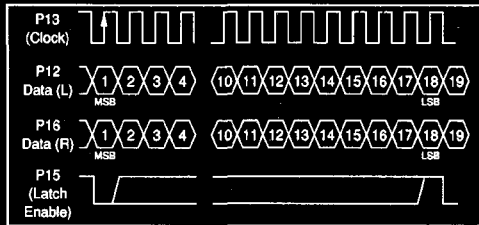


FIGURE 2. Timing Diagram.

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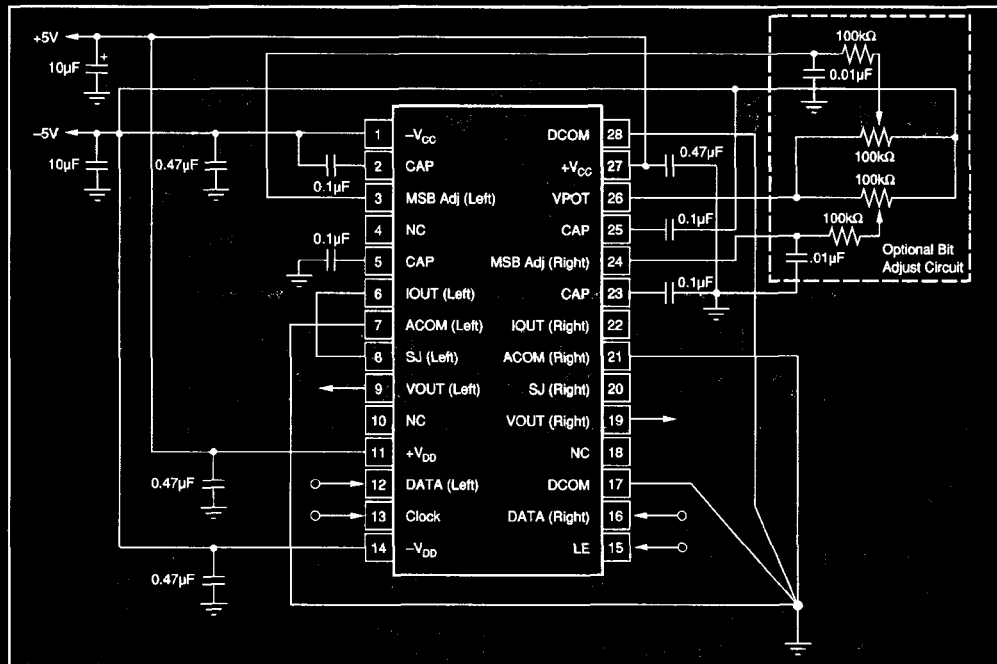


FIGURE 3. Voltage Output Connection Diagram (DIP Package Diagram.)

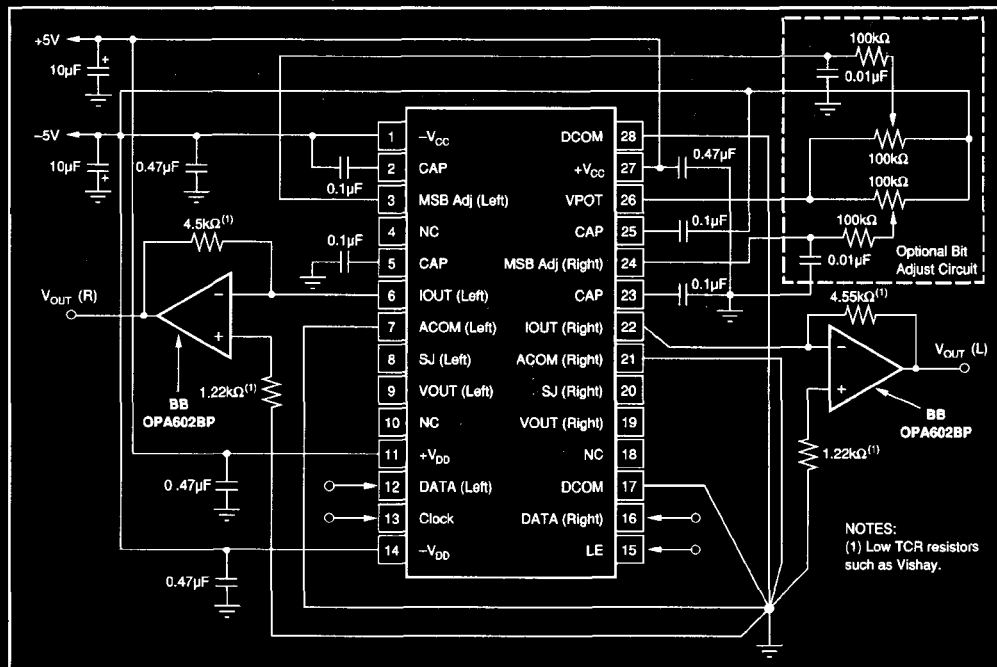


FIGURE 4. Current Output Connection Diagram (DIP Package Diagram.)



NOTES:  
(1) Low TCR resistors such as Vishay.