

**PCM64P**

ADVANCE INFORMATION  
Subject to Change

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

### FEATURES

- 18-BIT MONOLITHIC AUDIO D/A CONVERTER
- LOW  $-96\text{dB}$  MAX THD+N AT FS (16-BIT LINEARITY WITH EXTERNAL ADJUST)
- VERY FAST SETTLING CURRENT OUTPUT (200ns)
- PARALLEL INPUTS, 42-PIN PLASTIC "SHRINK" DIP
- USER PROVIDES 10V REFERENCE AND OP AMP TO OPTIMIZE COST EFFECTIVENESS
- $-15\text{V}$ ,  $+5\text{V}$  SUPPLIES, 415mW POWER DISSIPATION

### APPLICATIONS

- HIGH ACCURACY DIRECT DIGITAL WAVEFORM SYNTHESIS
- PROFESSIONAL AND HIGH END DIGITAL AUDIO

### DESCRIPTION

The PCM64JP/KP is a precision 18-bit digital-to-analog converter that features 16-bit linearity and ultra low distortion over a very wide frequency range. It is based on the highly accurate and stable 18-bit DAC729. The PCM64P greatly reduces cost by allowing the user to supply an external reference and current-to-voltage converter. This enables optimum cost/performance designs to be achieved when the very good temperature drift and stability specifications of the DAC729 are not necessarily required.

The PCM64P comes in a 42-pin double-wide plastic "shrink" DIP package. Applications include very low distortion frequency synthesis and very high end consumer and professional digital audio applications.

# SPECIFICATIONS

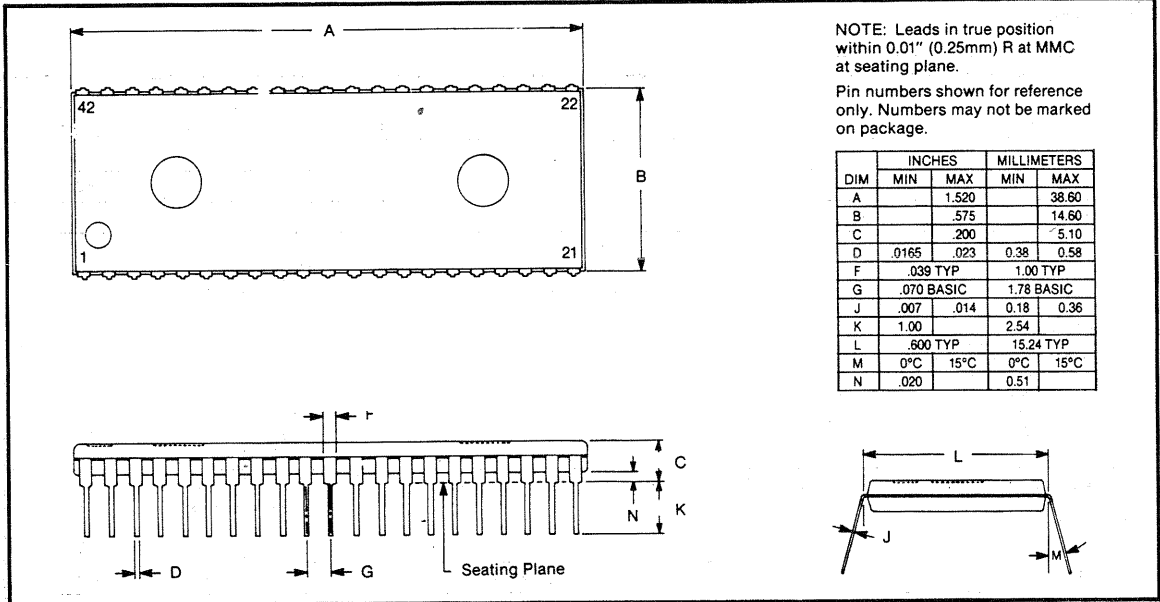
## ELECTRICAL

All specifications at +25°C, +V<sub>DD</sub> = +5.00V, and -V<sub>CC</sub> = -15.0V unless otherwise noted.

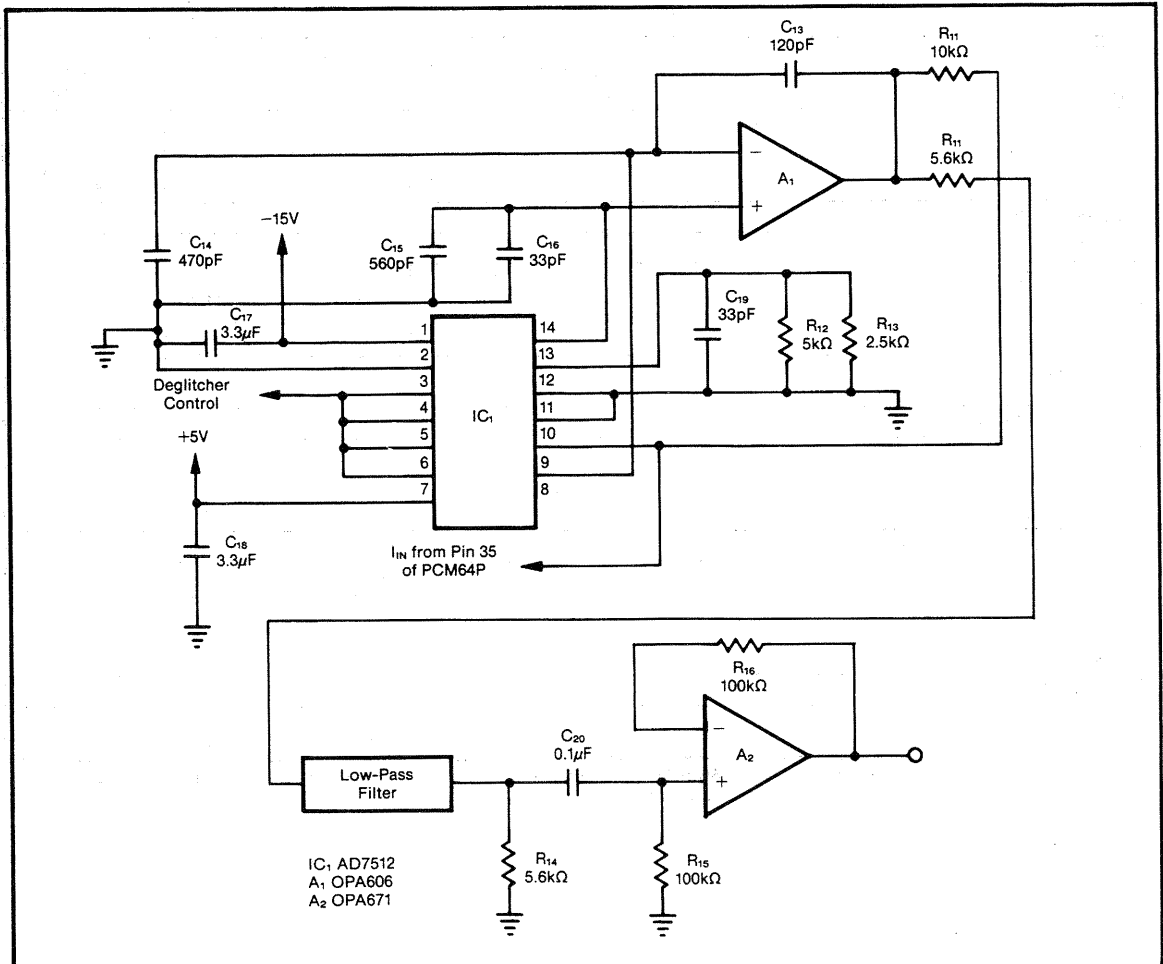
PARAMETER	CONDITIONS	PCM64P			UNITS
		MIN	TYP	MAX	
<b>RESOLUTION</b>				18	Bits
<b>DYNAMIC RANGE</b>			108		dB
<b>INPUT</b>					
<b>DIGITAL INPUT</b> Logic Family Logic Level: V <sub>IH</sub> V <sub>IL</sub> Data Format	I <sub>IH</sub> = +10μA I <sub>IL</sub> = -300μA	TTL Compatible +2.4 0.0 +5.25 +0.8			V V
<b>DYNAMIC CHARACTERISTICS</b>					
<b>TOTAL HARMONIC DISTORTION + NOISE<sup>(2)</sup></b> F = 991Hz (0dB) F = 991Hz (-20dB) F = 991Hz (-60dB)	F <sub>s</sub> = 176.4kHz with external bits 1-4 adjust <sup>(3)</sup>		-100 -86 -46	-96 -82 -42	dB dB dB
<b>TOTAL HARMONIC DISTORTION + NOISE</b> F = 991Hz (0dB) F = 991Hz (-20dB) F = 991Hz (-60dB)	F <sub>s</sub> = 176.4kHz without external bits adjust		-96 -78 -38	-93 -76 -36	dB dB dB
<b>NOISE</b>	20Hz to 20kHz at bipolar zero			3	nArms
<b>TRANSFER CHARACTERISTICS</b>					
<b>ACCURACY</b> Gain Error Bipolar Zero Error				±0.5 ±6.0	% μA
<b>DRIFT</b> Gain Bipolar Zero	0°C to +70°C 0°C to +70°C		±10 ±2		ppm/°C ppm of FSR/°C
<b>POWER SUPPLY SENSITIVITY</b> +V <sub>CC</sub> -V <sub>CC</sub> +V <sub>DD</sub>			±0.003 ±0.003 ±0.001		%FSR/%V <sub>CC</sub> %FSR/%V <sub>CC</sub> %FSR/%V <sub>DD</sub>
<b>WARM-UP TIME</b>				1	minute
<b>OUTPUT</b>					
<b>ANALOG OUTPUT</b> Output Range <sup>(4)</sup> Internal R <sub>FEEDBACK</sub> Output Impedance		-1.00		+1.00	mA Ω kΩ
<b>SETTLING TIME</b> 1mA Step	10Ω to 100Ω load		200		ns
<b>REFERENCE REQUIREMENTS</b>					
<b>REFERENCE INPUT</b> Input Voltage Input Current Input Current	Unipolar Bipolar	9.9	10	10.1 1 2	V mA mA
<b>POWER SUPPLY REQUIREMENTS</b>					
Voltage Range: -V <sub>CC</sub> +V <sub>DD</sub> Current: -V <sub>CC</sub> +V <sub>DD</sub> Power Dissipation	-V <sub>CC</sub> = -15V, V <sub>DD</sub> = +5V	-14.5 +4.75	-22 +17 415	-15.5 +5.25	V V mA mA mW
<b>TEMPERATURE RANGE</b>					
Specification Storage		0 -50		+70 +100	°C °C

NOTES: (1) CTC code requires external inversion of MSB bit input. (2) Ratio of Distortion rms + Noise rms/Signal rms. (3) F<sub>s</sub> = Sample rate of DAC (4 × 44.1kHz). (4) Tolerance of I<sub>OUT</sub> and R<sub>FEEDBACK</sub> is approximately ±1%.

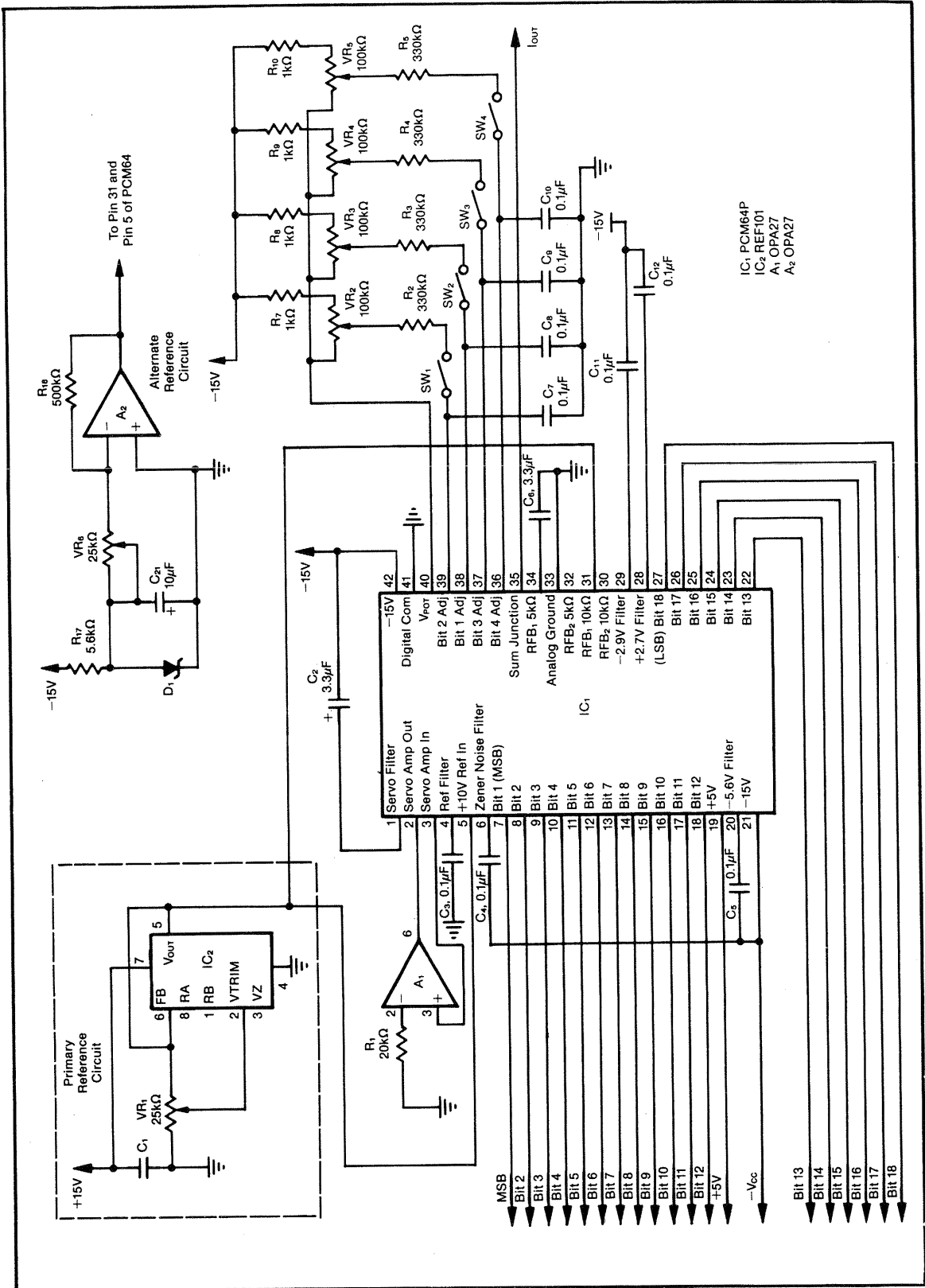
## MECHANICAL



## OUTPUT DEGLITCHING CIRCUITRY



CONNECTION DIAGRAM



PCM64P

AUDIO, COMMUNICATIONS, DSP D/A CONV.