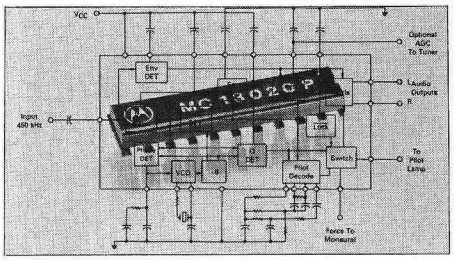
AM-stereo decoder chip vies to become standard

A complete AM-stereo decoder system, incorporating both decoding and pilot-tone-detection circuitry, the MC13020P promises to spark competition for de-facto-standard status in the potentially vast application area of AM stereo. Chosen by Delco Radio for use in all GM auto radios starting in model year 1984, it is the second AM-stereo decoder to receive large-customer endorsement.

The first such device, National Semiconductor's $1.25 (1,000,000) LM1981, provides no pilot-tone detection on chip. However, although designed around the Magnavox AM-stereo receiver format, it also accommodates three other schemes, from Harris, Belar and Kahn/Hazeltine (EDN, September 29, 1982, pg 60).



A complete monolithic decoding system, *the MC13020P incorporates both AM-stereo decoding and pilot-tone detection.*

Carrying a $1 (1,000,000) price tag, the MC13020P is dedicated to the Delco format. It employs full-wave envelope-signal detection continuously for the L+R signal and decodes L−R signals only when valid stereo transmission is present. A 25-Hz pilot tone must be present to permit reception of the L−R signal; pilot-acquisition time equals 300 msec for strong signals (the time is extendable to prevent falsing in noisy environments). An on-chip level detector can serve as an optional tuner-AGC source.

The decoder's C-QUAM (compatible quadrature AM) format develops two amplitude-modulated RF carriers that are 90° out of phase. The L+R signal modulates one; the L−R signal, the other. The combined signal is then hard-limited and remodulated with the L+R signal. Although this scheme provides monophonic compatibility, it destroys system linearity.

Any suitable stereophonic audio processor and matrix can generate the necessary sum and difference information. The received compatible quadrature signal is merely one that has been modulated by the cosine of its relative phase-angle information and is also a compatible envelope-detector signal. The system can thus decode either sum or difference information.

—Robert Landon

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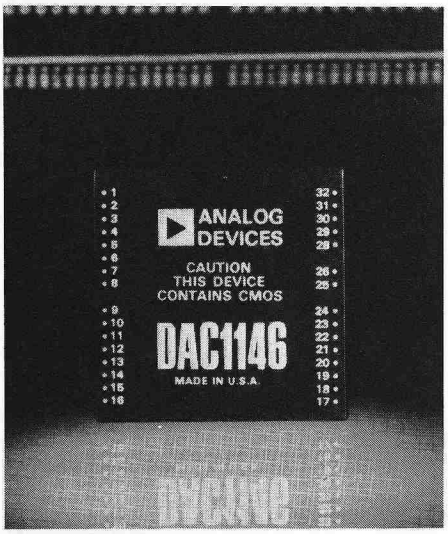
Circle No 453

Modular 18-bit DAC specs high linearity

Combining CMOS ICs, thin-film resistor technology and proprietary CMOS current switches to reduce module size to 2×2 in. without sacrificing performance, the DAC1146 18-bit DAC guarantees ±0.00076% FSR integral and differential nonlinearity. These figures match the specifications for its 2×4-in. DAC1136 predecessor—while lowering cost from $280 (50) to $130 (100). And they're significantly better than the ±0.0015% specs of competitive offerings such as the MP1926 and MP1936 from Analogic or the DAC9377-16 from Hybrid Systems.



Featuring 16-bit monotonicity and integral linearity at 25°C, *the DAC1146 D/A converter uses CMOS current-steering switches and thin-film technology to achieve a 2×2×0.4-in. module size.*

Additional specs include ±12-ppm/°C max gain drift, ±30-μV/°C max offset drift and ±7-ppm/°C max bipolar-offset drift. To meet digital-audio needs, the DAC is characterized for THD (total harmonic distortion): −94 dB typ from 20 Hz to 20 kHz.

Operating from ±11.5 to ±16V supplies, the converter dissipates 600 mW and remains fully specified over 0 to 70°C (−25 to +85°C without spec guarantees).

—Bill Travis

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Circle No 452