# Dual Function Digitally Programmable

Our AD-Dual filters require a minimum set up procedure with no clock and external components required. Two filter channels are available in the same package to save valuable PCB space and wiring. Stable DC shift between settings and wide cut off selections up to 1 MHz will greatly improve systems resolution and signal to noise ratio. TTL/CMOS digital inputs are compatible with most common microprocessors.
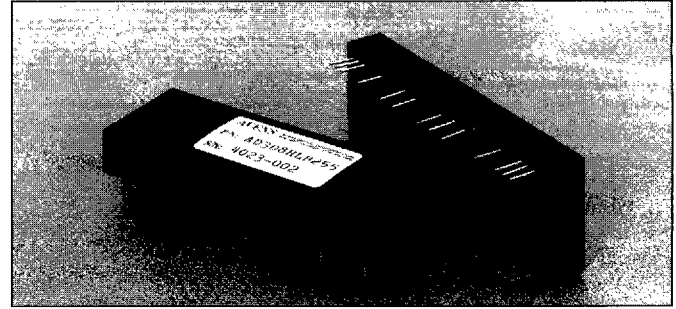
Features include:

☐ **DUAL FILTER FUNCTION**
Choice of two LOWPASS, or two HIGHPASS, or one HIGHPASS and one LOWPASS

☐ **INDEPENDENT OPERATION**
Frequency is programmed individually.
Separate Input & Output pins.

☐ **8 BITS, 10 BITS, & 12 BITS RESOLUTION**
Frequency range of 1 : 255, 1 : 1023, & 1 : 4095.

☐ **ANALOG ACTIVE FILTER**
RC active filter. Not switch-capacitor filter.

☐ **COMPLETELY ASSEMBLED**
Fully finished module. No external component required.

☐ **CMOS, TTL & μP COMPATIBLE**
Interface with 8 Bits (8085 & 6800),
and 12 Bits (68000) microprocessor.

☐ **4 STANDARD RESPONSES**
Butterworth, Bessel, Chebyshev, & Elliptic.

☐ **BANDPASS & BAND-REJECT CONFIGURATION**
Obtain BANPASS by connecting a HIGHPASS to a LOWPASS in series, or a BAND-REJECT by connecting a HIGHPASS and LOWPASS to a summer.

☐ **HIGH ATTENUATION, FAST ROLL-OFF**
Filter orders from 2nd order to 8th order.

☐ **STABLE OUTPUT**
Unity gain output.
Amplification available. (Up to 1000 times).

☐ **IDEAL FUNCTION BLOCK**
High input impedance.
Low output impedance.

☐ **COMPENSATED DC OFFSET**
Internal DC offset < 2 mV.
External adjustable to 0.0.

☐ **BUILT-IN DECOUPLING**
Internal power supply decoupling.

Suggested Applications for AD & AD-Dual Models

INTERFACE WITH 8 BIT PROGRAMMABLE FILTER
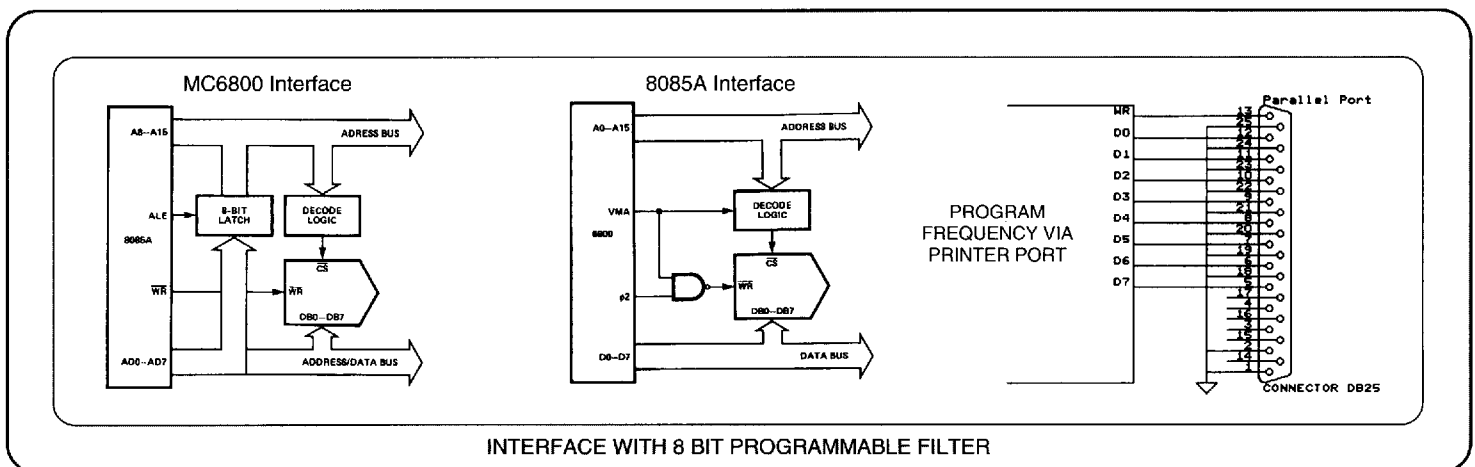
For All Custom & Standard Features Call...

0042950 0000269 789

Case Style and Outline Dimensions

PIN ASSIGNMENTS

Pin No.	Model AD8D
1	Digital Bit 2 (filter 1)
2	Digital Bit 1 (filter 1)
3	Digital Bit 0 (filter 1); (LSB)
4	$\overline{CS}$ (filter 1)
5	$\overline{WR}$ (filter 1)
6	N/C
7	Filter Input1 (filter 1)
8	N/C
9	V + (+15V)
10	Filter Output2 (filter 2)
11	DC Offset (filter 2)
12	Ground
13	Digital Bit 7 (filter 2); (MSB)
14	Digital Bit 6 (filter 2)
15	Digital Bit 5 (filter 2)
16	Digital Bit 4 (filter 2)
17	Digital Bit 3 (filter 2)
18	Digital Bit 2 (filter 2)
19	Digital Bit 1 (filter 2)
20	Digital Bit 0 (filter 2); (LSB)
21	$\overline{CS}$ (filter 2)
22	$\overline{WR}$ (filter 2)
23	N/C
24	N/C
25	Filter Input2 (filter 2)
26	V - (-15V)
27	DC Offset (filter 1)
28	Filter Output1 (filter 1)
29	Ground (all GND pins are connected)
30	Digital Bit 7 (filter 1); (MSB)
31	Digital Bit 6 (filter 1)
32	Digital Bit 5 (filter 1)
33	Digital Bit 4 (filter 1)
34	Digital Bit 3 (filter 1)

$\overline{CS}$	$\overline{WR}$	MODE
L	L	Immediate addressing
H	X	Data is latched
X	H	Last data is latched before WR goes HIGH

TOP VIEW

* N/C : no connection
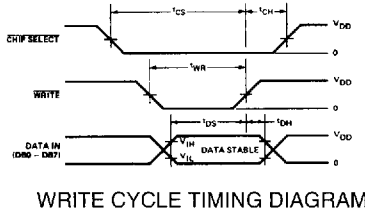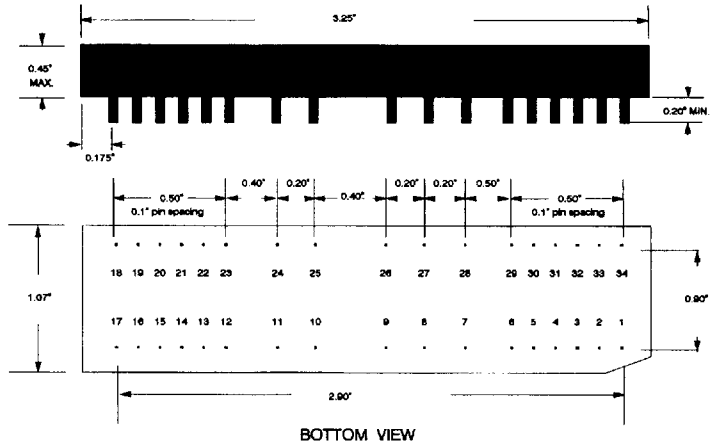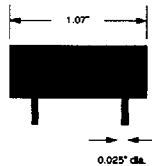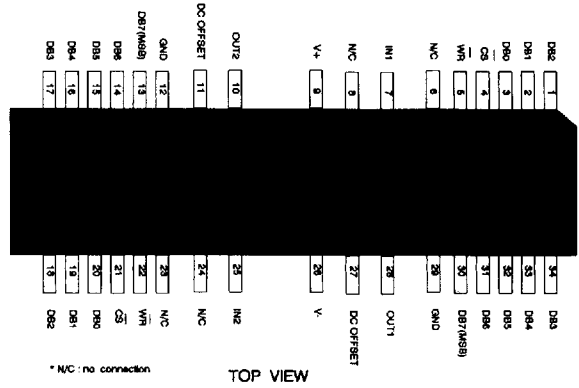
WRITE CYCLE TIMING DIAGRAM

BOTTOM VIEW

Specifications

ELECTRICAL CHARACTERISTICS
(Supply = ±15V., Load = 10 kΩ, Temp. = 25°C)

Supply Current	25 mA/4th order
Input Impedance	> 500 kohm
Output Impedance	< 1 ohm (@ DC)
Cut-off Variation	± 2%
Frequency Stability	0.01 % /°C
Unity Gain Output	0.0 dB
Max. Input Voltage	±12 V.
Max. Output Voltage	±12 V.
DC Offset	< ±2mV

MECHANICAL CHARACTERISTICS

Dimension	3.25" x 1.07" x 0.4"
Pin Diameter	0.025"
Materials	Glass Filled Thermoplastic Nylon

OPTIONS

Suffix	Description
L –	Low power consumption (10 mA / 4th order)
I –	Industrial temp. range (-25° C to 85° C)
M –	Military temp. range (-55° C to 125° C)
A1 –	10x amplification
A2 –	100x amplification
A3 –	1000x amplification

PART NUMBER SYSTEM (Typical part numbering example shown below)

AD – 8D – HL – 4 – E – 2.55K –10.2K – I – L – A1

- Gain Option
- Low power Option
- Temperature Range Option
- -3 dB Frequency: maximum cutoff freq. (filter 1 - filter 2)
- Response: B=Butterworth, L=Bessel, C=Chebyshev, E=Elliptic
- Filter order (4th order)
- Configuration: HH=Dual Highpass, HL=Highpass & Lowpass, LL=Dual Lowpass
- Resolution: 8D = 1:255, 10D = 1:1023, 12D = 1:4095
- Model Type: Digitally Programmable Filter

Typical Frequency Response Curves Available
(See Back of Catalog)