

## Delphi Seven Band Equalizer

### ▶ Description

When controlled by serial data, the Delphi Seven Band Equalizer (SBEQ) provides all of the functions of a high performance equalizer, including input selection, seven bands of equalization, loudness, volume, fade, balance, and soft mute on any of three stereo sources. The exploitation of transconductance-C circuit techniques minimizes the number of external components required. The SBEQ contains seven fully integrated bandpass filters with +/-12 dB boost and cut ranges. Four independently controlled output attenuators are used to control fade, balance, and volume levels. Individual left and right loudness filters and attenuators are also included to boost low frequencies at low volume levels. Each of these functions is independently controlled via serial data words.

### ▶ Features

- Input mute, output mute, and soft mute
- Three selectable stereo inputs and one selectable mono input
- Seven bands of tone control and frequency shaping with symmetrical boost and cut
- Independent control of volume, loudness, fade and balance
- Bowing is <3 dB with all bands boosted at +12 dB
- Dolby C compatible

### ▶ Packaging

- Available in 28-pin SO

### ▶ Typical Applications

- Automotive Radios
- Home Receivers and Equalizers
- Portable Stereo Systems

## Delphi Seven Band Equalizer

Recommended Operating Conditions			
Characteristic	Symbol	Value	Unit
Supply Voltage	Vdd	8.3 to 8.7	V
Digital Input Low Voltage	CLK, Data	0.8	V
Digital Input High Voltage	CLK, Data	3.0	V
Input Voltage - Audio		2.37	Vrms
Operating Temperature Range, Ambient	Ta	-40 to 125	°C

Absolute Maximum Ratings			
Characteristic	Symbol	Value	Unit
Supply Voltage	Vdd	-0.4 to 9.5	V
Input Voltage	Vin	-0.3 to Vdd +0.3	V
Storage Temp. Rise	Tstg	-65 to 150	°C
Max. Junction Temp.		150	°C

Electrical Performance Characteristics						
Characteristics	Symbol	Condition	Min	Max	Typ	Unit
Stereo Signal Gain	SG	1kHz @ 0.5 Vrms	-1.0	1.0	0	dB
Stereo Separation	SEP	1kHz @ 0.5 Vrms	50		60	dB
Distortion	THD	1kHz @ 1 Vrms, All Bands @ +3dB Vol=-8dB		0.25	0.1	%
Noise	NS	0 dB Vol/-15dB Vol		54/17	45/15	µV
Input CMRR	CM	1kHz @ .0575 Vrms -15dB Vol	60		70	dB
Volume Step Linearity	VL	96 Steps from +32dB to -63dB	0.6	1.4	1	dB/dB
Equalizer Step Linearity	EL	12 2dB Steps	.065	1.35	1	dB/dB
Loudness Step Linearity	LL	1 1.33dB Steps	0.6	1.4	1	dB/dB
Output Step Linearity	IL	30 1.25dB Steps	.06	1.4	1	dB/dB