

ECG813

CD-4 DISCRETE DISC DEMODULATION SYSTEM

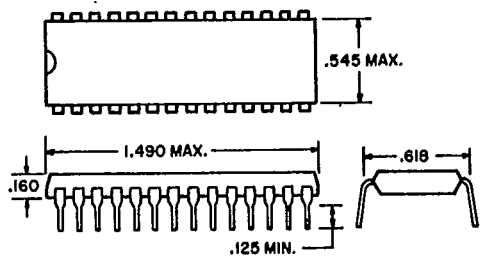
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DESCRIPTION

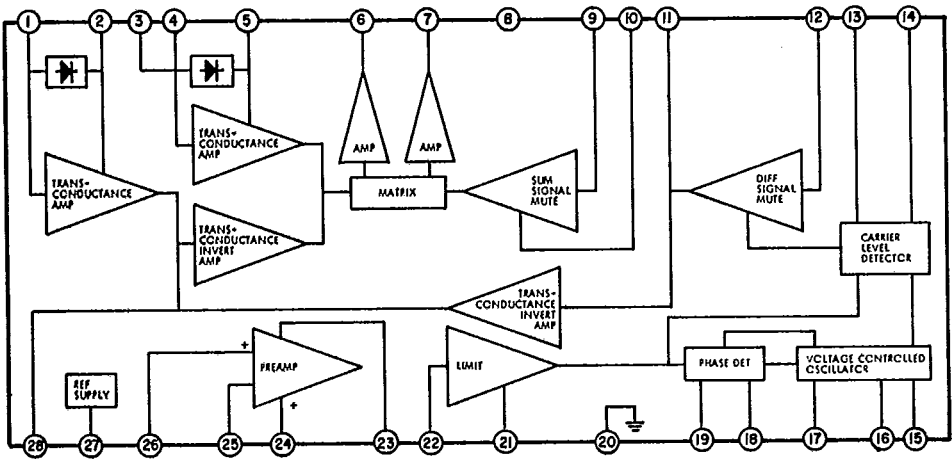
The CD-4 system integrated circuit is a complete sub-system which will allow demodulation of discrete disc recordings manufactured in this format.

The circuitry is integrated on a monolithic silicon chip and has been designed for high performance, low cost discrete four channel equipment. The utilization of two of these chips and the minimum amount of outboard components will result in a complete CD-4 discrete four channel demodulation.

The integrated circuit is housed in a 28 lead plastic molded dual-in-line package; the circuit will operate from a single ended 12 to 15 volt power supply and may be used with either magnetic, ceramic, or semiconductor cartridges.



SCHEMATIC DIAGRAM



Absolute Maximum Rating

Supply Voltage (Pin 8)..... 15V
 Operating Temperature Range..... 0° to 70°C
 Storage Temperature Range..... -65°C to 150°C
 Current Sink at Pin 13..... 20mA
 Voltage at Pin 13, On State..... 1V
 Voltage at Pin 13, Off State..... 15V

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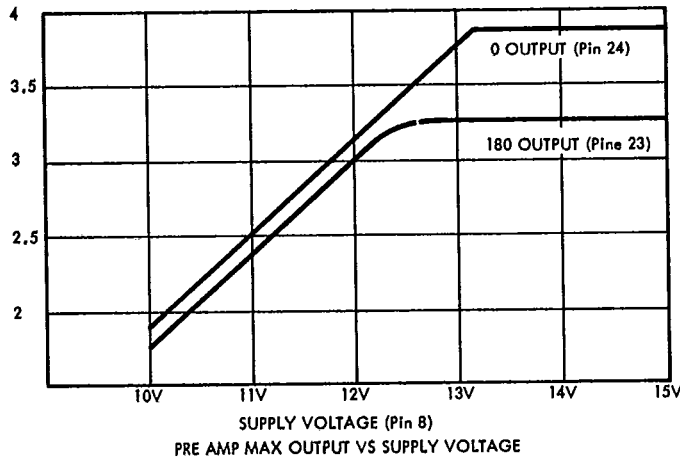
ELECTRICAL CHARACTERISTICS

Supply Voltage, 15V, Ta = 25°C, All AC Voltage Levels in RMS Volts

| Parameter | Min. | Typ. | Max. | Test Conditions |
|--|----------------|---|--------------|---|
| 1. Supply Voltage (Pin 8) | 11V | 13V | 15V | |
| 2. Supply Current | 32mA | 34mA | 40mA | Pin 13 Open |
| 3. Internal Ref Voltage Pin 27 | | 5.8V | | |
| 4. Supply Rejection a. Pre-Amp Pin 23 b. Pre-Amp Pin 24 c. Matrix Outputs Pin 6 & Pin 7 d. Mute Pin 11 e. Internal Ref Pin 27 | -30dB -30dB | -50dB -50dB -50dB -60dB -55dB | | 1kHz Signal at 300mV Applied to Pin 8 |
| 5. Pre-Amp a. Signal to Noise b. Output Swing Pin 23, Pin 24 c. Output Balance Between 0 & 180 Output d. Input Resistance e. Output Resistance f. Distortion | 70dB 3V | 3.3V 0dB 10 ⁶ ohms Ro < 100 Ω .05% | ±1dB ±1dB | 7mV Input Signal 20Hz to 15kHz Bandwidth 600Ω Source Resistance Before Clipping 40dB Pre-Amp Gain at 1kHz 40dB Pre-Amp Gain at 1kHz 1V RMS Output |
| 6. Matrix Amps a. Output Swing Pin 6 & 7 b. Frequency Response c. Output Resistance d. Output Balance | 3V | 0dB Ro < 100 Ω 0dB | -1dB ±1dB | 1.5V Sum Input Level and 1.5V Difference Input Level Frequency Response to 15kHz Difference of Pin 6 & 7 Output Levels |
| 7. Sum Sub-System Mute a. Charge Current b. Mute Control Trip Level c. Input/Output Gain | | 100μA 1.45V 0dB | +1/2dB | The Mute Is On Below This Level, Off Above This Level |

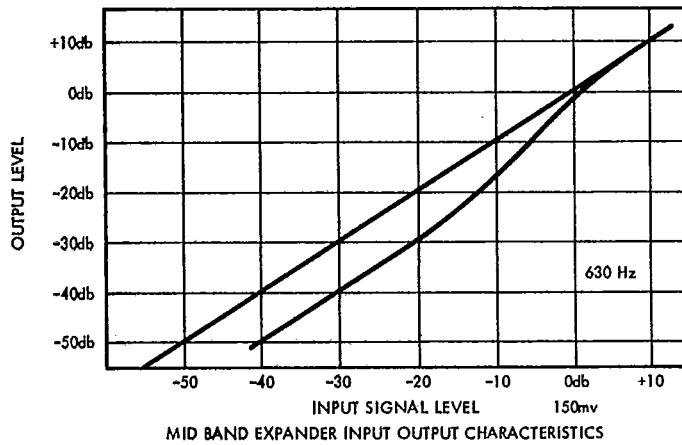
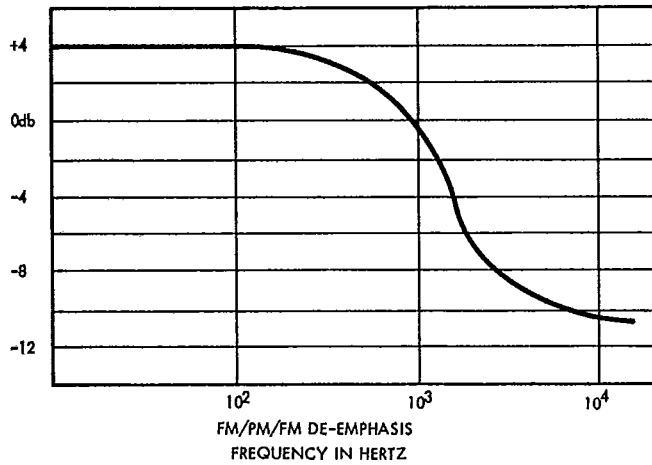
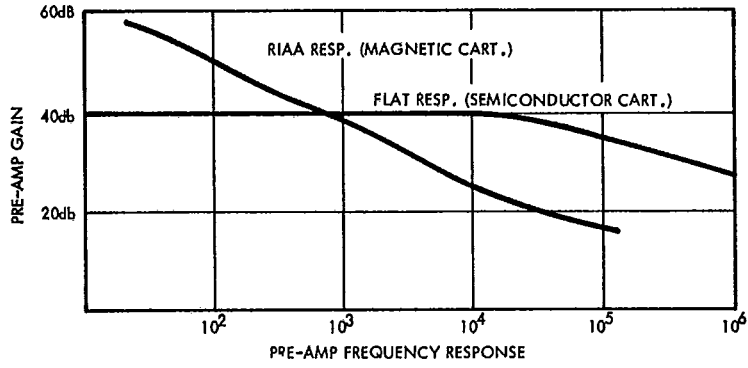
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| | | | | |
|--|------|--|-----------------------------|---|
| 8. Limiter a. Gain b. Frequency Response | | 60dB 300kHz | | Measured at 30kHz -3dB Point |
| 9. PLL a. Free Runing Frequency b. Signal to Noise Ratio c. Frequency Response d. Demodulate Output Level at LPF Output e. Demodulation Distortlon f. PLL Filter Source Impedance g. Tracking Range Limits h. AM Rejection | 45mV | 40dB 50mV <1% 15Kohms ±15kHz 30dB | 30% -3dB 55mV | 30kHz Center Frequency Carrier at 30kHz 1 Millivolt Level 30 to 13kHz Band with 1K and .01uf PLL Filter 30 to 13kHz with 1K and .01uf PLL Filter 1.3kHz Dev, 30kHz .0033uf at Pin 17, C26 at 1kHz 5kHz Dev - No Bandpass Filter Center Frequency, 30kHz 30% AM on Carrier 1kHz, Ref 1, 3kHz Dev. |
| 10. Carrier Level Detector a. Light Drive Sink Current b. Mute Delay Time c. Mute Off Time d. Mute On Level e. Mute Off Level | | 600µsec 60µsec 500µV 1milliV | 20mA | C6 = .0047uF On Input to Limiter |
| 11. Difference Sub-System a. Open Loop Gain b. Output Swing c. Mute On, Off Off-set | 40dB | 1.8V 0 | ±50mV | Load of Expander Input Networks |
| 12. Expander a. Accuracy of H.B. Exp. b. Accuracy of M.B. Exp. c. Input, Output Gain d. Distortion | | 0dB | ±3dB ±3dB ±1dB 1% | Over Full Range |

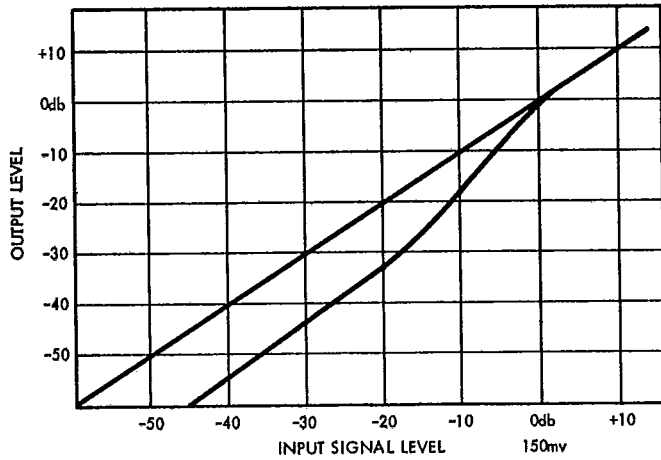


PRE AMP MAX OUTPUT VS SUPPLY VOLTAGE

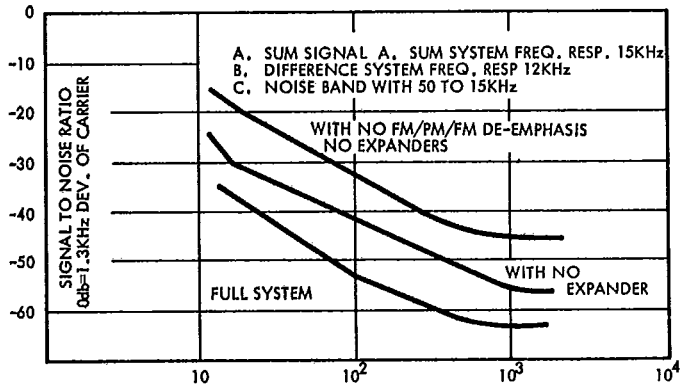
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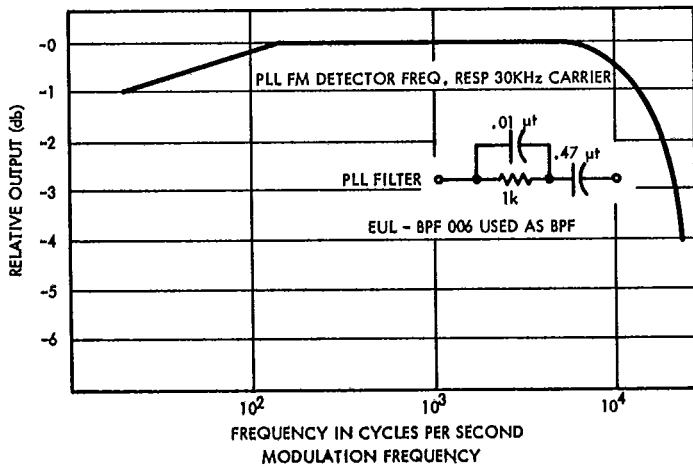
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HIGH BAND EXPANDER (15KHz) INPUT - OUTPUT CHARACTERISTICS



CARRIER INPUT LEVEL (u volts), (SUM SIGNAL +20db)
SIGNAL TO NOISE RATIO AT MATRIX OUTPUT (Pin 6+7)



PLL FM DETECTOR FREQ, RESP 30KHz CARRIER
PLL FILTER
EUL - BPF 006 USED AS BPF