



SPEAKER ELEVATION AUDIO PROCESSOR with A/V Focus Filter

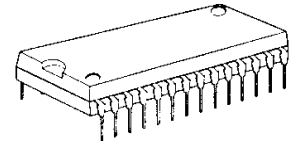
■ GENERAL DESCRIPTION

The **NJM2184** is a speaker elevation audio processor with A/V Focus Filter, based on SRS Focus technology. It is capable of raising sound image.

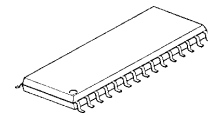
In addition, the **NJM2184** includes the A/V Focus Filter to reduce harsh sound when the speakers are directly put on hard-surface floor.

The **NJM2184** is suitable for almost all car audio, Projection TV, radio cassette, and then.

■ PACKAGE OUTLINE




NJM2184L



NJM2184M

■ FEATURES

- Operating Voltage (4.7 to 13V)
- Low Operating Current (7.0mA typ.)
- Low Output Noise (15 μ Vrms typ.)
- Adjusted by LF Elevation, HF Elevation, and Bass Compensation Volume
- Internal A/V Focus Filter
- Bipolar Technology
- Package Outline SDIP28,SDMP30

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For further information, please contact:

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 Tel:949-442-1070 Fax:949-852-1099 <http://www.srslabs.com>

■ ABSOLUTE MAXIMUM RATING (Ta=25°C)

| PARAMETER | SYMBOL | RATING | UNIT |
|-----------------------------|------------------|----------------------------|------|
| Supply Voltage | V ⁺ | 15 | V |
| Power Dissipation | P _D | (SDIP28)700 (SDMP30)700 | mW |
| Operating Temperature Range | T _{opr} | -40 to +85 | °C |
| Storage Temperature Range | T _{stg} | -40 to +125 | °C |

■ ELECTRICAL CHARACTERISTICS (V⁺=12V, Ta=25°C)

| PARAMETER | SYMBOL | TEST CONDITION | | MIN. | TYP. | MAX. | UNIT | | | |
|--|--------------------|------------------------------------|-----------------------------------|---|-----------------|----------------|---------------|-----------------|-----------------|----------------|
| Operating Voltage | V ⁺ | | | 4.7 | 12.0 | 13.0 | V | | | |
| Supply Current | I _{CC} | No Signal | | - | 7.0 | 10.5 | mA | | | |
| Reference Voltage | V _{REF} | V ⁺ /2 | | 5.8 | 6.0 | 6.2 | V | | | |
| Maximum Input Voltage | V _{INMAX} | f=1kHz at T.H.D.=3% | Bypass Mode | 7.79 (2.45) | 11.8 (3.88) | - | dBV (Vrms) | | | |
| | | | Focus Mode | -4.71 (0.58) | -1.21 (0.87) | - | | | | |
| | | | A/V Focus Mode | -5.21 (0.55) | -1.71 (0.82) | - | | | | |
| | | | f=70Hz at T.H.D.=3% Controls ∞ | Bypass Mode | - | 11.8 (3.88) | | - | | |
| | | | | Focus Mode | - | 0.77 (1.1) | | - | | |
| | | | | A/V Focus Mode | - | 0.77 (1.1) | | - | | |
| | | f=10kHz at T.H.D.=3% Controls ∞ | Bypass Mode | - | 11.8 (3.88) | - | | | | |
| | | | Focus Mode | - | -8.71 (0.37) | - | | | | |
| | | | A/V Focus Mode | - | -8.71 (0.37) | - | | | | |
| | | Output Noise | V _{NOISE} | Vin=V _{REF} A-weight Controls ∞ | Focus Mode | - | | -94.0 (20.0) | -88.0 (40.0) | dBV (μVrms) |
| | | | | | A/V Focus Mode | - | | -94.0 (20.0) | -88.0 (40.0) | |
| | | | | Vin=V _{REF} A-weight Controls Center | Focus Mode | - | | -96.5 (15.0) | - | |
| A/V Focus Mode | - | | | | -96.5 (15.0) | - | | | | |
| Vin=V _{REF} A-weight Controls 0 | Focus Mode | | | - | -96.5 (15.0) | - | | | | |
| | A/V Focus Mode | | | - | -96.5 (15.0) | - | | | | |

■ ELECTRICAL CHARACTERISTICS ($V^+=12V, T_a=25^\circ C$)

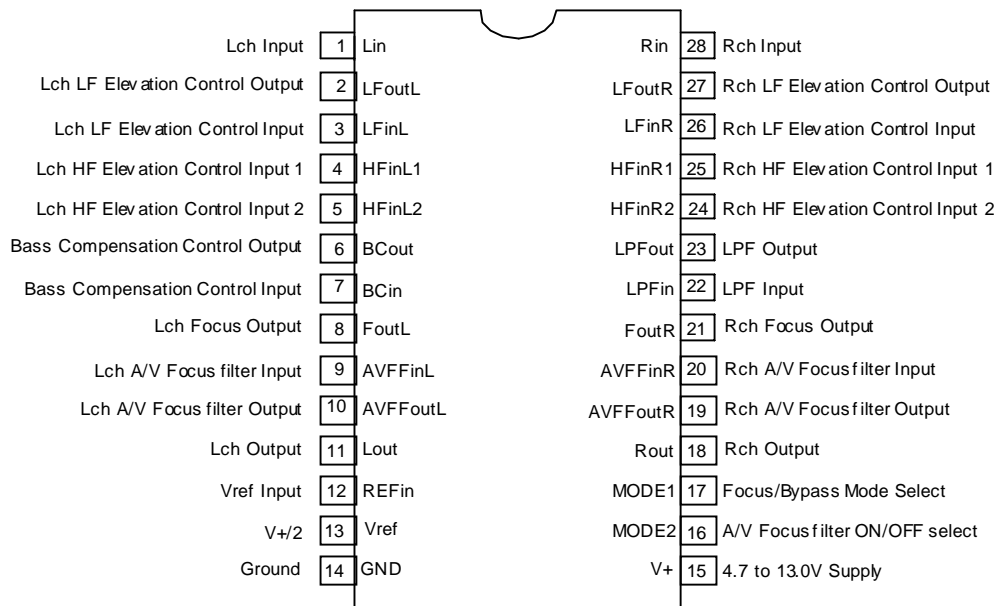
| PARAMETER | SYMBOL | TEST CONDITION | | MIN. | TYP. | MAX. | UNIT |
|-----------------------------|-------------|--|----------------|-------|-----------------|-------|--------------------------|
| Output Noise | V_{NOISE} | Vin= V_{REF} DIN-AUDIO Controls ∞ | Focus Mode | - | -90.1 (30.0) | - | dBV (μV_{rms}) |
| | | | A/V Focus Mode | - | -90.1 (30.0) | - | |
| | | Vin= V_{REF} DIN-AUDIO Controls Center | Focus Mode | - | -94.0 (20.0) | - | |
| | | | A/V Focus Mode | - | -94.0 (20.0) | - | |
| | | Vin= V_{REF} DIN-AUDIO Controls 0 | Focus Mode | - | -94.0 (20.0) | - | |
| | | | A/V Focus Mode | - | -96.5 (15.0) | - | |
| Channel Balance | CH_{BAL} | Vin=-17.2dBV f=1kHz Controls ∞ | Focus Mode | -1.0 | 0.0 | 1.0 | dB |
| | | | A/V Focus Mode | -1.0 | 0.0 | 1.0 | |
| Total Harmonic Distortion | THD | Vin=-17.2dBV Lch f=1kHz Controls ∞ | Focus Mode | - | 0.05 | 0.20 | % |
| | | | A/V Focus Mode | - | 0.09 | 0.30 | |
| BYPASS Gain | G_{BYP} | Vin=-17.2dBV f=1kHz | Bypass Mode | -1.0 | 0.0 | 1.0 | dB |
| FOCUS Gain1 | G_{FOC1} | Vin=-17.2dBV f=70Hz Controls ∞ | Focus Mode | 8.5 | 10.5 | 12.5 | dB |
| FOCUS Gain2 | G_{FOC2} | Vin=-17.2dBV f=20kHz Controls ∞ | Focus Mode | 19.0 | 21.0 | 23.0 | dB |
| AVF Gain | G_{AVF} | Vin=-17.2dBV f=800Hz Controls 0 | A/V Focus Mode | -12.0 | -10.0 | -8.0 | dB |
| MODE Select Control Voltage | V_{MODE} | Vin= High Level | | 2.0 | - | V^+ | V |
| | | Vin=Low Level | | 0.0 | - | 0.7 | |

■ MODE Switch

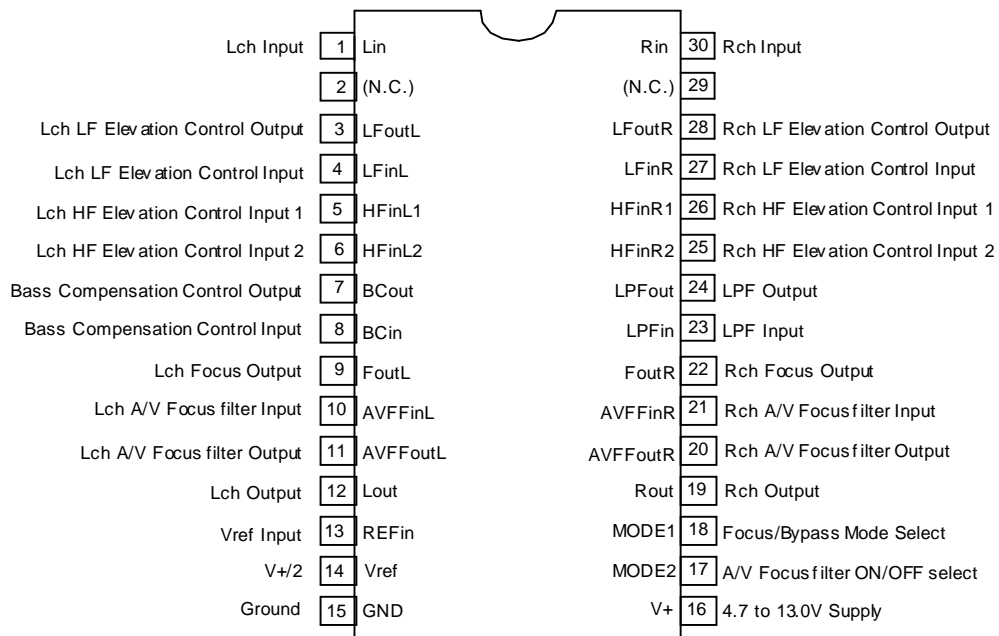
| | MODE1 | MODE2 |
|----------------|-------|-------|
| Bypass Mode | L | - |
| Focus Mode | H | L |
| A/V Focus Mode | H | H |

■ PIN FUNCTION

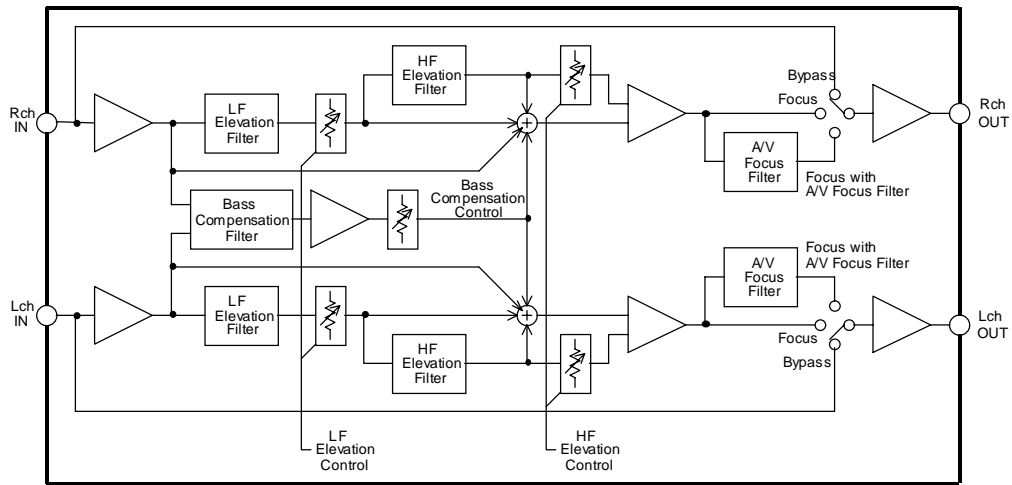
SDIP28



SDMP30

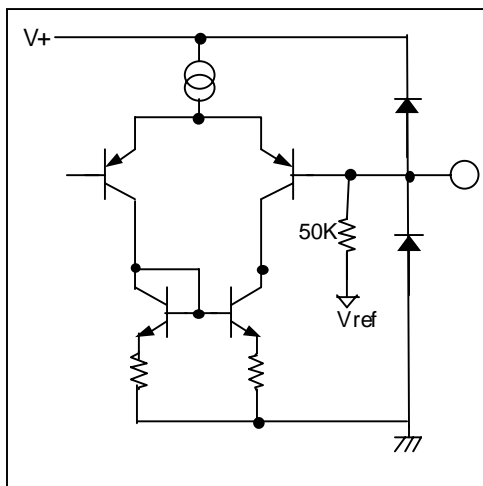


■ BLOCK DIAGRAM

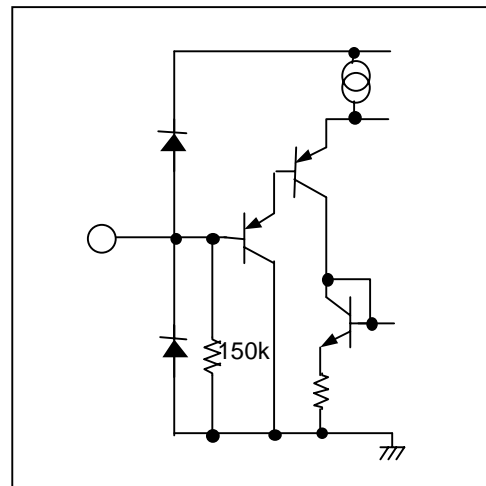


■ PIN DESCRIPTION

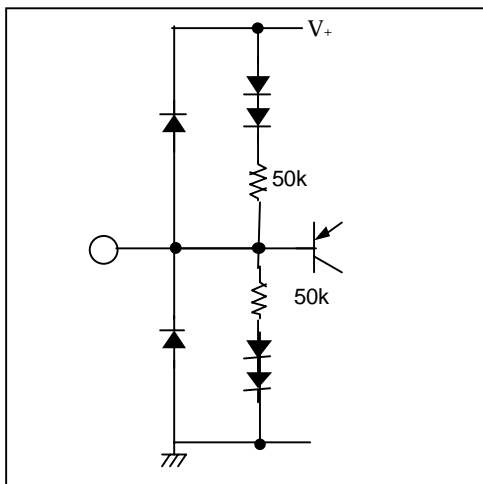
Lin, Rin



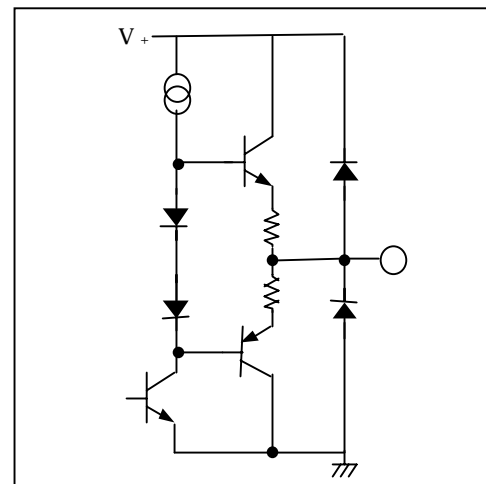
MODE1, MODE2



REFin

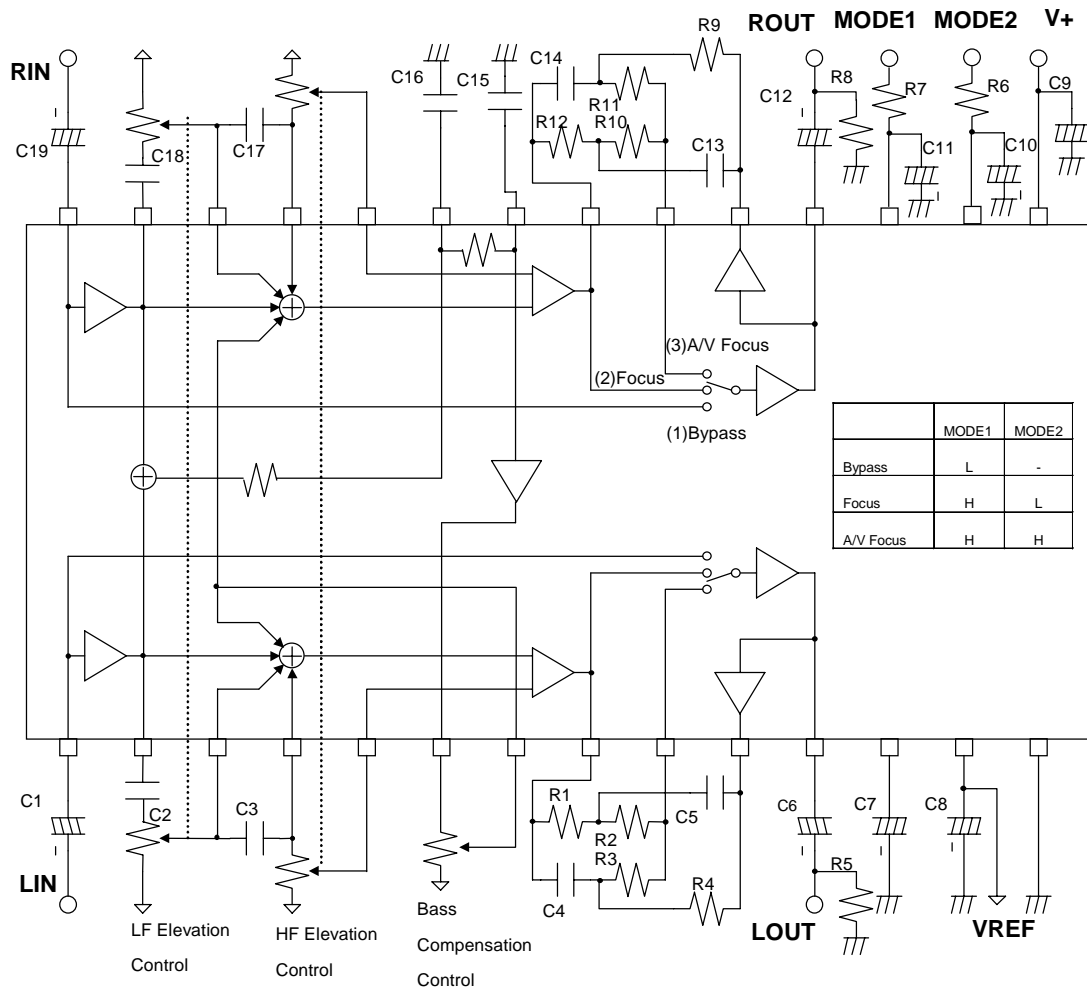


Lout, Rout, Vref



APPLICATION CIRCUIT

SDIP28

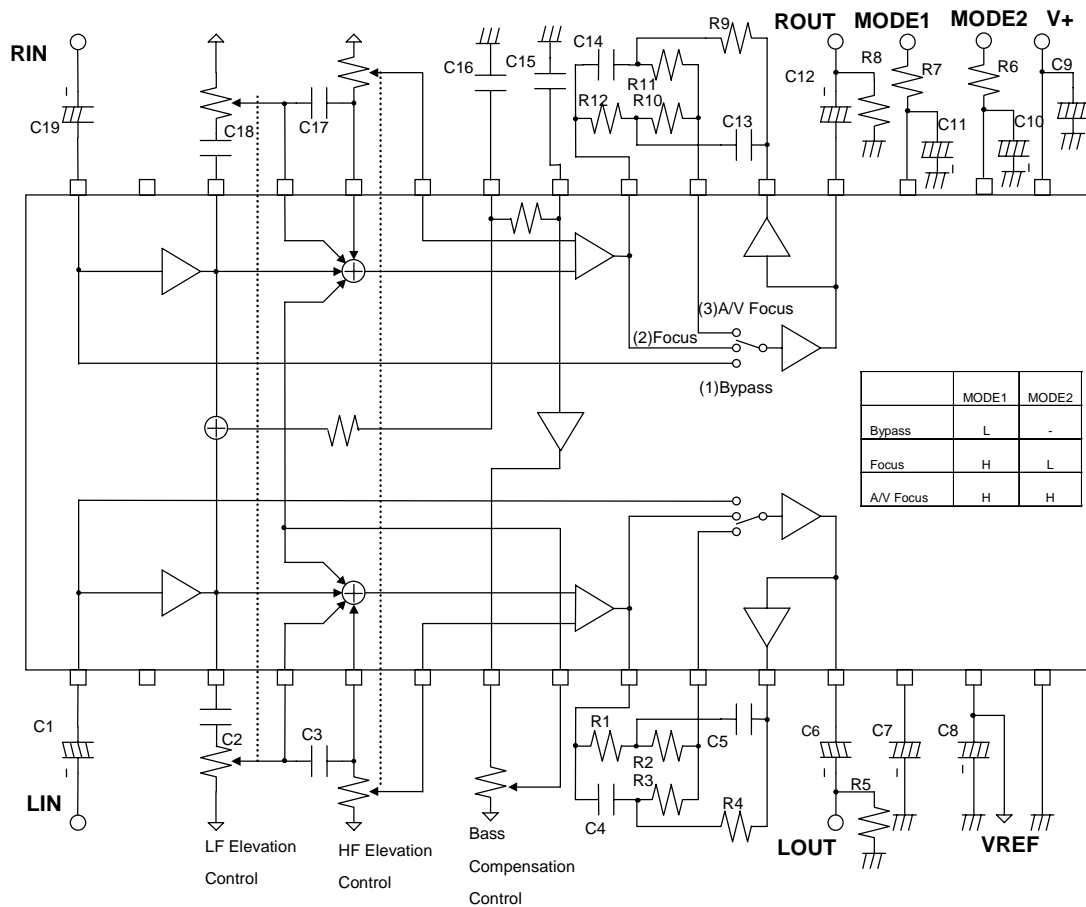


| PART No. | VALUE | Tolerance | PART No. | VALUE | Tolerance |
|-----------------|--------|-----------|------------------|-------|-----------|
| C1,C6,C7 | 10uF | | R5,R6,R8 | 10kΩ | |
| C10,C11,C12,C19 | 10uF | | R1,R12 | 1.8kΩ | ±5% |
| C8 | 33uF | | R2,R3,R7,R10,R11 | 22kΩ | ±5% |
| C9 | 100uF | | R4,R9 | 5.6kΩ | ±5% |
| C2,C18 | 0.22uF | ±5% | | | |
| C3,C17 | 3900pF | ±5% | | | |
| C4,C14,C15 | 0.01uF | ±5% | | | |
| C5,C13 | 0.47uF | ±5% | | | |
| C16 | 0.1uF | ±5% | | | |

- LF Elevation Control: 1kB Single-shaft Dual-unit
- HF Elevation Control: 10kB Single-shaft Dual-unit
- Bass Compensation Control: 1kB Single-shaft Single-unit

APPLICATION CIRCUIT

SDMP30



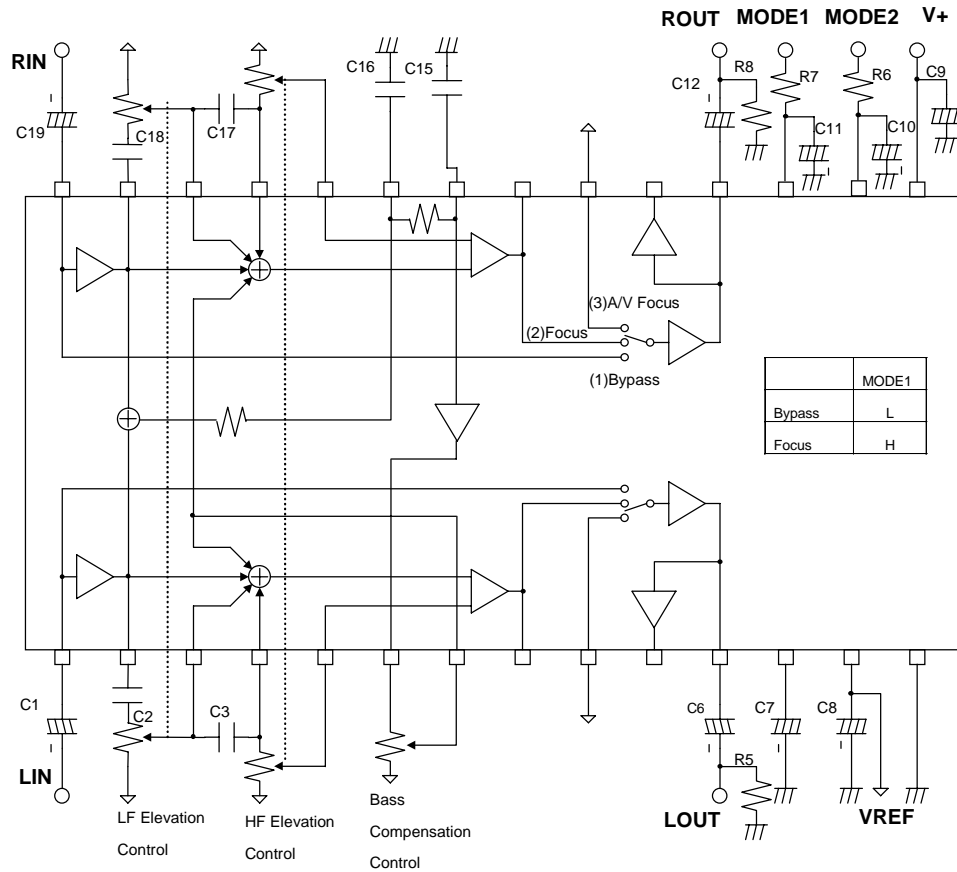
| PART No. | VALUE | Tolerance | PART No. | VALUE | Tolerance |
|-----------------|--------|-----------|------------------|-------|-----------|
| C1,C6,C7 | 10uF | | R5,R6,R8 | 10kΩ | |
| C10,C11,C12,C19 | 10uF | | R1,R12 | 1.8kΩ | ±5% |
| C8 | 33uF | | R2,R3,R7,R10,R11 | 22kΩ | ±5% |
| C9 | 100uF | | R4,R9 | 5.6kΩ | ±5% |
| C2,C18 | 0.22uF | ±5% | | | |
| C3,C17 | 3900pF | ±5% | | | |
| C4,C14,C15 | 0.01uF | ±5% | | | |
| C5,C13 | 0.47uF | ±5% | | | |
| C16 | 0.1uF | ±5% | | | |

- LF Elevation Control: 1kB Single-shaft Dual-unit
- HF Elevation Control: 10kB Single-shaft Dual-unit
- Bass Compensation Control: 1kB Single-shaft Single-unit

NJM2184

APPLICATION CIRCUIT(Without A/V Focus Filter)

SDIP28

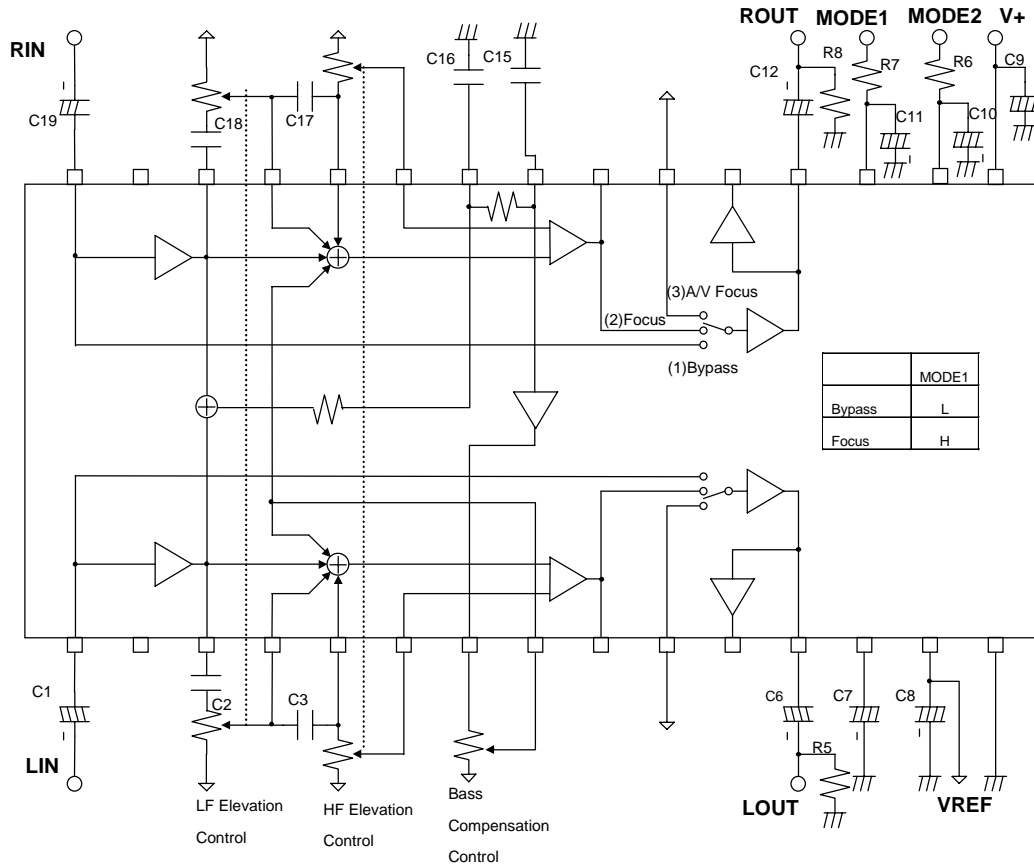


| PART No. | VALUE | Tolerance | PART No. | VALUE | Tolerance |
|-----------------|--------|-----------|----------|-------|-----------|
| C1,C6,C7 | 10uF | | R5,R6,R8 | 10kΩ | |
| C10,C11,C12,C19 | 10uF | | R7 | 22kΩ | ±5% |
| C8 | 33uF | | | | |
| C9 | 100uF | | | | |
| C2,C18 | 0.22uF | ±5% | | | |
| C3,C17 | 3900pF | ±5% | | | |
| C15 | 0.01uF | ±5% | | | |
| C16 | 0.1uF | ±5% | | | |

- LF Elevation Control: 1kB Single-shaft Dual-unit
- HF Elevation Control: 10kB Single-shaft Dual-unit
- Bass Compensation Control: 1kB Single-shaft Single-unit

APPLICATION CIRCUIT(Without AV Focus Filter)

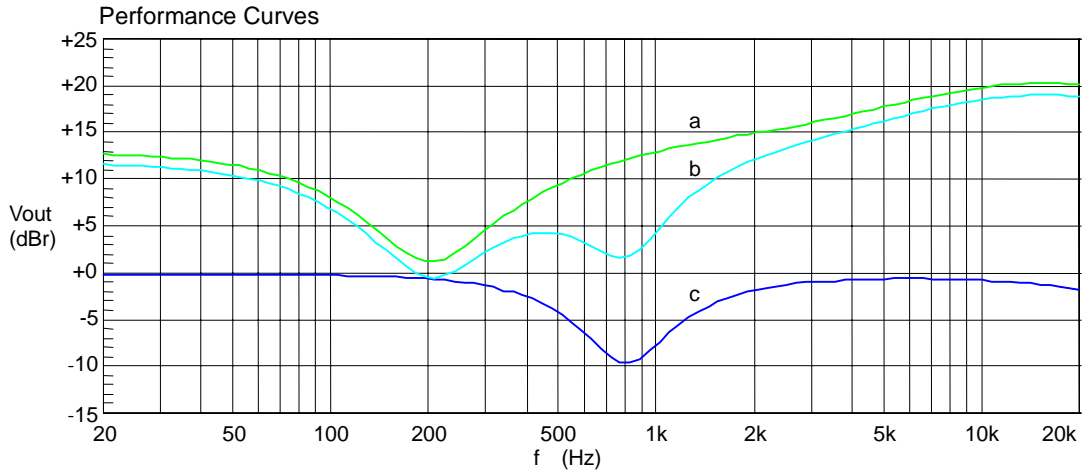
SDMP30



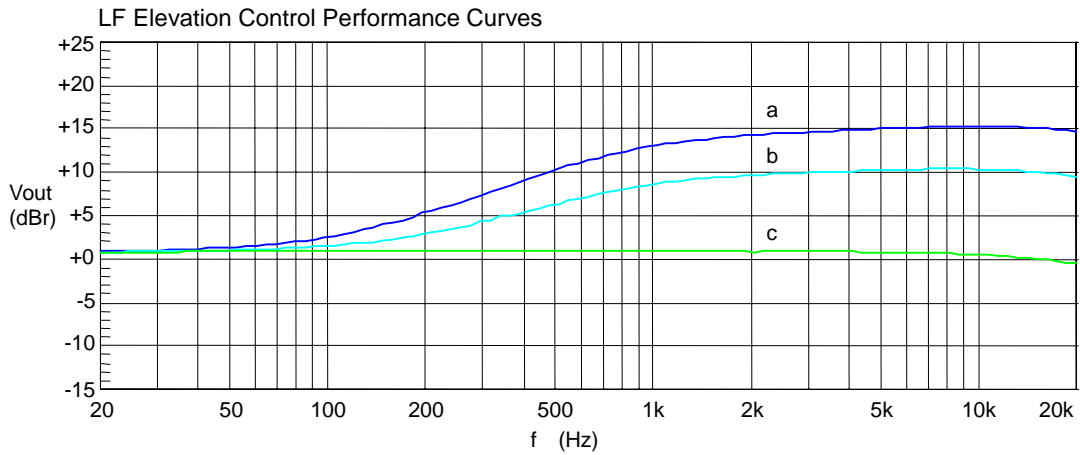
| PART No. | VALUE | Tolerance | PART No. | VALUE | Tolerance |
|-----------------|--------|-----------|----------|-------|-----------|
| C1,C6,C7 | 10uF | | R5,R6,R8 | 10kΩ | |
| C10,C11,C12,C19 | 10uF | | R7 | 22kΩ | ±5% |
| C8 | 33uF | | | | |
| C9 | 100uF | | | | |
| C2,C18 | 0.22uF | ±5% | | | |
| C3,C17 | 3900pF | ±5% | | | |
| C15 | 0.01uF | ±5% | | | |
| C16 | 0.1uF | ±5% | | | |

- LF Elevation Control: 1kB Single-shaft Dual-unit
- HF Elevation Control: 10kB Single-shaft Dual-unit
- Bass Compensation Control: 1kB Single-shaft Single-unit

CHARACTERISTICS



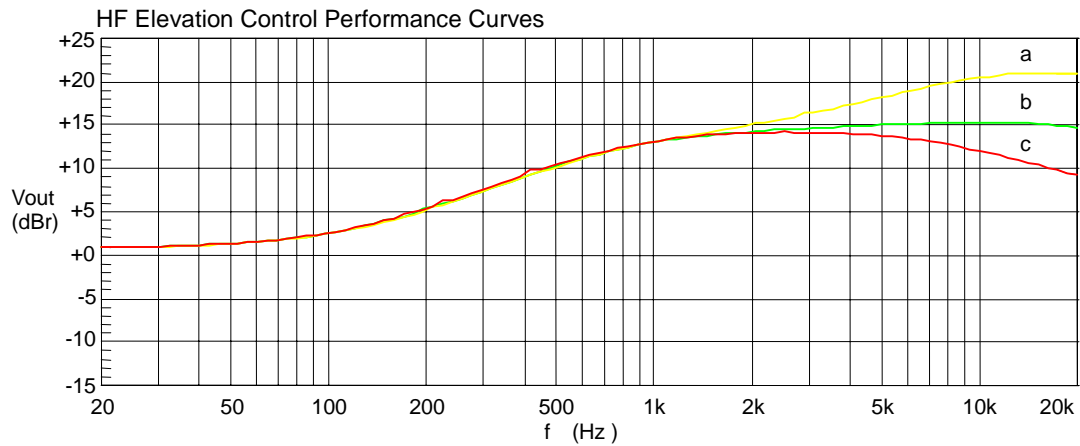
V+=12V Vin=-20dBV(=0dBr) Left in Left Out
 a:Focus Mode (Controls Maximum) (HF:10kΩ LF:1kΩ BC:1kΩ) *
 b:A/V Focus Mode (Controls Maximum) (HF:10kΩ LF:1kΩ BC:1kΩ)
 c:A/V Focus Filter Curve (A/V Focus Mode Controls 0) (HF:0Ω LF:0Ω BC:0Ω)



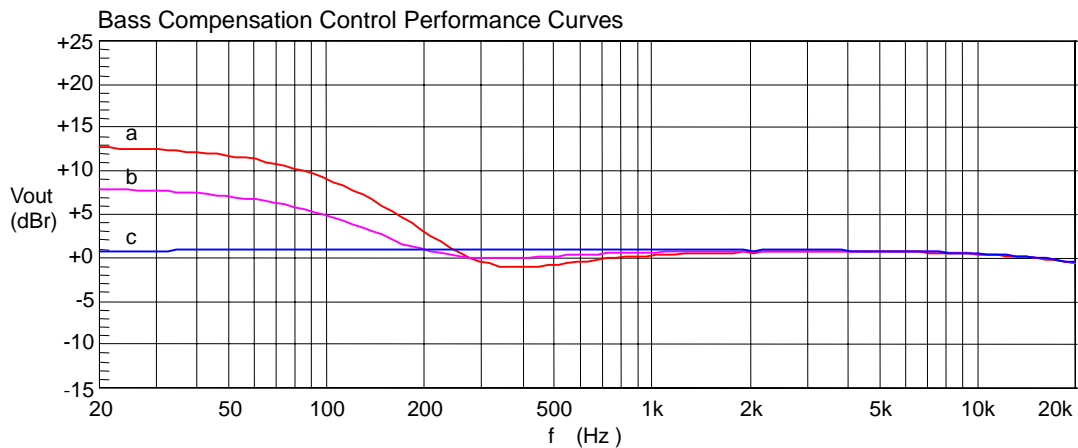
V+=12V Vin=-20dBV(=0dBr) Left in Left Out
 Focus Mode Bass Compensation : Minimum (0Ω) HF Elevation : Center (5kΩ)
 a:LF Elevation Control Maximum (1kΩ)
 b:LF Elevation Control Center (0.5kΩ)
 c:LF Elevation Control Minimum (0Ω)

*HF:HF Elevation
 LF:LF Elevation
 BC:Bass Compensation

CHARACTERISTICS

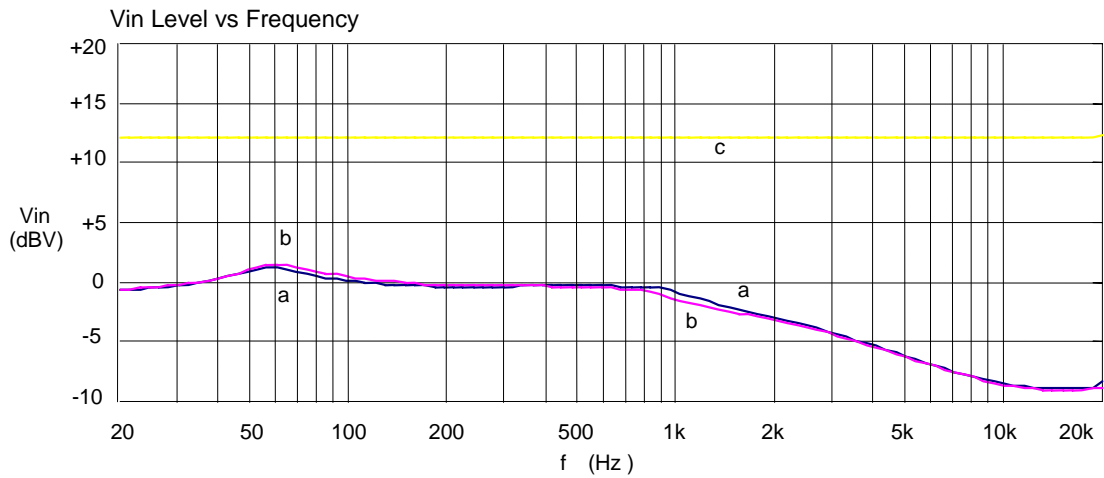


V+=12V Vin=-20dBV(=0dBr) Left in Left Out
 Focus Mode bass Compensation : Minimum (0Ω) LF Elevation : Maximum (1kΩ)
 a:HF Elevation Control Maximum (10kΩ)
 b:HF Elevation Control Center (5kΩ)
 c:HF Elevation Control Minimum (0Ω)

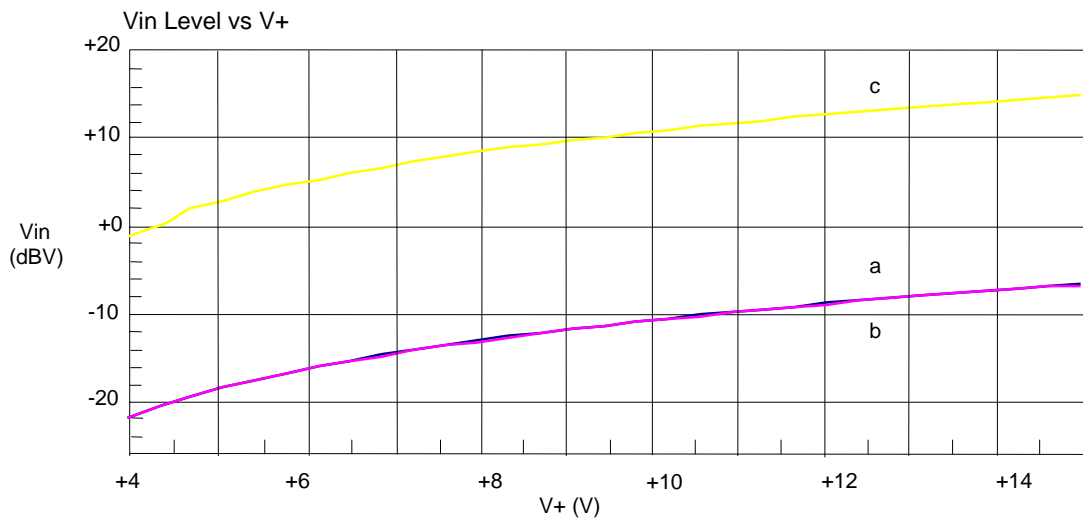


V+=12V Vin=-20dBV(=0dBr) Left in Left Out
 Focus Mode LF Elevation : Minimum (0Ω)
 a:Bass Compensation Control Maximum (1kΩ)
 b:Bass Compensation Control Center (0.5kΩ)
 c:Bass Compensation Control Minimum (0Ω)

CHARACTERISTICS



V+=12V , THD=3%
 a:Focus Mode (Controls Maximum) (HF:10kΩ LF:1kΩ BC:1kΩ)
 b:A/V Focus Mode (Controls Maximum) (HF:10kΩ LF:1kΩ BC:1kΩ)
 c:Bypass Mode



f=20kHz , fin=20kHz , THD=3%
 a:Focus Mode (Controls Maximum) (HF:10kΩ LF:1kΩ BC:1kΩ)
 b:A/V Focus Mode (Controls Maximum) (HF:10kΩ LF:1kΩ BC:1kΩ)
 c:Bypass Mode

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