



LOW NOISE STEREO PREAMPLIFIER

- DUAL CHANNEL PROCESSOR FOR PLAYBACK APPLICATIONS.
- LOW NOISE HEAD PREAMPLIFIER GROUND COMPATIBLE
- MUTE, AUTOREVERSE METAL/NORMAL FUNCTIONS
- INTERNAL SWITCHES FOR EQUALIZATION
- LOW SUPPLY CURRENT
- MIXED BIPOLAR/CMOS TECHNOLOGY

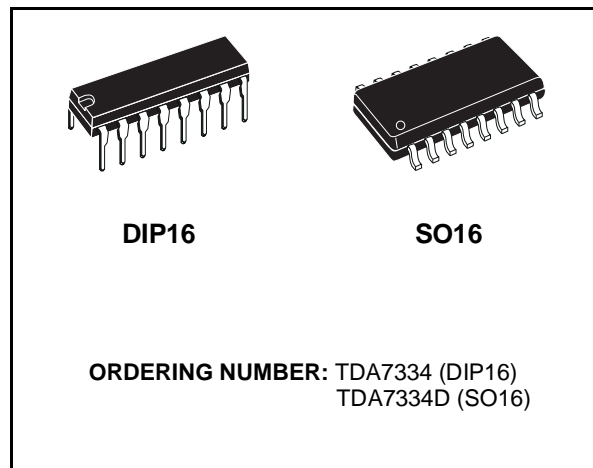
DESCRIPTION

The TDA7334 is a monolithic BiCMos IC designed for use in stereo cassette player systems.

The dual preamplifier contains mute, autoreverse, metal/normal facilities for amplification of low level signal in applications requiring very low noise performance.

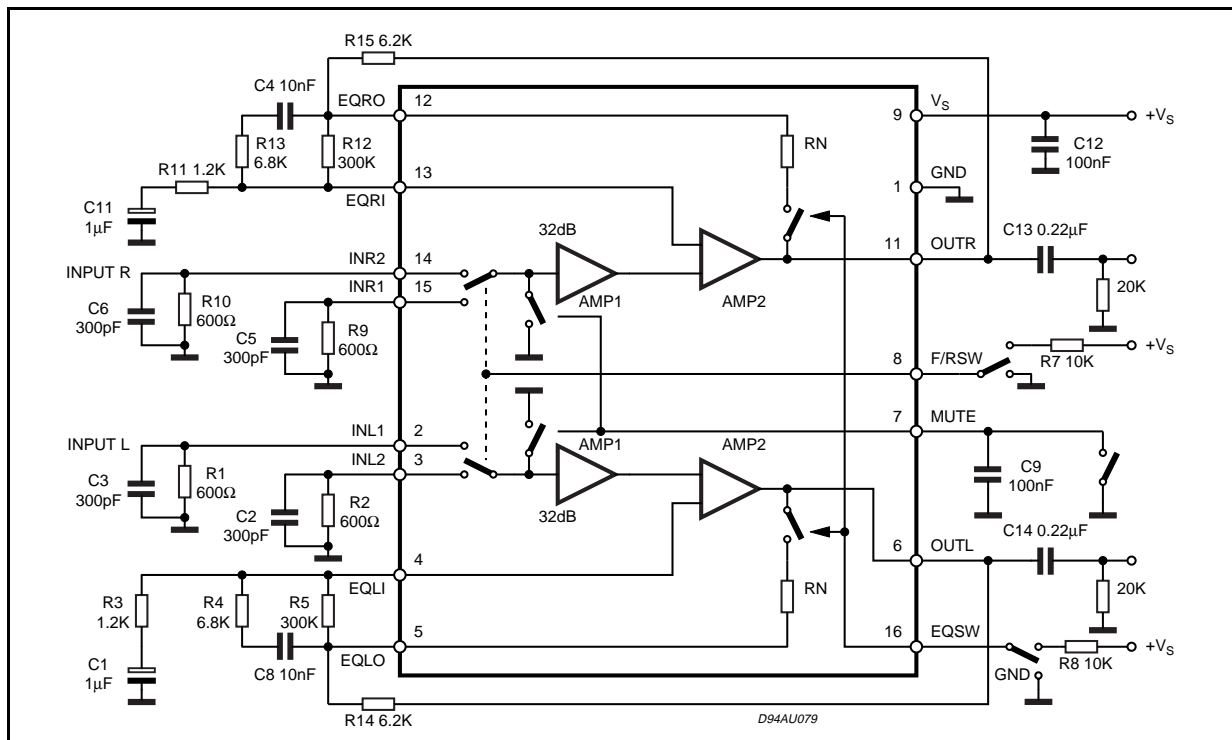
Each channel consists of two cascaded operational amplifiers.

The first one, AMP1, has a fixed gain of 32dB,



low noise forward/reverse switchable input, and allows magnetic heads connection directly to ground. The second one, AMP2, is a standard operational amplifier whose equalizing external components fix the frequency response.

TEST CIRCUIT

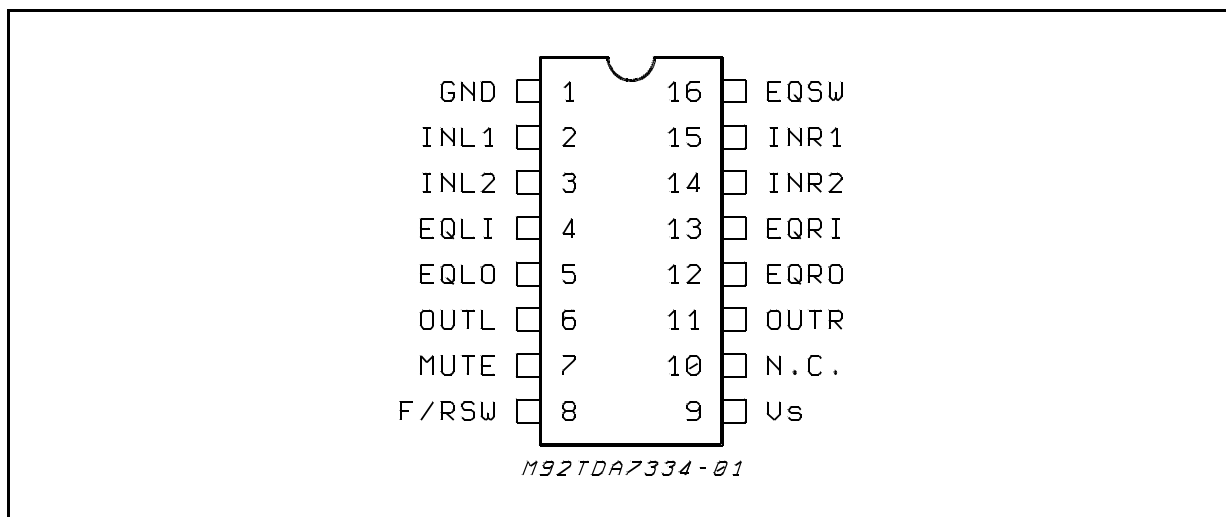


TDA7334

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|------------------|-----------------------------|------------|------|
| V _s | Supply Voltage | 12 | V |
| P _{tot} | Total Power Dissipation | 1 | W |
| T _{op} | Operating Temperature Range | -40 to 85 | °C |
| T _{stg} | Storage Temperature Range | -40 to 150 | °C |

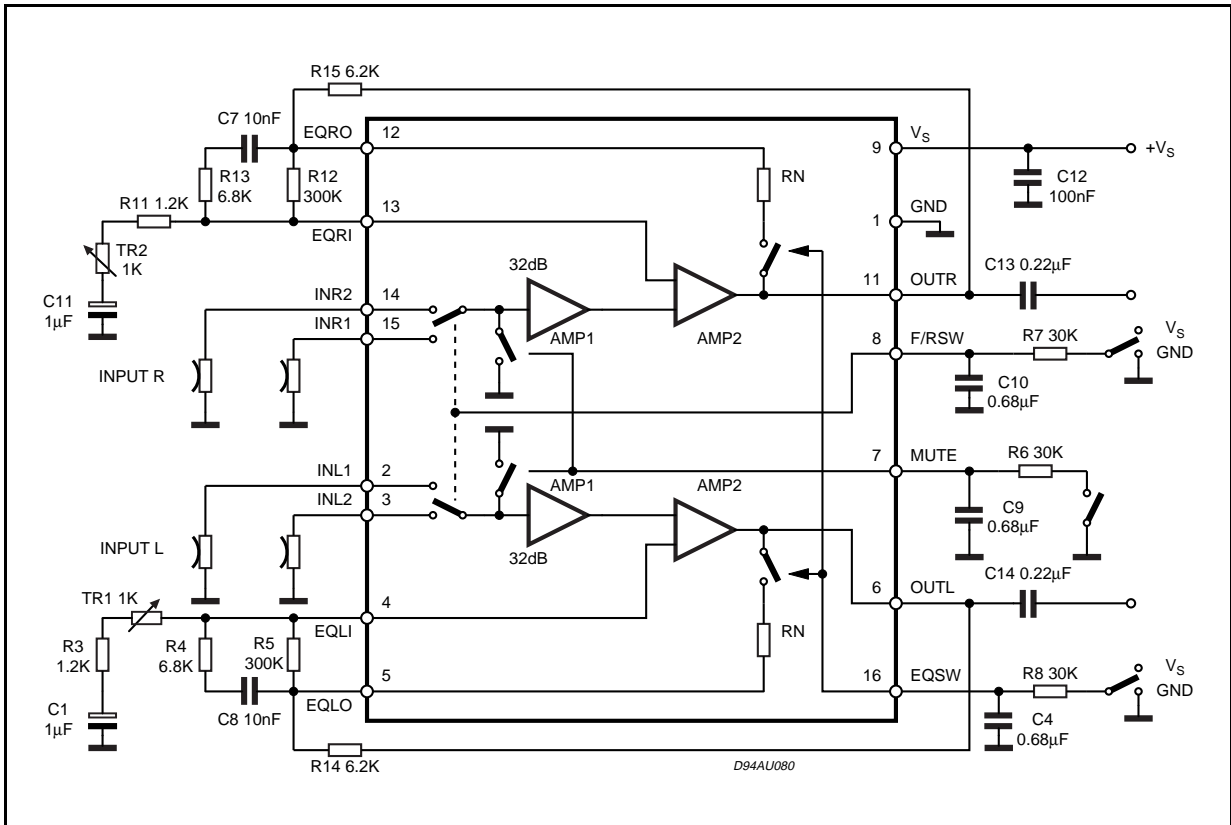
PIN CONNECTION (Top view)



THERMAL DATA

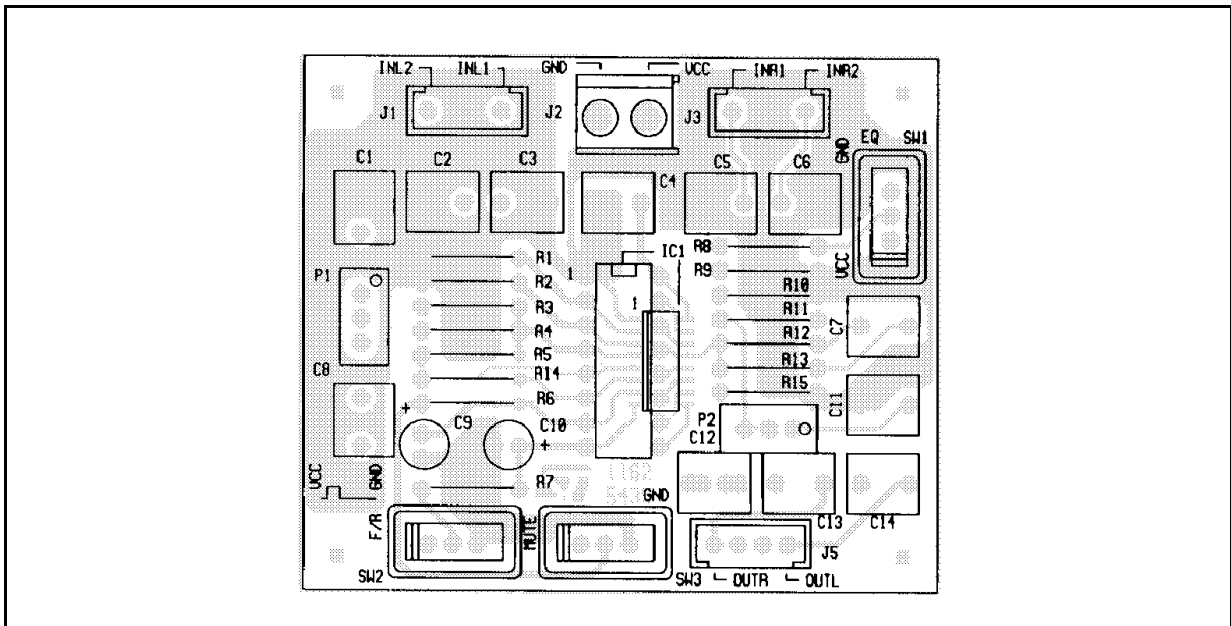
| | | DIP 16 | SO16 | |
|------------------------|----------------------------------|--------|------|------|
| R _{th j-pins} | Thermal resistance junction-pins | 100 | 200 | °C/W |

Application Circuit



| PIN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|--------|-----|---|---|-----|-----|-----|---|---|-----|------|-----|-----|-----|----|----|----|
| DC (V) | GND | 0 | 0 | 3.6 | 3.6 | 3.6 | | | 8.0 | N.C. | 3.6 | 3.6 | 3.6 | 0 | 0 | |

P.C. Board and component layout of the Application Circuit (1:1 scale)



TDA7334

ELECTRICAL CHARACTERISTICS ($V_S = 8V$; $R_{IN} = 600\Omega$; $f = 1KHz$; $T_{amb} = 25^\circ C$; unless otherwise specified (see figure 2))

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Unit |
|--------------------|-----------------------------|-----------------------------------|----------|------|--------------|------------------|
| V_S | Supply Voltage | | 6 | 8 | 11 | V |
| I_S | Supply Current | | | 7.5 | 9.0 | mA |
| SVR | Ripple Rejection | Input referred (ripple = 1V) | | 105 | | dB |
| MUTE _{th} | Mute (Pin 7) | OFF ON | 0 3.5 | | 0.8 V_S | V V |
| MUTE _A | Mute Attenuation | | 60 | 80 | | dB |
| R_I | Input Resistance | | 100 | | | K Ω |
| $V_{out DC}$ | Output Voltage DC | | 3.2 | 3.6 | 4.2 | V |
| I_i | Input Bias Current | | | | 10 | μA |
| G_{VO} | Open Loop Gain | $f = 400Hz$ | | 110 | | dB |
| G_V | Closed Loop Gain | NAB short | 30 | 31 | 32.5 | dB |
| ΔG_V | Closed Loop Gain Match | NAB short | -1 | | 1 | dB |
| V_{OM} | Signal Handling | THD = 1%, $V_{CC} = 7.6V$ | 1.8 | 2.0 | | V _{rms} |
| R_N | Resistance Normal Position | | | 100 | 300 | Ω |
| S_R | Slew Rate | NAB Short | | 1 | | V/ μs |
| e_N | Total Input Noise | $R_{IN} = 600\Omega$; unweighted | | 0.8 | | μV |
| | | $R_{IN} = 600\Omega$; A weighted | | 0.5 | | μV |
| | | $R_{IN} = 0$; unweighted | | 0.45 | | μV |
| R_o | Output Resistance | | | | 1 | K Ω |
| F/ R_i | Rev. Low Level (pin 8) | IN2 = ON; IN1 = OFF | 0 | | 0.8 | V |
| F/ R_h | Forward High Level (pin 8) | IN2 = OFF; IN1 = ON | 3.5 | | V_S | V |
| EQ _i | Normal Low Level (pin 16) | | 0 | | 0.8 | V |
| EQ _h | Metal High Level (pin 16) | | 3.5 | | V_S | V |
| THD | Total Harmonic Distortion | $V_o = 1V$; $f = 1KHz$ metal | | 0.02 | | % |
| | | $V_o = 1V$; $f = 1KHz$ normal | | 0.02 | 0.1 | % |
| | | $V_o = 1V$; $f = 10KHz$ metal | | 0.05 | | % |
| | | $V_o = 1V$; $f = 10KHz$ normal | | 0.04 | | % |
| SVR ₁ | Ripple Rejection | NAB short | | 75 | | dB |
| C_s | Channel Separation (L to R) | | 45 | 60 | | dB |
| C_{CT} | Channel Cross talk (F to R) | | 60 | 80 | | dB |
| S/N | Signal to Noise | $V_o = 388mV$; metal | | 63 | | dB |

Figure 1: Quiescent Current vs. Supply

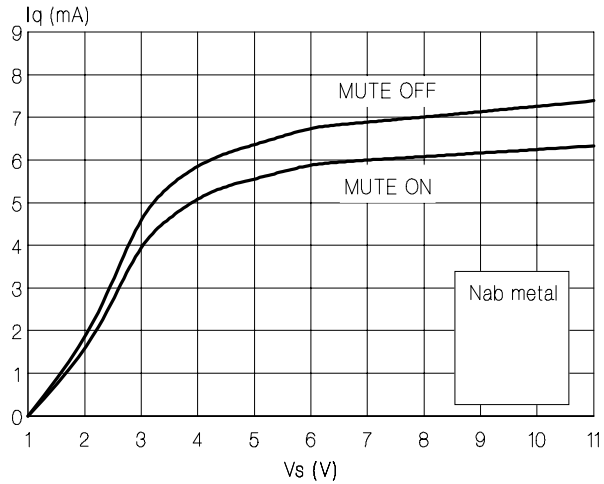


Figure 2: D.C. Output vs. Supply Voltage

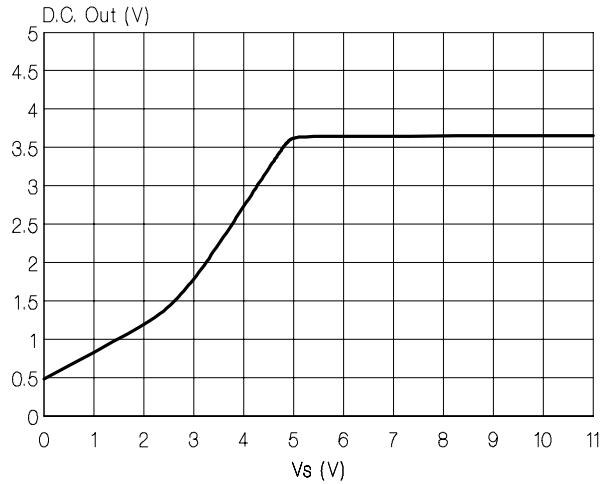


Figure 3: Forward/Reverse Threshold

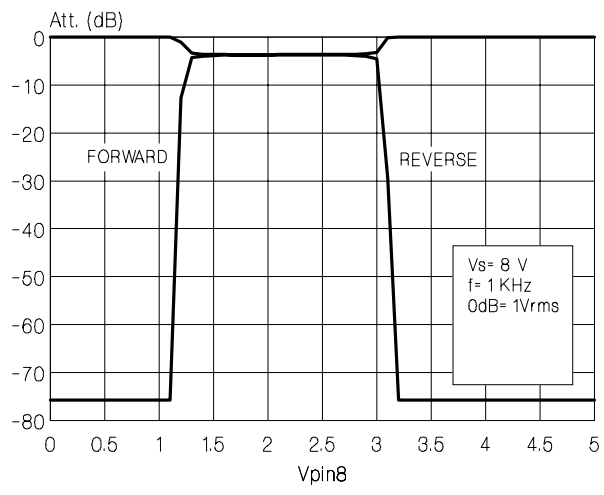


Figure 4: Metal/Normal Threshold

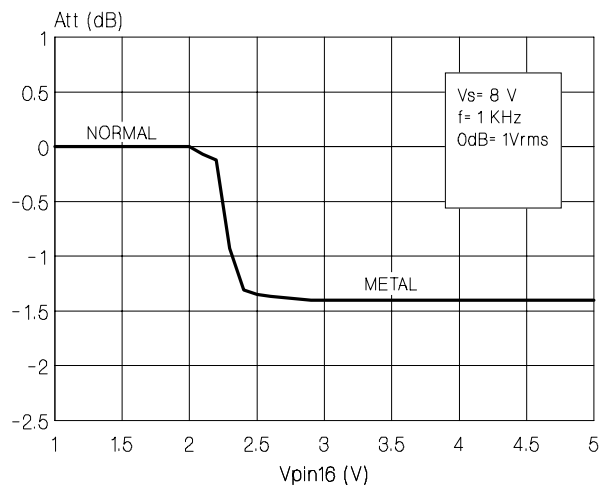


Figure 5: Mute Threshold

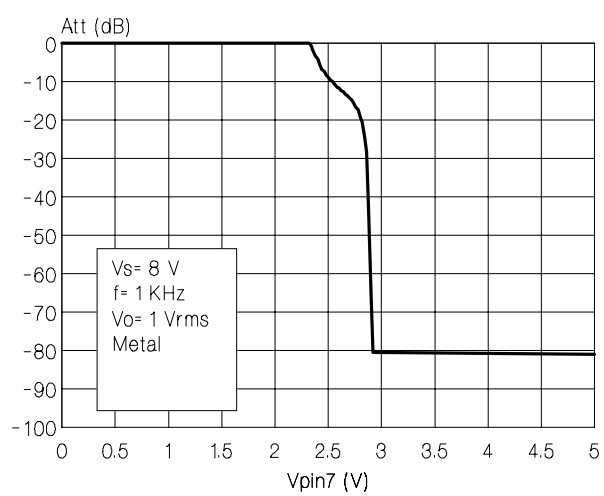


Figure 6: Mute Attenuation vs. Frequency

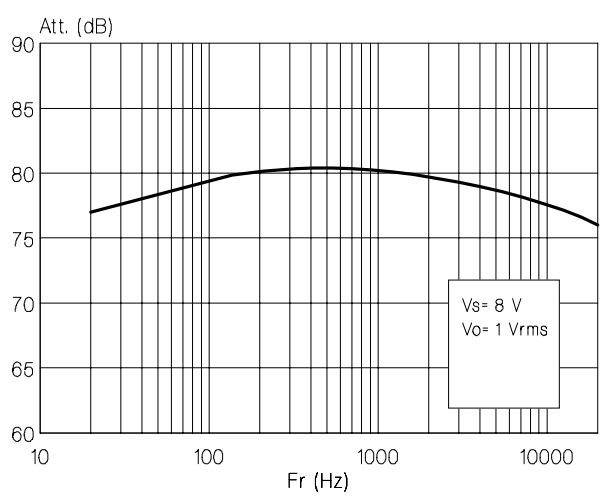


Figure 7: Mute Attenuation vs. Output Level

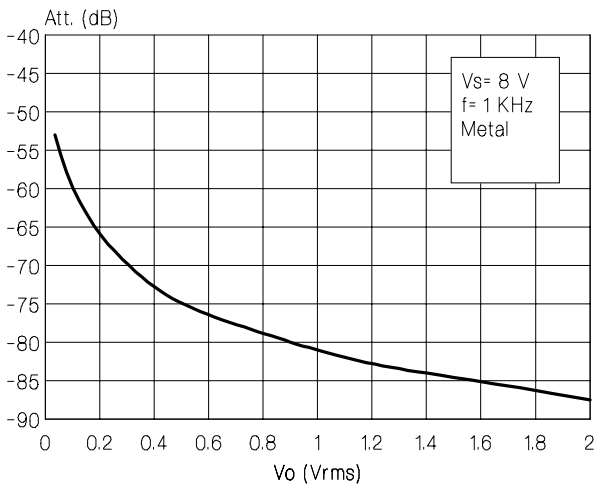


Figure 9: THD + N vs. Frequency

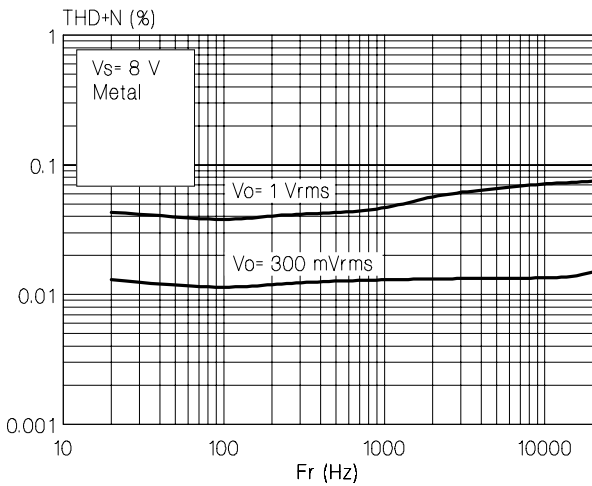


Figure 11: Load Characteristic

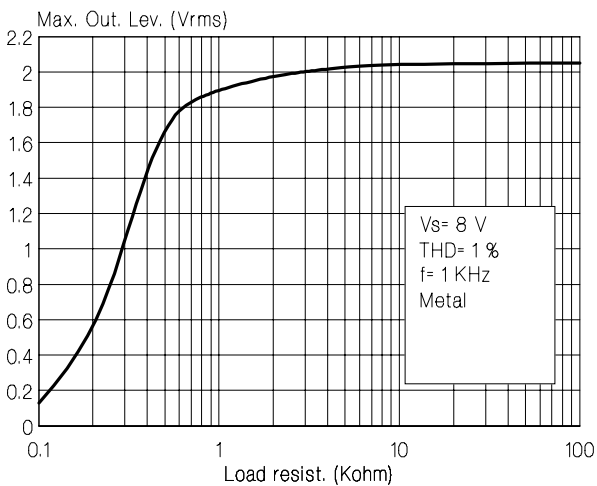


Figure 8: THD vs. Frequency

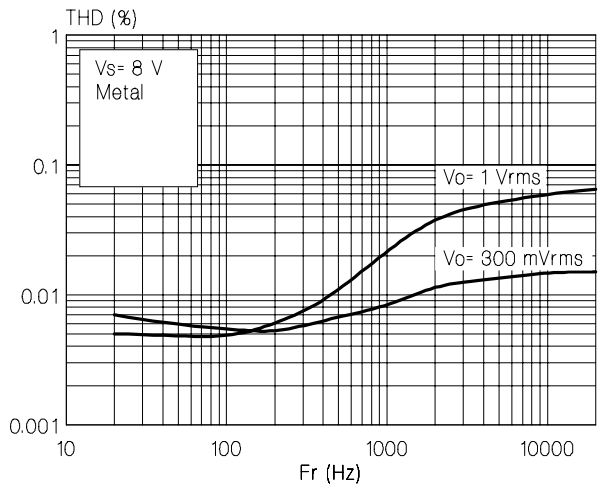


Figure 10: THD vs. Supply Voltage

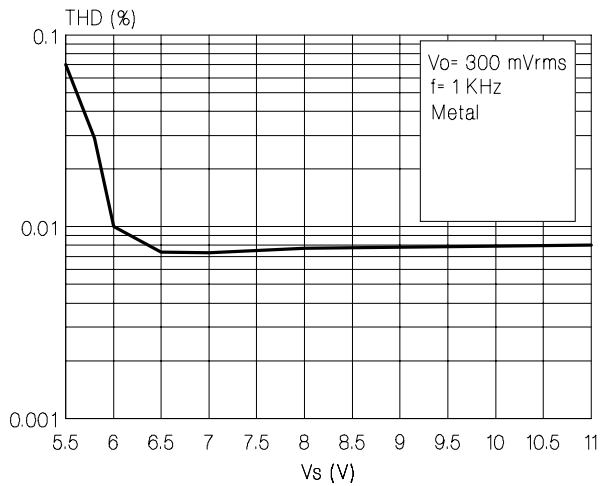


Figure 12: Signal Handling vs. Supply Voltage

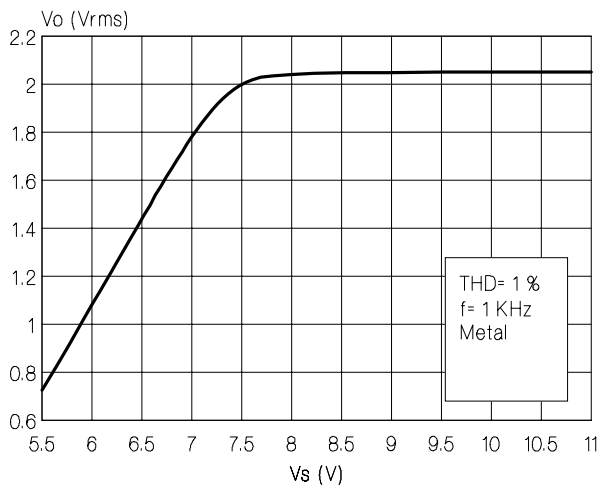


Figure 13: Total Input Noise vs. Input Resistance

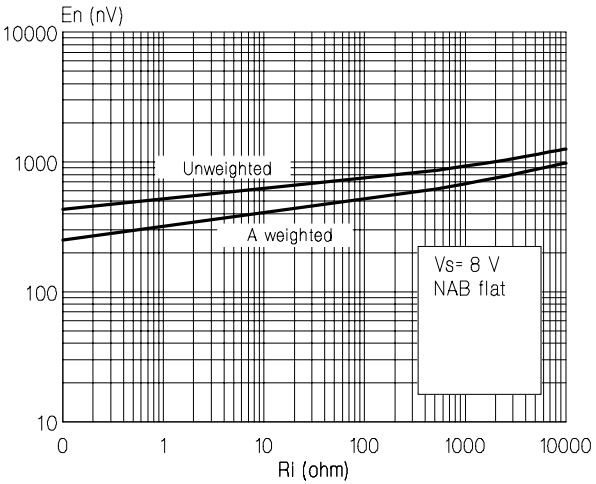


Figure 14: Cross Channel vs. Frequency

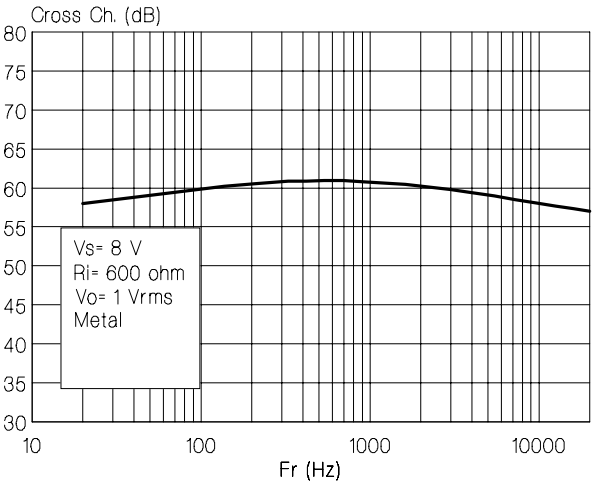


Figure 15: Cross Talk vs. Frequency

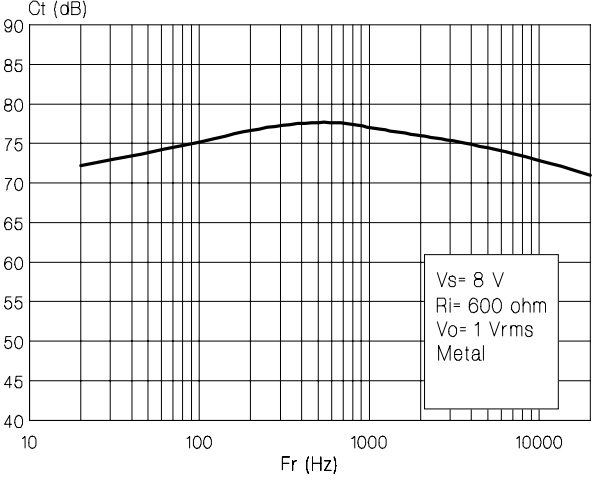


Figure 16: SVR vs. Frequency

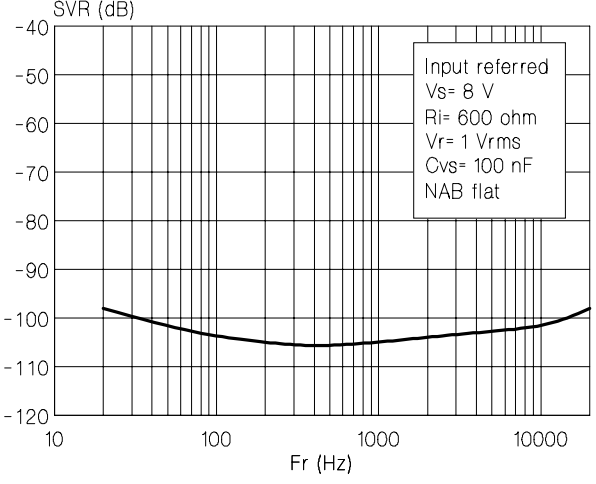


Figure 17: SVR vs. Frequency

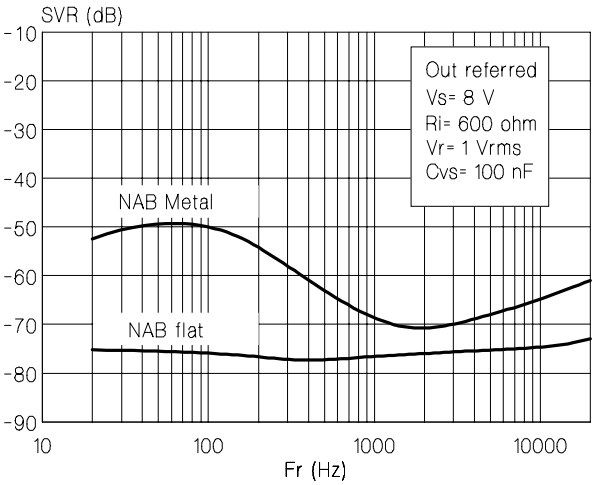


Figure 18: Power Bandwidth

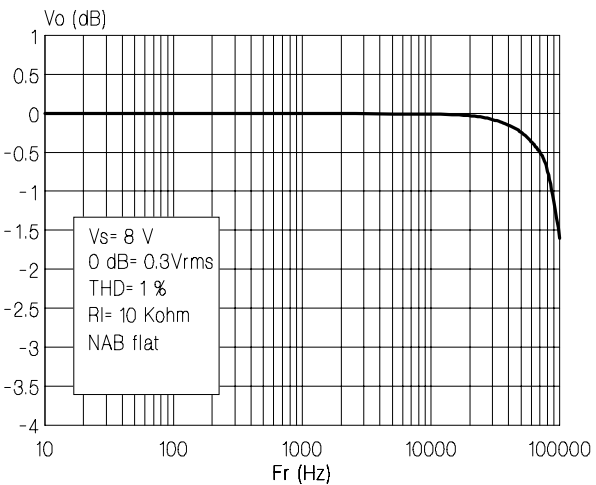


Figure 19: Voltage Gain vs. Input Voltage

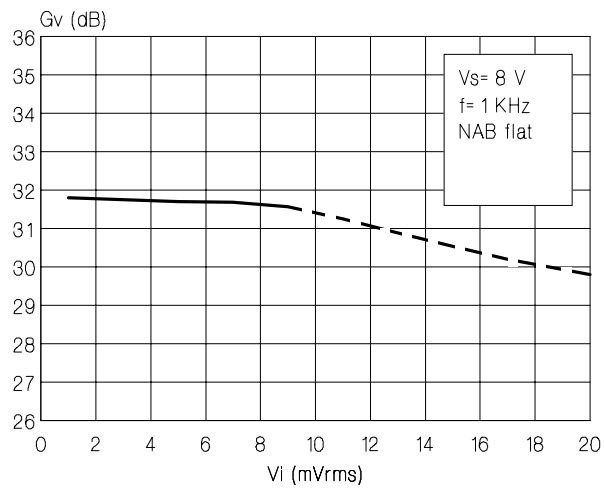
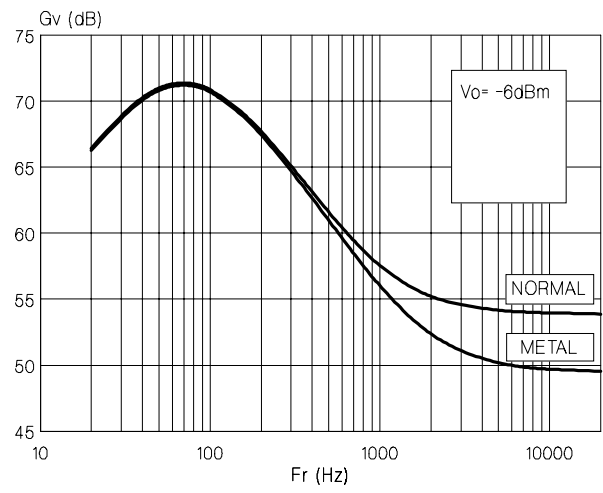
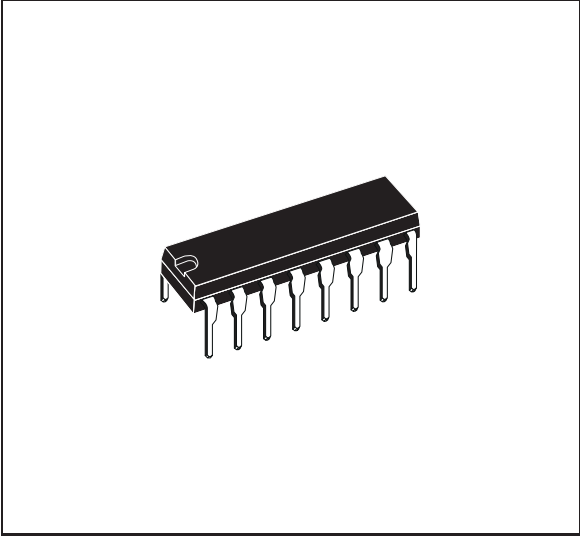


Figure 20: NAB Network

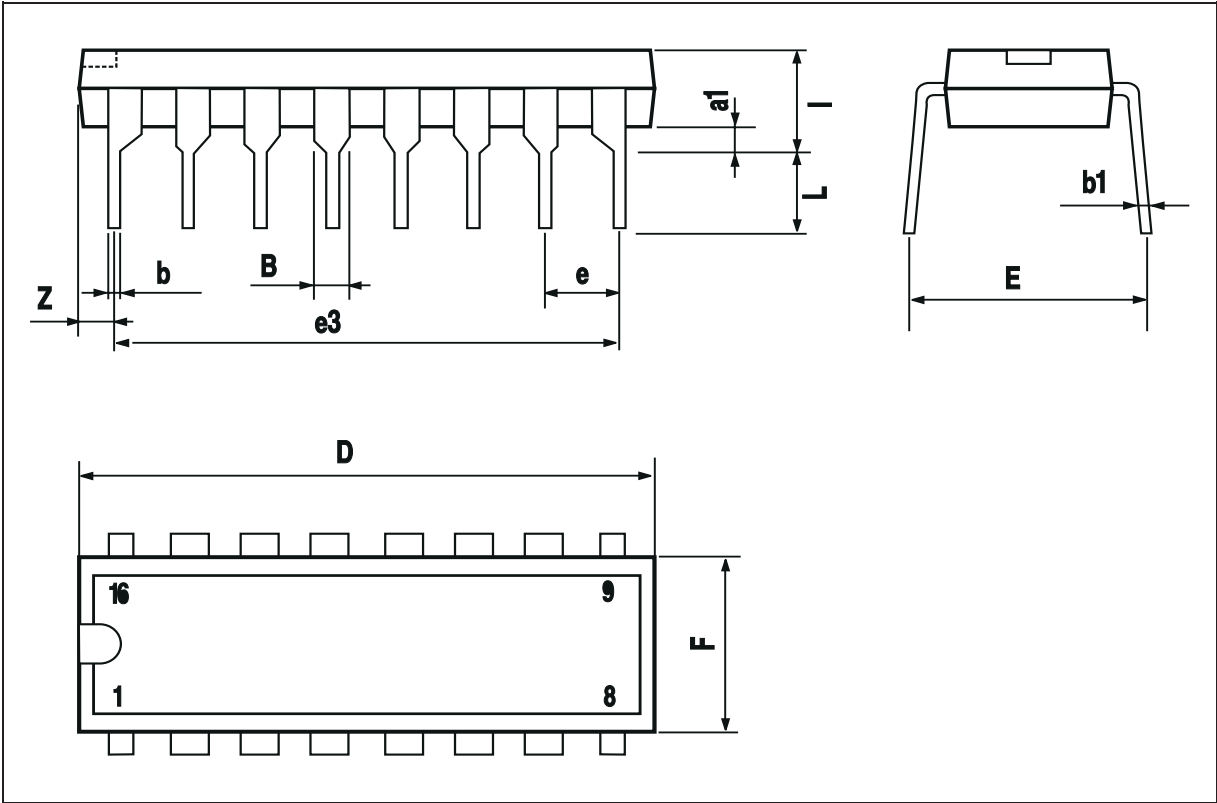


| DIM. | mm | | | inch | | |
|------|------|-------|------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| a1 | 0.51 | | | 0.020 | | |
| B | 0.77 | | 1.65 | 0.030 | | 0.065 |
| b | | 0.5 | | | 0.020 | |
| b1 | | 0.25 | | | 0.010 | |
| D | | | 20 | | | 0.787 |
| E | | 8.5 | | | 0.335 | |
| e | | 2.54 | | | 0.100 | |
| e3 | | 17.78 | | | 0.700 | |
| F | | | 7.1 | | | 0.280 |
| I | | | 5.1 | | | 0.201 |
| L | | 3.3 | | | 0.130 | |
| Z | | | 1.27 | | | 0.050 |

OUTLINE AND MECHANICAL DATA

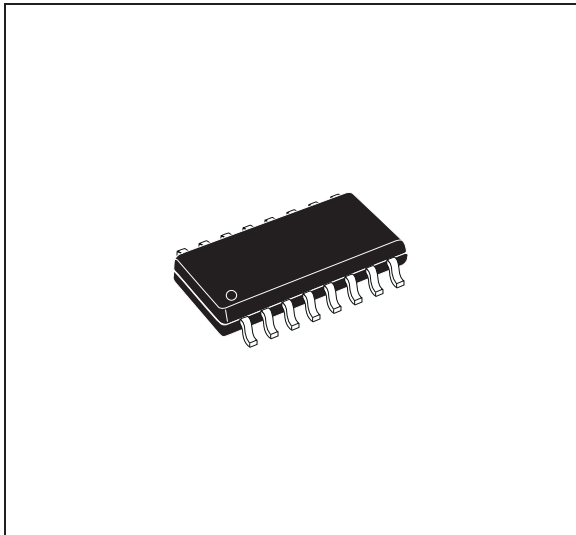


DIP16



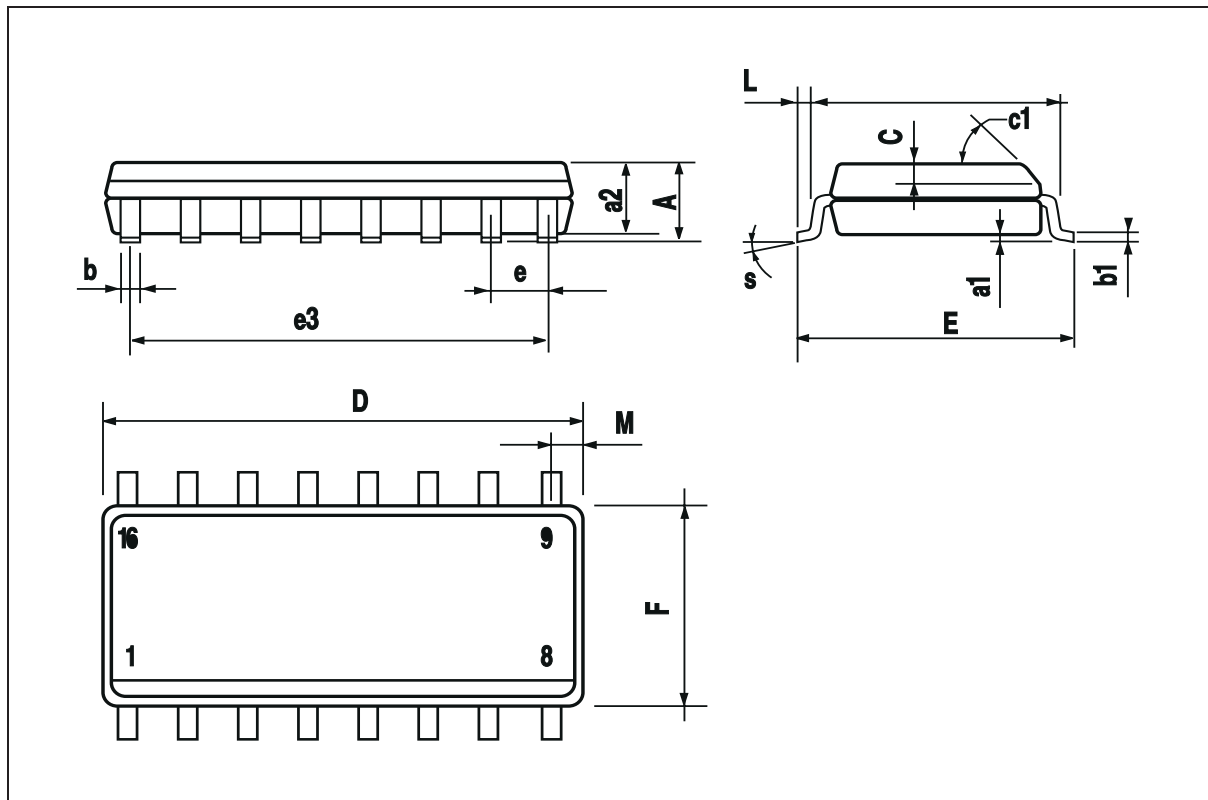
| DIM. | mm | | | inch | | |
|-------|------------|------|------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | | | 1.75 | | | 0.069 |
| a1 | 0.1 | | 0.25 | 0.004 | | 0.009 |
| a2 | | | 1.6 | | | 0.063 |
| b | 0.35 | | 0.46 | 0.014 | | 0.018 |
| b1 | 0.19 | | 0.25 | 0.007 | | 0.010 |
| C | | 0.5 | | | 0.020 | |
| c1 | 45° (typ.) | | | | | |
| D (1) | 9.8 | | 10 | 0.386 | | 0.394 |
| E | 5.8 | | 6.2 | 0.228 | | 0.244 |
| e | | 1.27 | | | 0.050 | |
| e3 | | 8.89 | | | 0.350 | |
| F (1) | 3.8 | | 4 | 0.150 | | 0.157 |
| G | 4.6 | | 5.3 | 0.181 | | 0.209 |
| L | 0.4 | | 1.27 | 0.016 | | 0.050 |
| M | | | 0.62 | | | 0.024 |
| S | 8° (max.) | | | | | |

OUTLINE AND MECHANICAL DATA



SO16 Narrow

(1) D and F do not include mold flash or protrusions. Mold flash or protrusions shall not exceed 0.15mm (.006inch).



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