

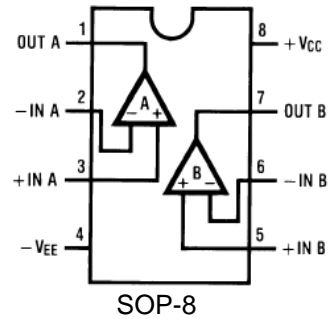
# Dual channel audio operational amplifier

## Summary

LM833 is a dual-channel audio operational amplifier, especially suitable for audio and data signal applications. The device can work in a wide range of single and dual power supply voltages, low noise, high gain bandwidth and high conversion rate. It has the characteristics of low noise voltage, high conversion rate, low distortion and large phase margin.

LM833 is available in DIP8 and SOP8 packages.

## Pin description



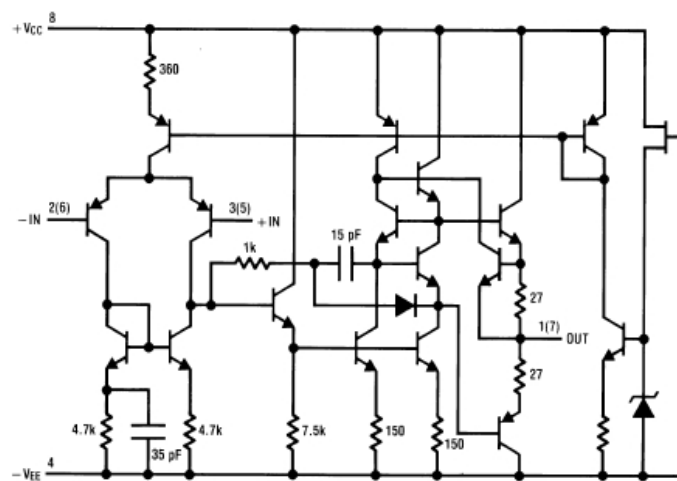
## Characteristic

- Dual power supply voltage:  $\pm 15$  V
- Low noise voltage:  $4.5 \text{ nV}/\sqrt{\text{Hz}}$ .
- Low offset voltage: 0.3 mA
- Low distortion: 0.002%
- High conversion rate:  $7 \text{ V}/\mu\text{s}$
- High gain bandwidth: 15 MHz
- High power bandwidth: 120 KHz
- Large phase margin:  $60^\circ$

## Main applications

- HiFi audio system equipment
- Pre-amplification and filtering
- set-top box
- Microphone preamplifier circuit
- General amplifier application

## logic diagram



**Dual channel audio operational amplifier**
**Limit parameter**

| symbol | Parameter name              | numerical value | unit               |
|--------|-----------------------------|-----------------|--------------------|
| Vcc    | Power supply voltage        | $\pm 18$ or 36  | V                  |
| Vid    | Differential input voltage  | $\pm 30$        | V                  |
| Vi     | input voltage               | $\pm 15$        | V                  |
| Toper  | operating temperature range | -10~ 70         | $^{\circ}\text{C}$ |
| Tstg   | Storage temperature         | -60~ 150        | $^{\circ}\text{C}$ |
| Ptot   | Maximum power consumption   | 500             | mW                 |

**Recommended working parameters**

| symbol | Parameter name       | numerical value       | unit |
|--------|----------------------|-----------------------|------|
| Vcc    | Power supply voltage | $\pm 2.5$ to $\pm 15$ | V    |

 Dc parameters ( $T_a = 25^{\circ}\text{C}$ ,  $V_s = \pm 15\text{v}$ )

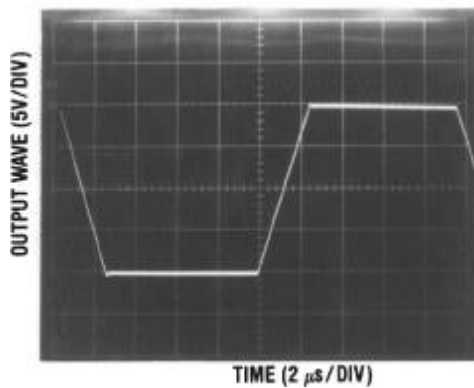
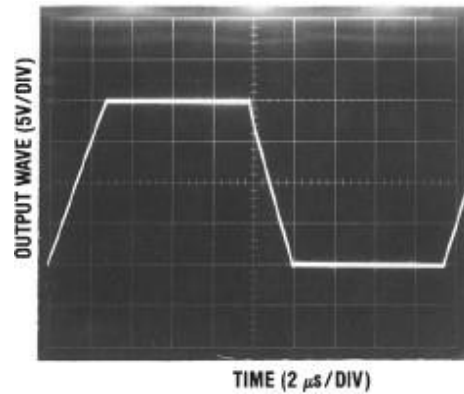
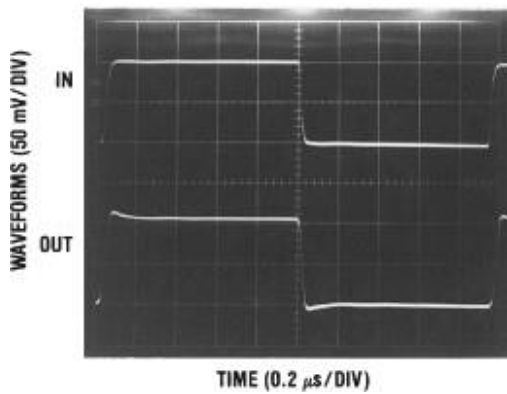
| symbol | parameter                   | condition  | minimum value | typical value | maximum | unit |
|--------|-----------------------------|--|---------------|---------------|---------|------|
| Vos    | Input bias voltage          | $R_s = 10\Omega$                                 | —             | 0.3           | 5       | mV   |
| Ios    | Input offset voltage        | —  | —             | 10            | 200     | nA   |
| Ib     | Input current bias          | —  | —             | 500           | 1000    | nA   |
| Av     | Gain voltage                | $R_I = 2\text{k}\Omega$ , $V_o = \pm 10\text{V}$ | 90            | 110           | —       | dB   |
| Vom    | Output conversion voltage   | $R_I = 10\text{k}\Omega$                         | $\pm 12$      | $\pm 13.5$    | —       | V    |
|        |                             | $R_I = 2\text{k}\Omega$                          | $\pm 10$      | $\pm 13.4$    | —       | V    |
| Vcm    | common- mode input voltage  | —  | $\pm 12$      | $\pm 14.0$    | —       | V    |
| CMRR   | common mode rejection ratio | $V_{in} = \pm 12\text{V}$                        | 80            | 100           | —       | dB   |
| PSRR   | Power supply                | $V_s = 15 \sim 5\text{V} - 15 \sim -5\text{V}$   | 80            | 100           | —       | dB   |
| Iq     | quiescent current           | $V_o = 0\text{V}$ Both Amps                      | —             | 5             | 8       | mA   |

Dual channel audio operational amplifier

Ac parameters (Ta=25C°, Vs=±15V, RI=2kΩ )

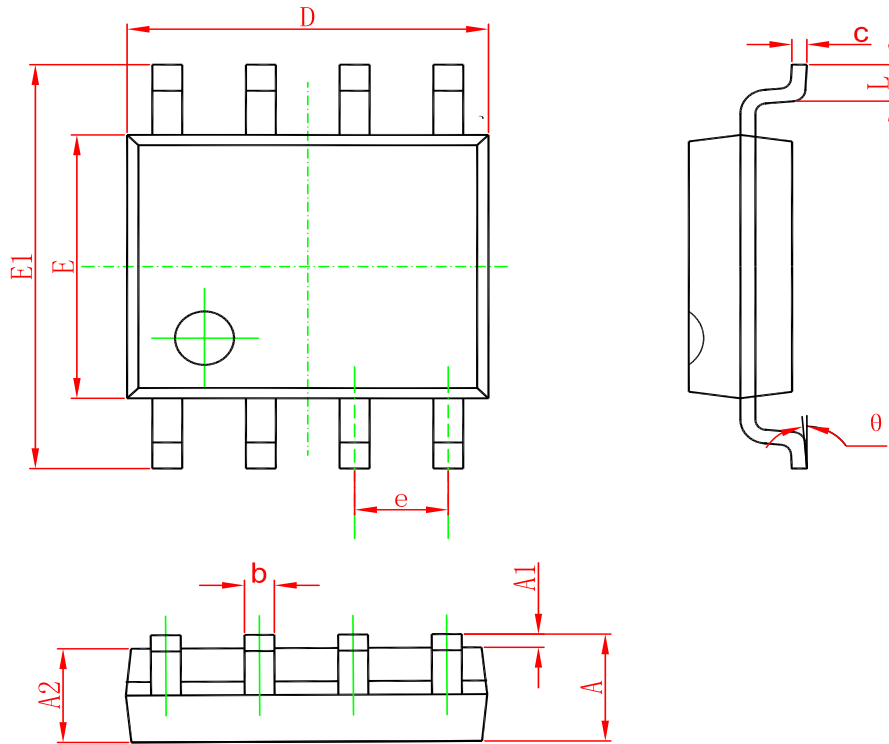
| symbol | parameter              | condition | minimum value | typical value | maximum | unit |
|--------|------------------------|-----------|---------------|---------------|---------|------|
| SR     | conversion rate        | RI=2kΩ    | 5             | 7             | —       | V/μs |
| GBW    | Gain bandwidth product | f=100kHz  | 10            | 15            | —       | MHz  |

Typical waveform diagram



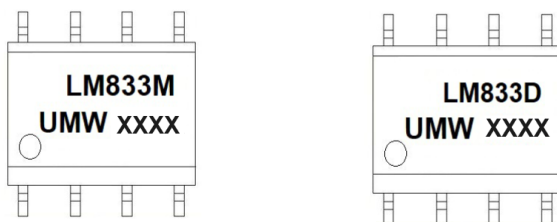
PACKAGE OUTLINE DIMENSIONS

SOP-8



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.350                     | 1.750 | 0.053                | 0.069 |
| A1     | 0.100                     | 0.250 | 0.004                | 0.010 |
| A2     | 1.350                     | 1.550 | 0.053                | 0.061 |
| b      | 0.330                     | 0.510 | 0.013                | 0.020 |
| c      | 0.170                     | 0.250 | 0.006                | 0.010 |
| D      | 4.700                     | 5.100 | 0.185                | 0.200 |
| E      | 3.800                     | 4.000 | 0.150                | 0.157 |
| E1     | 5.800                     | 6.200 | 0.228                | 0.244 |
| e      | 1.270(BSC)                |       | 0.050(BSC)           |       |
| L      | 0.400                     | 1.270 | 0.016                | 0.050 |
| theta  | 0°                        | 8°    | 0°                   | 8°    |

**Marking**



**Ordering information**

| Order code  | Package | Baseqty | Deliverymode  |
|-------------|---------|---------|---------------|
| UMW LM833MX | SOP-8   | 2500    | Tape and reel |
| UMW LM833DT | SOP-8   | 2500    | Tape and reel |

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