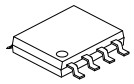
LM833

CMOS IC

DUAL OPERATIONAL AND LOW VOLTAGE NOISE AMPLIFIER



SOP-8

■ DESCRIPTION

The UTC **LM833** is integrated circuit amplifiers which combine dual operational and low voltage noise (4.5nV/ $\sqrt{Hz}$). It is particularly suited to audio applications.

It offers excellent phase/gain margins and a very low distortion (0.002%).

In addition, the UTC **LM833** has high frequency performances (15 MHz gain bandwidth product, 7V/μs slew rate).

■ FEATURES

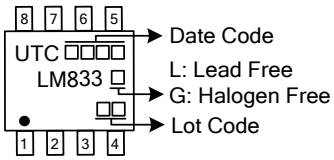
* High slew rate: 7V/μs
* High gain bandwidth product: 15MHz
* Excellent frequency stability
* Low distortion: 0.002%
* Low voltage noise: 4.5nV/√Hz

■ ORDERING INFORMATION

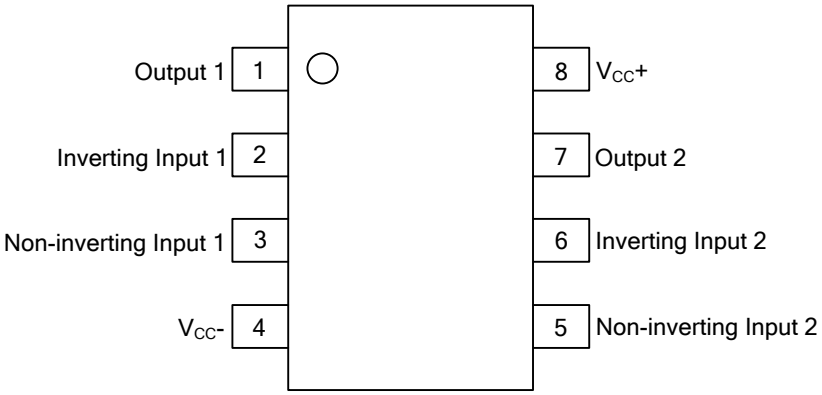
Ordering Number		Package	Packing
Lead Free	Halogen Free		
LM833L-S08-R	LM833G-S08-R	SOP-8	Tape Reel

LM833G-S08-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



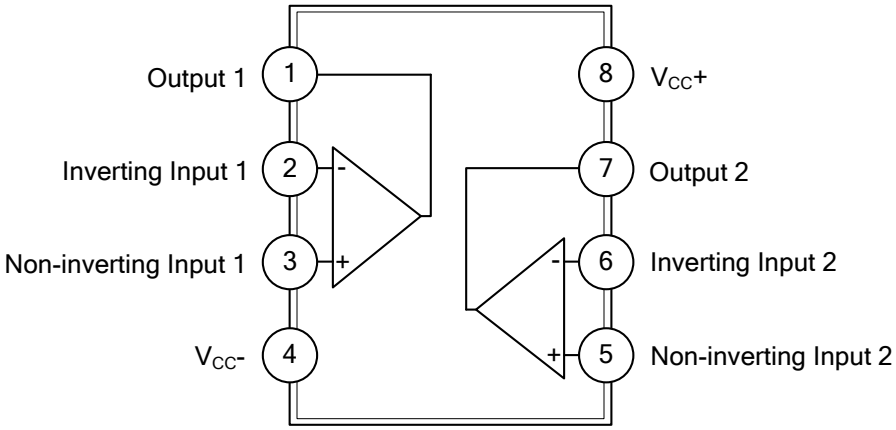
■ PIN CONFIGURATION



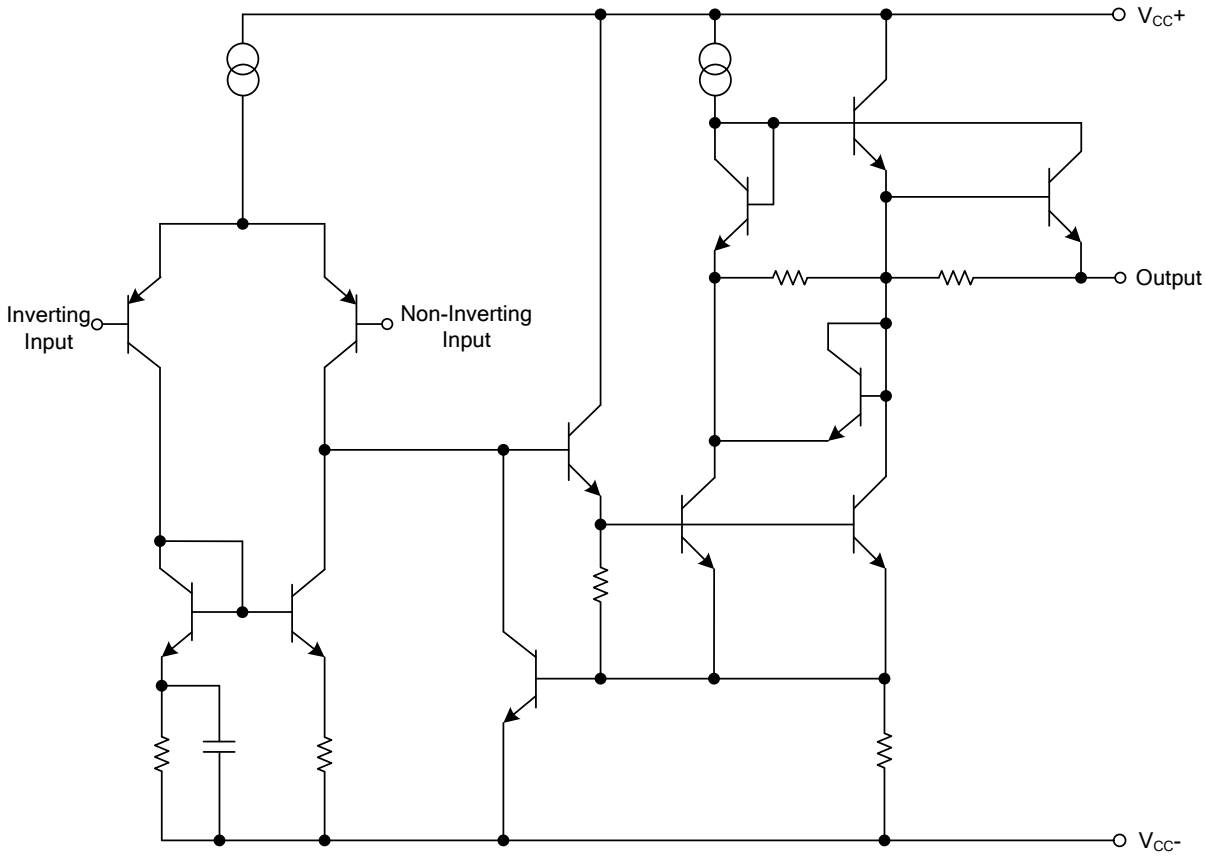
■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	Output 1	The output of channel 1
2	Inverting Input 1	The inverting input of channel 1
3	Non-inverting Input 1	The non-inverting input of channel 1
4	V_{CC}-	Power supply
5	Non-inverting Input 2	The non-inverting input of channel 2
6	Inverting Input 2	The inverting input of channel 2
7	Output 2	The output of channel 2
8	V_{CC}+	Power supply

■ BLOCK DIAGRAM



■ SCHEMATIC DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	±18 or +36	V
Differential Input Voltage (Note 1)	V_{ID}	±30	V
Input Voltage (Note 1)	V_{IN}	±15	V
Maximum Power Dissipation (Note 2)	P_D	500	mW
Junction Temperature	T_J	+150	°C
Storage Temperature	T_{STG}	-65 ~ +150	°C

Notes: 1. Either or both input voltages must not exceed the magnitude of V_{CC}+ or V_{CC}-.
2. Power dissipation must be considered to ensure maximum junction temperature (T_J) is not exceeded.

■ OPERATING CONDITIONS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V_{CC}	±2.5 ~ ±15	V
Operating Free-Air Temperature Range	T_{OPER}	-40 ~ +105	°C

■ ELECTRICAL CHARACTERISTICS

(V_{CC}+=+15V, V_{CC}-=-15V, T_{AMB}=25°C(unless otherwise specified))

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Input Offset Voltage	V_{IO}	R_S=10Ω, V_O=0V, V_{IC}=0V			0.3	5	mV
Input Offset Voltage Drift	DV_{IO}	R_S=10Ω, V_O=0V, $T_{MIN.}$≤T_{AMB}≤$T_{MAX.}$			2		μV/°C
Input Offset Current	I_{IO}	V_O=0V, V_{IC}=0V			25	200	nA
Input Bias Current	I_{IB}	V_O=0V, V_{IC}=0V			500	1000	nA
Input Common Mode Voltage Range	V_{ICM}			±12	±14		V
Large Signal Voltage Gain	A_{VD}	R_L=2Ω, V_O=±10V		90	100		dB
Output Voltage Swing	±V_{OPP}	V_{ID}=±1V	R_L=2.0kΩ	10	13.7		V
			R_L=2.0kΩ		-14	-10	V
			R_L=10kΩ	12	13.9		V
			R_L=10kΩ		-14.4	-12	V
Common-Mode Rejection Ratio	CMR	V_{IC}=±13V		80	100		dB
Supply Voltage Rejection Ratio	SVR	V_{CC}+/ V_{CC}-=+15V/-15V ~ +5V/-5V		80	105		dB
Supply Current	I_{CC}	V_O=0V, all amplifiers			4	8	mA
Slew Rate	SR	V_I=-10V ~ +10V, R_L=2kΩ, A_V=+1		5	7		V/μs
Gain Bandwidth Product	GBW	R_L=2kΩ, C_L=100pF, f=100kH_Z		10	15		MH_Z
Unity Gain Bandwidth	B	open loop			9		MH_Z
Phase Margin	φm	R_L=2kΩ			60		Degrees
Equivalent Input Noise Voltage	e_N	R_S=100Ω, f=1kH_Z			4.5		nV/$\sqrt{Hz}$
Equivalent Input Noise Current	i_N	f=1kH_Z			0.5		pA/$\sqrt{Hz}$
Total Harmonic Distortion	THD	R_L=2kΩ,f=20H_Z ~ f=20kH_Z, V_O=3V_{RMS}, A_V=+1			0.002		%
Channel Separation	V_{O1}/V_{O2}	f=20H_Z ~ f=20kH_Z			120		dB
Full Power Bandwidth	PBW	V_O=27V_{PP}, R_L=2 kΩ, THD≤1%			120		kH_Z