National Semiconductor

LM2879 Dual 8W Audio Amplifier

General Description

The LM2879 is a monolithic dual power amplifier which offers high quality performance for stereo phonographs, tape players, recorders, AM-FM stereo receivers, etc.

The LM2879 will deliver 8W/channel to an 8Ω load. The amplifier is designed to operate with a minimum of external components and contains an internal bias regulator to bias each amplifier. Device overload protection consists of both internal current limit and thermal shutdown.

Features

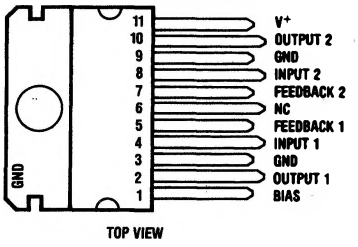
- A_{VO} typical 90 dB
- 9W per channel (typical)
- 60 dB ripple rejection
- 70 dB channel separation
- Self-centering biasing
- 4 MΩ input impedance
- Internal current limiting
- Internal thermal protection

Applications

- Multi-channel audio systems
- Tape recorders and players
- Movie projectors
- Automotive systems
- Stereo phonographs
- Bridge output stages
- AM-FM radio receivers
- Intercoms
- Servo amplifiers
- Instrument systems

Connection Diagram and Typical Application

Plastic Package

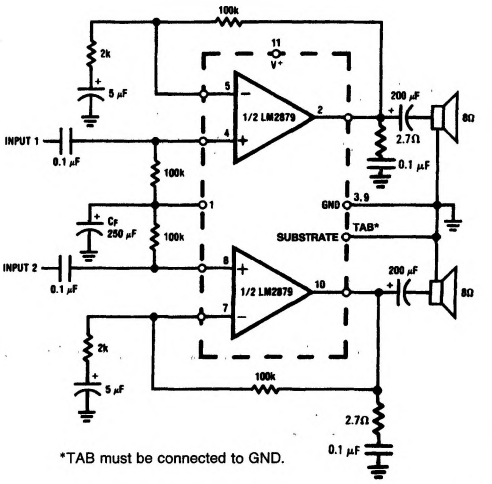


TOP VIEW

TL/H/5291-1

Order Number LM2879T
See NS Package Number TA11B

Stereo Amplifier



*TAB must be connected to GND.

TL/H/5291-2

FIGURE 1

Absolute Maximum Ratings

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage	35V
Input Voltage (Note 1)	±0.7V
Operating Temperature (Note 2)	0°C to + 70°C
Storage Temperature	−65°C to +150°C
Junction Temperature	150°C
Lead Temp. (Soldering, 10 seconds)	260°C
ESD rating to be determined.	
Thermal Resistance	
θ_{JC}	1°C/W
θ_{JA}	43°C/W

Electrical Characteristics $V_S = 28V$, $T_{TAB} = 25°C$, $R_L = 8\Omega$, $A_V = 50$ (34 dB), unless otherwise specified.

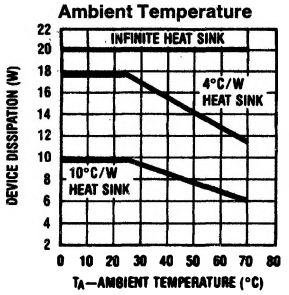
Parameter	Conditions	Min	Typ	Max	Units
Total Supply Current	$P_O = 0W$		12	65	mA
Operating Supply Voltage		6		32	V
Output Power/Channel	f = 1 kHz, THD = 10%, $T_{TAB} = 25°C$	6	8		W
Distortion	f = 1 kHz, $R_L = 8\Omega$ $P_O = 1$ W/Channel		0.05	1	%
Output Swing	$R_L = 8\Omega$		$V_S - 6V$		Vp-p
Channel Separation	$C_{BYPASS} = 50\ \mu F$, $C_{IN} = 0.1\ \mu F$ f = 1 kHz, Output Referred $V_O = 4$ Vrms	−50	−70		dB
PSRR Positive Supply	$C_{BYPASS} = 50\ \mu F$, $C_{IN} = 0.1\ \mu F$ f = 120 Hz, Output Referred $V_{ripple} = 1$ Vrms	−50	−60		dB
PSRR Negative Supply	Measured at DC, Input Referred		−60		dB
Common-Mode Range	Split Supplies ±15V, Pin 1 Tied to Pin 11		±13.5		V
Input Offset Voltage			10		mV
Noise	Equivalent Input Noise $R_S = 0$, $C_{IN} = 0.1\ \mu F$ BW = 20 − 20 kHz CCIR•ARM Output Noise Wideband $R_S = 0$, $C_{IN} = 0.1\ \mu F$, $A_V = 200$		 2.5 3.0 0.8		 μV μV mV
Open Loop Gain	$R_S = 51\Omega$, f = 1 kHz, $R_L = 8\Omega$		70		dB
Input Bias Current			100		nA
Input Impedance	Open Loop		4		MΩ
DC Output Voltage	$V_S = 28V$		14		V
Slew Rate			2		V/μs
Power Bandwidth	3 dB Bandwidth at 2.5W		65		kHz
Current Limit			1.5		A

Note 1: The input voltage range is normally limited to ±0.7V with respect to pin 1. This range may be extended by shorting pin 1 to the positive supply.

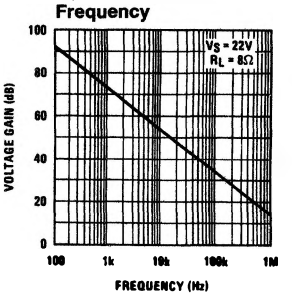
Note 2: For operation at ambient temperature greater than 25°C, the LM2879 must be derated based on a maximum 150°C junction temperature. Thermal resistance, junction to case, is 3°C/W. Thermal resistance, case to ambient, is 40°C/W.

Typical Performance Characteristics

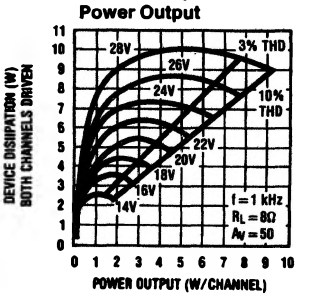
Device Dissipation vs Ambient Temperature



Open Loop Gain vs Frequency



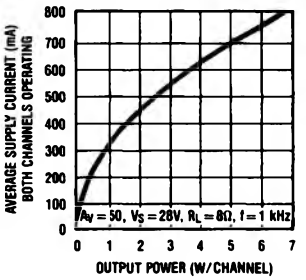
Power Dissipation vs Power Output



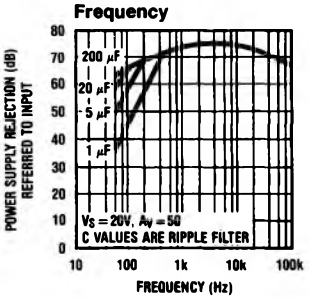
TL/H/5291–3

Typical Performance Characteristics (Continued)

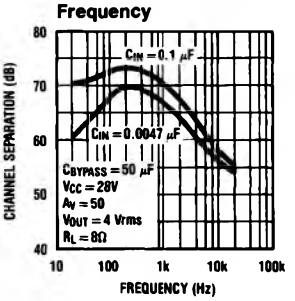
Supply Current vs Output Power



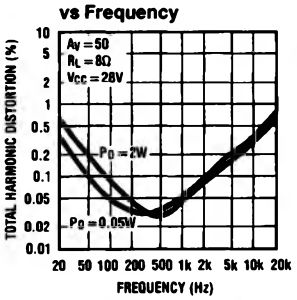
Supply Rejection vs Frequency



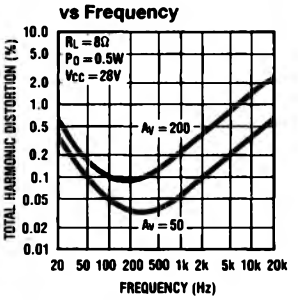
Channel Separation (Referred to the Output) Frequency



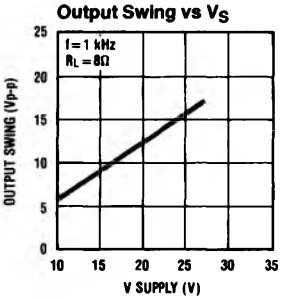
Total Harmonic Distortion vs Frequency



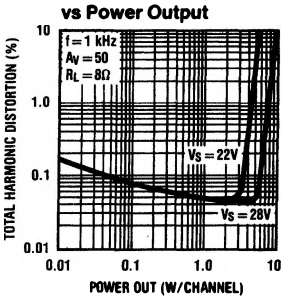
Total Harmonic Distortion vs Frequency



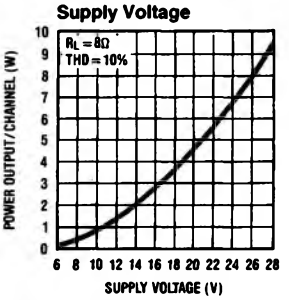
Output Swing vs V_S



Total Harmonic Distortion vs Power Output

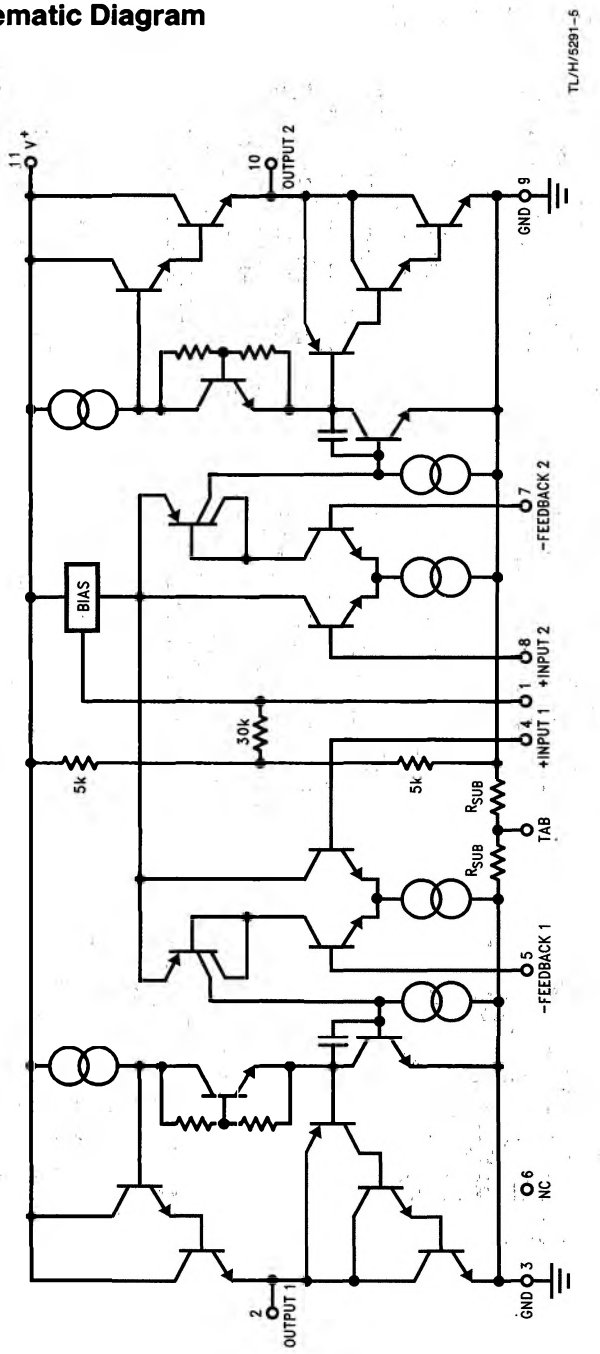


Power Output/Channel vs Supply Voltage



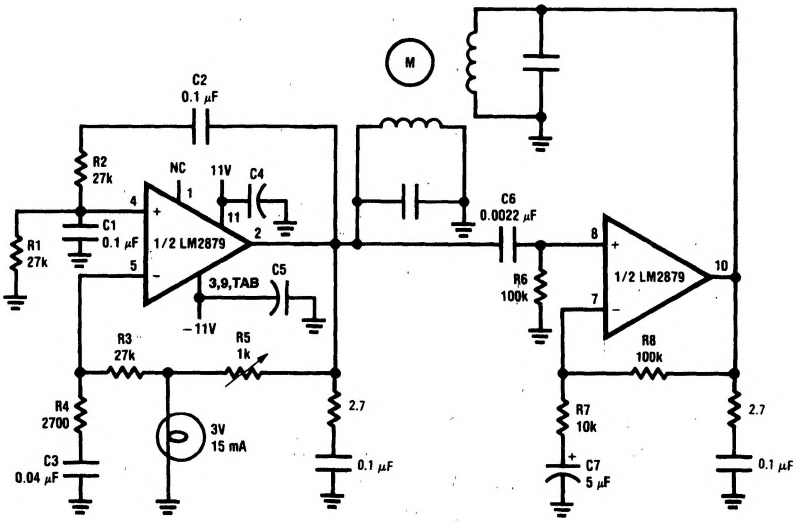
TL/H/5291–4

Equivalent Schematic Diagram



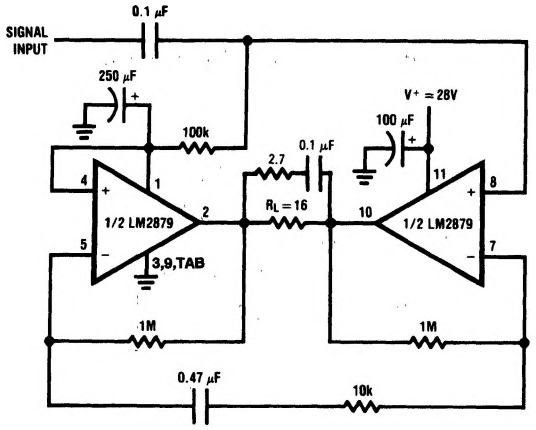
Typical Applications

Two-Phase Motor Drive



TL/H/5291–6

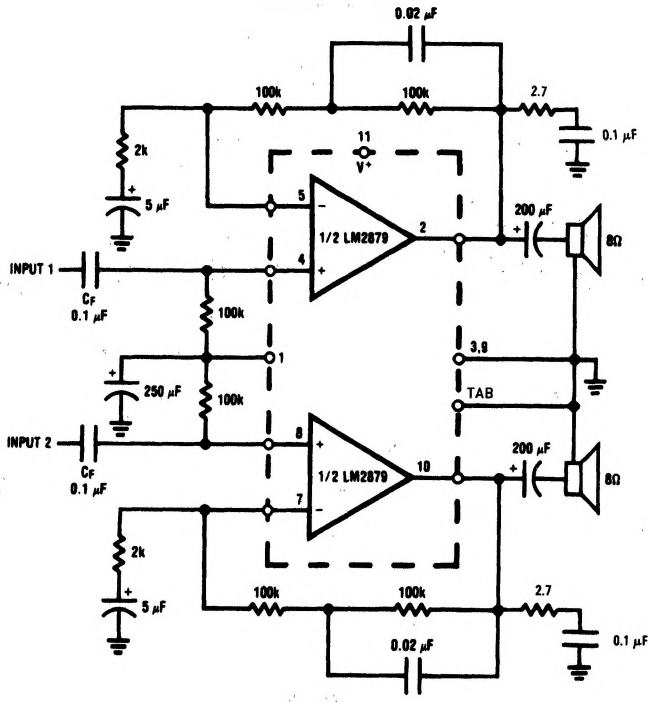
12W Bridge Amplifier



TL/H/5291–7

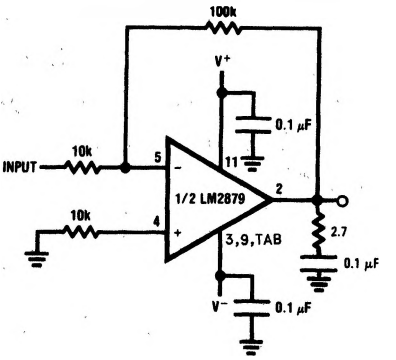
Typical Applications (Continued)

Simple Stereo Amplifier with Bass Boost



TL/H/5291–8

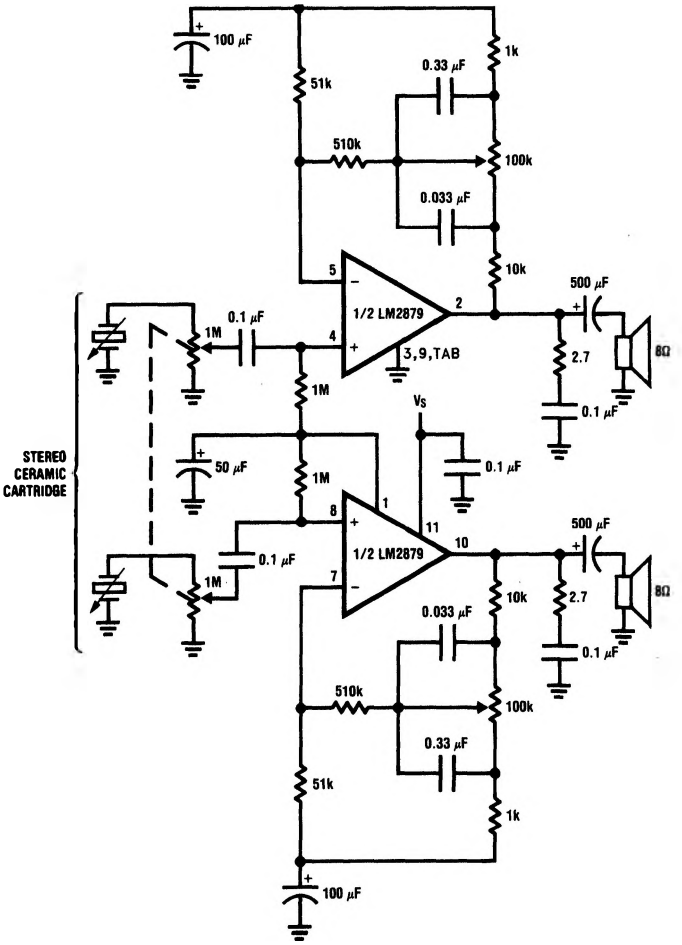
Power Op Amp (Using Split Supplies)



TL/H/5291–9

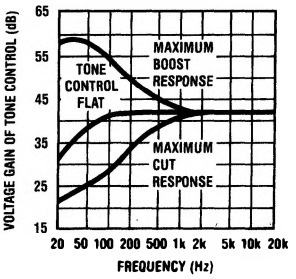
Typical Applications (Continued)

Stereo Phonograph Amplifier with Bass Tone Control



TL/H/5291–10

Frequency Response of Bass Tone Control



TL/H/5291–11