

## 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

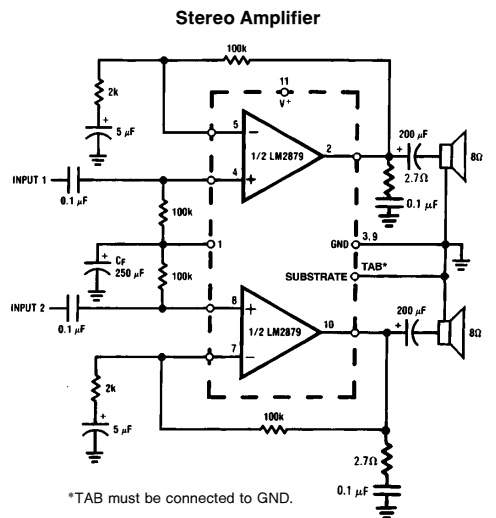
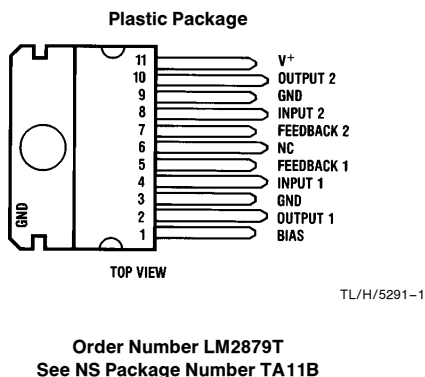


FIGURE 1

## 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)  $\pm 0.7V$   
Operating Temperature (Note 2)  $0^{\circ}C$  to  $+70^{\circ}C$

Storage Temperature  $-65^{\circ}C$  to  $+150^{\circ}C$   
Junction Temperature  $150^{\circ}C$   
Lead Temp. (Soldering, 10 seconds)  $260^{\circ}C$   
ESD rating to be determined.  
Thermal Resistance  
 $\theta_{JC}$   $1^{\circ}C/W$   
 $\theta_{JA}$   $43^{\circ}C/W$

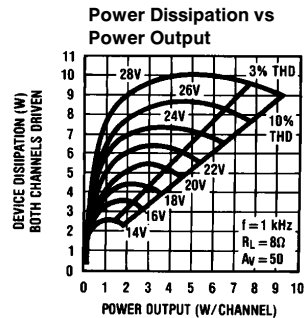
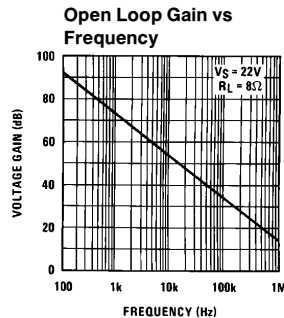
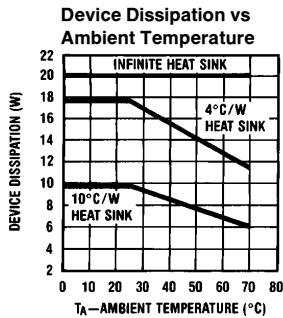
## Electrical Characteristics $V_S = 28V$ , $T_{TAB} = 25^{\circ}C$ , $R_L = 8\Omega$ , $A_V = 50$ (34 dB), unless otherwise specified.

Parameter	Conditions	Min	Typ	Max	Units
Total Supply Current	$P_O = 0W$		12	65	mA
Operating Supply Voltage		6		32	V
Output Power/Channel	$f = 1\text{ kHz}$ , THD = 10%, $T_{TAB} = 25^{\circ}C$	6	8		W
Distortion	$f = 1\text{ kHz}$ , $R_L = 8\Omega$ $P_O = 1\text{ W/Channel}$		0.05	1	%
Output Swing	$R_L = 8\Omega$		$V_S - 6V$		Vp-p
Channel Separation	$C_{BYPASS} = 50\text{ }\mu F$ , $C_{IN} = 0.1\text{ }\mu F$ $f = 1\text{ kHz}$ , Output Referred $V_O = 4\text{ Vrms}$	-50	-70		dB
PSRR Positive Supply	$C_{BYPASS} = 50\text{ }\mu F$ , $C_{IN} = 0.1\text{ }\mu F$ $f = 120\text{ Hz}$ , Output Referred $V_{ripple} = 1\text{ Vrms}$	-50	-60		dB
PSRR Negative Supply	Measured at DC, Input Referred		-60		dB
Common-Mode Range	Split Supplies $\pm 15V$ , Pin 1 Tied to Pin 11		$\pm 13.5$		V
Input Offset Voltage			10		mV
Noise	Equivalent Input Noise $R_S = 0$ , $C_{IN} = 0.1\text{ }\mu F$ BW = 20 – 20 kHz CCIR*ARM Output Noise Wideband $R_S = 0$ , $C_{IN} = 0.1\text{ }\mu F$ , $A_V = 200$		2.5 3.0 0.8		$\mu V$ $\mu V$ mV
Open Loop Gain	$R_S = 51\Omega$ , $f = 1\text{ kHz}$ , $R_L = 8\Omega$		70		dB
Input Bias Current			100		nA
Input Impedance	Open Loop		4		M $\Omega$
DC Output Voltage	$V_S = 28V$		14		V
Slew Rate			2		V/ $\mu s$
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  $\pm 0.7V$  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  $25^{\circ}C$ , the LM2879 must be derated based on a maximum  $150^{\circ}C$  junction temperature. Thermal resistance, junction to case, is  $3^{\circ}C/W$ . Thermal resistance, case to ambient, is  $40^{\circ}C/W$ .

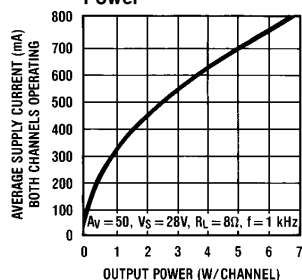
## Typical Performance Characteristics



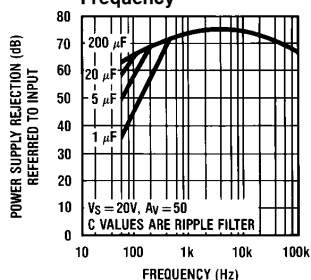
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## Typical Performance Characteristics (Continued)

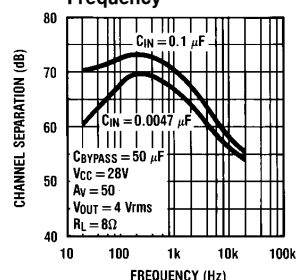
**Supply Current vs Output Power**



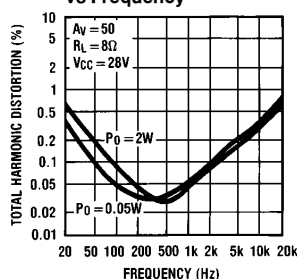
**Supply Rejection vs Frequency**



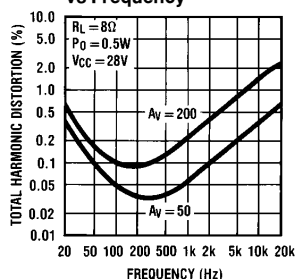
**Channel Separation (Referred to the Output) vs Frequency**



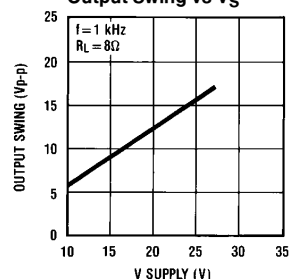
**Total Harmonic Distortion vs Frequency**



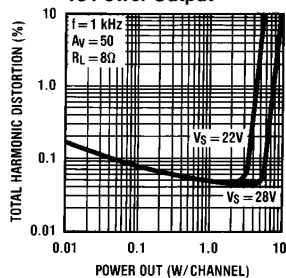
**Total Harmonic Distortion vs Frequency**



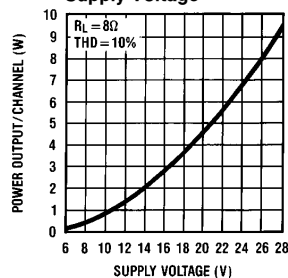
**Output Swing vs  $V_s$**



**Total Harmonic Distortion vs Power Output**

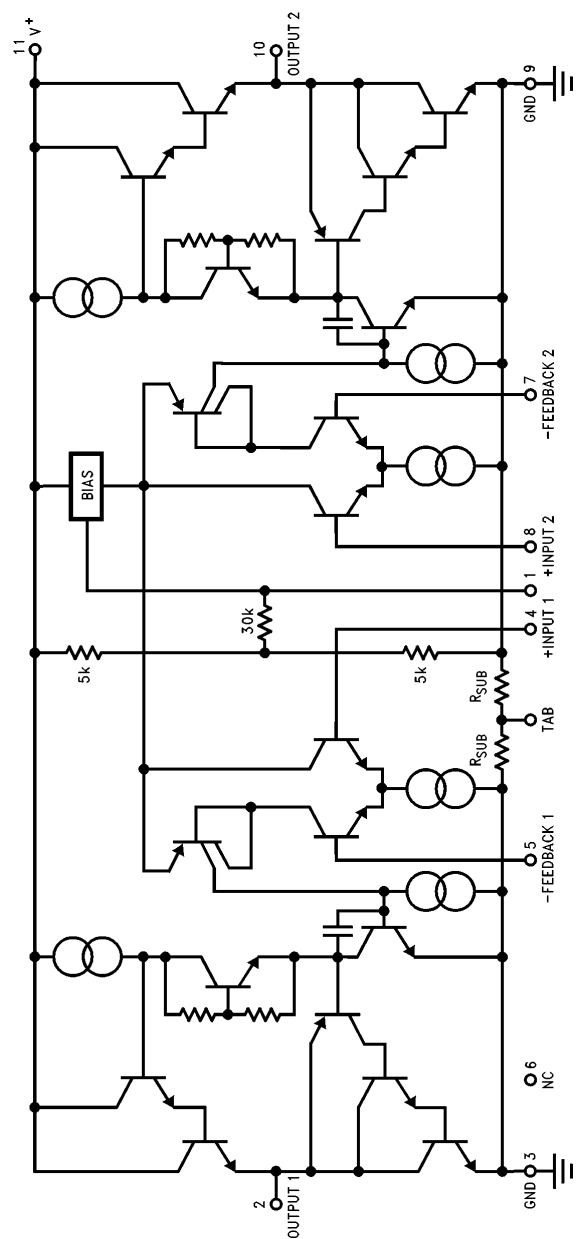


**Power Output/Channel vs Supply Voltage**



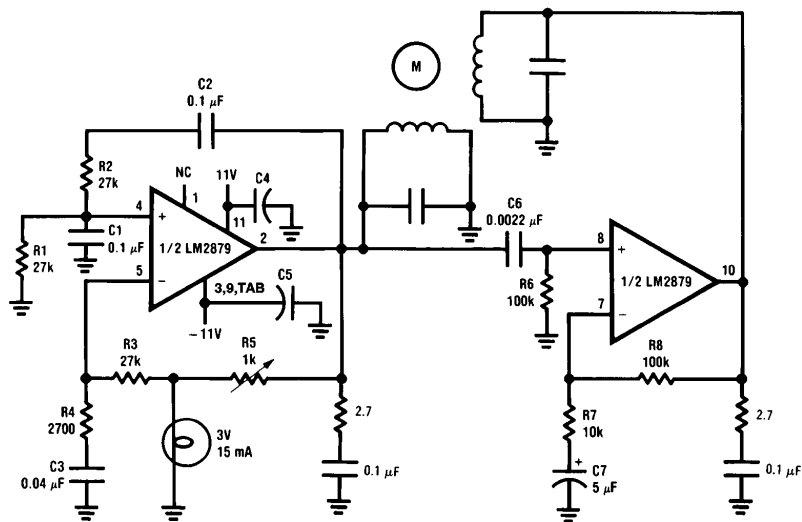
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Equivalent Schematic Diagram



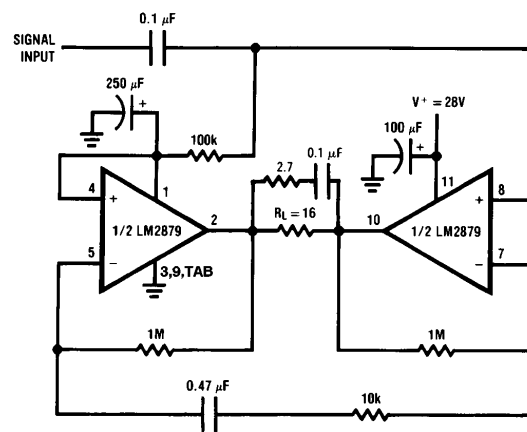
## Typical Applications

Two-Phase Motor Drive



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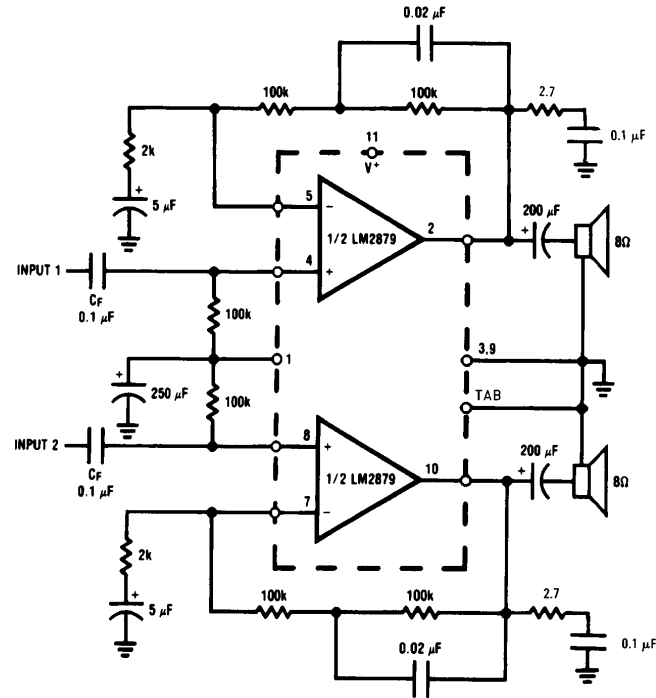
12W Bridge Amplifier



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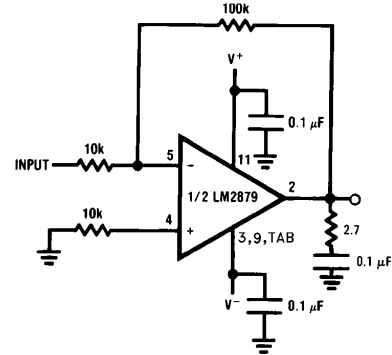
# Typical Applications (Continued)

Simple Stereo Amplifier with Bass Boost



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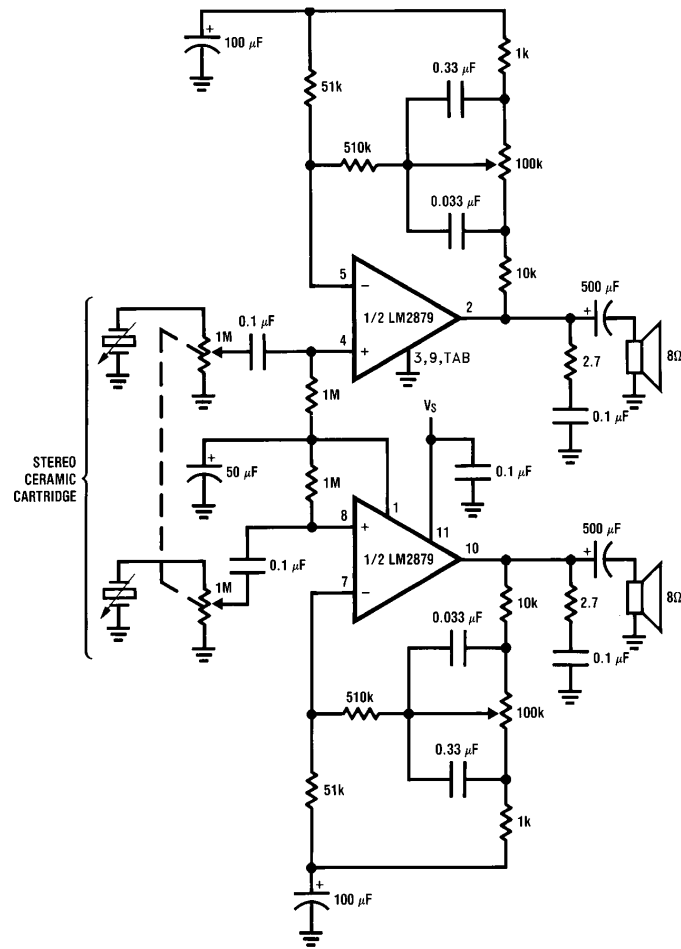
Power Op Amp (Using Split Supplies)



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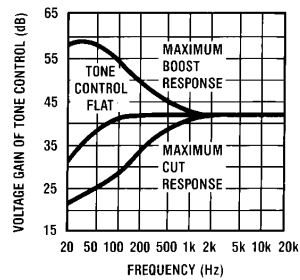
## Typical Applications (Continued)

**Stereo Phonograph Amplifier with Bass Tone Control**



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**Frequency Response of Bass Tone Control**



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