LM1875 - 20-W Audio Power Amplifier

Features

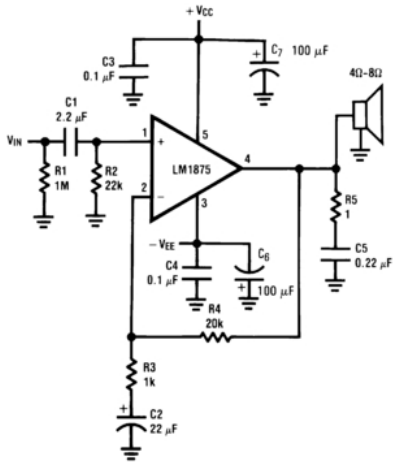
- Up to 30 watts output power
- A_{VO} typically 90 dB
- Low distortion: 0.015%, 1 kHz, 20 W
- Wide power bandwidth: 70 kHz
- Protection for AC and DC short circuits to ground
- Thermal protection with parole circuit
- High current capability: 4A
- Wide supply range 16V-60V
- Internal output protection diodes
- 94 dB ripple rejection
- Plastic power package TO-220

Applications

- High performance audio systems
- Bridge amplifiers
- Stereo phonographs
- Servo amplifiers
- Instrument systems

Typical Application

click for larger image



Connection Diagram

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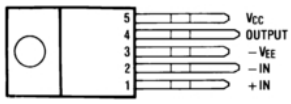

Parametric Table

Power@ 4Ohms, 1% THD	20 Watt
Power@ 8Ohms, 1% THD	25 Watt
Power@ 8Ohms, 10% THD	30 Watt
THD	0.022 %
PSRR	95 dB
Channels	1 Channels
Special Features	AvCl>10
THD Conditions	Pout=20W, 4ohm load, 1kHz
User Supply	50 Volt
Supply Range	+20 - +60V
Supply Min	16 Volt
Supply Max	60 Volt
Gain Bandwidth	5.5 MHz
Slew Rate	8 Volts/usec
Temperature Min	0 deg C
Temperature Max	70 deg C

Typical Performance

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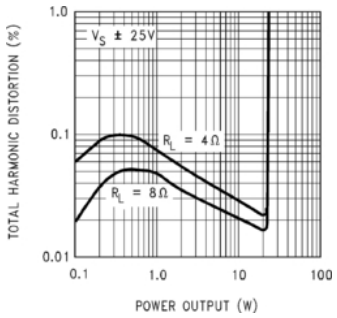

Datasheet

RoHS Compliance Information
LM1875 20W Audio Power Amplifier
LM1875 20W Audio Power Amplifier (**Japanese**) 本サイトの日本語版データシートは最新版ではない場合があります。ご検討 およびご採用に当たっては、最新の英語版データシートを必ずご確認ください。

Package Availability, Models

Part Number	Package							Factory Lead Time		Models				Std Pack Size	Package Marking Format
	Type	Pins	Spec.	MSL Rating	Peak Reflow	RoHS Report	CAD Symbols	Weeks	Qty						
LM1875T	TO-220	5	STD	1	NA	RoHS	N/A	Full production		N/A				rail of 45	NSUZXYTTE# LM1875T
			NOPB	1	NA			6 weeks	500						
LM1875 MWC	Wafer							Obsolete		N/A				wafer jar of N/A	-
								N/A	N/A						

General Description

The LM1875 is a monolithic power amplifier offering very low distortion and high quality performance for consumer audio applications.

The LM1875 delivers 20 watts into a 4Ω or 8Ω load on ±25V supplies. Using an 8Ω load and ±30V supplies, over 30 watts of power may be delivered. The amplifier is designed to operate with a minimum of external components. Device overload protection consists of both internal current limit and thermal shutdown.

The LM1875 design takes advantage of advanced circuit techniques and processing to achieve extremely low distortion levels even at high output power levels. Other outstanding features include high gain, fast slew rate and a wide power bandwidth, large output voltage swing, high current capability, and a very wide supply range. The amplifier is internally compensated and stable for gains of 10 or greater.

National Semiconductor

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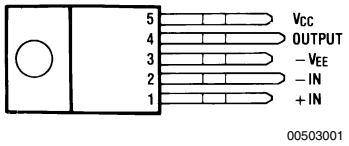
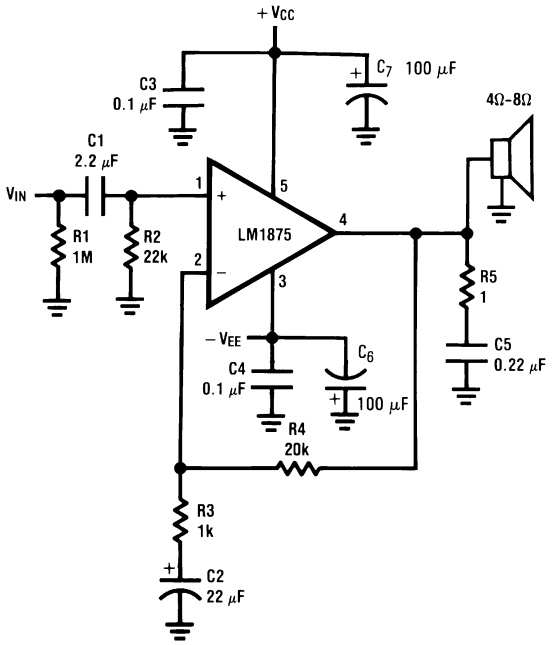


Front View

Package	Ordering Info	NSC Package Number
For Straight Leads	LM1875T SL108949	T05A
For Stagger Bend	LM1875T LB03	T05D
For 90˚ Stagger Bend	LM1875T LB05	T05E
For 90˚ Stagger Bend	LM1875T LB02	TA05B

Typical Applications



Absolute Maximum Ratings (Note 1)

Supply Voltage	60V
Input Voltage	$-V_{EE}$ to V_{CC}
Storage Temperature	−65˚C to + 150˚C
Junction Temperature	150˚C
Lead Temperature	
(Soldering, 10 seconds)	260˚C
θ_{JC}	3˚C
θ_{JA}	73˚C

Electrical Characteristics

V_{CC}=+25V, $-V_{EE}$=−25V, $T_{AMBIENT}$=25˚C, R_L=8Ω, A_V=20 (26 dB), f_o=1 kHz, unless otherwise specified.

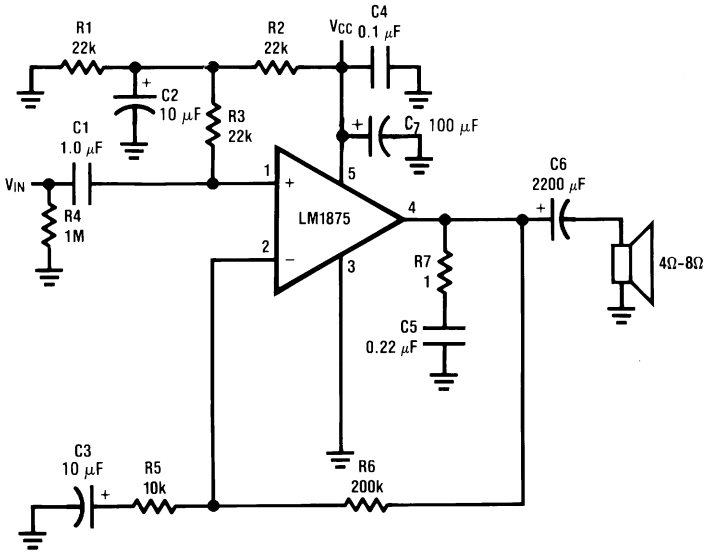
Parameter	Conditions	Typical	Tested Limits	Units
Supply Current	P_{OUT}=0W	70	100	mA
Output Power (Note 2)	THD=1%	25		W
THD (Note 2)	P_{OUT}=20W, f_o=1 kHz	0.015		%
	P_{OUT}=20W, f_o=20 kHz	0.05	0.4	%
	P_{OUT}=20W, R_L=4Ω, f_o=1 kHz	0.022		%
	P_{OUT}=20W, R_L=4Ω, f_o=20 kHz	0.07	0.6	%
Offset Voltage		±1	±15	mV
Input Bias Current		±0.2	±2	µA
Input Offset Current		0	±0.5	µA
Gain-Bandwidth Product	f_o=20 kHz	5.5		MHz
Open Loop Gain	DC	90		dB
PSRR	V_{CC}, 1 kHz, 1 Vrms	95	52	dB
	V_{EE}, 1 kHz, 1 Vrms	83	52	dB
Max Slew Rate	20W, 8Ω, 70 kHz BW	8		V/µs
Current Limit	V_{OUT} = V_{SUPPLY} −10V	4	3	A
Equivalent Input Noise Voltage	R_S=600Ω, CCIR	3		µVrms

Note 1: "Absolute Maximum Ratings" indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is functional, but do not guarantee specific performance limits.

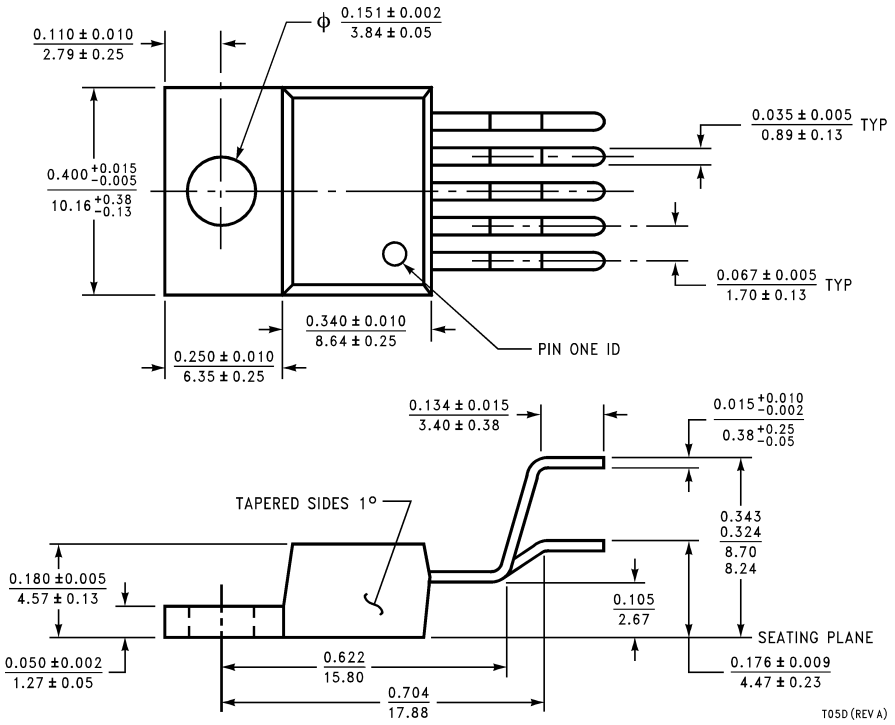
Note 2: Assumes the use of a heat sink having a thermal resistance of 1˚C/W and no insulator with an ambient temperature of 25˚C. Because the output limiting circuitry has a negative temperature coefficient, the maximum output power delivered to a 4Ω load may be slightly reduced when the tab temperature exceeds 55˚C.

Typical Applications

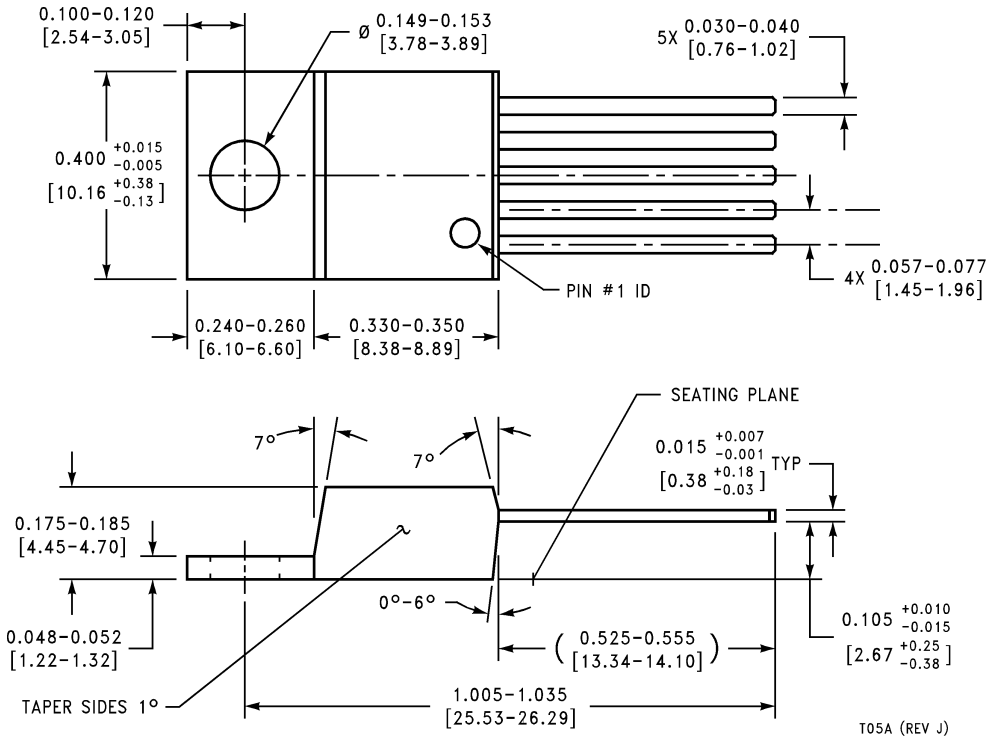
Typical Single Supply Operation



Physical Dimensions inches (millimeters) unless otherwise noted

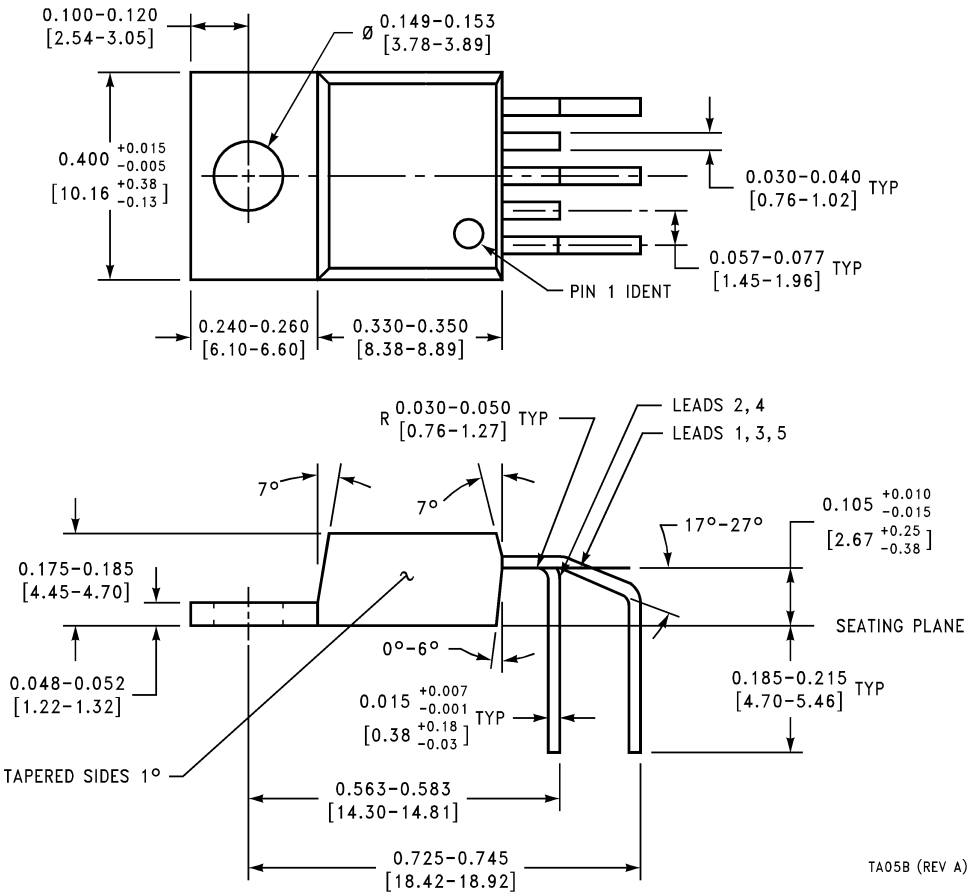


TO-220 Power Package (T)
Order Number LM1875T
NS Package Number T05D



Order Number LM1875T SL108949
NS Package Number T05A

Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



Order Number LM1875T LB02
NS Package Number TA05B