



LM1875

LINEAR INTEGRATED CIRCUIT

20W AUDIO POWER AMPLIFIER

DESCRIPTION

The UTC **LM1875** is a monolithic power amplifier offering very low distortion and high quality performance for consumer audio applications. It delivers 20W into a 4Ω or 8Ω load on ±25V supplies. Using an 8Ω load and ±30V supplies, over 30W 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 UTC **LM1875** design utilizes 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.

FEATURES

- *Up to 30W output power
- *Avo typically 90 dB
- *Low distortion: 0.015%, 1kHz, 20W
- *Wide power bandwidth: 70kHz
- *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

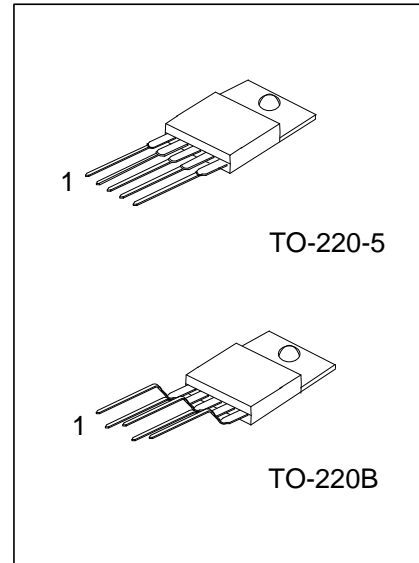
APPLICATIONS

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

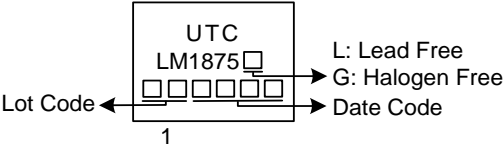
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
LM1875L-TA5-T	LM1875G-TA5-T	TO-220-5	+IN	-IN	-V _{EE}	OUT	V _{CC}	Tube
LM1875L-TB5-T	LM1875G-TB5-T	TO-220B	+IN	-IN	-V _{EE}	OUT	V _{CC}	Tube

<p>LM1875G-TA5-T</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) T: Tube (2) TA5: TO-220-5, TB5: TO-220B (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	60	V
Input Voltage	V _{IN}	-V _{EE} ~ V _{CC}	V
Junction Temperature	T _J	+150	°C
Storage Temperature	T _{STG}	-40 ~ +150	°C

Note Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

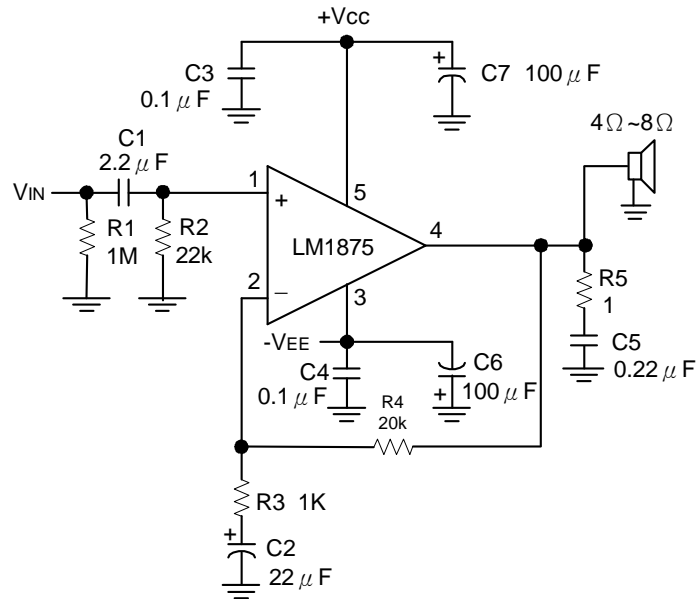
■ ELECTRICAL CHARACTERISTICS

(V_{CC}=+25V, -V_{EE}=-25V, T_A=25°C, R_L=8Ω, A_v=20(26dB), f_o=1kHz, unless otherwise specified.)

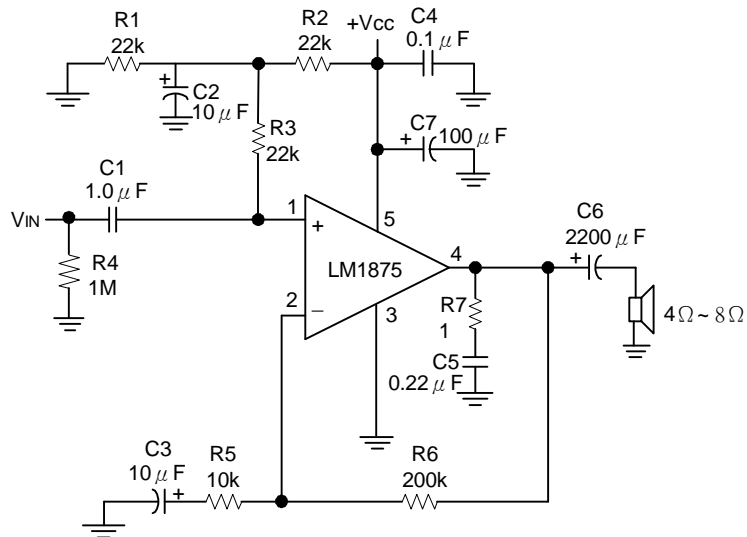
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current	I _{CC}	P _{OUT} =0W		70	100	mA
Output Power(Note)	P _{OUT}	THD=1%		25		W
Total Harmonic Distortion (Note)	THD	P _{OUT} =20W, f _o =1kHz		0.015		%
		P _{OUT} =20W, f _o =20kHz		0.05	0.4	
		P _{OUT} =20W, R _L =4Ω, f _o =1kHz		0.022		
		P _{OUT} =20W, R _L =4Ω, f _o =20kHz		0.07	0.6	
Offset Voltage	V _{O(OFF)}			±1	±15	mV
Input Bias Current	I _{I(BIAS)}			±0.2	±2	μA
Input Offset Current	I _{I(OFF)}			0	±0.5	μA
Gain-Bandwidth Product	GB _W	F _o =20kHz		5.5		MHz
Open Loop Gain	G _v	DC		90		dB
Power Supply Rejection Ratio	RR	V _{CC} , 1kHz, 1 Vrms	52	95		dB
		V _{EE} , 1kHz, 1 Vrms	52	83		
Max Slew Rate	SR	20W, 8Ω, 70kHz BW		8		V/μs
Current Limit	I _{LIMIT}	V _{OUT} =V _{SUPPLY} -10V	3	4		A
Equivalent Input Noise Voltage	e _N	R _S =600Ω, CCIR		3		μVrms

Note: Assumes the use of a heat sink having a thermal resistance of 1°C/W and no insulator with an T_a=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.

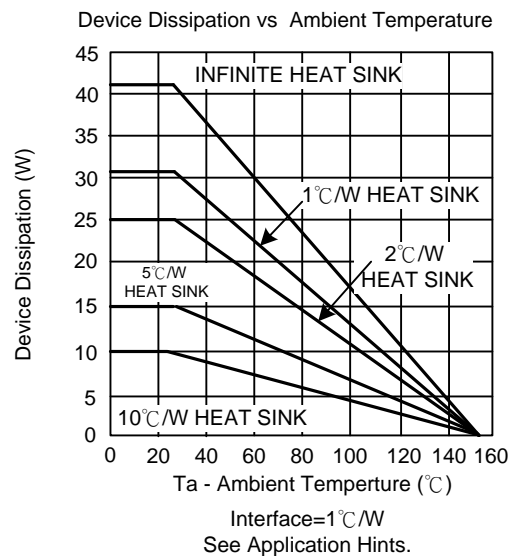
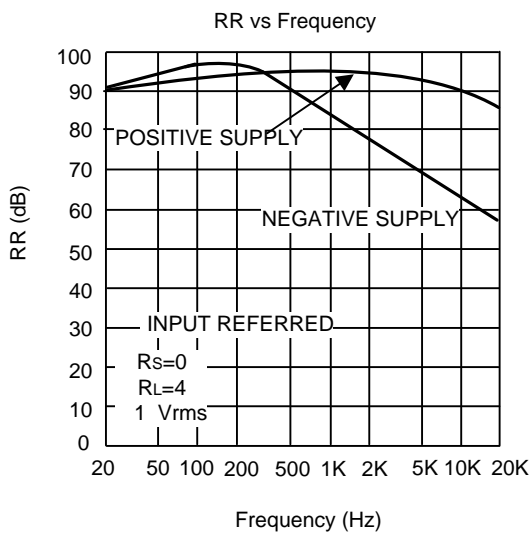
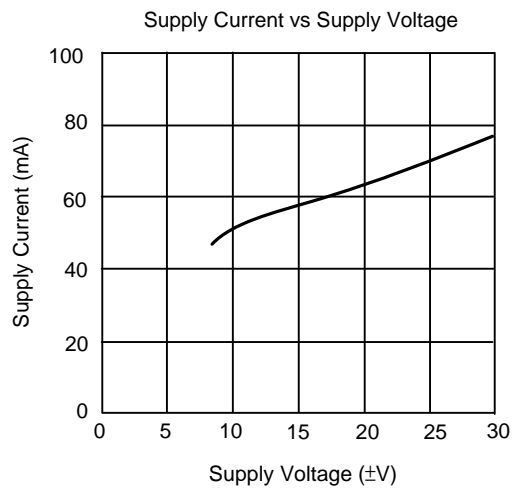
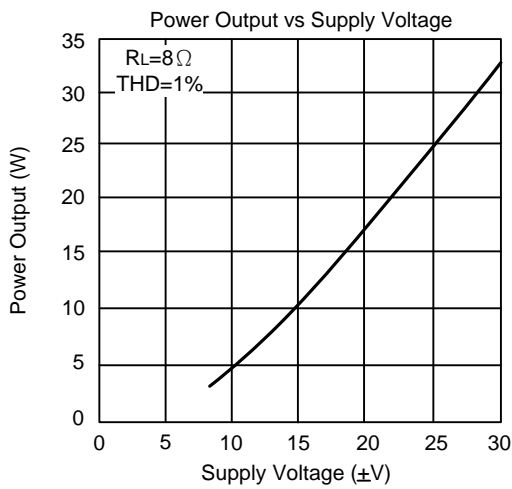
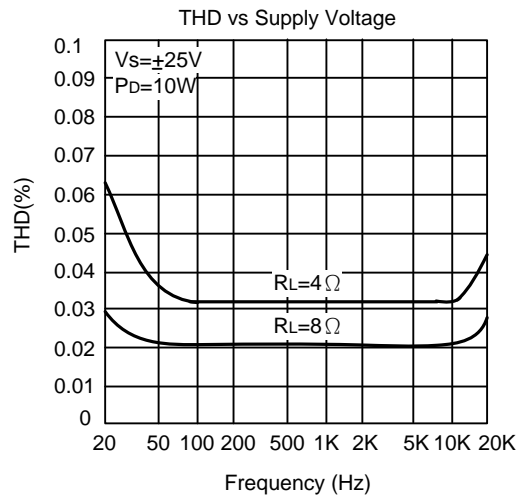
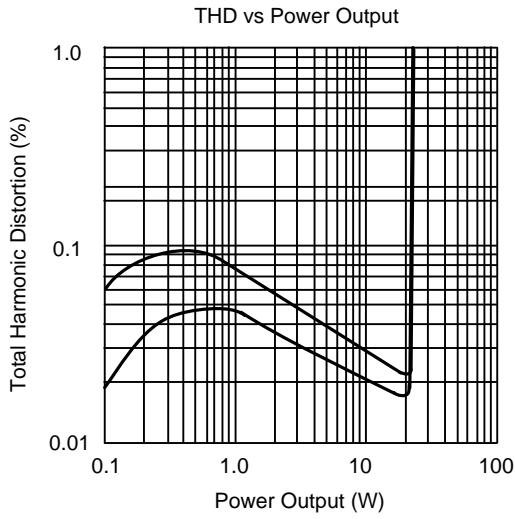
■ TYPICAL APPLICATION CIRCUIT



■ TYPICAL SINGLE SUPPLY OPERATION

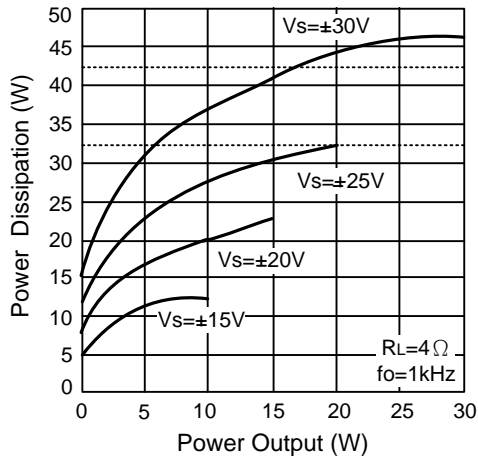


TYPICAL CHARACTERISTICS

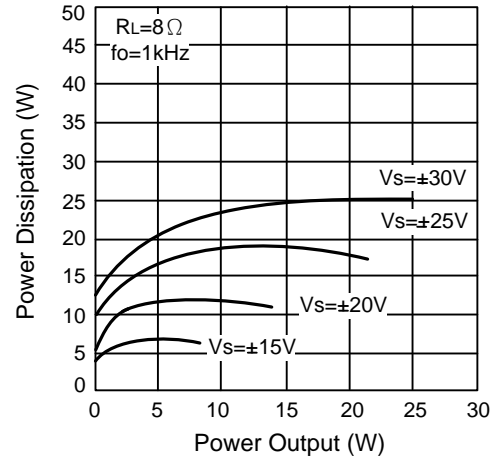


■ TYPICAL CHARACTERISTICS (Cont.)

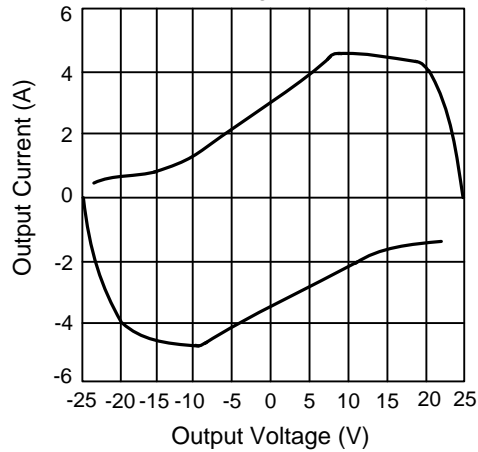
Power Dissipation vs Power Output



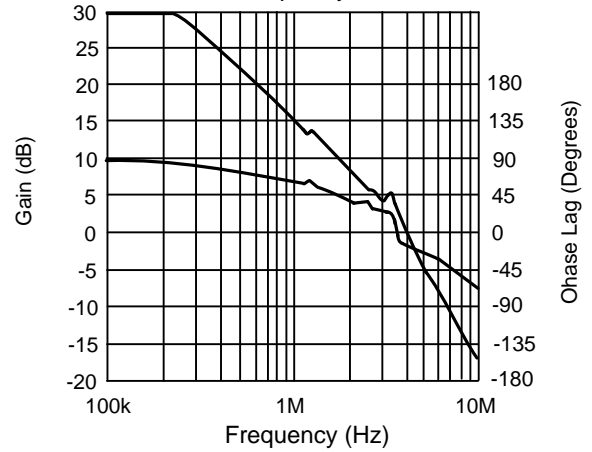
Power Dissipation vs Power Output



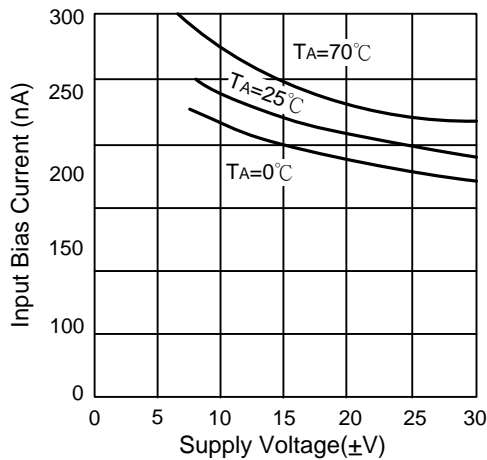
I_{OUT} vs V_{OUT} -Current Limit/
Safe Operating Area Boundary



Open Loop Gain and Phase vs
Frequency

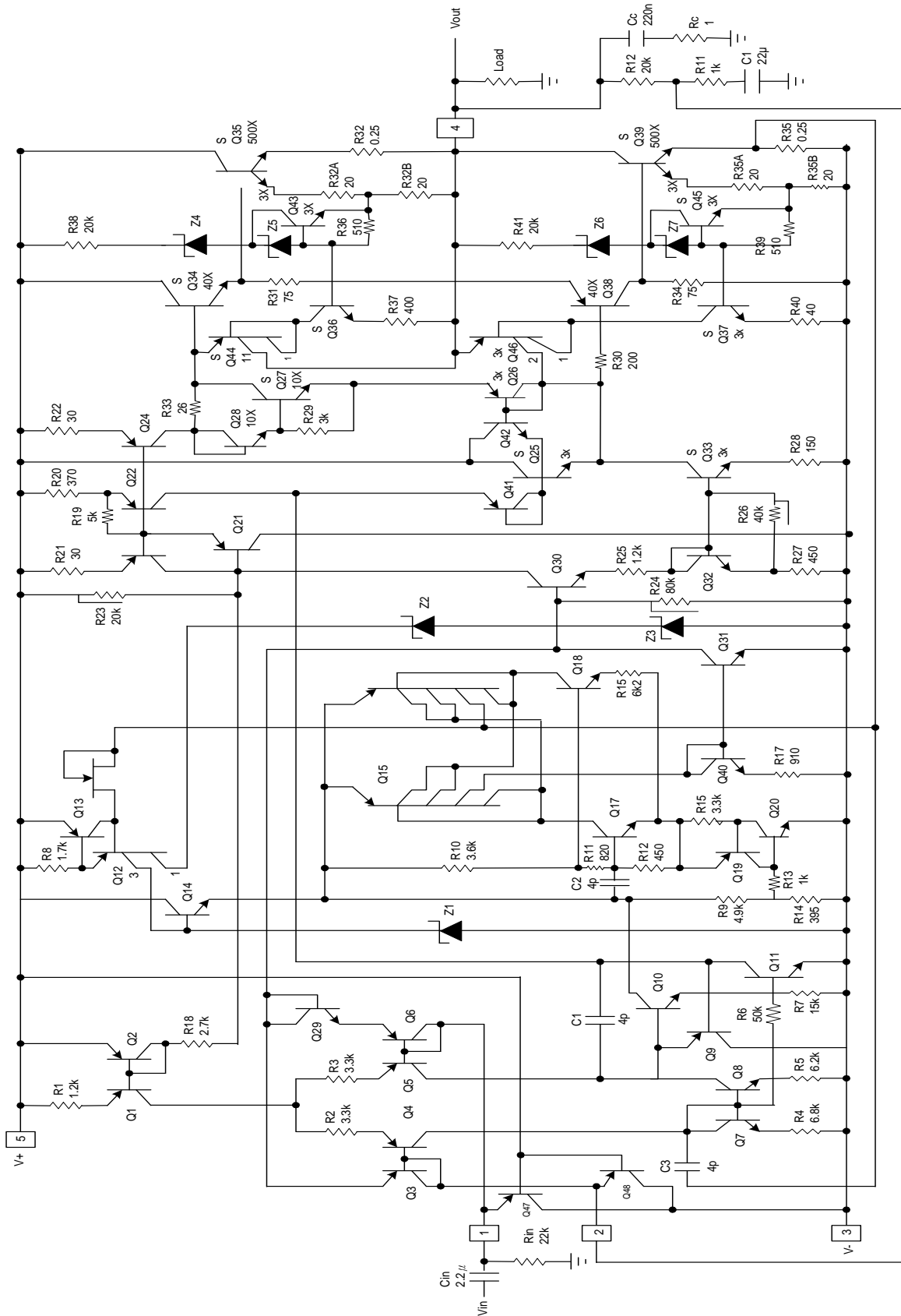


Input Bias Current vs Supply Voltage



* Thermal shutdown with infinite heat sink
** Thermal shutdown with $1^\circ\text{C}/\text{W}$ heat sink

■ TYPICAL APPLICATION CIRCUIT



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