



UNISONIC TECHNOLOGIES CO., LTD

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 $\pm 25V$ supplies. Using an 8Ω load and $\pm 30V$ 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

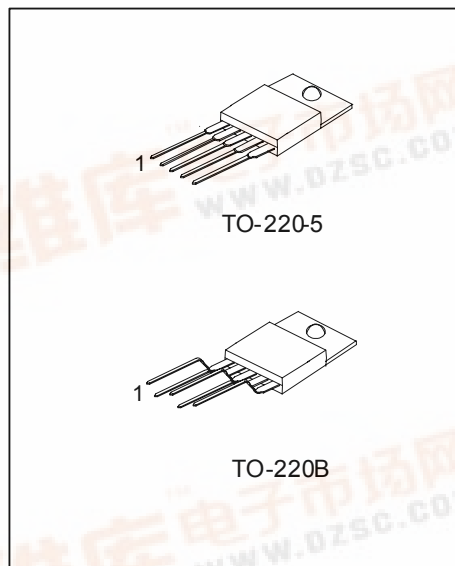
APPLICATIONS

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

ORDERING INFORMATION

Order Number		Package	Pin Assignment					Packing
Normal	Lead Free Plating		1	2	3	4	5	
LM1875-TA5-T	LM1875L-TA5-T	TO-220-5	+IN	-IN	-V _{EE}	OUT	V _{CC}	Tube
LM1875-TB5-T	LM1875L-TB5-T	TO-220B	+IN	-IN	-V _{EE}	OUT	V _{CC}	Tube

		(1) Packing Type (2) Package Type (3) Lead Plating	(1) T: Tube (2) TA5: TO-220-5, TB5: TO-220B (3) L: Lead Free Plating Blank: Pb/Sn
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*Pb-free plating product number: LM1875L

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	60	V
Input Voltage	V_{IN}	$-V_{EE} \sim V_{CC}$	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

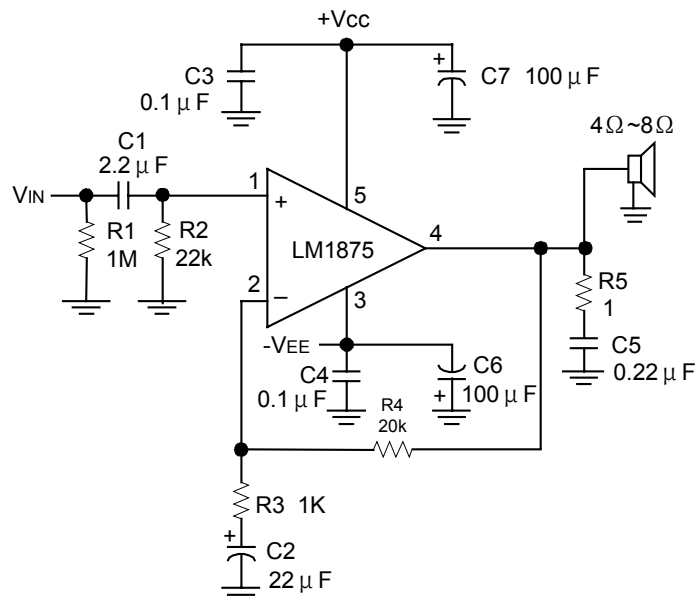
($V_{CC}=+25V$, $-V_{EE}=-25V$, $T_a=25^\circ C$, $R_L=8\Omega$, $A_v=20(26dB)$, $f_o=1kHz$, unless otherwise specified.)

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	
		$P_{OUT}=20W, R_L=4\Omega, f_o=1kHz$		0.022		
		$P_{OUT}=20W, R_L=4\Omega, f_o=20kHz$		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	$V_{CC}, 1kHz, 1V_{rms}$	52	95		dB
		$V_{EE}, 1kHz, 1V_{rms}$	52	83		
Max Slew Rate	SR	20W, 8 Ω , 70kHz BW		8		V/ μs
Current Limit	I_{LIMIT}	$V_{OUT}=V_{SUPPLY}-10V$	3	4		A
Equivalent Input Noise Voltage	eN	$R_s=600\Omega, CCIR$		3		μV_{rms}

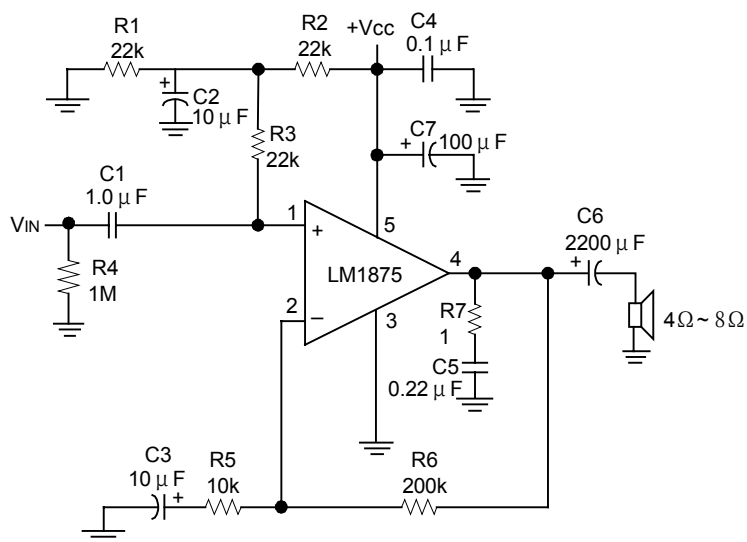
Note: Assumes the use of a heat sink having a thermal resistance of 1°C/W and no insulator with an $T_a=25^\circ C$.

Because the output limiting circuitry has a negative temperature coefficient, the maximum output power delivered to a 4 Ω load may be slightly reduced when the tab temperature exceeds 55°C.

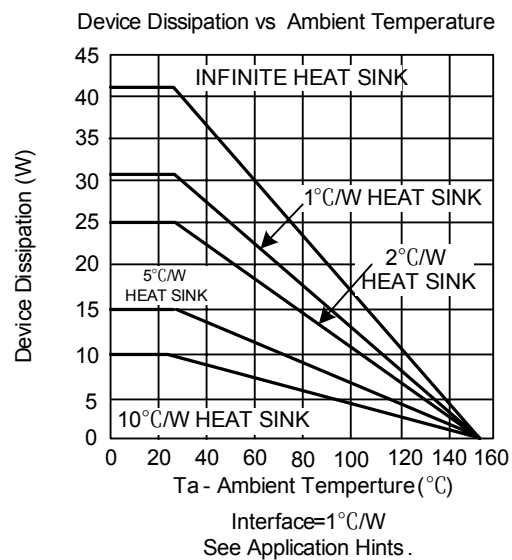
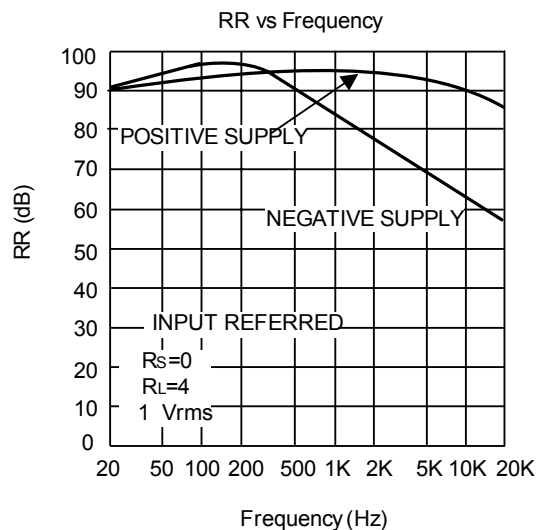
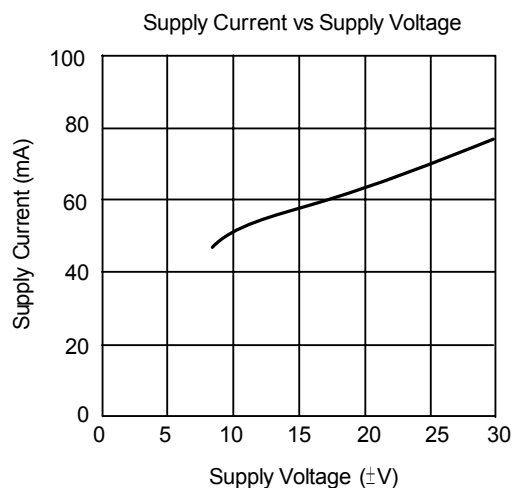
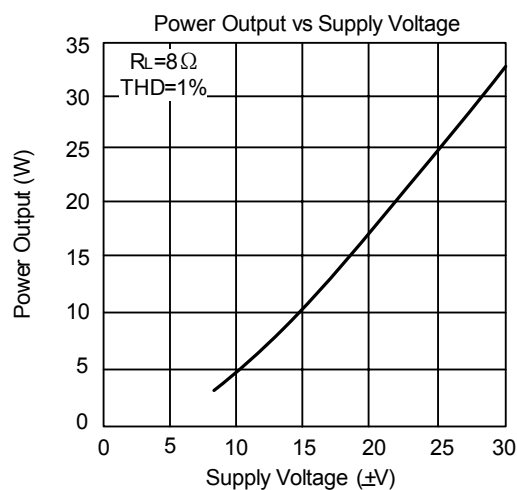
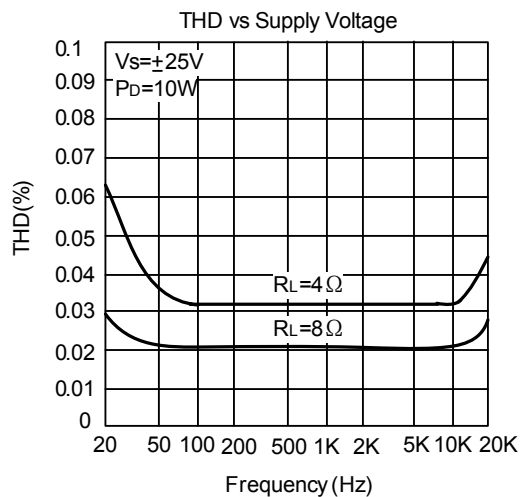
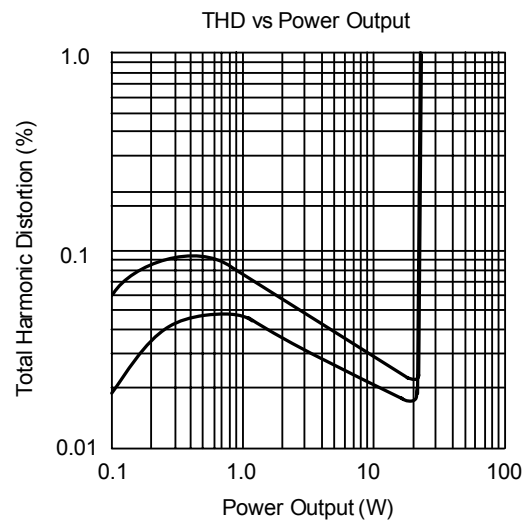
■ TYPICAL APPLICATION CIRCUIT



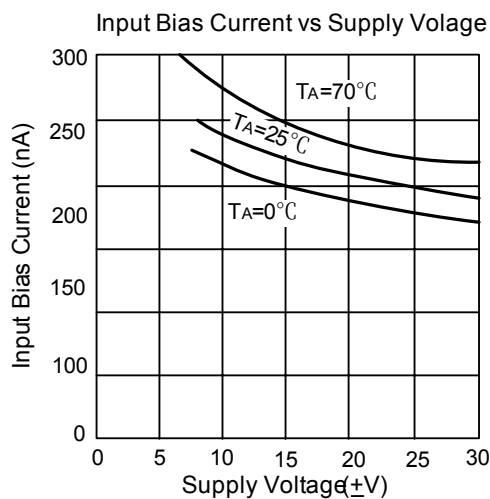
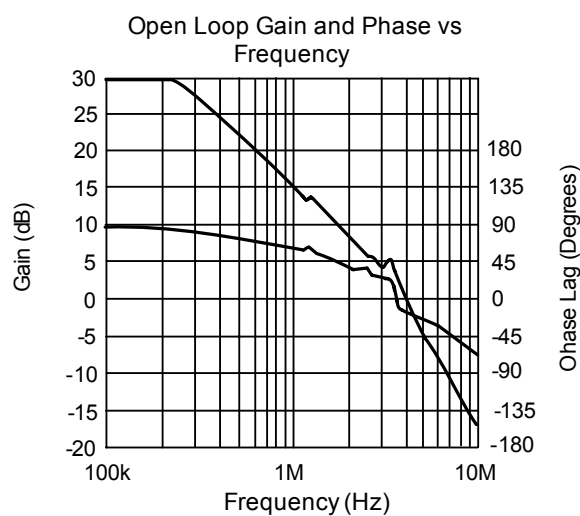
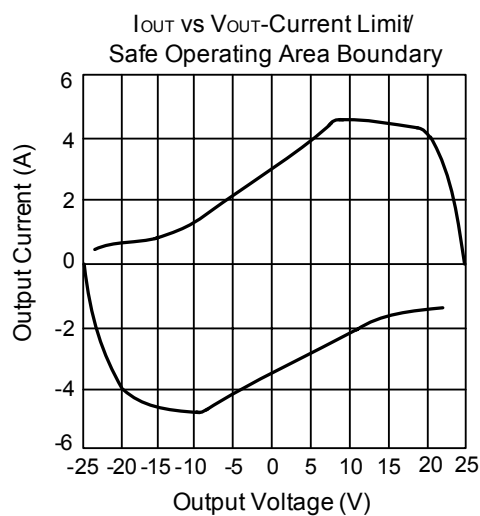
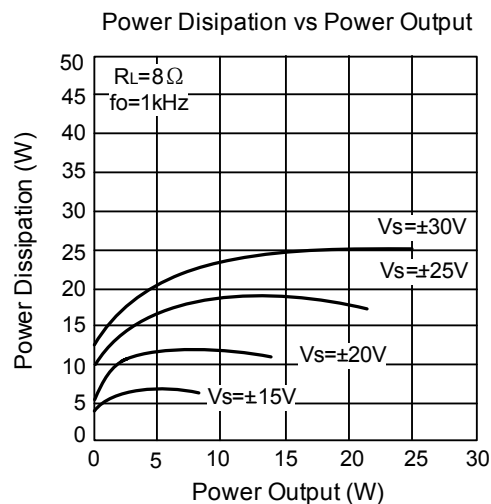
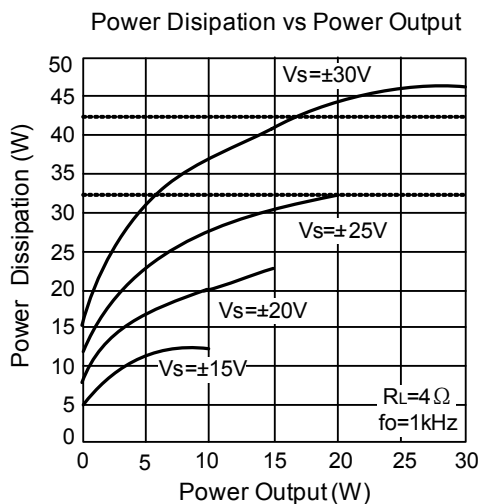
■ TYPICAL SINGLE SUPPLY OPERATION



■ TYPICAL CHARACTERISTICS

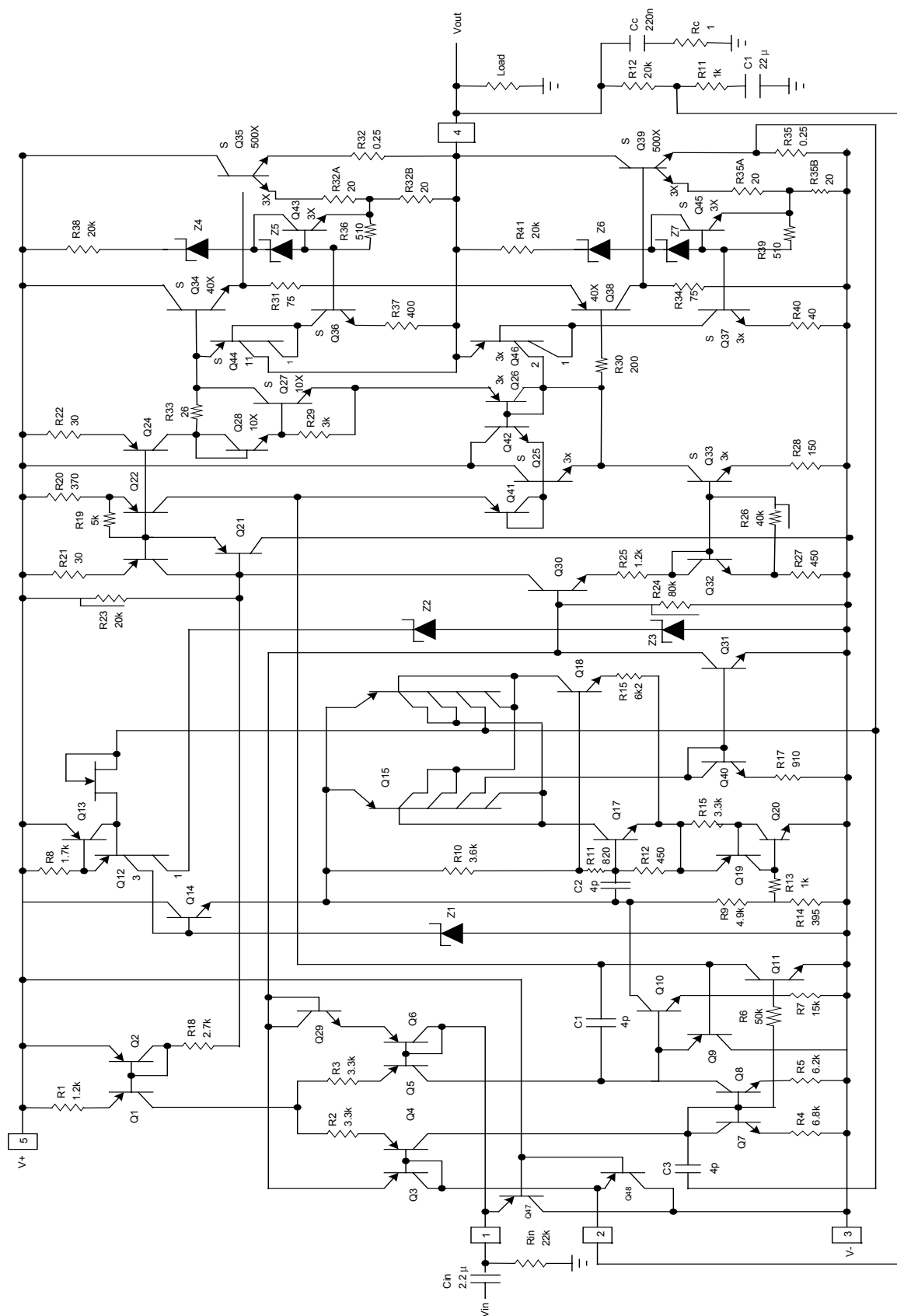


■ TYPICAL CHARACTERISTICS (Cont.)



* Thermal shutdown with infinite heat sink

** Thermal shutdown with $1^\circ C/W$ heat sink



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