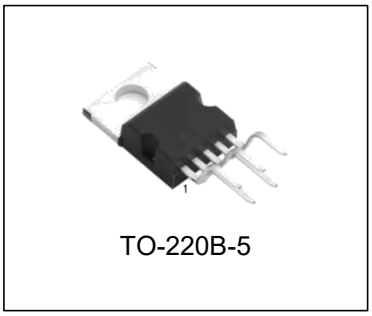
20W AUDIO POWER AMPLIFIER

FEATURES

- Up to 30 watts 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
- Themal protection with parole circuit
- High current capability: 4A
- Wide supply range 16V-60V
- Internal output protection diodes
- 94 dB ripple rejection



TO-220B-5

ORDERING INFORMATION

DEVICE	Package Type	MARKING	Packing	Packing Qty
LM1875TB	TO-220B-5	LM1875	TUBE	1000pcs/Box
LM1875T	TO-220B-5	LM1875	TUBE	1000pcs/Box

DESCRIPTION

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

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

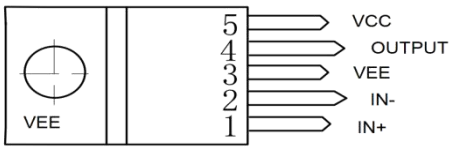
The HG LM1875 design takes advantage of advanced circuit techniques and processing to achieve extremely low distortion levels even at high output power levels.Other outstanding features include high gain,fast slew rate and a wide power bandwidth,large output voltage swing,high current capability,and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

APPLICATIONS

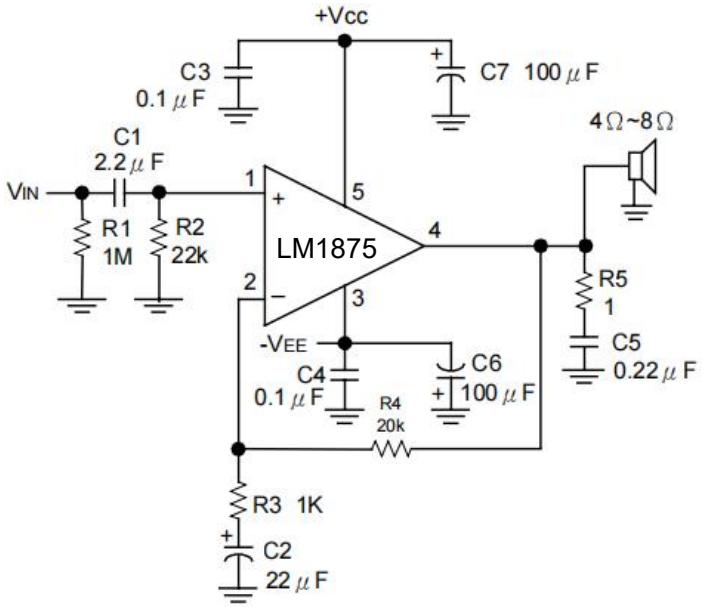
- High performance audio systems
- Bridge amplifiers
- Stereo phonographs
- Servo amplifiers
- Instrument systems

PIN CONNECTIONS

TO-220B-5



TYPICAL APPLICATIONS



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	Vs	60	V
Input Voltage	V_{IN}	$-V_{EE}$ ~ Vcc	V
Storage Temperature	T_{stg}	-65 ~ +150	℃
Junction Temperature	T_J	150	℃
Lead Temperature(Soldering,10 seconds)	T_L	245	℃

Note:Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is intended to be functional, but specific performance is not ensured.

THERMAL DATA

DESCRIPTION	SYMBOL	RATING	UNIT
Thermal Resistance, Junction-case	θ_{JC}	3	℃/W
Thermal Resistance, Junction-ambient	θ_{JA}	73	℃/W

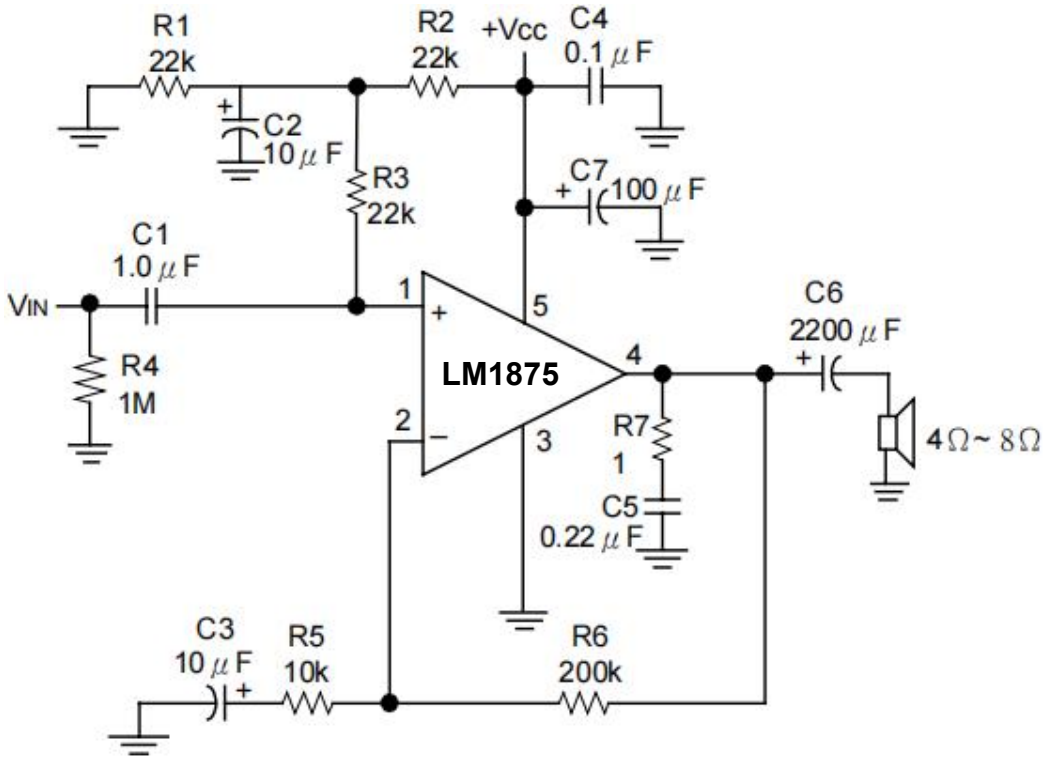
ELECTRICAL CHARACTERISTICS

Vcc=+25V,-V_{EE}=-25V,$T_{AMBIENT}$=25℃,R_L=8Ω,Av=20(26dB),fo=1kHz,unless otherwise specified.

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current	Vs	P_{OUT}=0W		70	100	mA
Output Power(Note 1)	Po	T_{HD}=1%		25		W
Total Harmonic Distortion (Note 1)	THD	P_{OUT}=20W,fo=1kHz P_{OUT} =20W, fo =20kHz P_{OUT} =20W,RL=4Ω,fo=1kHz P_{OUT} =20W,RL=4Ω,fo=20kHz		0.015 0.05 0.022 0.07	0.4 0.6	%
Offset Voltage	Vos			±1	±15	mV
Input Bias current	Iib			±0.2	±2	μA
Input Offset Current	IIO			0	±0.5	μA
Gain-Bandwidth Product	GBW	Fo=20kHz		5.5		MHz
Open Loop Gain	Gv	DC		90		dB
Power Supply Rejection Ratio	PSRR	Vcc,1kHz,1 VrmsVEE,1kHz,1 Vrms		95 83	52 52	dB
Max Slew Rate	SR	20W,8Ω,70kHz BW		8		V/μs
Current Limit	I_{LIM}	VOUT=VSUPPLY – 10V		4	3	A
Equivalent Input NoiseVoltage	e_n	Rs=600Ω,CCIR		3		μVrms

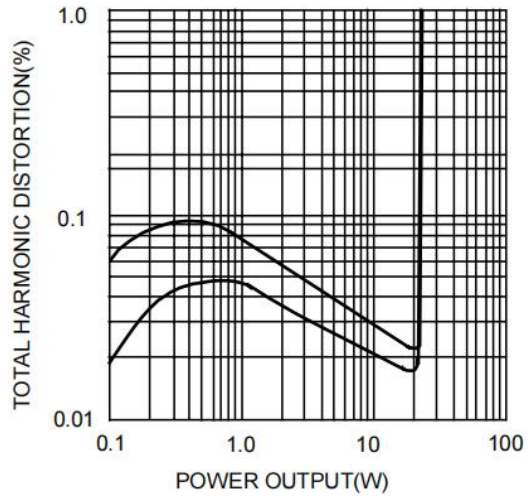
Note 1: Assumes the use of a heat sink having a thermal resistance of 1℃/W and no insulator with an ambient temperature of 25℃.Because the output limiting circuitry has a negative temperature coefficient,the maximum output power delivered to a 4Ωload may be slightly reduced when the tab temperature exceeds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

TYPICAL APPLICATIONS(CONTINUED)

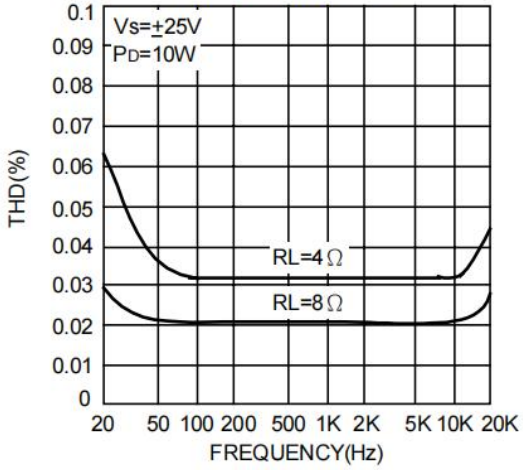


TYPICAL PERFORMANCE CHARACTERISTICS

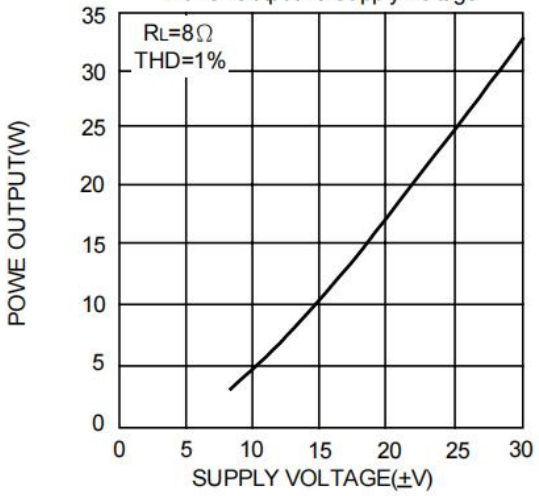
THD vs Power Output



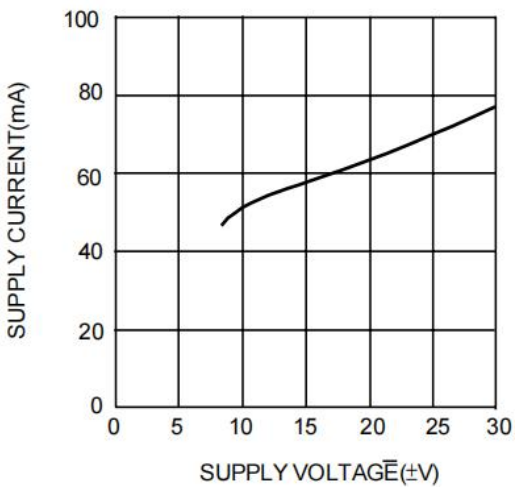
THD vs Supply Voltage



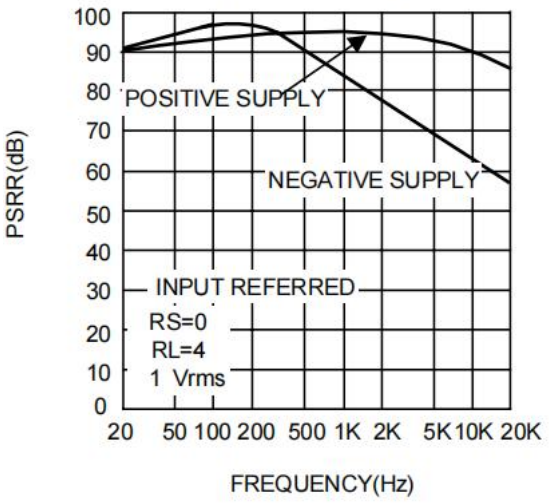
Power Output vs Supply Voltage



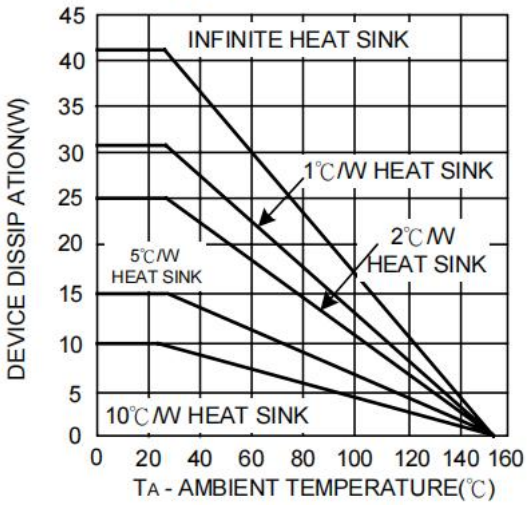
Supply Current vs Supply Voltage



PSRR vs Frequency

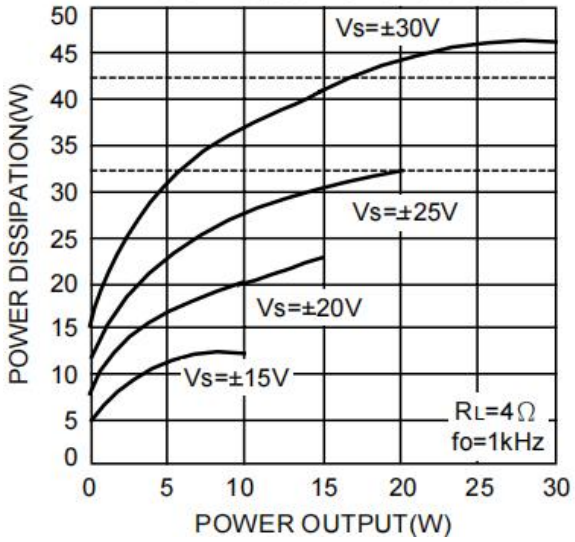


Device Dissipation vs Ambient Temperature

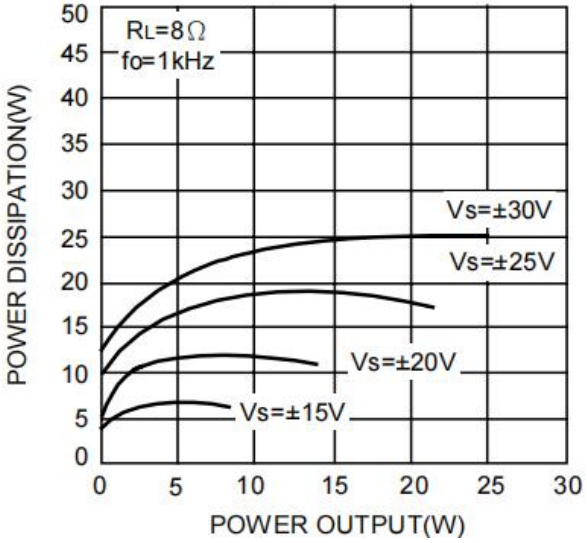


INTERFACE=1℃/W
See Application Hints.

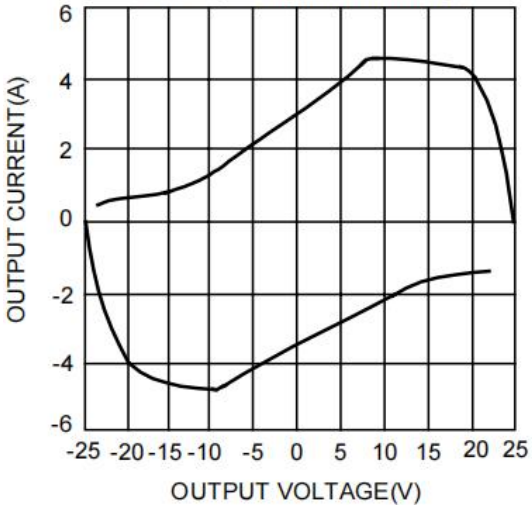
Power Disipation vs Power Output



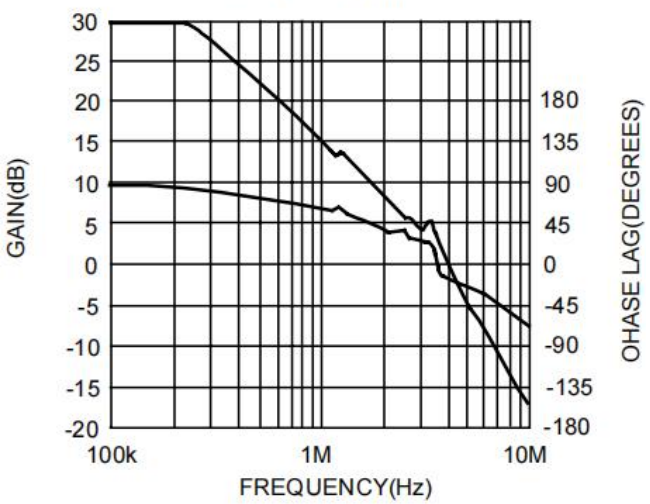
Power Disipation vs Power Output



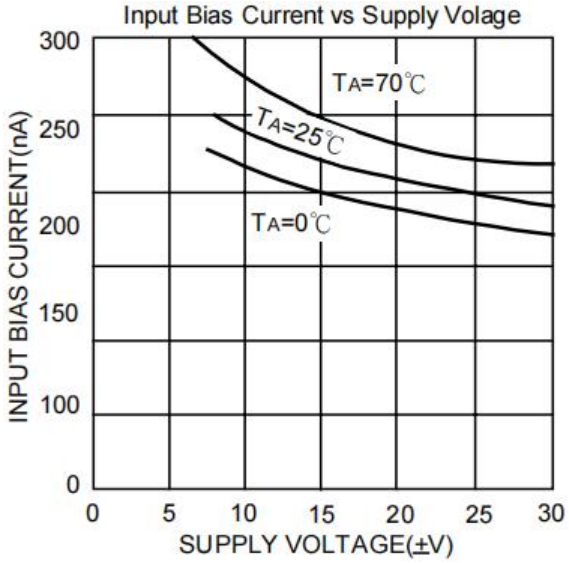
IOUT vs VOUT-Current Limit/
Safe Operating Area Boundary



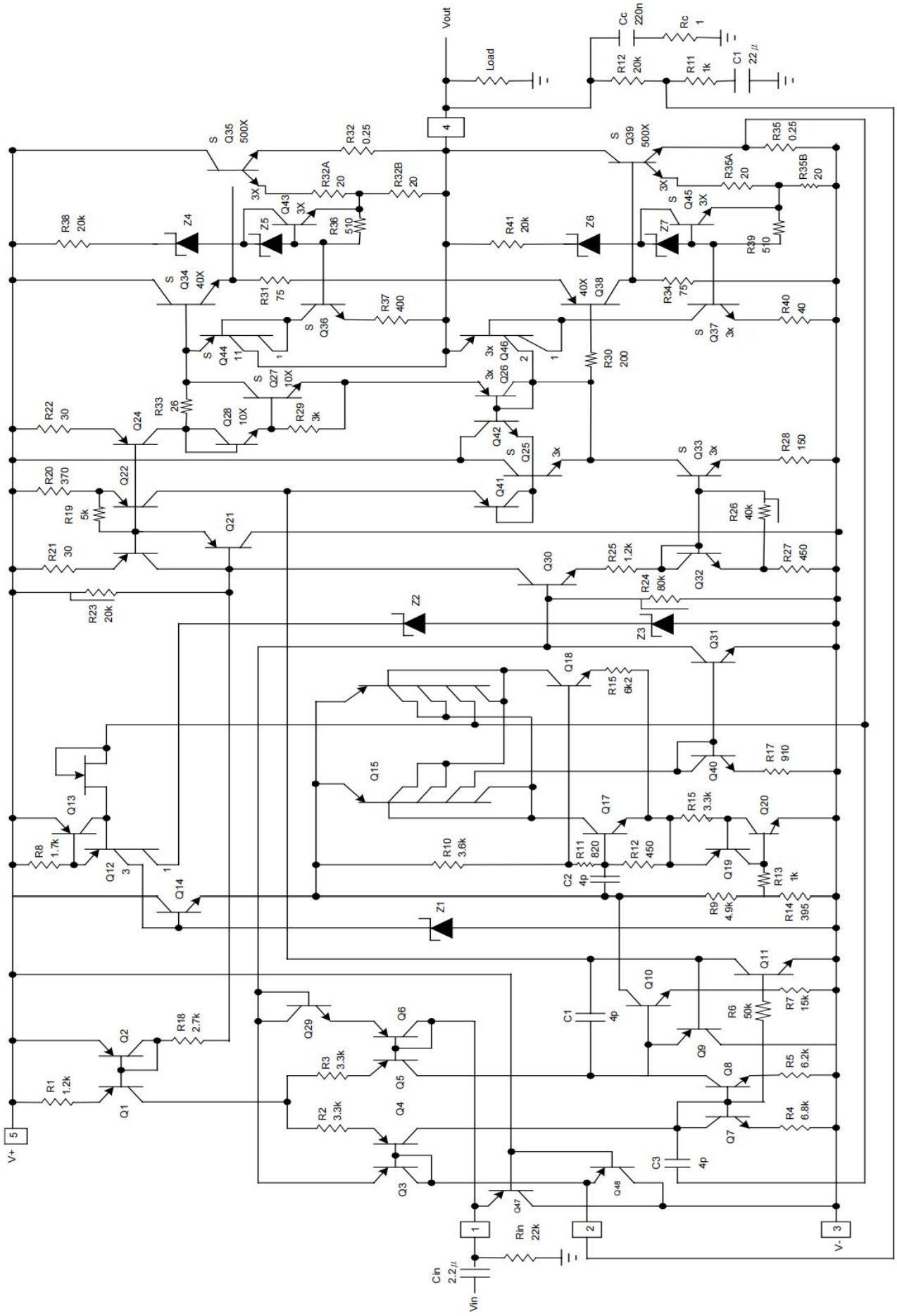
Open Loop Gain and
Phase vs Frequency



Input Bias Current vs Supply Volage

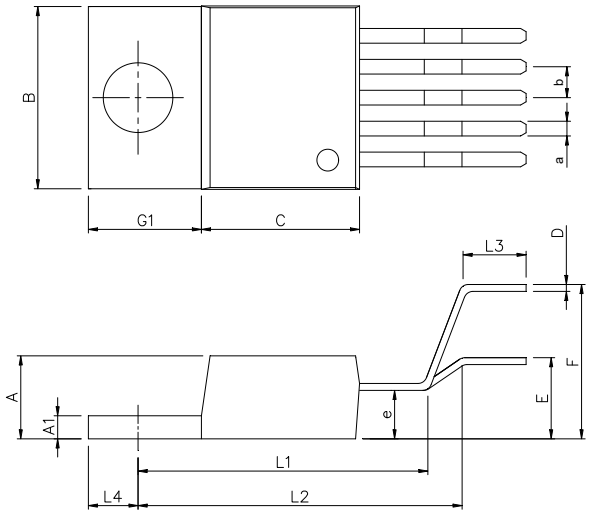


* Thermal shutdown with infinite heat sink
**Thermal shutdown with 1℃/W heat sink


Vout
Load
Cc 220n
Rc 1
R12 20k
R11 1k
C1 22μ
4
S Q35 500X
R32 0.25
R32A 20
R32B 20
3X Q43 3X
R36 510
R38 20k
Z4
Z5
R41 20k
Z6
Z7
S Q39 500X
R35 0.25
R35A 20
R35B 20
3X S Q45 3X
R39 510
S Q34 40X
R31 75
R37 400
40X Q38
R34 75
R40 40
S Q36
S Q37 3x
S Q44 11
3x Q46 2
3x Q26
R30 200
S Q27 10X
R22 30
Q24
R33 26
Q28 10X
R29 3k
Q42
S Q25 3x
S Q33 3x
R28 150
R20 370
Q22
R19 5k
Q41
R26 40k
Q21
R21 30
Q30
R25 1.2k
Q32
R27 450
R24 80k
R23 20k
Z2
Z3
Q31
Q18
R15 6k2
Q15
Q40
R17 910
Q13
Q17
R15 3.3k
Q20
R8 1.7k
Q12 3
R10 3.6k
R11 820
R12 450
Q19
R13 1k
C2 4p
Q14
R9 4.9k
R14 395
Z1
Q11
Q10
C1 4p
R6 50k
R7 15k
Q29
Q6
Q9
R18 2.7k
Q2
R3 3.3k
Q5
Q8
R5 6.2k
R1 1.2k
Q1
R2 3.3k
Q4
R4 6.8k
Q7
V+ 5
Q3
C3 4p
Q48
Q47
1
Rin 22k
2
V- 3
Cin 2.2μ
Vin

Physical Dimensions

TO220B-5



Dimensions In Millimeters(TO220B-5)															
Symbol:	A	A1	B	C	C1	D	E	F	L1	L2	L3	L4	a	b	e
Min:	4.45	1.22	10	8.45	6.10	0.32	4.24	8.24	15.45	17.65	3.00	2.64	0.76	1.70	2.67
Max:	4.62	1.32	10.4	8.95	6.60	0.42	4.70	8.70	16.25	18.25	3.85	2.84	1.02	BSC	TYP

Revision History

DATE	REVISION	PAGE
2016-1-9	New	1-10
2023-10-8	Modify the package dimension diagram TO220-5、Update encapsulation type、Update Lead Temperature、Updated TO-220 B dimension、Add annotation for Maximum Ratings.Correct the packages Type.	1、3、8

IMPORTANT STATEMENT:

Huaguan Semiconductor reserves the right to change its products and services without notice. Before ordering, the customer shall obtain the latest relevant information and verify whether the information is up to date and complete. Huaguan Semiconductor does not assume any responsibility or obligation for the altered documents.

Customers are responsible for complying with safety standards and taking safety measures when using Huaguan Semiconductor products for system design and machine manufacturing. You will bear all the following responsibilities: Select the appropriate Huaguan Semiconductor products for your application; Design, validate and test your application; Ensure that your application meets the appropriate standards and any other safety,security or other requirements. To avoid the occurrence of potential risks that may lead to personal injury or property loss.

Huaguan Semiconductor products have not been approved for applications in life support, military, aerospace and other fields, and Huaguan Semiconductor will not bear the consequences caused by the application of products in these fields. All problems, responsibilities and losses arising from the user's use beyond the applicable area of the product shall be borne by the user and have nothing to do with Huaguan Semiconductor, and the user shall not claim any compensation liability against Huaguan Semiconductor by the terms of this Agreement.

The technical and reliability data (including data sheets), design resources (including reference designs), application or other design suggestions, network tools, safety information and other resources provided for the performance of semiconductor products produced by Huaguan Semiconductor are not guaranteed to be free from defects and no warranty, express or implied, is made. The use of testing and other quality control technologies is limited to the quality assurance scope of Huaguan Semiconductor. Not all parameters of each device need to be tested.

The documentation of Huaguan Semiconductor authorizes you to use these resources only for developing the application of the product described in this document. You have no right to use any other Huaguan Semiconductor intellectual property rights or any third party intellectual property rights. It is strictly forbidden to make other copies or displays of these resources. You should fully compensate Huaguan Semiconductor and its agents for any claims, damages, costs, losses and debts caused by the use of these resources. Huaguan Semiconductor accepts no liability for any loss or damage caused by infringement.