

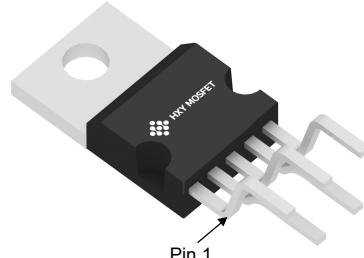


## General Description

The LM1875T/NOPB is a monolithic power amplifier offering very low distortion and high quality performance for consumer audio applications.

The LM1875T/NOPB delivers 20 watts into a 4 Ω or 8 Ω 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 of external components. Device overload protection consists of both internal current limit and thermal shutdown.

The LM1875T/NOPB 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.



TO-220S-5L/G

1:+IN 2:-IN 3:V<sub>EE</sub>  
4:Output 5:V<sub>CC</sub>

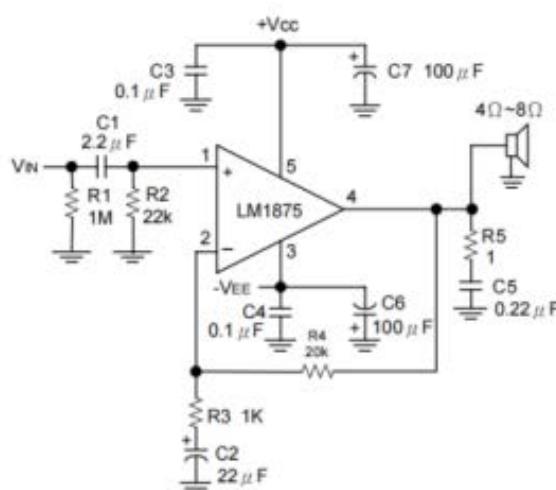
## Features

- 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
- Thermal protection with paralleled 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

## Typical Applications





## Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply Voltage	$V_s$	60	V
Input Voltage	$V_{IN}$	$-V_{EE} \sim V_{CC}$	V
Storage Temperature	$T_{STG}$	-65 ~ +150	°C
Junction Temperature	$T_J$	150	°C
Lead Temperature(Soldering,10 seconds)	$T_L$	260	°C

## Thermal Data

Description	Symbol	Rating	Unit
Thermal Resistance, Junction-case	$\theta_{JC}$	3	°C/W
Thermal Resistance, Junction-ambient	$\theta_{JA}$	73	°C/W

## Electrical Characteristics

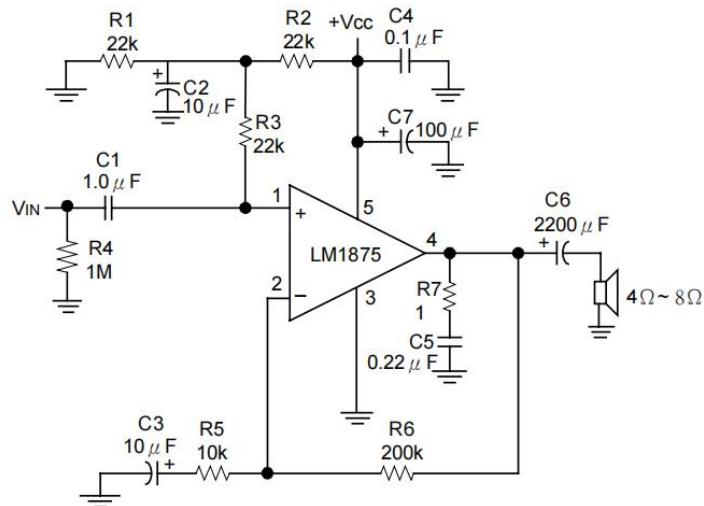
$V_{CC}=+25V, -V_{EE}=-25V, T_{AMBIENT}=25^{\circ}C, RL=8\Omega, Av=20(26dB), fo=1kHz$ , unless otherwise

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Current	$V_s$	$P_{OUT}=0W$		70	100	mA
Output Power(Note 1)	$P_o$	THD=1%		25		W
Total Harmonic Distortion (Note 1)	THD	$P_{OUT}=20W, fo=1kHz$ $P_{OUT}=20W, fo=20kHz$ $P_{OUT}=20W, RL=4\Omega, fo=1kHz$ $P_{OUT}=20W, RL=4\Omega, fo=20kHz$		0.015 0.05 0.022 0.07	0.4 0.6	%
Offset Voltage	$V_{OS}$			±1	±15	mV
Input Bias current	$I_{IB}$			±0.2	±2	µA
Input Offset Current	$I_{IO}$			0	±0.5	µA
Gain-Bandwidth Product	GBW	$F_o=20kHz$		5.5		MHz
Open Loop Gain	$G_v$	DC		90		dB
Power Supply Rejection Ratio	PSRR	$V_{CC}, 1kHz, 1V_{rms}$ $V_{EE}, 1kHz, 1V_{rms}$		95 83	52 52	dB
Max Slew Rate	SR	$20W, 8\Omega, 70kHz$ BW		8		V/µs
Current Limit	$I_{LIM}$	$V_{OUT}=V_{SUPPLY} - 10V$		4	3	A
Equivalent Input Noise Voltage	$e_n$	$R_s=600\Omega, CCIR$		3		µVrms

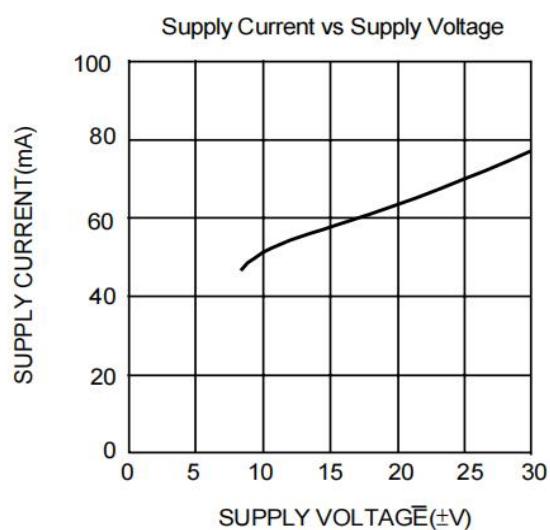
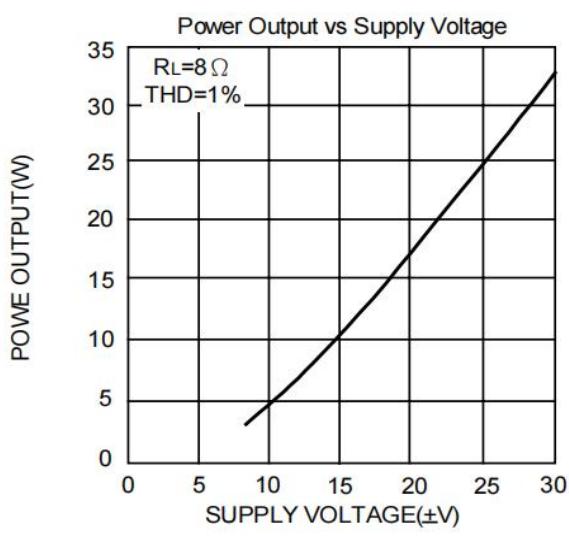
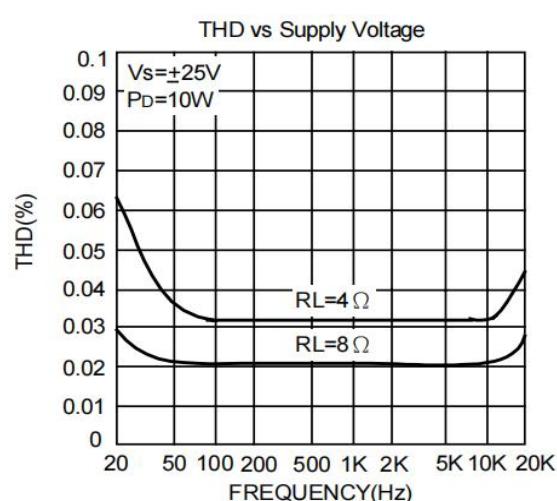
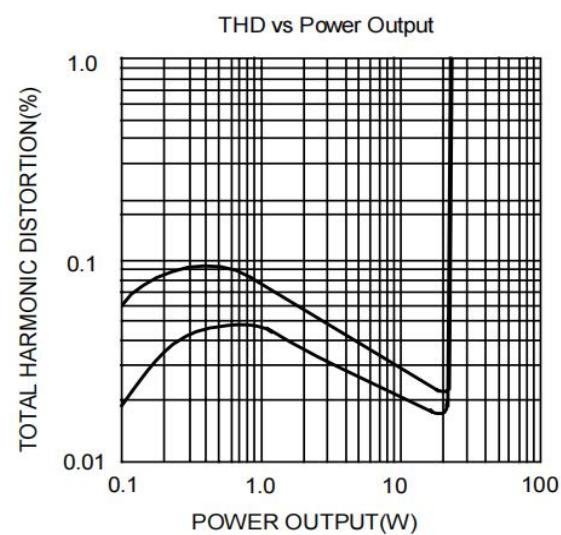
Note 1: Assumes the use of a heat sink having a thermal resistance of 1°C/W and no insulator with an ambient temperature of 25°C. Because the output limiting circuitry has a negative temperature coefficient, the maximum output power delivered to a 4Ω load may be slightly reduced when the tab temperature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

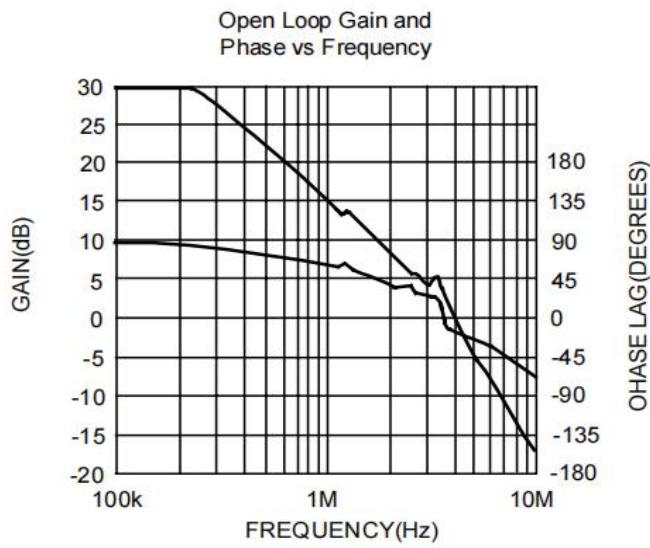
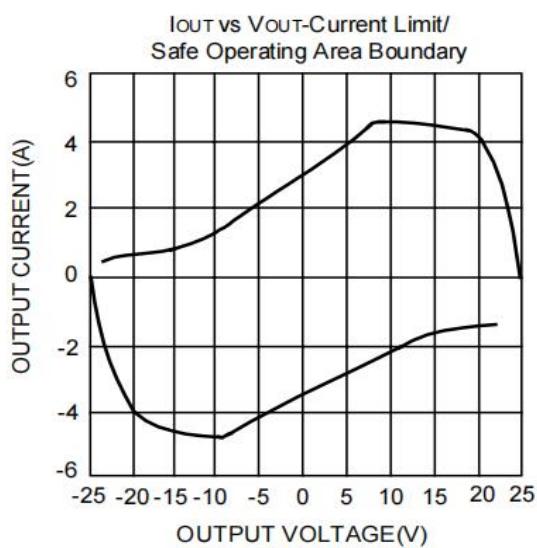
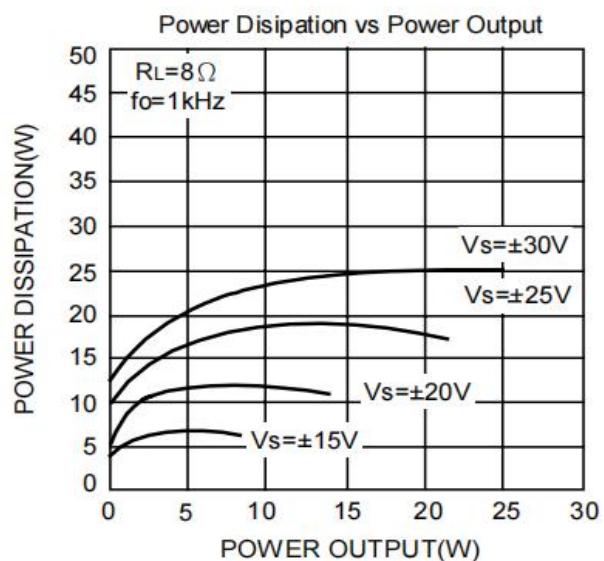
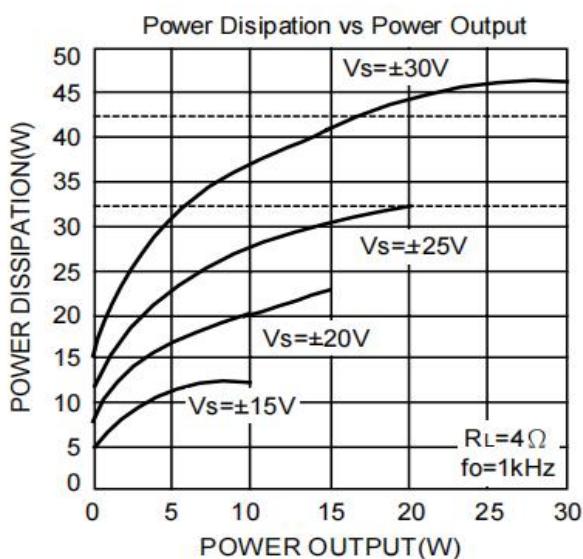
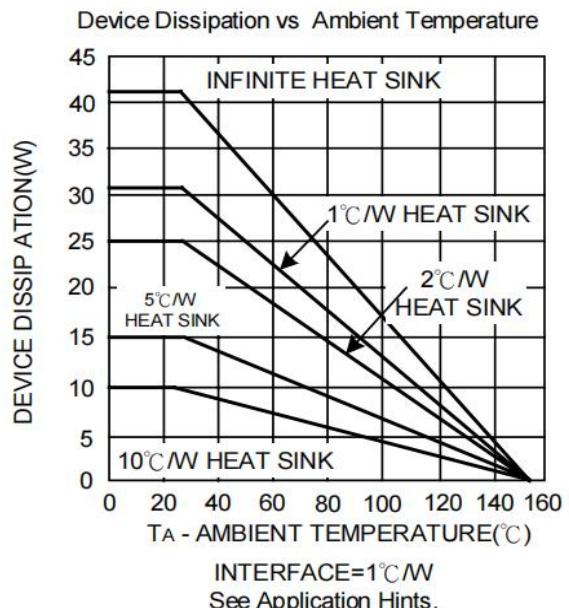
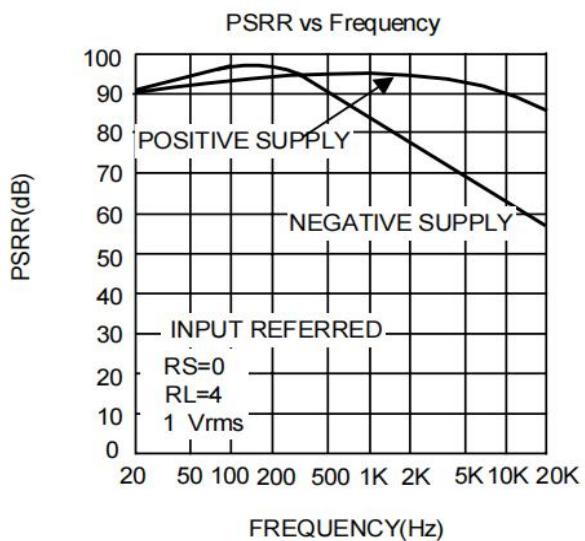


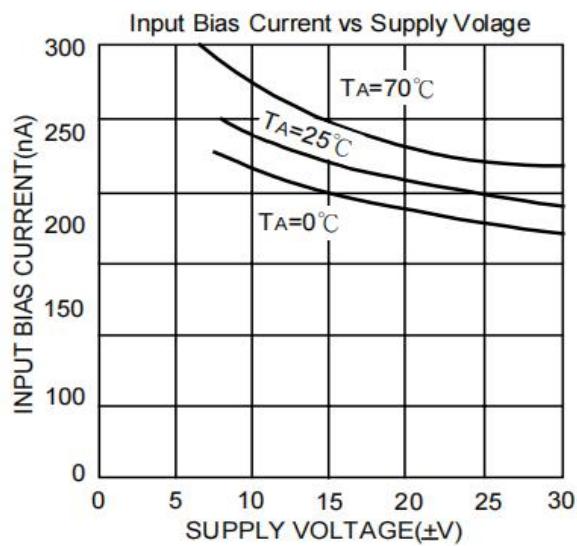
## Typical Applications(Continued)



## Typical Performance Characteristics





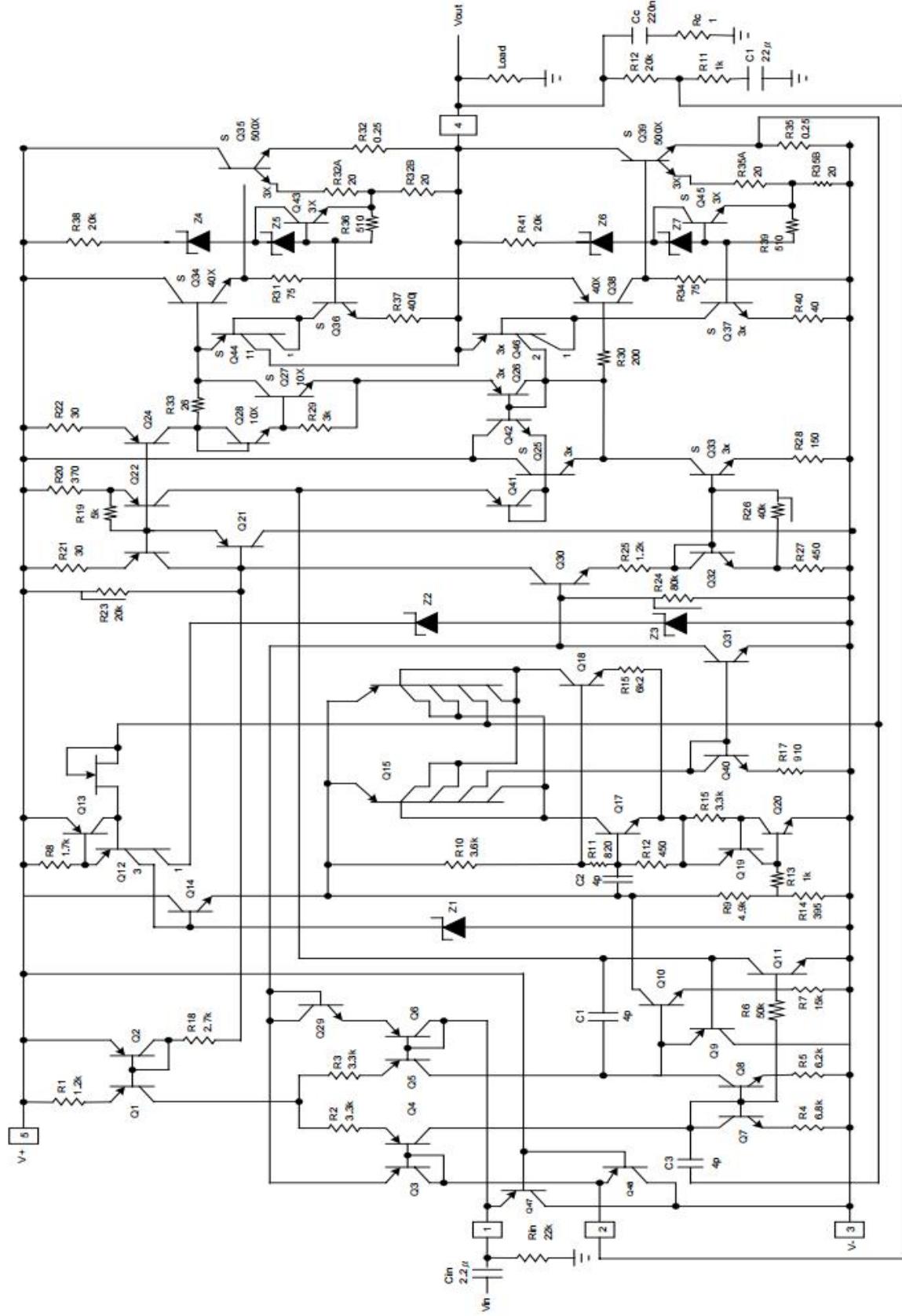


\* Thermal shutdown with infinite heat sink

\*\*Thermal shutdown with 1°C / W heat sink



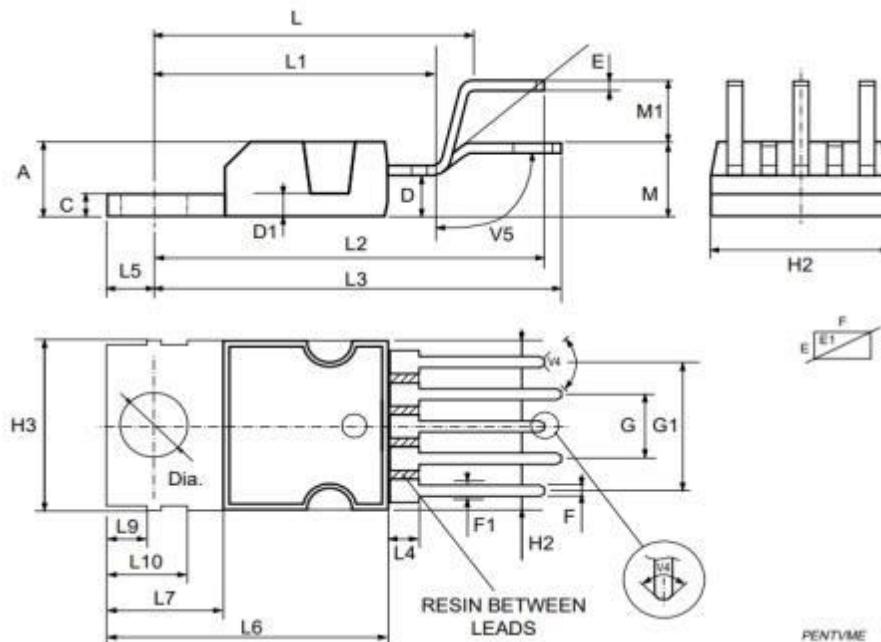
## Block Diagram





**Package Information**  
**TO-220S-5L/G**

Unit: mm



DIM.	mm			Inch		
	MIN.	Typ.	MAX.	MIN.	Typ.	MAX.
A			4.8			0.189
C			1.37			0.054
D	2.4		2.8	0.094		0.110
D1	1.2		1.35	0.047		0.053
E	0.35		0.55	0.014		0.022
E1	0.76		1.19	0.030		0.047
F	0.8		1.05	0.031		0.041
F1	1.0		1.4	0.039		0.055
G	3.2	3.4	3.6	0.126	0.134	0.142
G1	6.6	6.8	7.0	0.260	0.268	0.276
H2				10.4		0.409
H3	10.05		10.4	0.396		0.409
L	17.55	17.85	18.15	0.691	0.703	0.715
L1	15.55	15.75	15.95	0.612	0.620	0.628
L2	21.2	21.4	21.6	0.831	0.843	0.850
L3	22.3	22.5	22.7	0.878	0.886	0.894
L4				1.29		0.051
L5	2.6		3.0	0.102		0.118
L6	15.1		15.8	0.594		0.622
L7	6.0		6.6	0.236		0.260
L9	2.1		2.7	0.008		0.106
L10	4.3		4.8	0.17		0.189
M	4.23	4.5	4.75	0.167	0.178	0.187
M1	3.75	4.0	4.25	0.148	0.157	0.167
V4				40° (typ.)		
V5				90° (typ.)		
Dia	3.65		3.85	0.144		0.152



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