

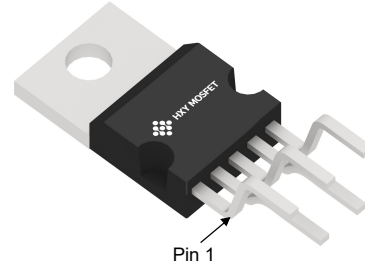


General Description

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

The LM1875T delivers 20 watts into a $4\ \Omega$ or $8\ \Omega$ load on +25V supplies. Using an $8\ \Omega$ 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 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_{EE}
4:Output 5:V_{CC}

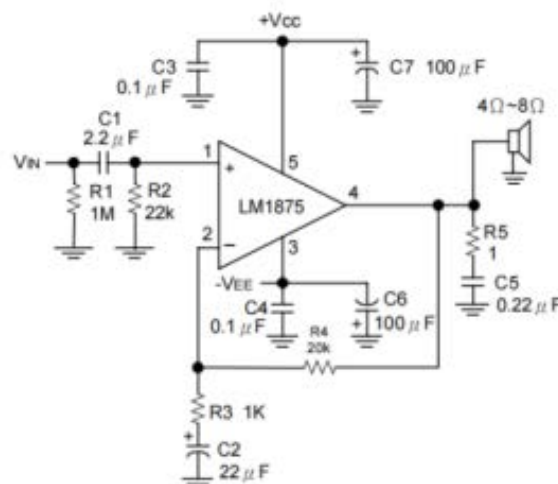
Features

- 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 thermal 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} ~ 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	θ_{JC}	3	°C/W
Thermal Resistance, Junction-ambient	θ_{JA}	73	°C/W

Electrical Characteristics

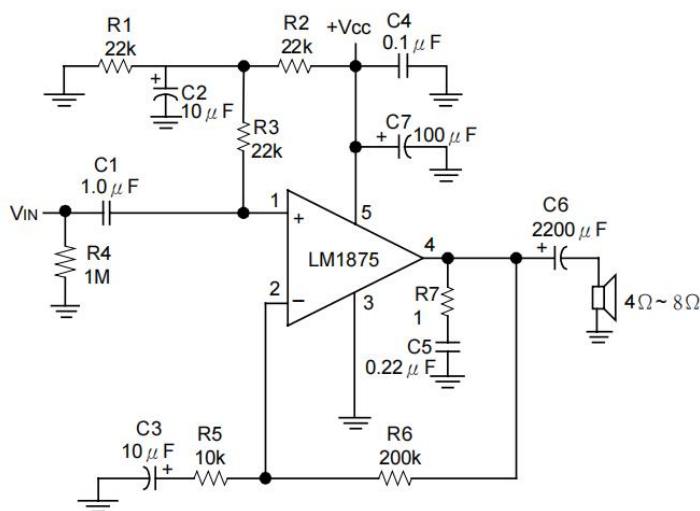
V_{CC}=+25V, -V_{EE}=-25V, T_{AMBIENT}=25°C, R_L=8Ω, A_v=20(26dB), f_o=1kHz, unless otherwise

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, f _o =1kHz P _{OUT} =20W, f _o =20kHz P _{OUT} =20W, R _L =4Ω, f _o =1kHz P _{OUT} =20W, R _L =4Ω, f _o =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, 1 V _{rms} V _{EE} , 1kHz, 1 V _{rms}		95 83	52 52	dB
Max Slew Rate	SR	20W, 8Ω, 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 =600Ω, CCIR		3		μV _{rms}

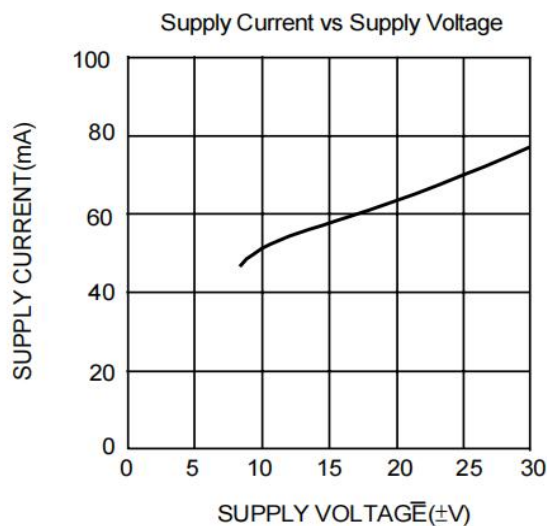
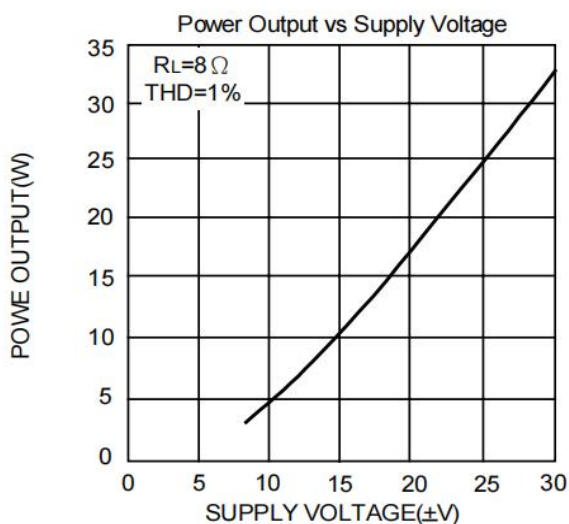
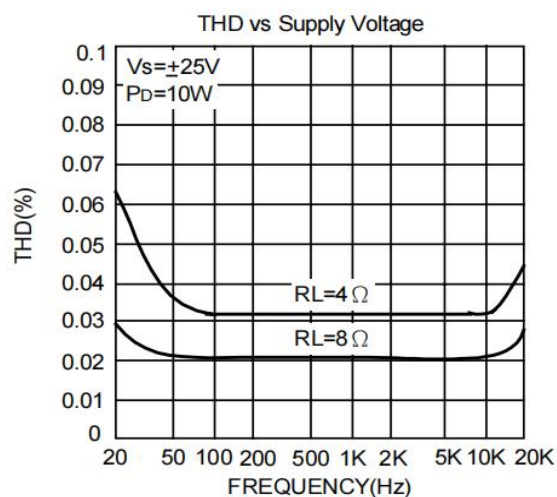
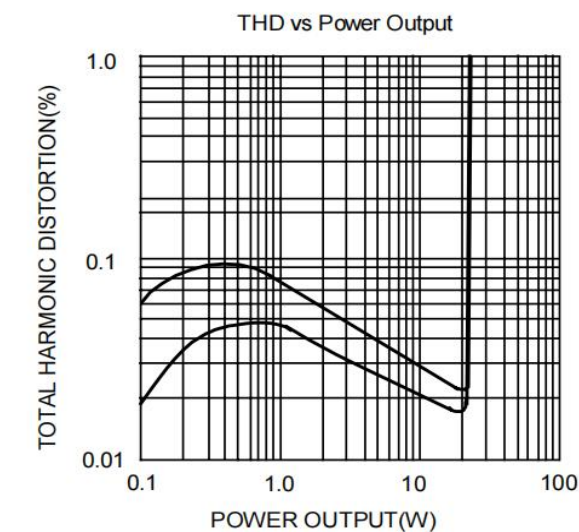
Note 1: Assumes the use of a heat sink having a thermal resistance of 1°C/W and no insulator with an ambient temperature of 25°C. Because the output limiting circuitry has a negative temperature coefficient, the maximum output power delivered to a 4Ω load may be slightly reduced when the tab temperature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

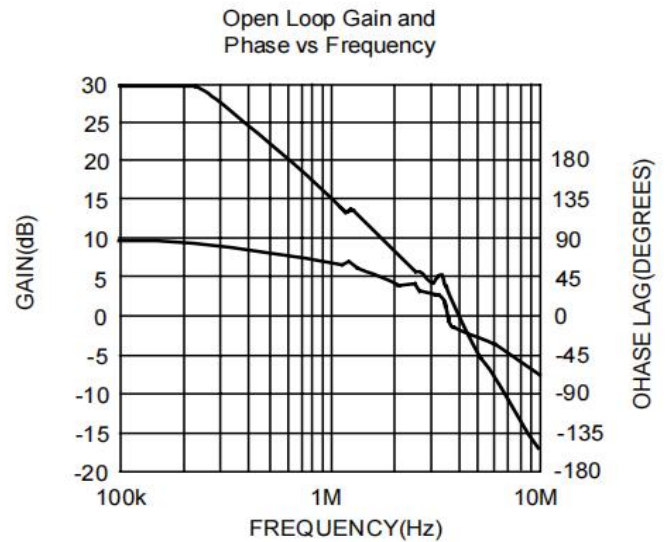
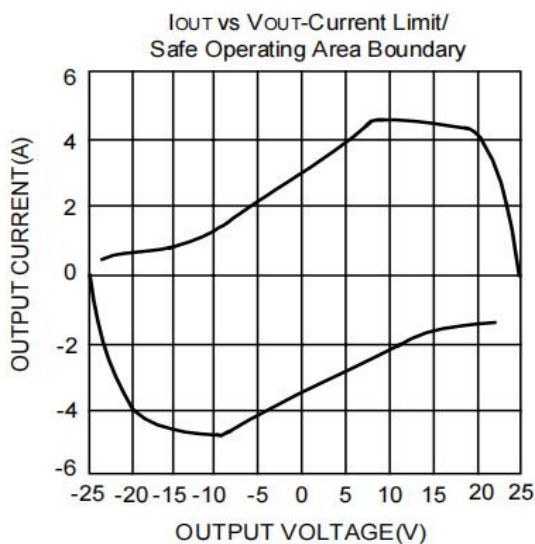
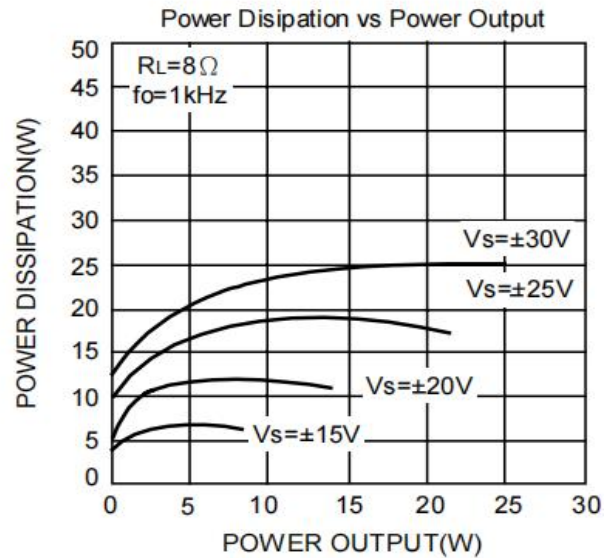
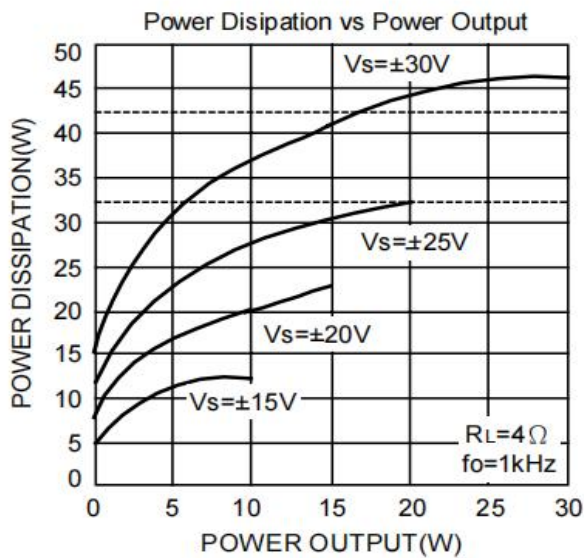
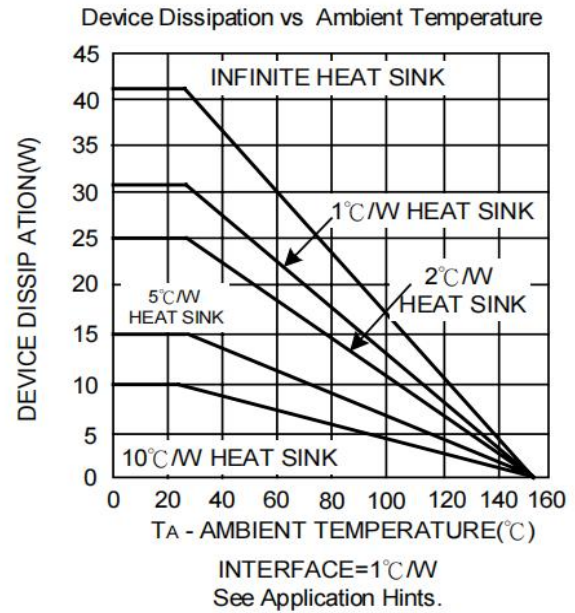
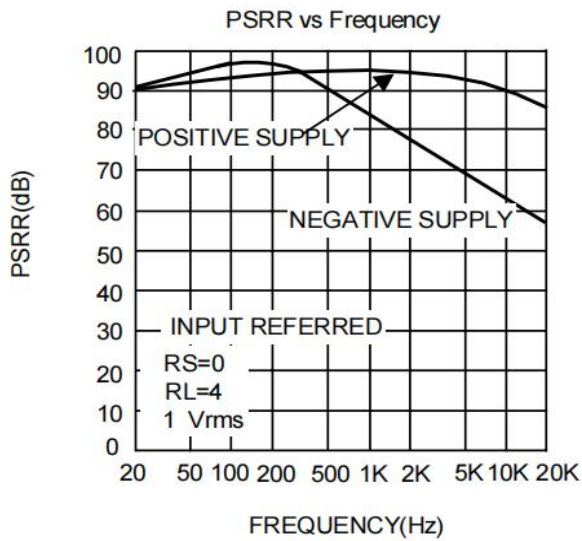


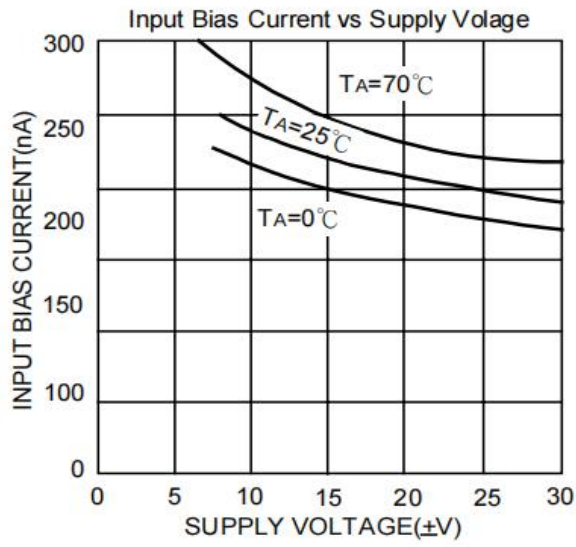
Typical Applications(Continued)



Typical Performance Characteristics



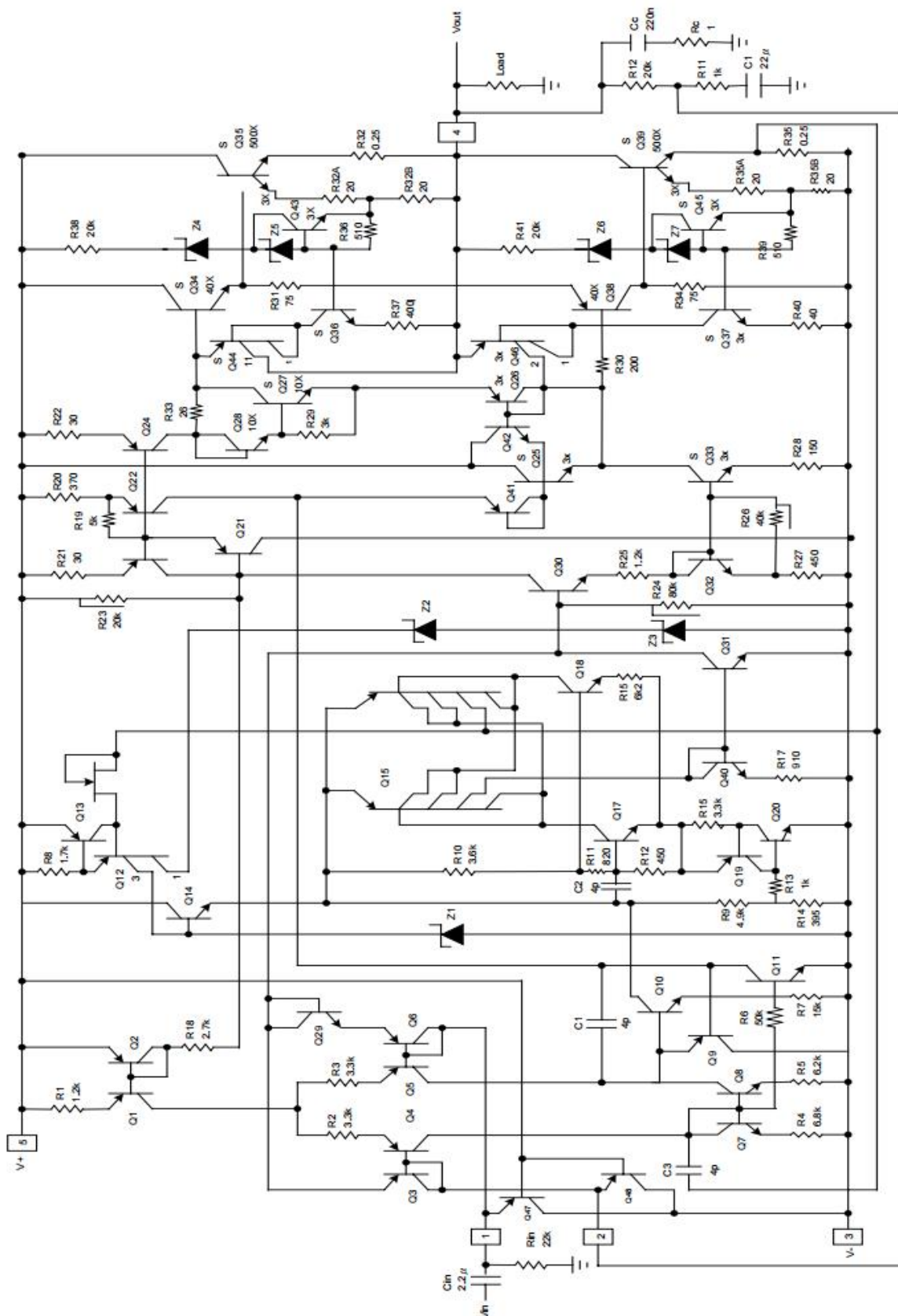


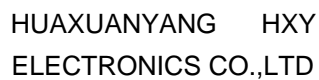


* Thermal shutdown with infinite heat sink
**Thermal shutdown with 1°C/W heat sink



Block Diagram





Package Information

TO-220S-5L/G

Technical drawing of a multi-lead package showing top, side, and detail views with dimensions L, L1, L2, L3, L4, L5, L6, L7, L9, L10, L, M, M1, V5, V4, G, G1, F, F1, H2, H3, Dia., and callouts E1, E, F, V4, and RESIN BETWEEN LEADS.

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



Attention

- Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.
- HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.
- Specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- HUA XUAN YANG ELECTRONICS CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all HUA XUAN YANG ELECTRONICS products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of HUA XUAN YANG ELECTRONICS CO.,LTD.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the HUA XUAN YANG ELECTRONICS product that you intend to use.