

MSKSEMI

SEMICONDUCTOR



ESD



TVS



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MOV



GDT



PLED

Product data sheet
Product data sheet

GENERAL DESCRIPTION

LM393 是一款开漏输出的双路电压比较器，可以单电源或双电源供电。具有良好的温度稳定性，和输出短路保护的特点。可以直接使用数字系统中的标准 5V 电源供电，而无需增加额外的供电电源。

FEATURES

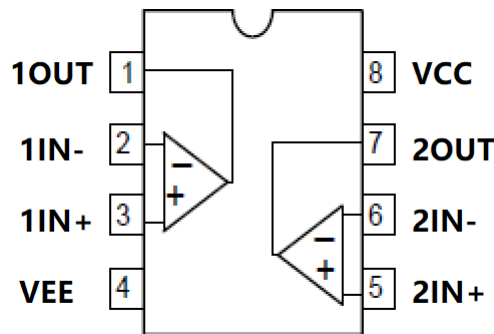
- 单电源电压范围：2V~32V
- 低输出饱和电压：典型值 0.1V @ $I_{OL}=4mA$
- 低功耗：典型值 0.6mA @ $V_{CC}=5V$
- 低输入失调电压：典型值 $\pm 1mV$
- 双电源电压范围： $\pm 16V$
- 差分输入电压范围： $\pm V_{CC}$
- 开漏输出
- 封装形式：DIP8、SOP8

APPLICATION

- 电压鉴幅电路
- 其它应用领域
- 电压变换电路

PIN CONFIGURATION

DIP8/SOP8 管脚序号	管脚定义	功能说明
1	1OUT1	第 1 路输出
2	1IN-	第 1 路负输入
3	1IN+	第 1 路正输入
4	VEE	负电源
5	2IN+	第 2 路正输入
6	2IN-	第 2 路负输入
7	2OUT	第 2 路输出
8	VCC	正电源



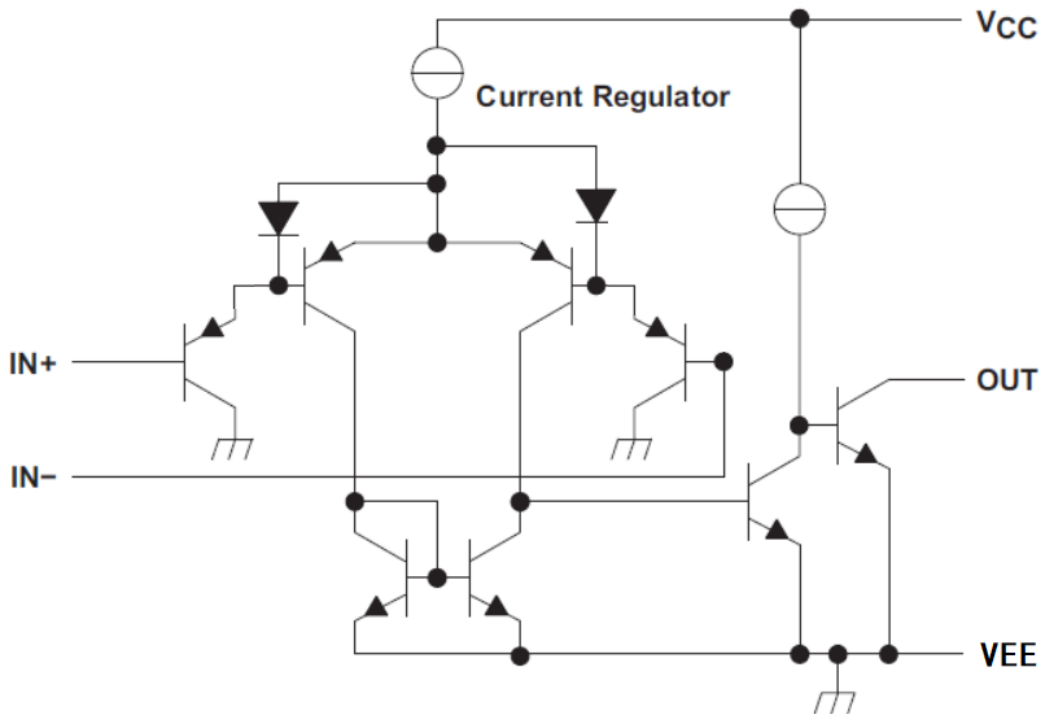
极限参数

项目	符号	极限值 ⁽¹⁾	单位
单电源供电电压	V_{CC}	36	V
双电源供电电压	V_S	± 18	V
差分输入电压 ⁽²⁾	V_{IDR}	± 18	V
共模输入电压	V_{ICR}	$-0.3 \sim V_{CC}$	V
输出短路时间	t_{sc}	连续	
耗散功率	P_D	500	mW
工作温度	T_A	0-70	$^{\circ}C$
储存温度	T_S	-65-150	$^{\circ}C$
焊接温度	T_W	260, 10s	$^{\circ}C$

注：（1）极限值是指无论在任何条件下都不能超过的极限值。如果达到此极限值，将有可能造成产品劣化等物理性损伤；同时在接近极限参数下，不能保证芯片可以正常工作。

（2）指IN+与IN-端之间的电压差。

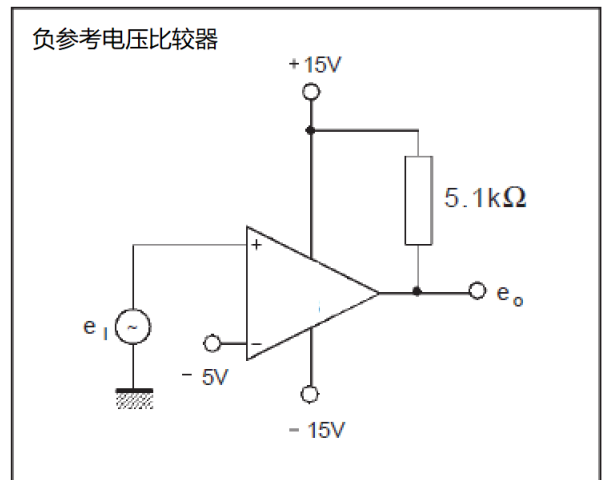
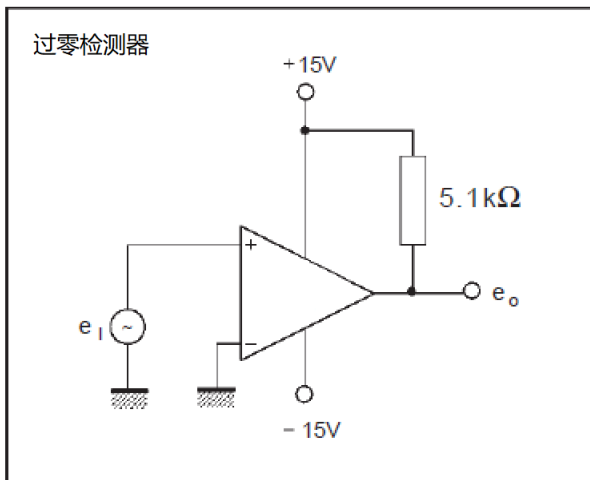
等效原理图



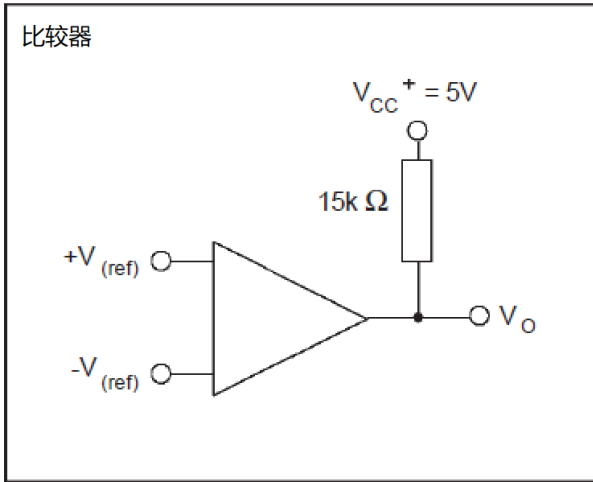
直流电学特性 ($T_A=25^\circ\text{C}$, $V_{CC}=5\text{V}$, $V_{EE}=\text{GND}$ 除非特别指定)

项目	符号	测试条件	最小值	典型值	最大值	单位
输入失调电压	V_{IO}	$V_{CC}=5\text{V to }30\text{V}$, $V_{IC}=V_{ICR}(\text{Min})$, $V_0=1.4\text{V}$	-	1	-	mV
输入失调电流	I_{IO}	$V_0=1.4\text{V}$	-	5	50	nA
偏置电流	I_{BIAS}	$V_0=1.4\text{V}$	-	100	500	nA
大信号电压增益	A_{VD}	$V_{CC}=15\text{V}$, $V_0=1\text{V to }11\text{V}$, $R_L=15\text{k}\Omega$	-	200	-	V/mV
输入共模电压	V_{ICR}	$V_{CC}=5\text{V to }30\text{V}$	0	-	$V_{CC}-1.5\text{V}$	V
输入差分电压	V_{ID}	$V_{CC}=5\text{V to }30\text{V}$	0	-	$V_{CC}-1.5\text{V}$	V
输出灌电流	I_{OL}	$V_{ID}=-1\text{V}$, $V_0=1.5\text{V}$	-	34	-	mA
输出低电平电压	V_{OL}	$V_{ID}=-1\text{V}$, $I_{OL}=4\text{mA}$	-	0.1	0.4	V
输出漏电流	I_{OH}	$V_{ID}=1\text{V}$, $V_0=V_{CC}=30\text{V}$	-	-	1	μA
电源工作电流	I_{CC}	$V_{CC}=5\text{V}$, No load	-	0.6	2	mA
		$V_{CC}=32\text{V}$, No load	-	1.0	3	mA
单电源工作电压	V_{CC}	$V_{EE}=0\text{V}(\text{GND})$	2	-	32	V
双电源工作电压	V_S	V_{CC+} , V_{EE-}	-16	-	+16	V

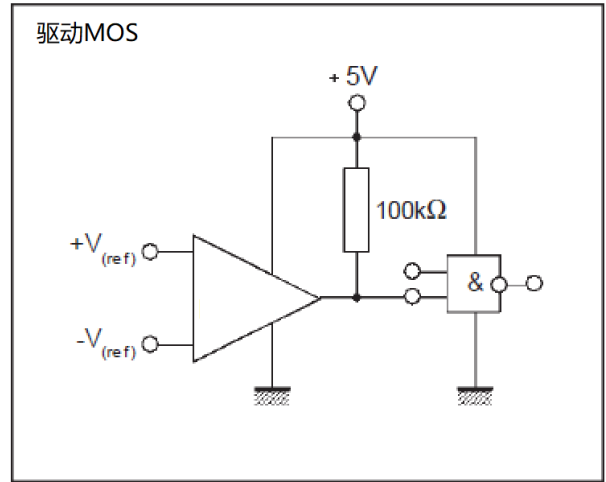
典型应用 (仅做参考)



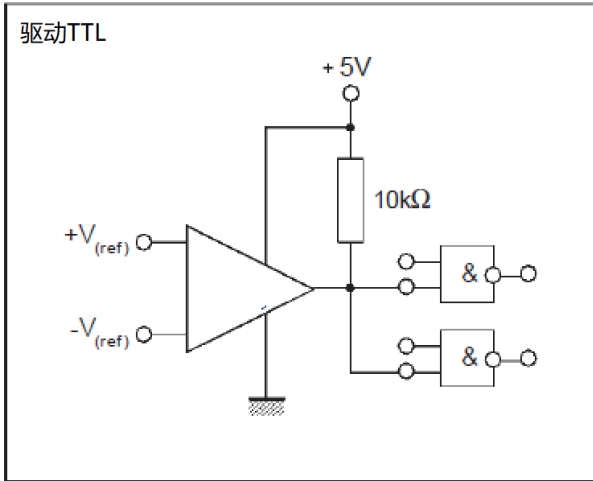
比较器



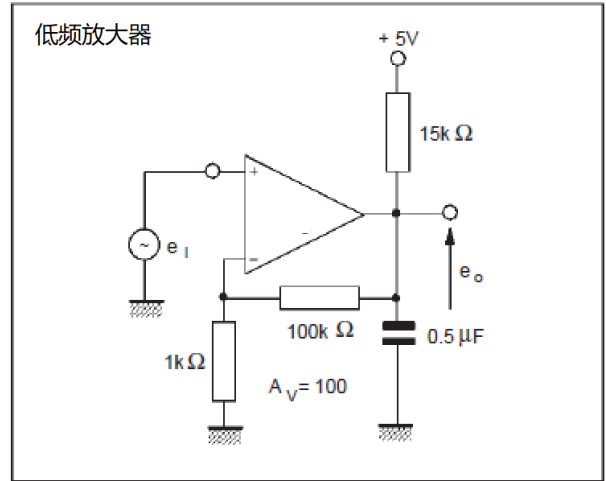
驱动MOS



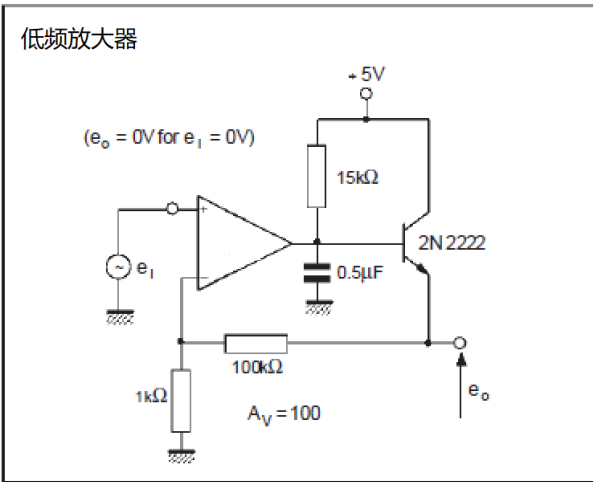
驱动TTL



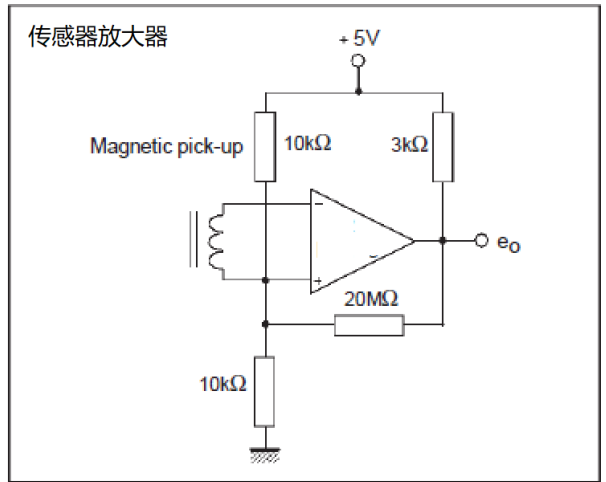
低频放大器

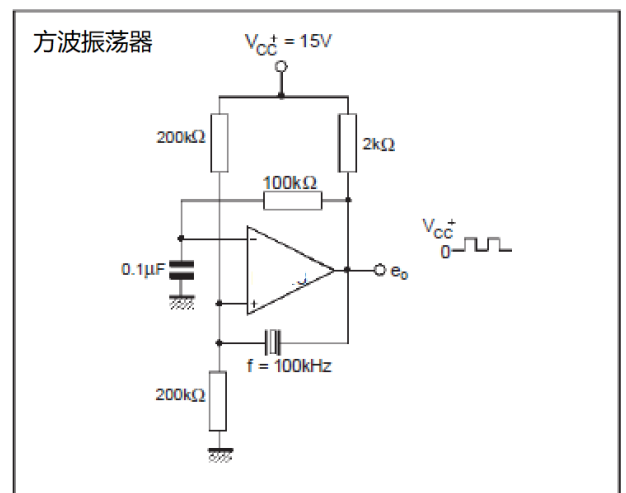
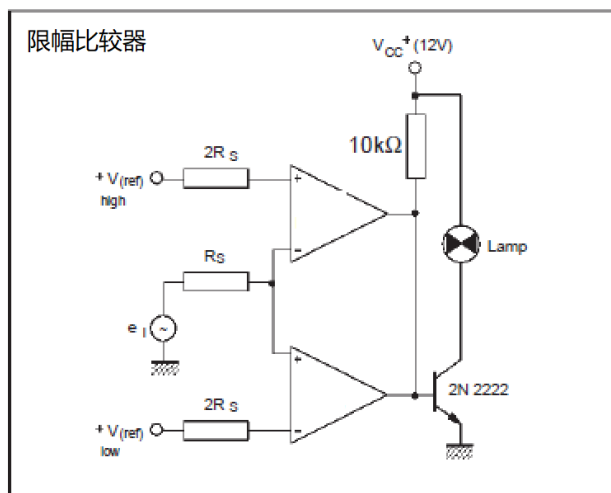
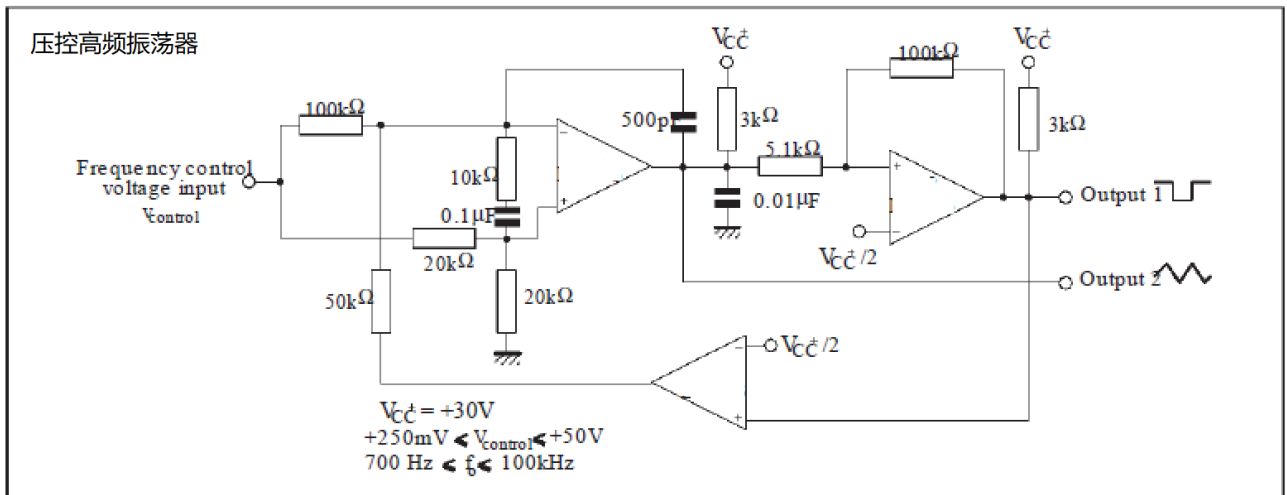
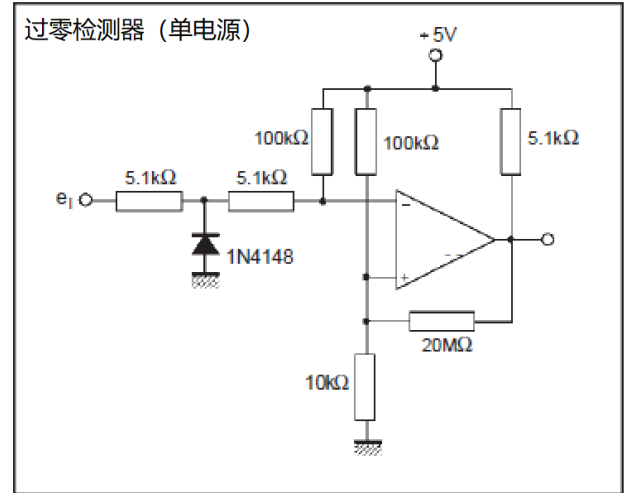
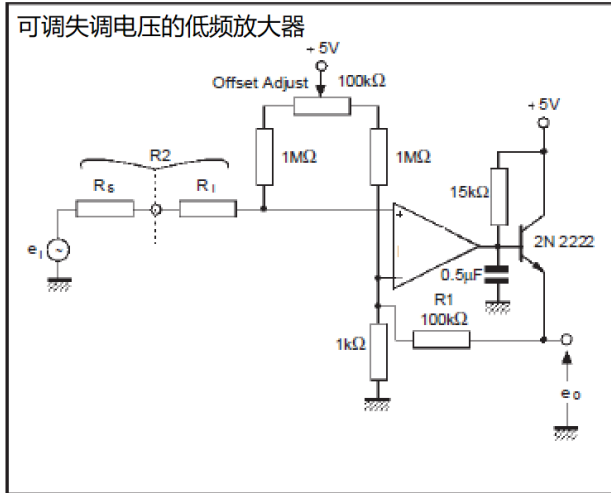


低频放大器

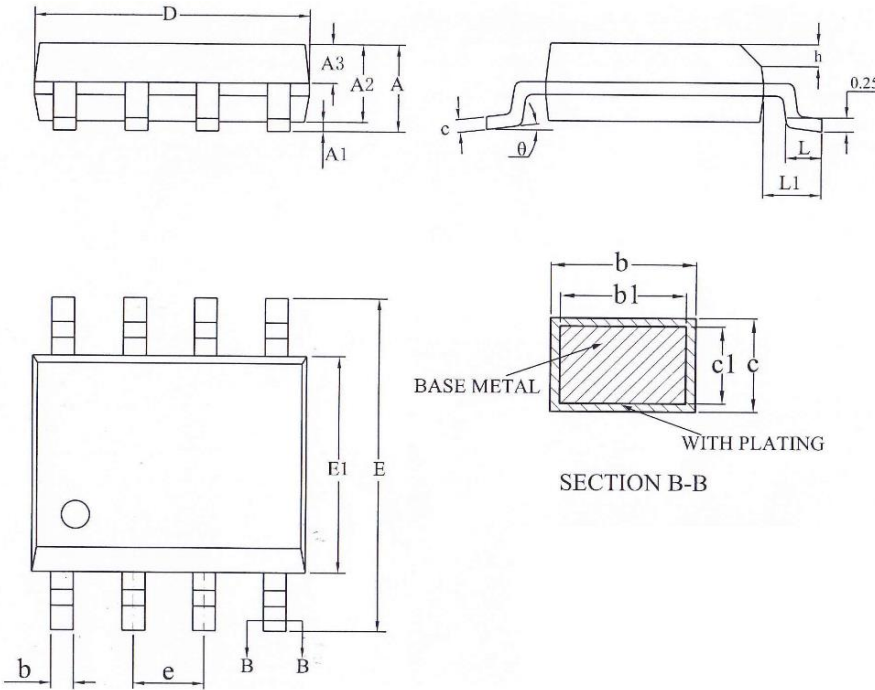


传感器放大器





PACKAGE MECHANICAL DATA



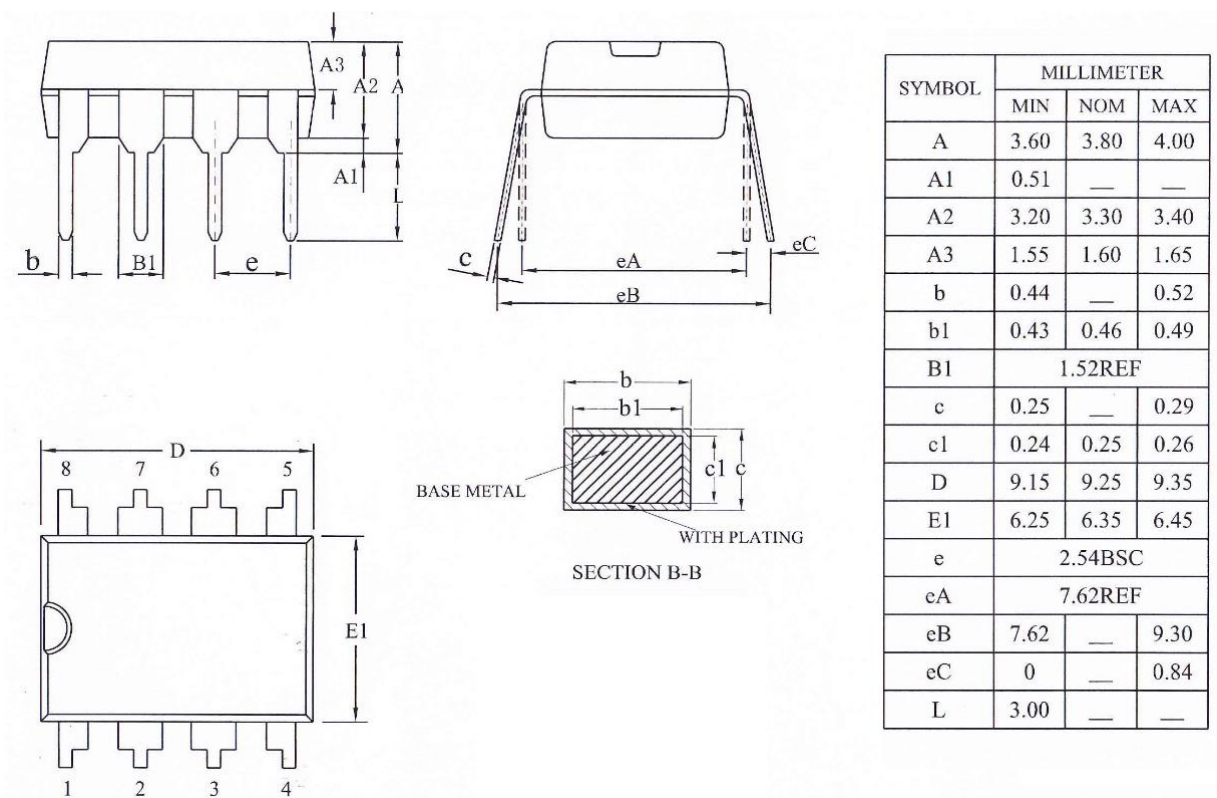
SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.75
A1	0.10	—	0.225
A2	1.30	1.40	1.50
A3	0.60	0.65	0.70
b	0.39	—	0.47
b1	0.38	0.41	0.44
c	0.20	—	0.24
c1	0.19	0.20	0.21
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
h	0.25	—	0.50
L	0.50	—	0.80
L1	1.05REF		
θ	0	—	8°

REEL SPECIFICATION

P/N	PKG	QTY
LM393	SOP-8	3000

PACKAGE MECHANICAL DATA

DIP-18



REEL SPECIFICATION

P/N	PKG	QTY
LM393	DIP-18	50

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