

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

CA3140AMZ96-MS/CA3140EZ-MS

Product specification

产品概述

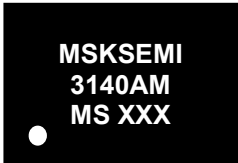
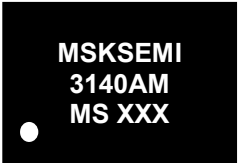
CA3140 系列电路为 BiMOS 型高输入阻抗运算放大器，其在单个芯片内集成了 PMOS 晶体管和双极晶体管，综合了高电压 PMOS 晶体管和高电压双极晶体管的优点。高输入阻抗的 PMOS 晶体管差分对结构提供了极高的输入阻抗、极低的输入电流及高速特性。由于 PMOS 晶体管的采用，CA3140 提供了很宽的共模输入电压范围。CA3140 的另一个非常重要的特性是其可应用于单电源应用场合。管脚连接与 741 系列产品兼容，在大部分工业场合可与 741 直接插拔替代。

该系列产品大量使用于军用、民用、商用和工业应用领域，如加速度表信号处理、积分器、医用监护仪、可见光光度计、单电源放大器、采样和保持放大器、光电流仪表、有源滤波器、接口电路、手持仪器、报警器、峰值探测器、比较器、积分器、多频振荡器、函数发生器及其它所有标准放大器应用领域。

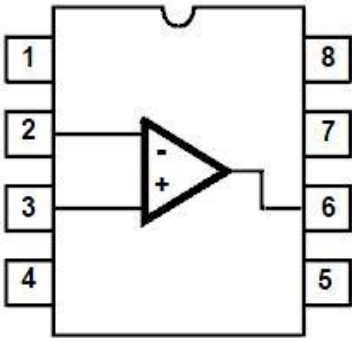
产品特性

- 采用先进的 BiMOS 工艺技术
- 采用 MOSFET 输入
- 具有极高的输入阻抗（ZIN）：典型值为 $1.5T\Omega$
- 极低的失调电流（II0）：10pA@±15V
- 很宽的共模输入电压范围（VICR）：-15V~12V
- 较大的输出摆幅（VOPP）：-14V~12V
- 在大多数应用领域可直接替换 741 类运算放大器
- 8 线 DIP 或 SOP 封装
- 工作温度范围：-25℃~125℃

包装和订单信息

产品编号	封装		管体标记	最小包装 (PCS)
CA3140AMZ96-MS	SOP-8			2500
CA3140EZ-MS	DIP-8			50

引脚描述



引出端序号	符号	功能
1	OA1	失调调整
2	IN-	反相输入
3	IN+	同相输入
4	V-	负电源
5	OA2	失调调整
6	OUT	输出
7	V+	正电源
8	ST	选通

图1引出端排列图（顶视图）

功能框图

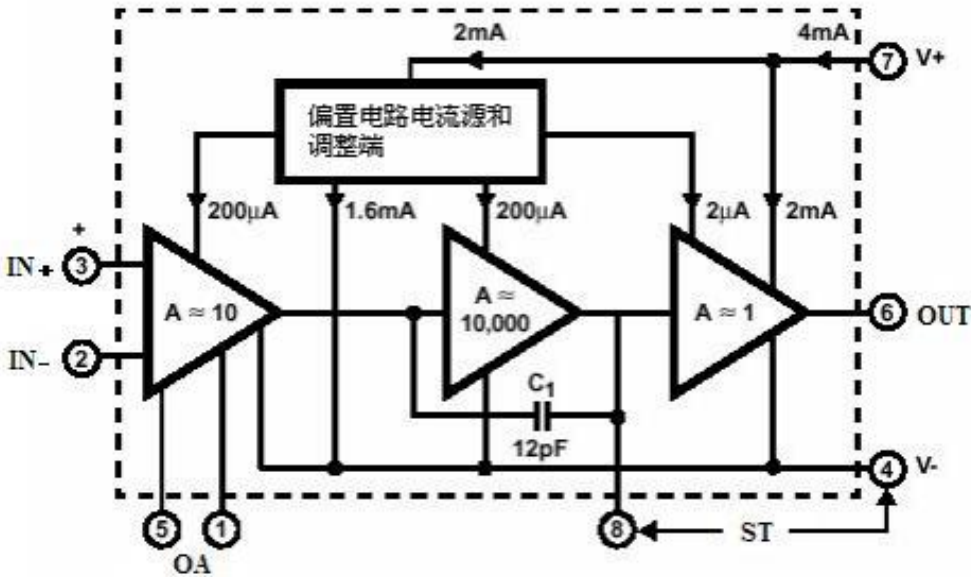


图 2 CA3140 电原理框图

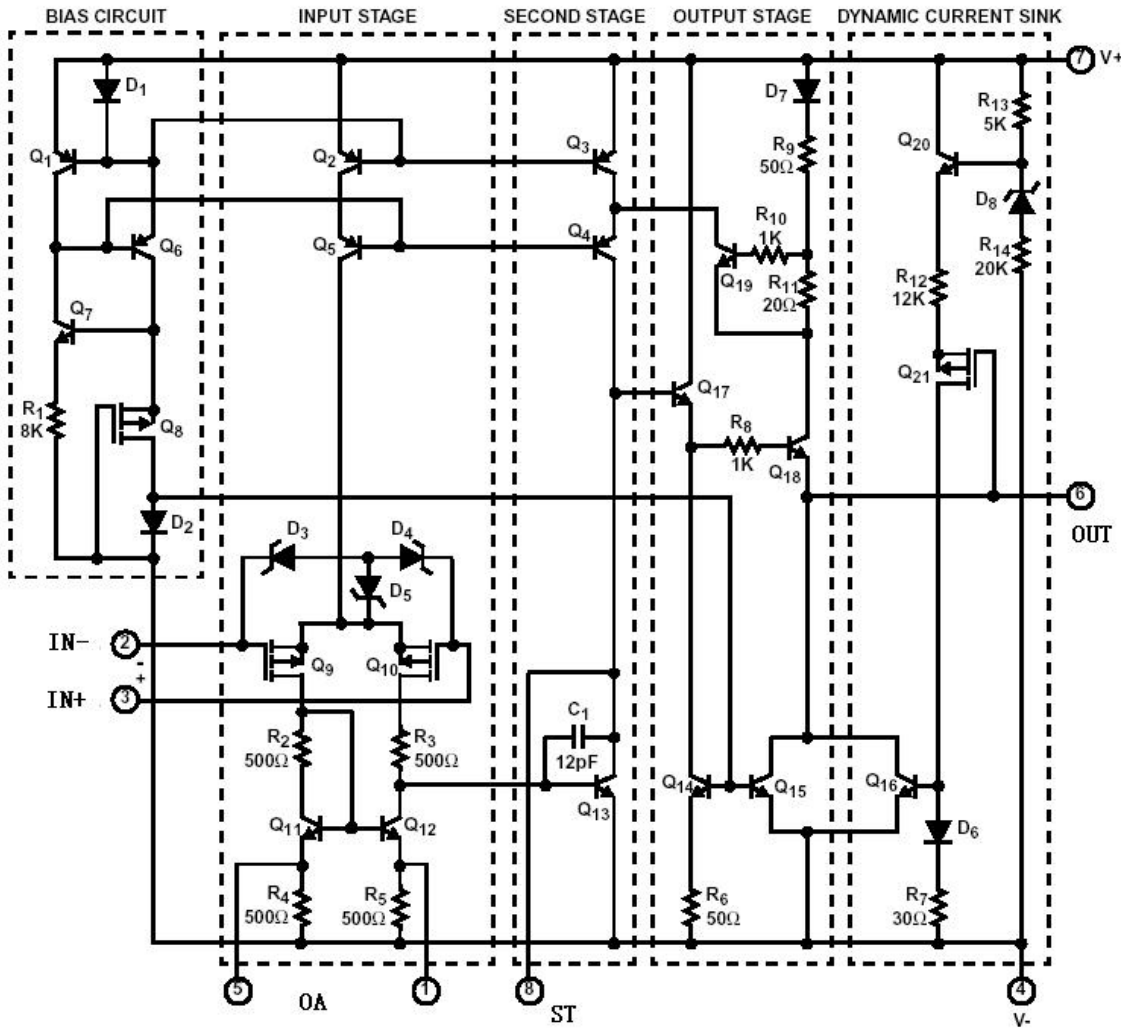


图 3 CA3140 线路图

绝对最大额定值

绝对最大额定值如下（除另有注明外，均指在工作环境温度下）：

电源电压 (V_S)	$\pm 18V$
直流输入电压 (V_I)	$(V_+ + 8V) \sim (V_- - 0.5V)$
输入电流 (I_I)	$1mA$
共模输入电压范围 (V_{ICR})	$-15V \sim 12V$
差模输入电压范围 (V_{IDR})	$-8V \sim 8V$
贮存温度 (T_{stg})	$-65^{\circ}C \sim 150^{\circ}C$
引线耐焊接温度(T_h)(10s)	$300^{\circ}C$
结 温(T_j)	$150^{\circ}C$

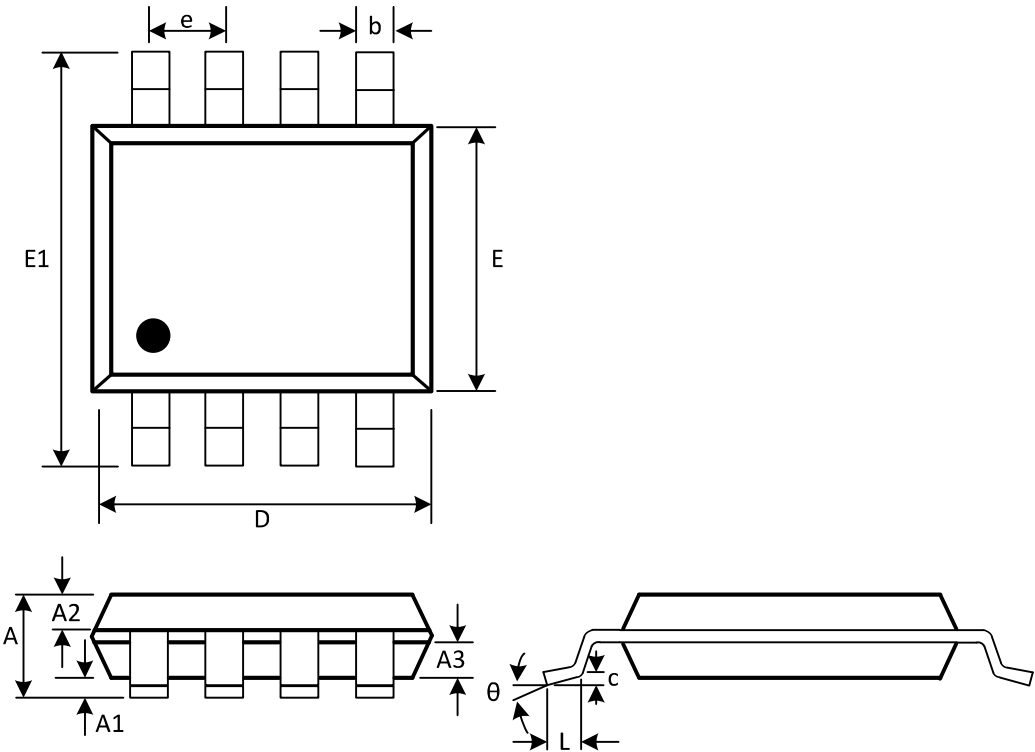
推荐工作条件

电源电压 (V_S)	$\pm 15V$
工作环境温度 (T_A)	$-25^{\circ}C \sim 125^{\circ}C$

电特性表

特性	符号	测试条件（除另有规定外， $V_S = \pm 15V$ ， $-25^\circ C \leq T_A \leq 125^\circ C$ ）	极限值			单位
			T_A	最小	最大	
输入失调电压	$ V_{IO} $		25℃	—	5	mV
				—	6.5	
输入失调电压温度系数	$ \alpha V_{IO} $			—	24	$\mu V/^\circ C$
输入失调电流	$ I_{IO} $		25℃	—	20	pA
				—	1000	
输入偏置电流	$ I_{IB} $		25℃	—	40	pA
				—	1500	
开环电压增益	A_{VO}	$V_O = -14V \sim 12V$ ， $R_L = 2k\Omega$	25℃	86	—	dB
				80	—	dB
共模抑制比	K_{CMR}	$V_{CM} = -14V \sim 11V$	25℃	70	—	dB
				64	—	
电源电压抑制比	K_{SVR}	$V_S = \pm 5V \sim \pm 15V$	25℃	76	—	dB
				70	—	
输出峰－峰电压	V_{OPP}^+	$R_L = 2k\Omega$	25℃	+12	—	V
				+11.5	—	
	V_{OPP}^-	$R_L = 2k\Omega$	25℃	-14	—	V
				-13.5	—	
增益带宽积	$G \cdot BW$	$R_L = 2k\Omega$	25℃	3.5	—	MHz
转换速率	S_R	$R_L = 2k\Omega$	25℃	6.0	—	V/ μs
吸入电流（8端）	I_{SINK8}	8 端接 V-	25℃	160	—	μA
电源电流	I_S	$V_S = \pm 15V$ ， $R_L = \infty$		—	6	mA

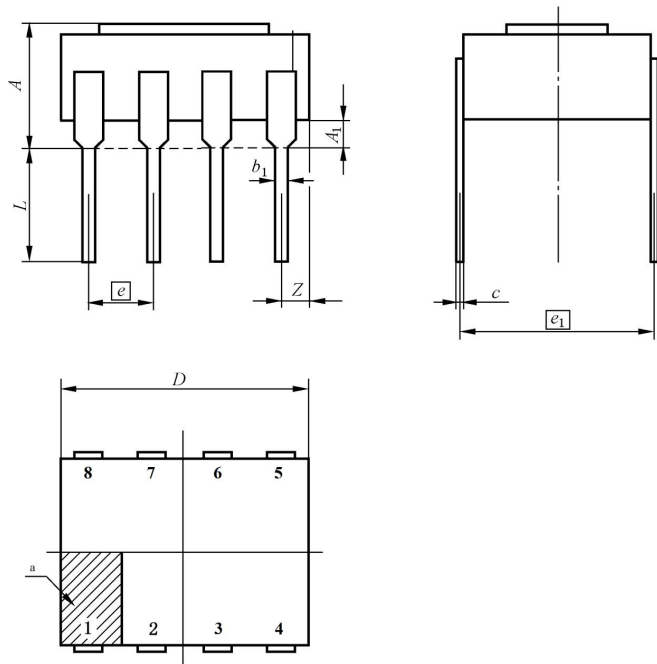
SOP-8



(Unit: mm)

Symbol	Min	Max
A	1.300	1.600
A1	0.050	0.200
A2	0.550	0.650
A3	0.550	0.650
b	0.356	0.456
c	0.203	0.233
D	4.800	5.000
e	1.270(BSC)	
E	3.800	4.000
E1	5.800	6.200
L	0.400	0.800
θ	0°	8°

DIP-8



a 引出端标识区

尺寸符号	数值（单位：mm）		
	最小	公称	最大
A	—	—	5.10
A1	0.51	—	—
b1	0.35	—	0.59
c	0.20	—	0.36
e	—	2.54	—
e1	—	7.62	—
L	3.5	—	5.00
D	—	—	10.16
Z	—	—	1.27
未注公差按 GB/T1804-c 执行			

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