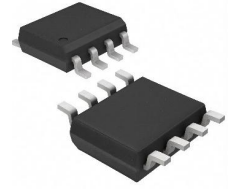


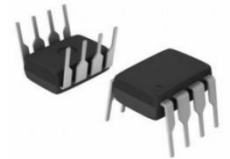
HX3240-P MOS input dual operational amplifier

Summarize

The HX3240-P is a powerful dual integrated operational amplifier circuit that cleverly combines the advantages of both high-voltage PMOS and high-voltage bipolar transistors on a single chip. This unique design makes the HX3240-P outstanding in terms of performance. In particular, in its input circuit, MOSFETs (PMOS) with gate protection are added, an innovative measure that greatly improves its input impedance, making the input current extremely low, while ensuring high-speed performance. The HX3240-P is available in SOP8 and DIP8 packages.



SOP-8



DIP-8

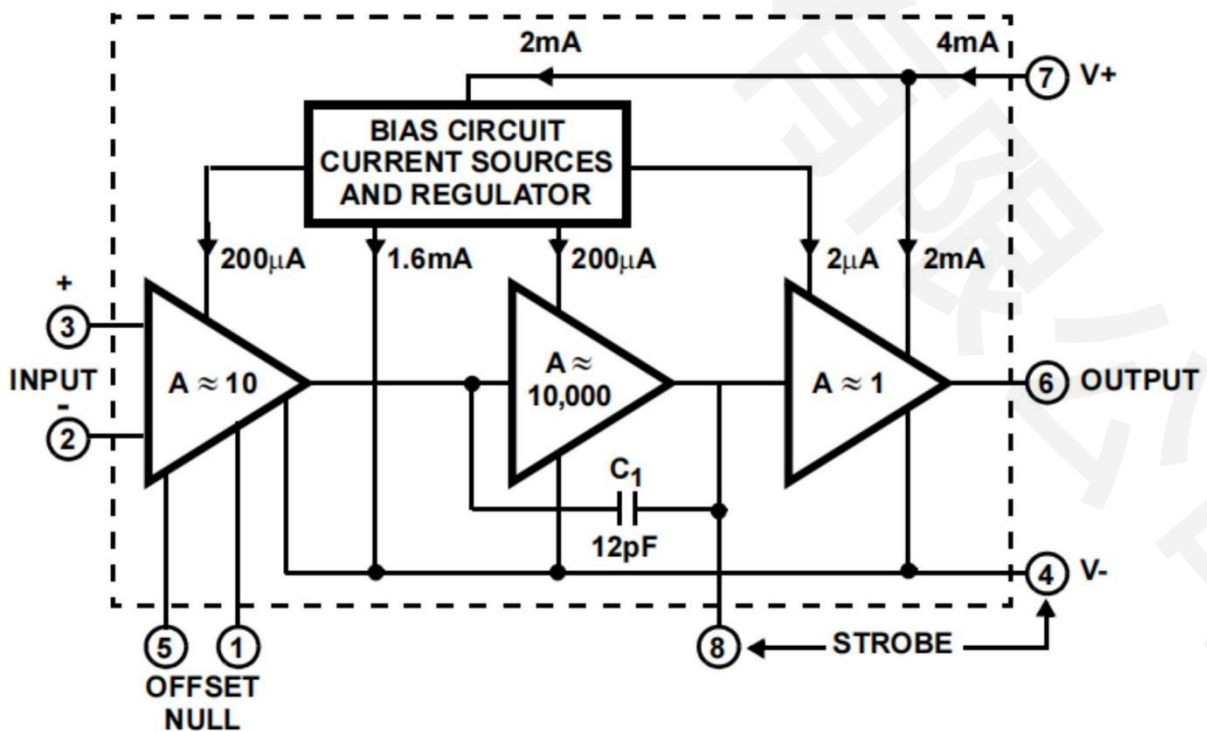
Peculiarity

- ★ Wide common-mode input voltage range
- ★ Wide differential mode input voltage range
- ★ Low input offset current: 30 pA
- ★ Low input bias current: 50 pA
- ★ Output short-circuit protection
- ★ High conversion rate: 9V/μs
- ★ High gain bandwidth product: 4.5MHz

Apply

- ★ Peak detector
- ★ comparator
- ★ Sampling and holding amplifier

Functional block diagram



Pin specification

Pin number	Pin name	I/O	Description	Pin arrangement diagram
1	OUTPUT(A)	O	Exportation	
2	INV.INPUT(A)	I	Reverse input	
3	NON-INV.INPUT(A)	I	The same direction input	
4	V-	P	Negative source	
5	NON-INV.INPUT(B)	I	Reverse input	
6	INV.INPUT(B)	I	The same direction input	
7	OUTPUT(B)	O	Exportation	
8	V+	P	Positive source	

Limit parameter (Tamb=25°C if no other provisions are made)

Argument	Identification	Value
Supply voltage	V _{CC}	±18V
Differential input voltage	V _{ID}	±8V
Input current	I _{IN}	1 mA
Maximum working junction temperature	T _J	150°C
Storage temperature	T _S	-65 ~ +150°C
Lead temperature (welding, 10s)	T _W	260°C

Recommended working conditions (unless otherwise specified, Tamb=25°C)

Argument	Symbol	Min	Max	Unit
Positive source	V+	+5	+15	V
Negative source	V-	-5	-15	V
Common-mode input voltage	V _{CM}	(V-) + 4	(V+) - 4	V
Operating temperature range	T _A	-20	+85	°C
Working junction temperature	T _J	-20	+125	°C

Electrical characteristics (if not otherwise specified, V+=15V V -=-15V Tamb=25°C)

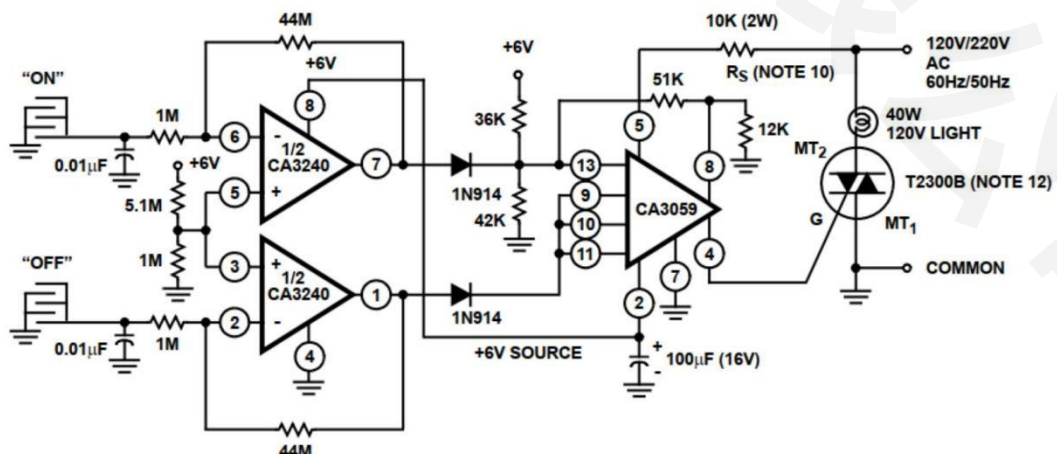
Argument	Identification	Test condition	Min	Typ	Max	Unit
Input resistance	R _i		-	1.5	-	TΩ
Input capacitance	C _i		-	4	-	pF
Output resistance	R _O		-	60	-	Ω
Equivalent wideband input noise voltage	e _N	BW=140kHz, R _S =1MΩ	-	48	-	μV
Equivalent input noise voltage	e _N	R _S =100Ω	f=1kHz	40	-	nV/√Hz
			f=10kHz	12	-	nV/√Hz

The short circuit current is opposite to the supply	I_{OM+}	-	Source	-	40	-	mA
	I_{OM-}		Sink	-	11	-	mA
Gain-bandwidth product	GBWP			-	4.5	-	MHz
Conversion rate	SR			-	9	-	V/ μ s
Output goes to low level Flow current from 8 ends to 4 ends	I_{SINK}			-	220	-	μ A
Dynamic response	t_r	$R_L=2k\Omega$ $C_L=100pF$	Rise time	-	0.08	-	μ s
	OS		overshoot	-	10	-	%
Build time at 10VP-P	t_s	$R_L=2k\Omega$, $C_L=100pF$ Voltage follower	Up to 1mV	-	4.5	-	μ s
			Up to 1mV	-	1.4	-	μ s

Electrical characteristics (if not otherwise specified, $V_+=15V$ $V_-=-15V$ $T_{amb}=25^\circ C$)

Argument	Identification	Test condition	Min	Typ	Max	Unit
Input offset voltage	V_{IO}		-	3	6	mV
Input offset current	I_{IO}		-	3	6	mV
Input current	I_i		-	-	40	pA
Large signal voltage gain	A_{OL}		86	100	-	dB
Common mode rejection ratio	CMRR		70	90	-	dB
Power supply rejection ratio	PSRR		76	80	-	dB
Maximum output voltage	V_{OM+}		12	13	-	V
	V_{OM-}		-14	-14.4	-	V
Supply current	I_+		-	8	12	mA
Input offset voltage temperature drift	$\Delta V_{IO}/\Delta T$		-	15	-	$\mu V/^\circ C$

Typical application



NOTE:

10. At 220V operation, TRIAC should be T2300D, $R_S = 18K$, 5W.

Figure 1 Touch the switch

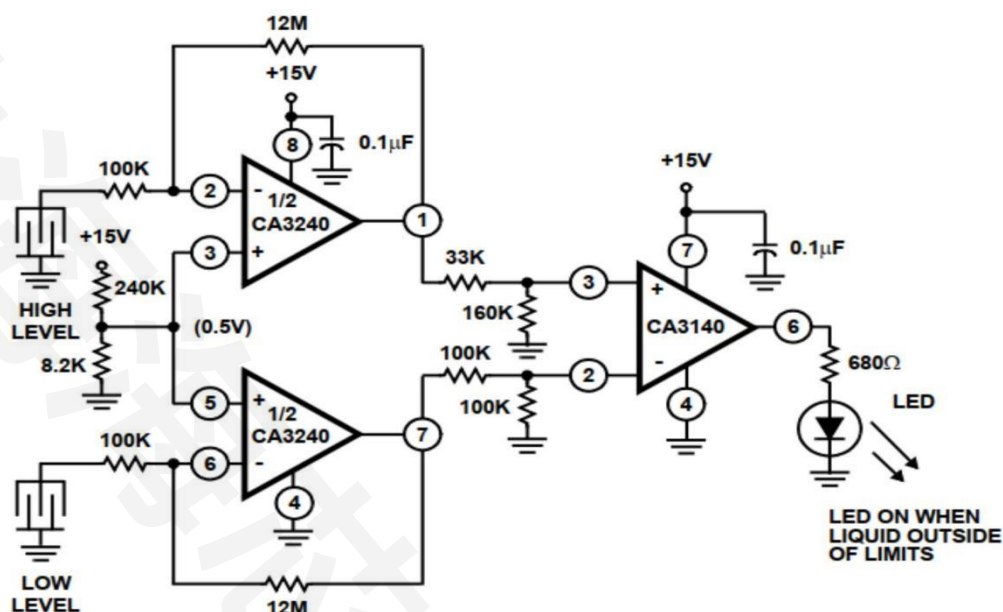


Figure 2 Dual level detector

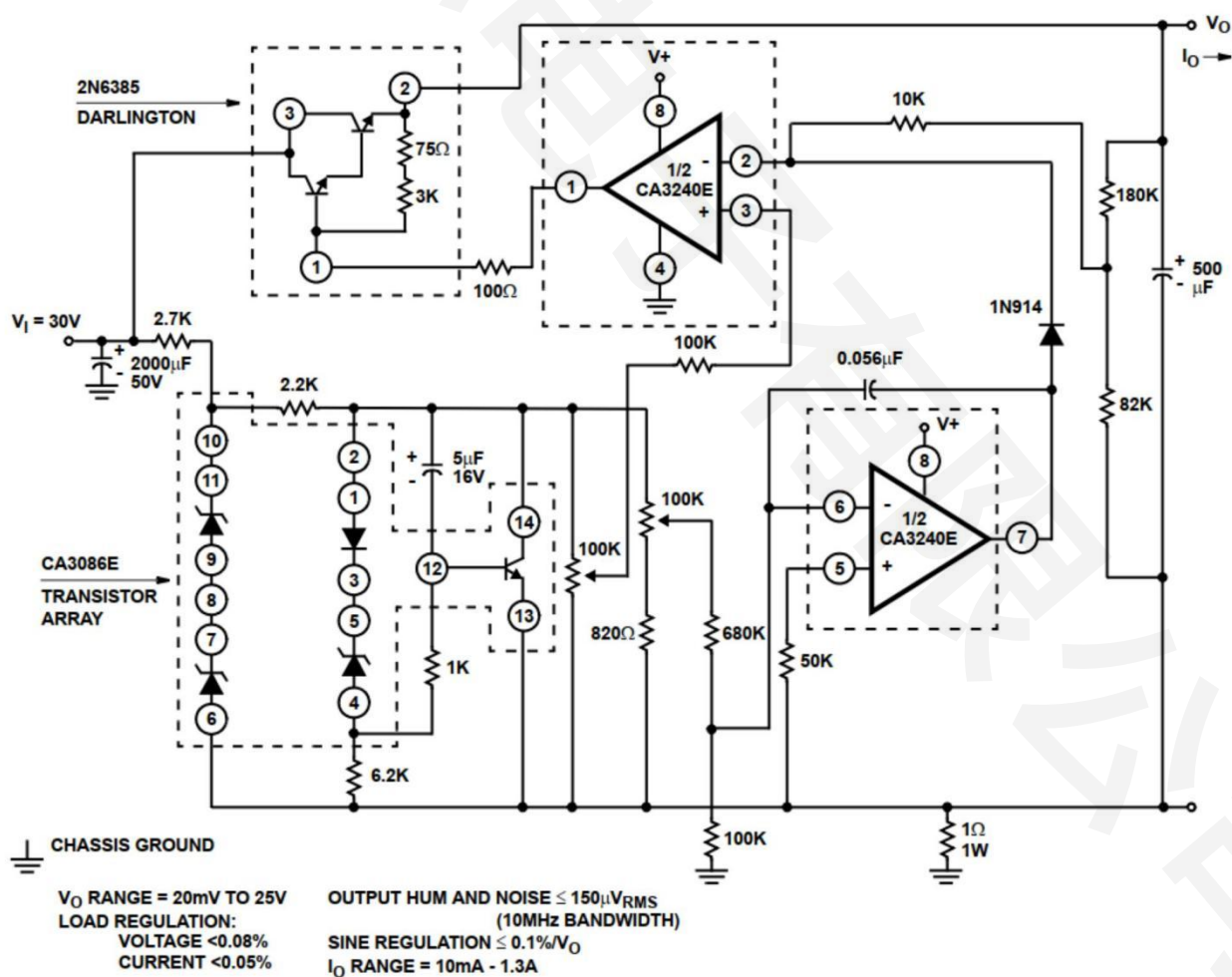


Figure 3 Constant voltage/constant current source

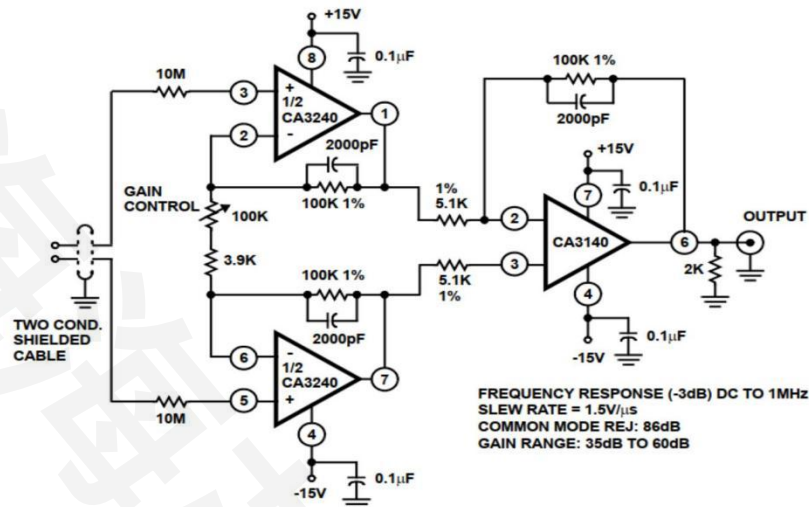


Figure 4 Precision differential amplifier

Characteristic curve

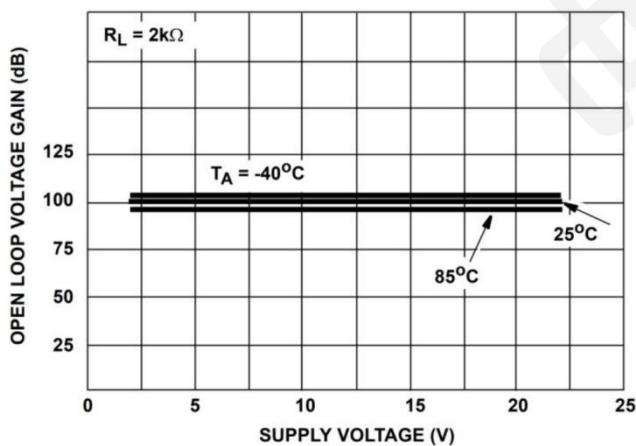


Figure 5 Open circuit voltage gain vs. supply voltage

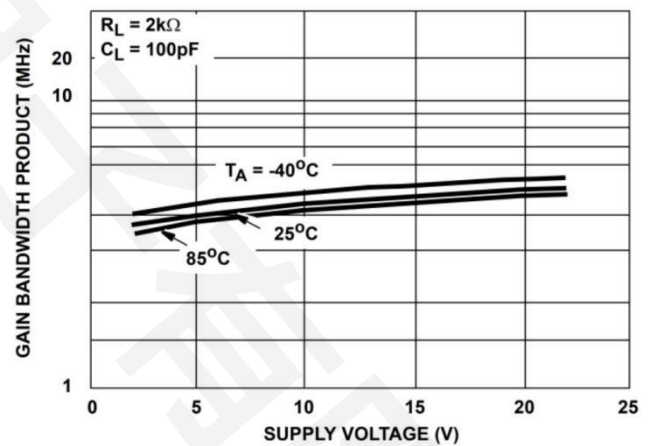


Figure 6. Gain bandwidth vs. supply voltage

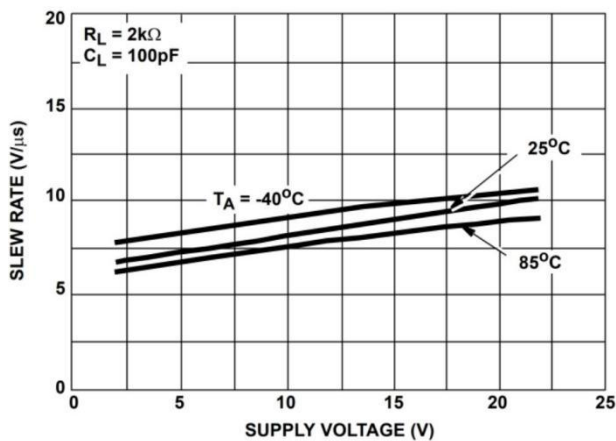


Figure 7. Conversion rate vs supply voltage

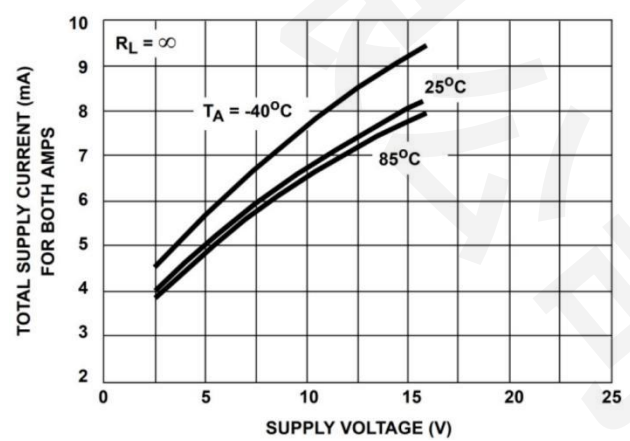
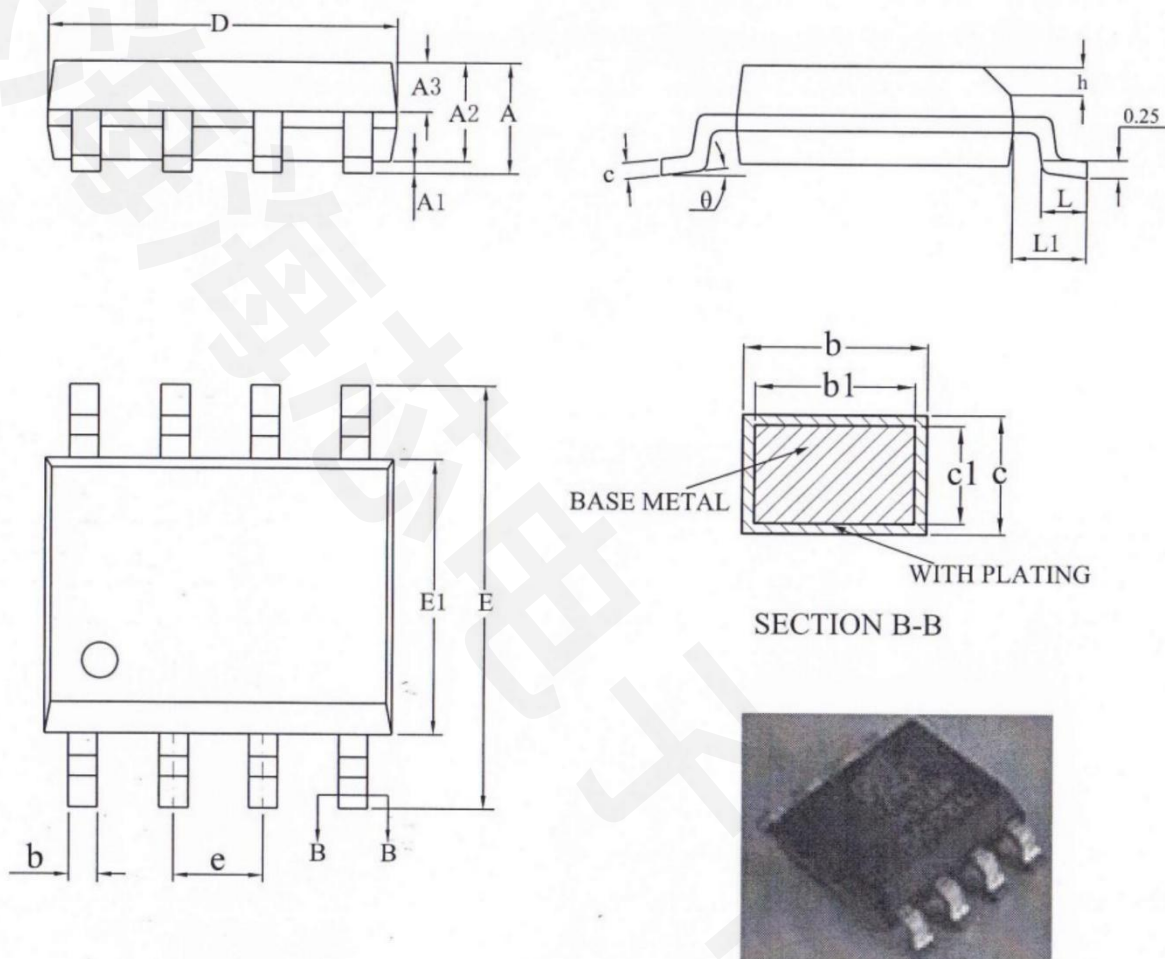


Figure 8 Static current vs supply voltage

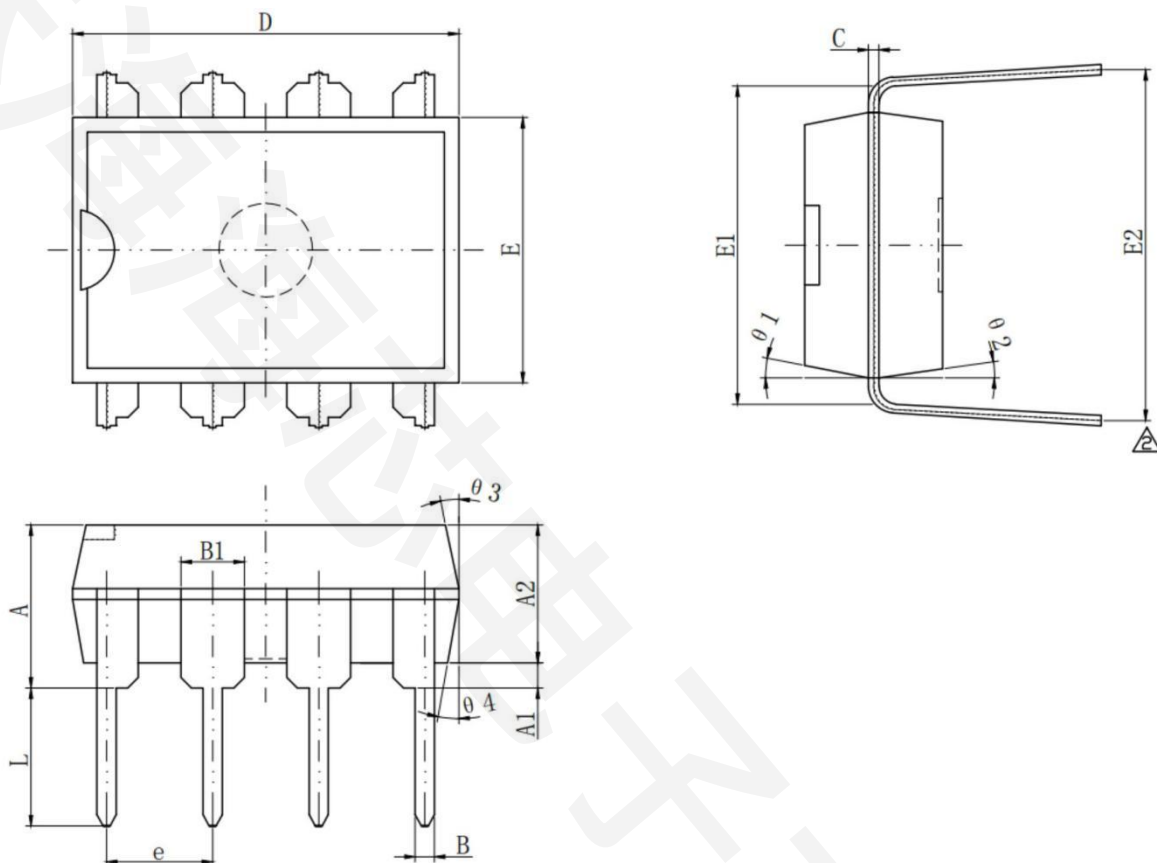
Packaging machinery data:

SOP8package



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

DIP8 package



label	Millimeter			label	Millimeter		
	MIN	NOM	MAX		MIN	NOM	MAX
A	3.75	3.90	4.15	E1	7.35	7.62	7.85
A1	0.60	-	-	E2	8.00	8.40	8.80
A2	3.15	3.30	3.40	e	2.54 (BSC)		
B	0.38	0.46	0.56	L	3.00	3.30	3.60
B1	1.52 (BSC)			$\theta 1$	10°	-	14°
C	0.20	0.25	0.34	$\theta 2$	8°	-	12°
D	9.00	9.25	9.40	$\theta 3$	10°	-	14°
E	6.20	6.35	6.50	$\theta 4$	8°	-	12°