LM358

DATASHEET

Specification Revision History:

Version	Date	Description
V1.0	2020/02	New
V1.1	2021/05	Modify Ordering Information
V1.2	2023/02	Modify Ordering Information
V1.3	2024/06	Add application precautions and overall typesetting.

Description

The LM358 consists of two independent high gain,internally frequency compensated operational amplifier.It can be operated from a single power supply and also split power supplies.

Features

※ Internally frequency compensated for unity gain.

※ Wide power supply range 3V-30V.

※ Input common-mode voltage range include ground.

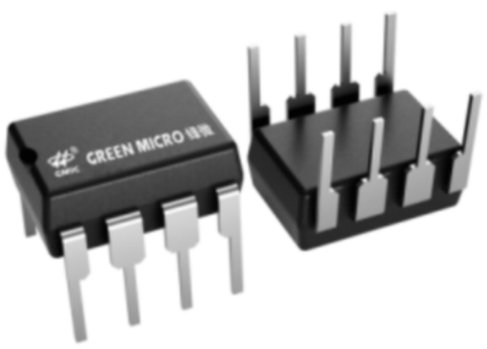
※ Large DC voltage gain.

Applications

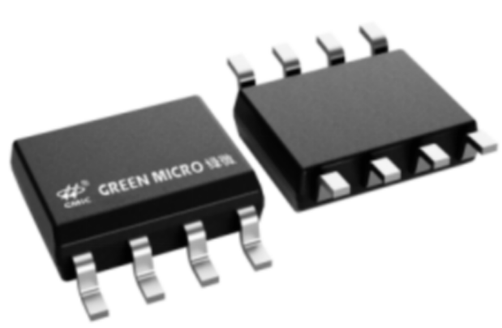
※ General purpose amplifier.

※ Transducer amplifier.

The appearance of the product



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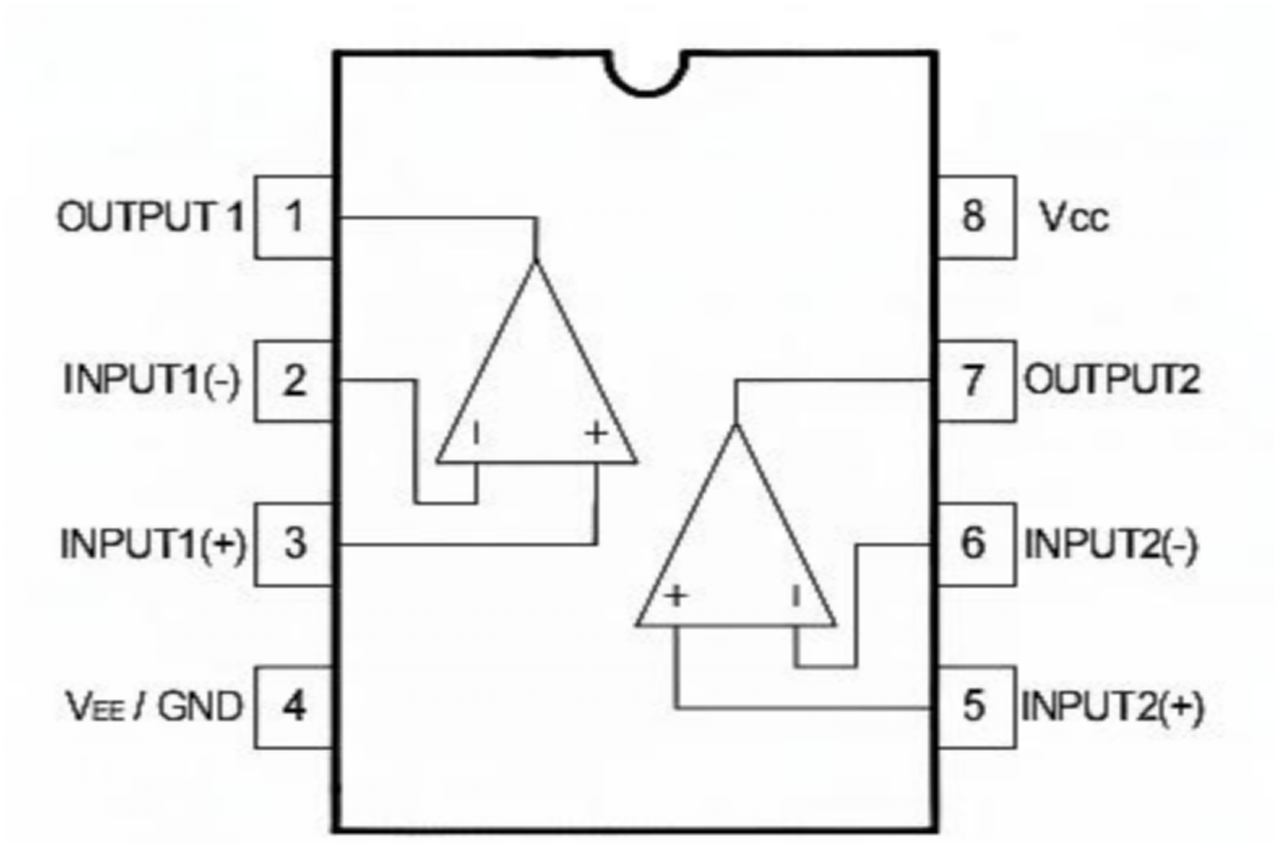


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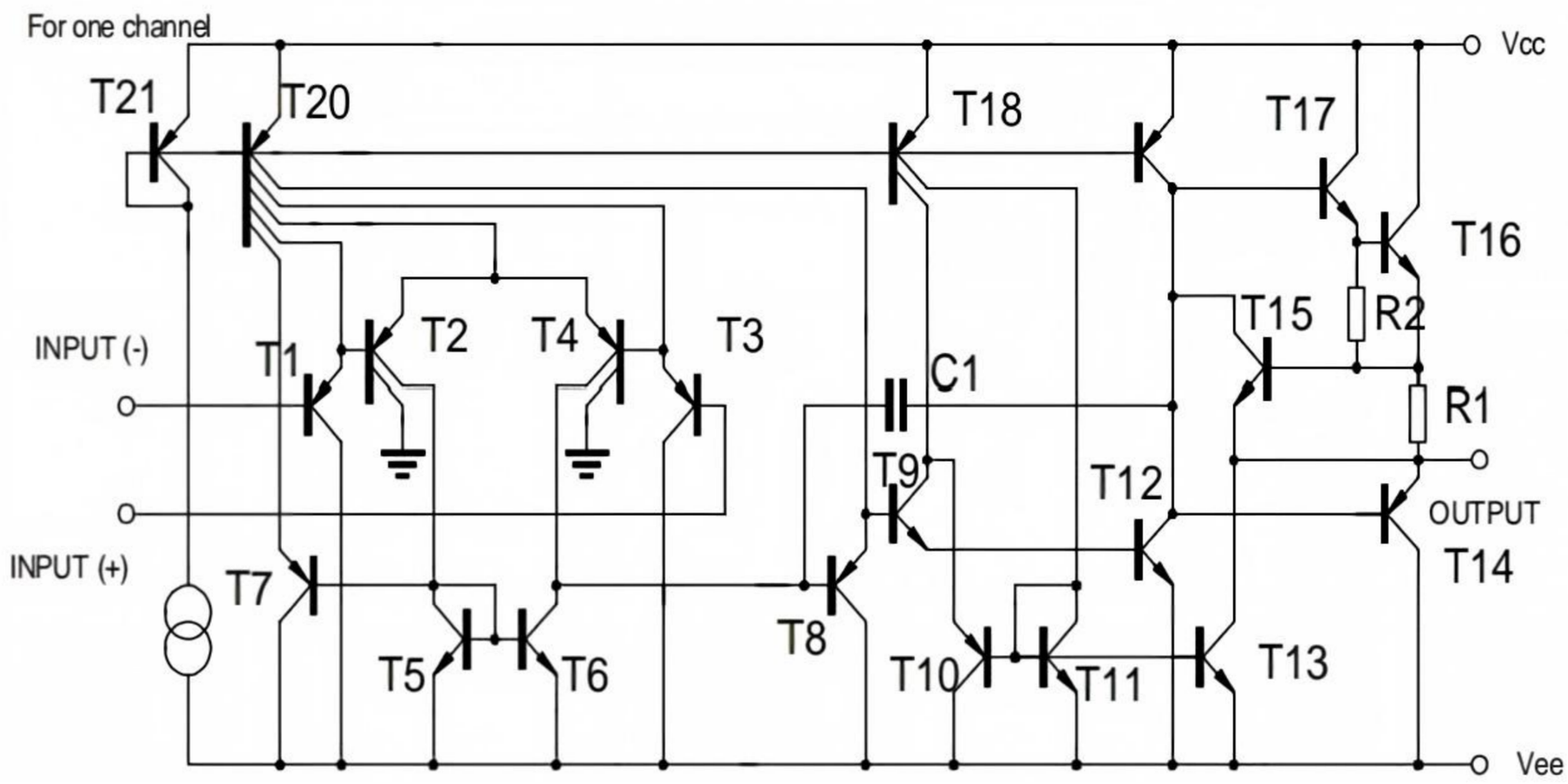
Ordering Information

Product Model	Package Type	Packing	Packing Qty
LM358DBD	DIP-8	TUBE	2000PCS/BOX
LM358DBS	SOP-8	REEL	2500PCS/REEL
LM358N	DIP-8	TUBE	2000PCS/BOX
LM358DR	SOP-8	REEL	2500PCS/REEL

Pin Configurations



Block diagram



Absolute maximum ratings

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	Vcc	±15 or 30	V
Differential Input Voltage	VI(DIFF)	30	V
Input Voltage	VI	-0.3～+30	V
Output Short to Ground		Continuous	
Operating Temperature Range	TOPR	0~+70	°C
Storage Temperature Range	TSTG	-65~+150	°C

Electrical characteristics

(Vcc=5.0V,VEE=GND,TA=25°C,unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Input Offset Voltage	VIO	VCM=0V to VCC-1.5V VO(P)=1.4V, RS=0Ω		2.9	6.0	mV
Input Offset Current	IIO			5	50	nA
Input Bias Current	IBIAS			45	250	nA
Input Common Mode Voltage	VI(R)	VCC=30V	0		VCC-1.5	V
Power Supply Current	ICC	RL=∞,VCC=30V		0.8	2.0	mA
		RL=∞,Full Temperature Range		0.5	1.2	mA
Large Signal Voltage Gain	GV	VCC=15V, RL≥2KΩ VO(P)=1V to 11V	25	100		V/mV
Output Voltage Swing	VO(H)	VCC=30V,RL=2KΩ	24			V
		VCC=30V,RL=10KΩ	25			V
	VO(L)	VCC=5V,RL≥10KΩ		5	20	mV
Common Mode Rejection Ratio	CMRR		65	80		dB
Power Supply Rejection Ratio	PSRR		65	100		dB
Channel Separation	CS	f=1KHZ to 20KHZ		120		dB
Short Circuit Current to Ground	ISC			40	60	mA
Output Current	ISOURCE	VI(+)=1V,VI(-)=0V VCC=15V,VO(P)=2V	20			mA
	ISINK	VI(+)=0V,VI(-)=1V VCC=15V,VO(P)=2V	4			mA
Differential Input Voltage	VI(DIFF)				VCC	V

Typical performance characteristics

Fig.1 Input Voltage Range

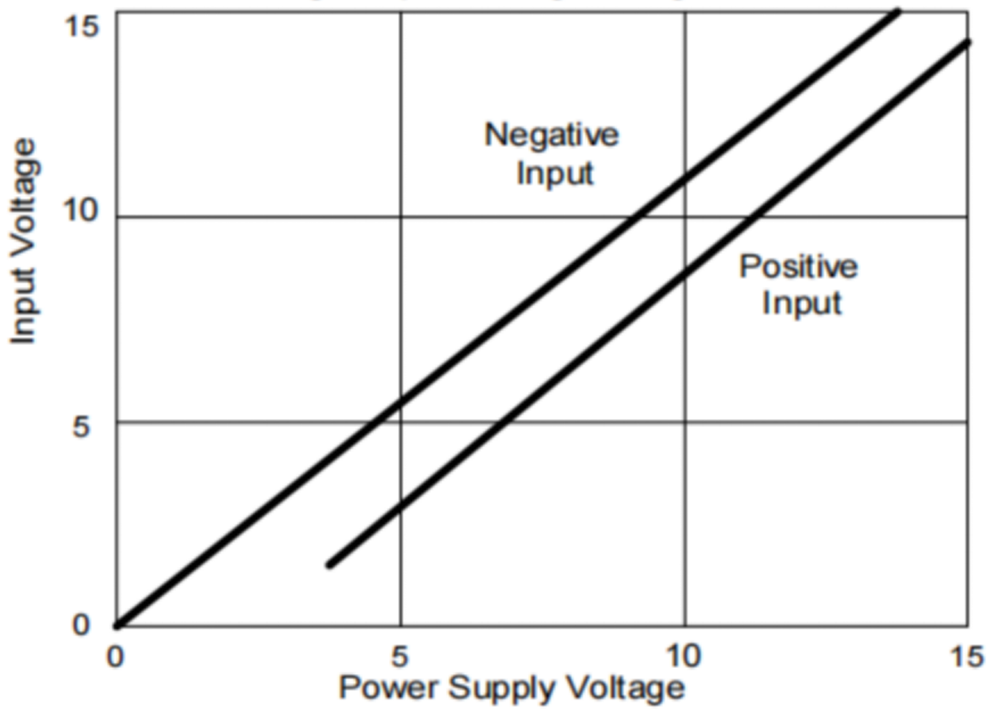


Fig.2 Input Current vs Temperature

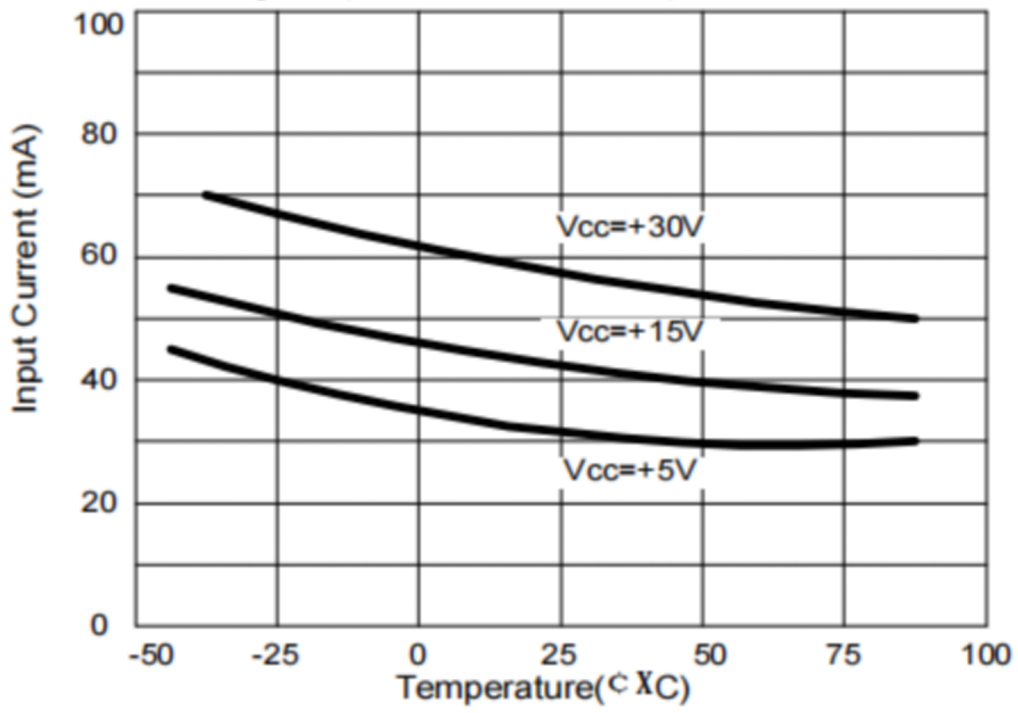


Fig.3 Input Current vs Supply Voltage

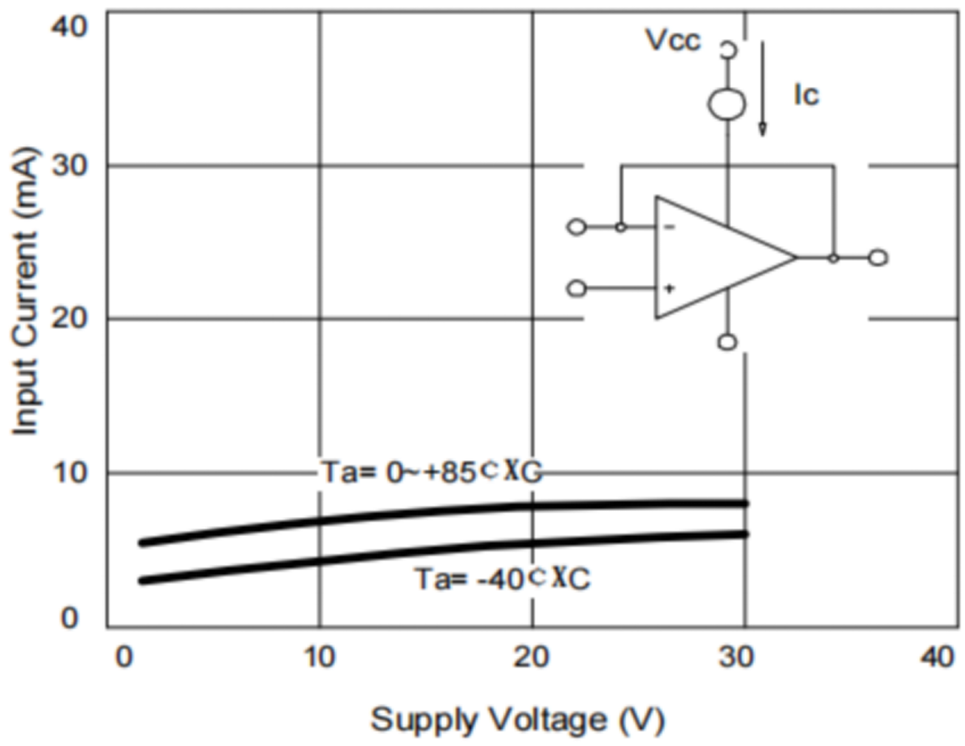


Fig. 4 Voltage Gain vs Supply Voltage

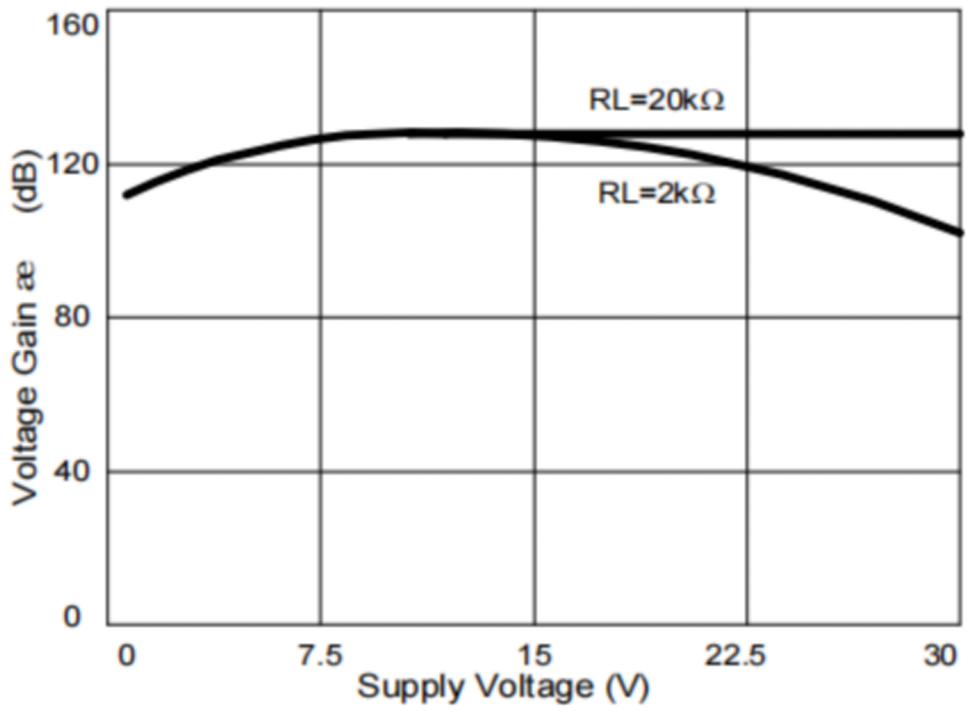


Fig. 5 Open Loop Gain vs Frequency

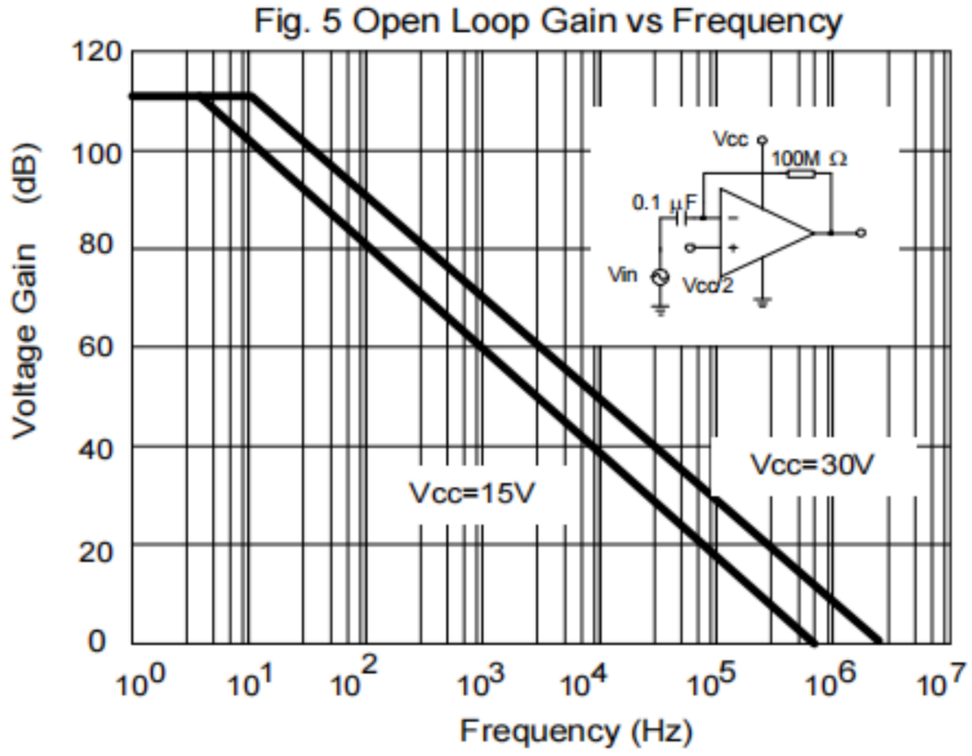


Fig. 6 Common Mode Rejection Ratio vs Frequency

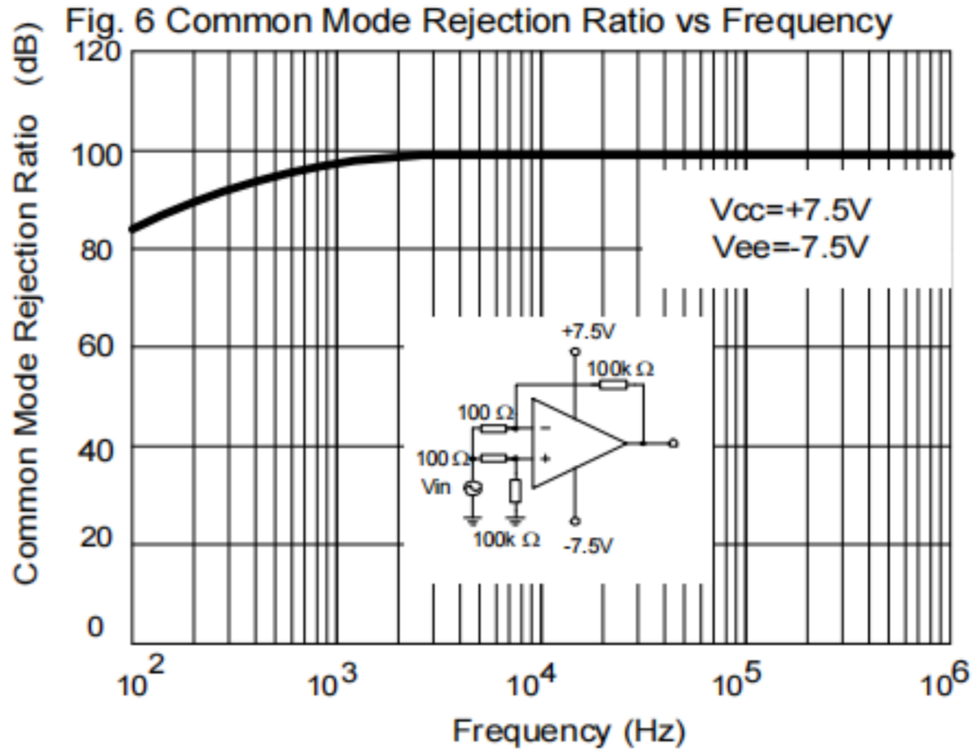


Fig. 7 Voltage Follower Pulse Response

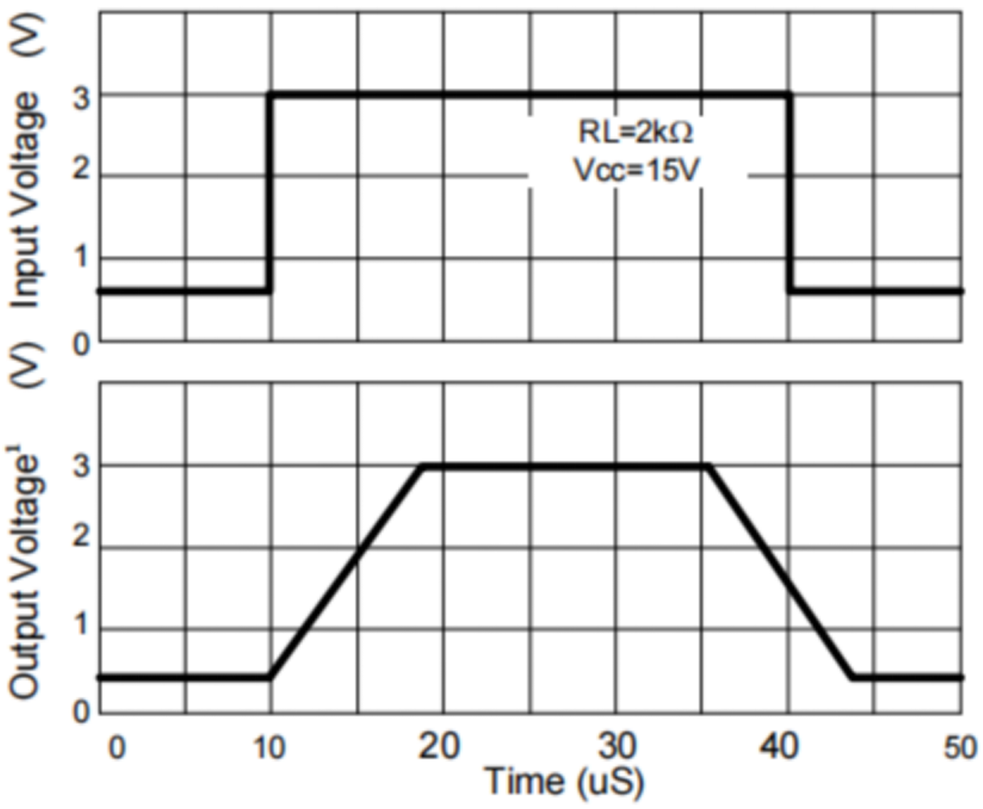


Fig. 8 Voltage Follower Response (Small Signal)

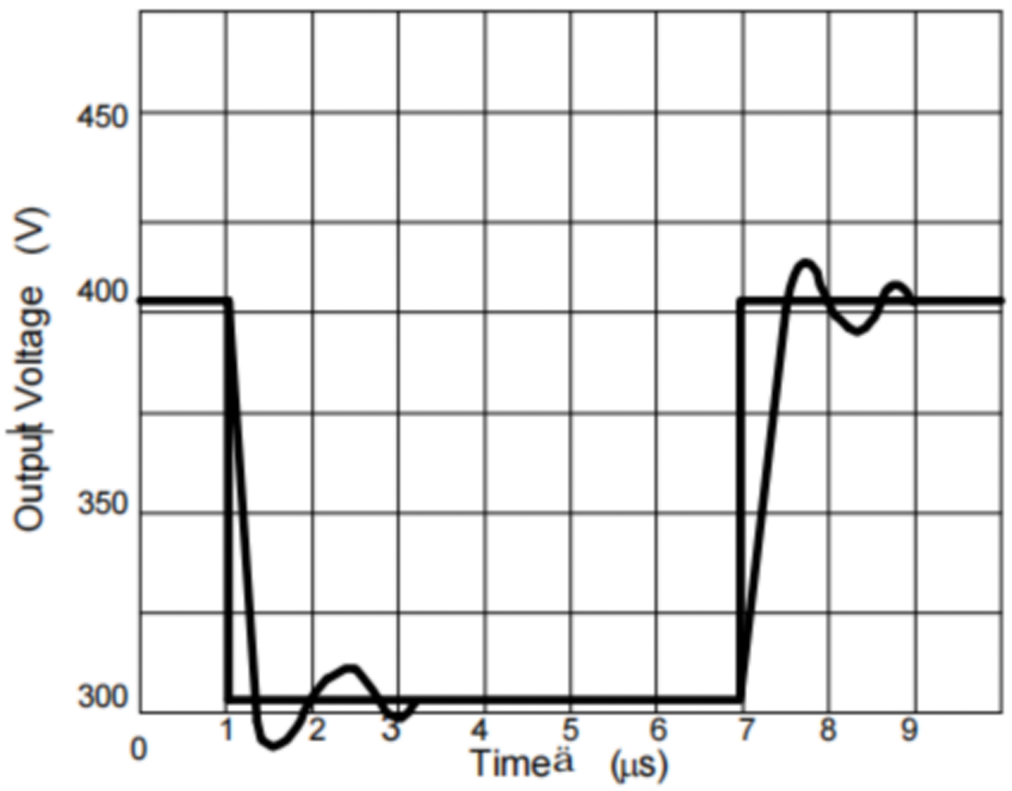


Fig. 9 Gain vs Large Signal Frequency

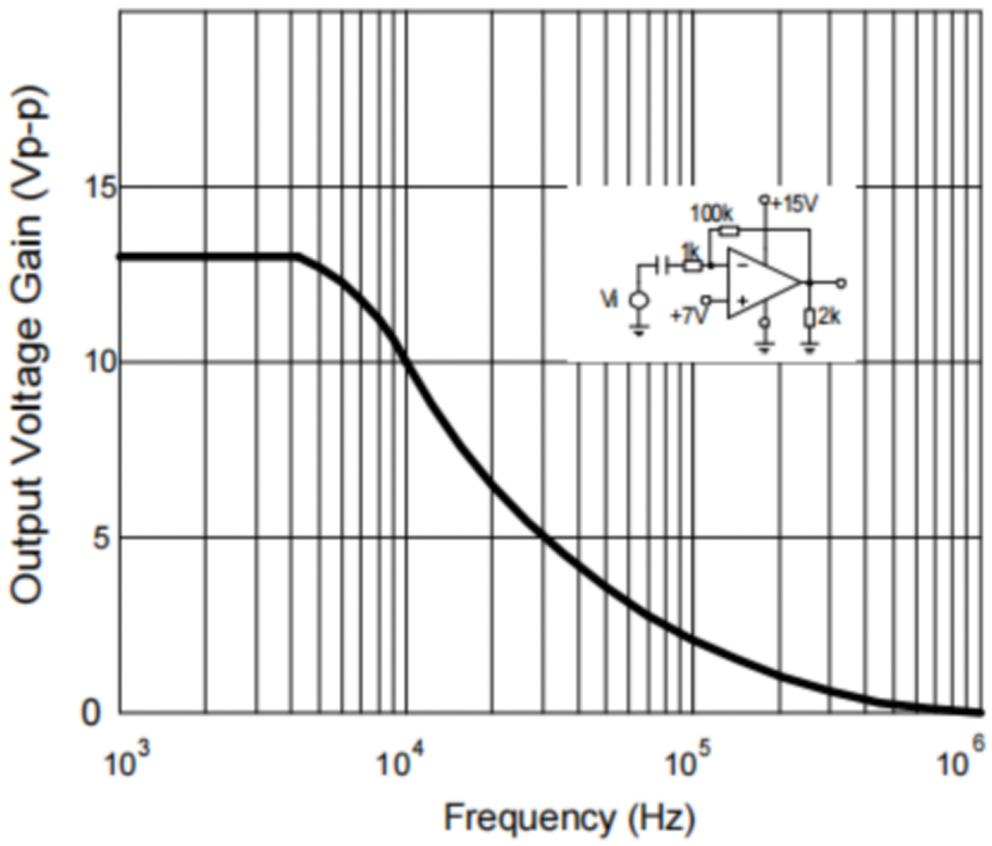


Fig. 10 Output Current Sinking vs Output Voltage

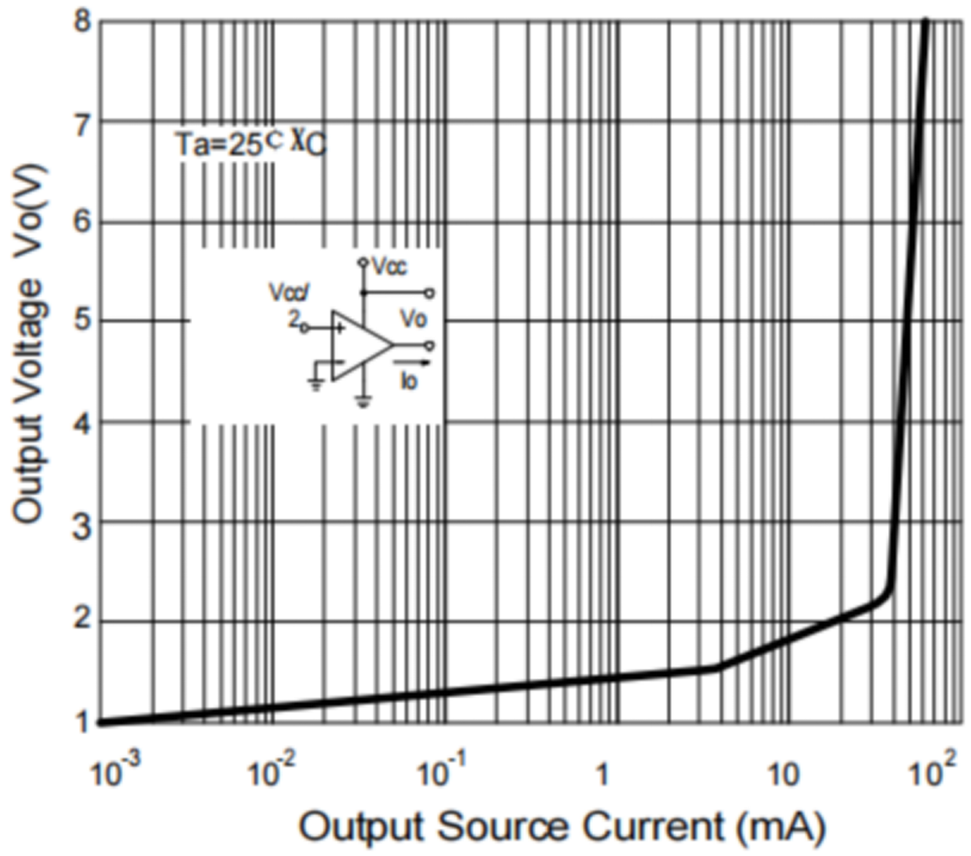


Fig. 11 Output Sink Current vs Output Voltage

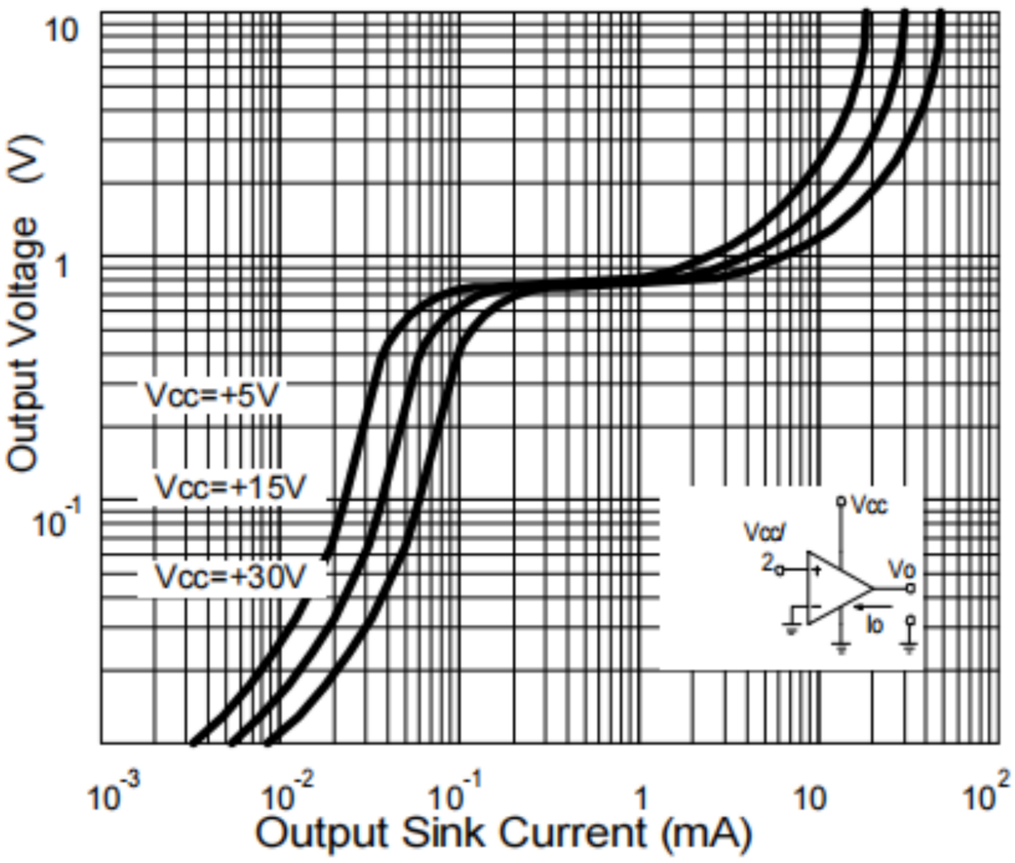
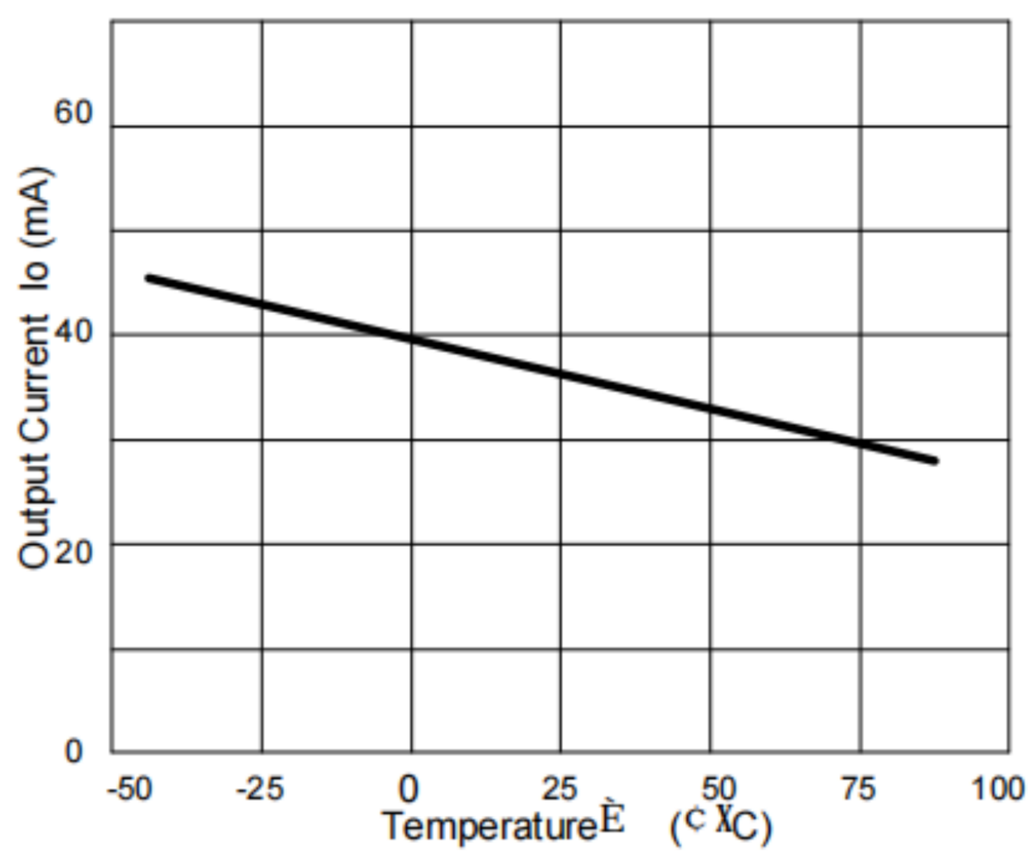
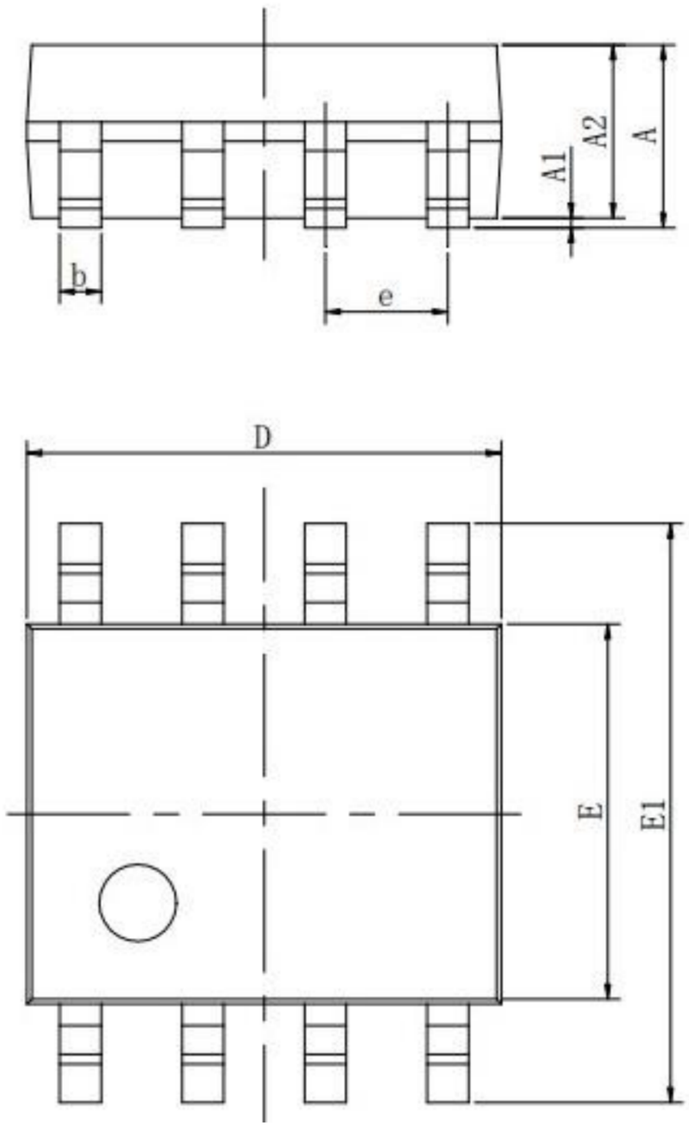


Fig.12 Current Limiting vs Temperature



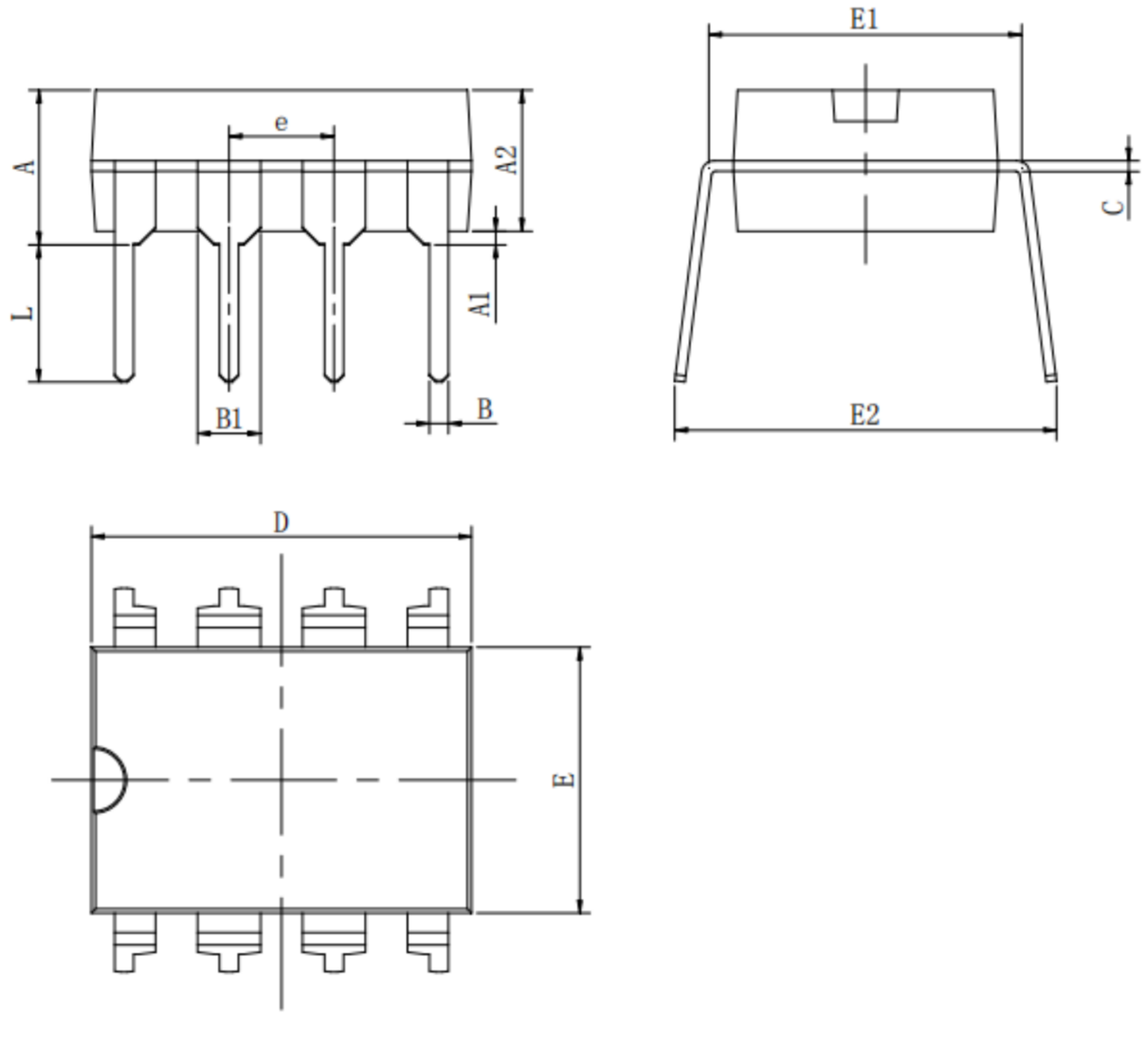
Outline Dimensions

SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.800	0.053	0.071
A1	0.050	0.250	0.004	0.010
A2	1.250	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
C	0.170	0.250	0.006	0.010
D	4.780	5.000	0.185	0.197
E	3.800	4.000	0.150	0.157
E1	5.800	6.300	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

DIP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.710	4.310	0.146	0.170
A1	0.510		0.020	
A2	3.200	3.600	0.126	0.142
B	0.380	0.570	0.015	0.022
B1	1.524(BSC)		0.060(BSC)	
C	0.204	0.360	0.008	0.014
D	9.000	9.400	0.354	0.370
E	6.200	6.600	0.244	0.260
E1	7.320	7.920	0.288	0.312
e	2.540(BSC)		0.100(BSC)	
L	3.000	3.600	0.118	0.142
E2	8.400	9.000	0.331	0.354

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