芯伯乐®
XINBOLE

Product Specification

XBLW LM158

Low Power Dual Operational Amplifier

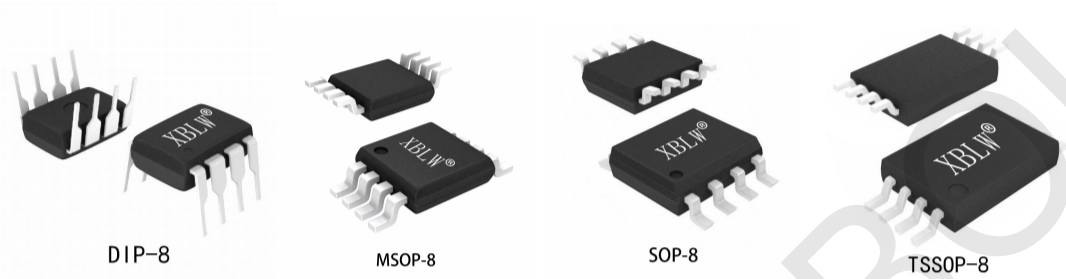
WEB | www.xinboleic.com



Descriptions

The LM158 series consists of two independent, high gain,internally frequency compensated operational amplifiers which were designed specifically to operate from a single power supply over a wide range of voltages. Operation from split power supplies is also possible and the low power supply current drain is independent of the magnitude of the power supply voltage.

Application areas include transducer amplifiers, dc gain blocks and all the conventional op amp circuits which now can be more easily implemented in single power supply systems. For example, the LM158 series can be directly operated off of the standard +5V power supply voltage which is used in digital systems and will easily provide the required interface electronics without requiring the additional ±15V power supplies.



Feature

- Wide power supply range:
  Single supply: 4V to 32V
  or dual supplies: ±2V to ±16V
- Very low supply current drain (500 μA)—essentially independent of supply voltage
- Wide bandwidth (unity gain): 1 MHz
- Low Input Bias Currents
- CommonModeRangeExtendstoNegativeSupply

Applications

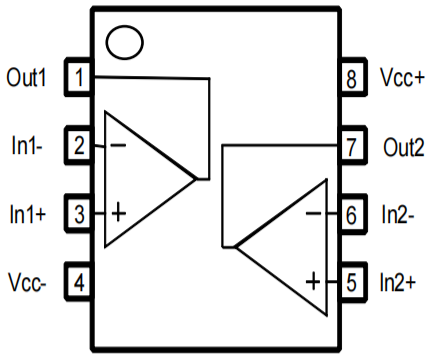
- Desktop PC and motherboard
- Electronic point-of-sale systems
- Indoor and outdoor air conditioners
- Merchant network and server power supply units
- Multi-function printers
- Power supplies and mobile chargers
- Uninterruptible power supplies
- Washers, dryers, and refrigerators
- AC inverters, string inverters, central inverters, and voltage frequency drives
- Motor control: AC induction, brushed DC, brushless DC, high-voltage, low-voltage, permanent magnet, and stepper motor

Ordering Information

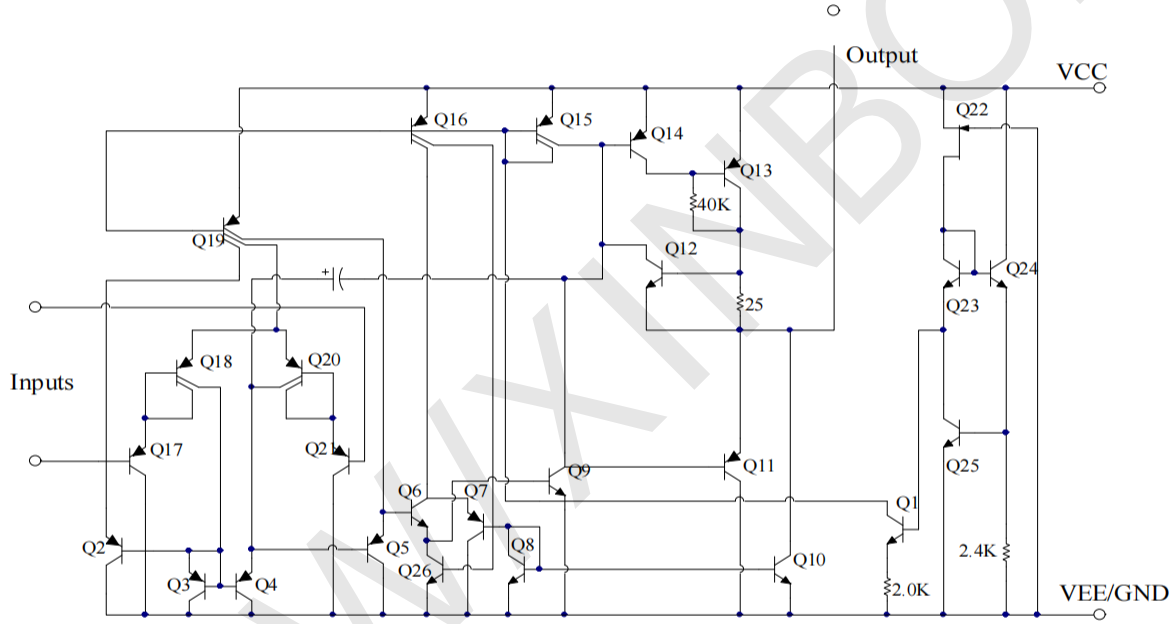
Product Model	Package Type	Marking	Packing	Packing Qty
XBLW LM158N	DIP-8	LM158N	Tube	2000Pcs/Box
XBLW LM158DTR	SOP-8	LM158	Tape	2500Pcs/Reel
XBLW LM158MDTR	MSOP-8	158M	Tape	2500Pcs/Reel
XBLW LM158TDTR	TSSOP-8	LM158	Tape	2000Pcs/Reel

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Pin Connections



Schematic Diagram（One-Half of Circuit Shown）



Absolute Maximum Ratings

TA = + 25 ° C, unless otherwise specified

Rating		Value	Unit
Power Supply Voltages		32 or ±16	V
Input Differential Voltage Range		32	V
Input Common Mode Voltage Range		-0.3 ～ VCC	V
Power Dissipation (Note1)	DIP8	830	mW
	SOP8	530	
Output Short Circuit Duration （One Amplifier ） （V≤15V,Ta=25℃）		Continuous	
Input Current（VIN<-0.3V）		50	mA
Junction Temperature		150	℃
Operating Temperature Range		-40 ~ 125	℃
Storage Temperature Range		-65 ~ 150	℃

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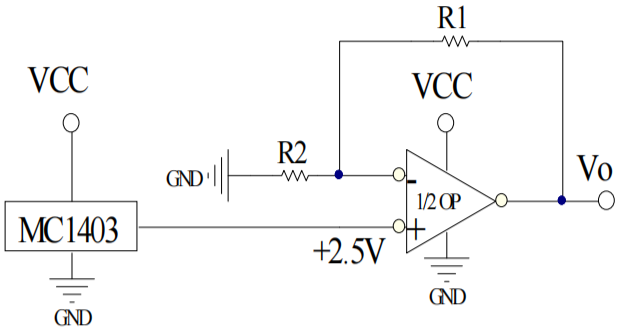
Electrical Characteristics

Vcc=5.0V,TA = + 25 ° C, unless otherwise specified.

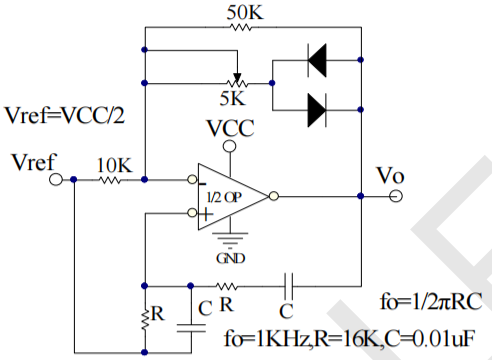
Parameter		Conditions		Min	Typ	Max	Units
Input Offset Voltage		Ta=25℃, VCC = 5.0 V to 30 V, VO =1.4 V			2	5	mV
Input Bias Current		Ta=25℃, IIN(+) or IIN（-），VCM=0V			45	250	nA
Input Offset Current		Ta=25℃, IIN(+) - IIN（-），VCM=0V			3	50	nA
Input Common Mode Voltage Range		Ta=25℃, V+=30V		0		Vcc -1.5	V
Power Supply Current		RL=∞,Total Device	Vcc =30V		1	2	mA
			Vcc =5V		0.5	1.2	mA
Large Signal Open Loop Voltage Gain		Vcc =15V，Ta=25℃, RL≥2kΩ（for Vo=1~11V）		25	100		V/mV
Common Mode Rejection		DC，Ta=25℃, VCM=0~Vcc-1.5V		65	90		dB
Power Supply Rejection		DC，Ta=25℃, Vcc =5~30V		65	100		dB
Output Source Current		VIN(+)=1V,VIN(-)=0V,Vcc=15V,Vo=2V,Ta=25℃		20	40		mA
Output Sink Current		VIN(-)=1V,VIN(+)=0V,Vcc=15V,Vo=2V,Ta=25℃		10	15		mA
		VIN(-)=1V,VIN(+)=0V,Vcc=15V,Vo=200mV, Ta=25℃		12	50		μA
Output Short Circuit to Ground		Vcc=15V, Ta=25℃			40	60	mA
Output Volta e Swing	VOH	Vcc=30V	RL=2kΩ	26			V
		Vcc=30V	RL=10kΩ	27	28		V
	VOL	Vcc=5V，RL=10kΩ			5	20	mV

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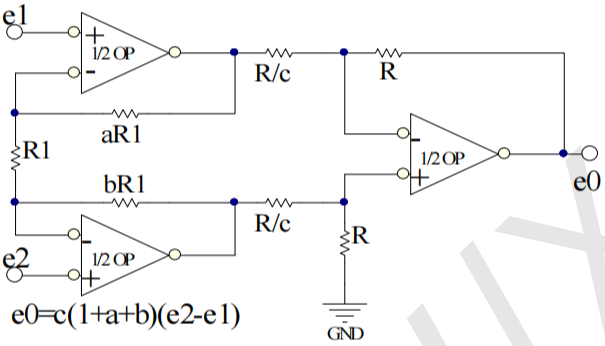
Typical Applications



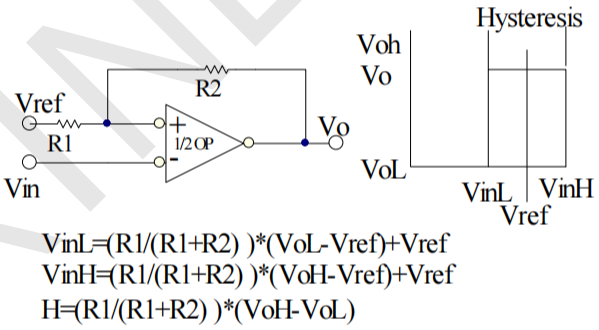
Voltage Reference, Vo=2.5V (1+R1/R2)



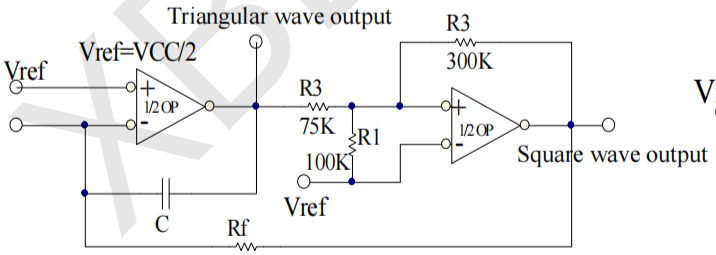
Wien Bridge Oscillator



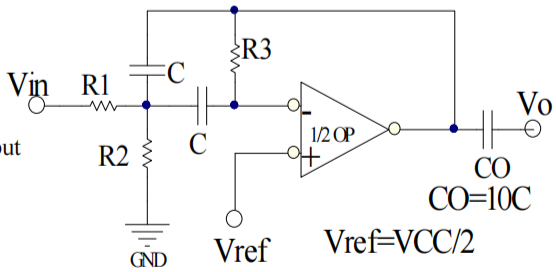
High Impedance Differential Amplifier



Comparator with Hysteresis



Function Generator

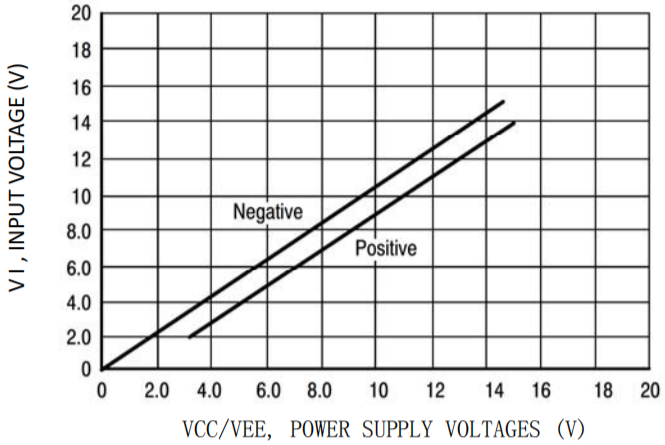


fo = center frequency

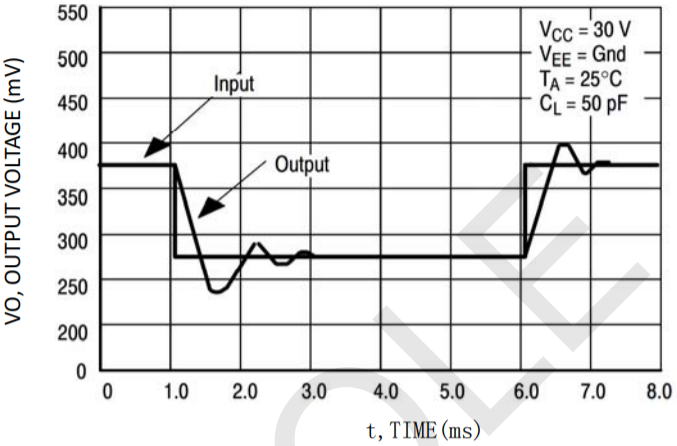
Multiple Feedback Bandpass Filter

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Typical Performance Characteristics

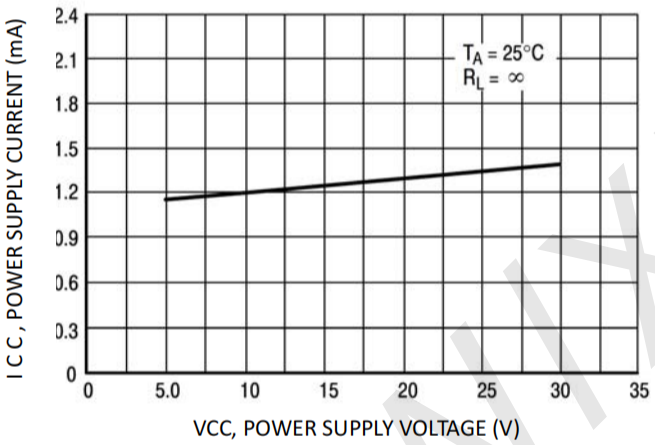


Input Voltage Range

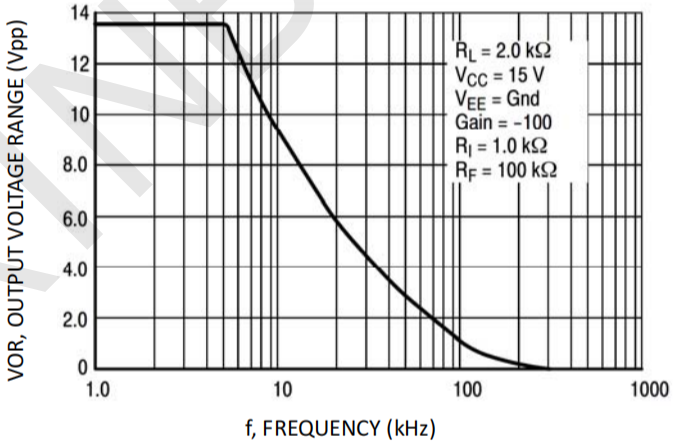


Small Signal Voltage Follower Pulse Response

(Noninverting)



Power Supply Current versus Power Supply Voltage



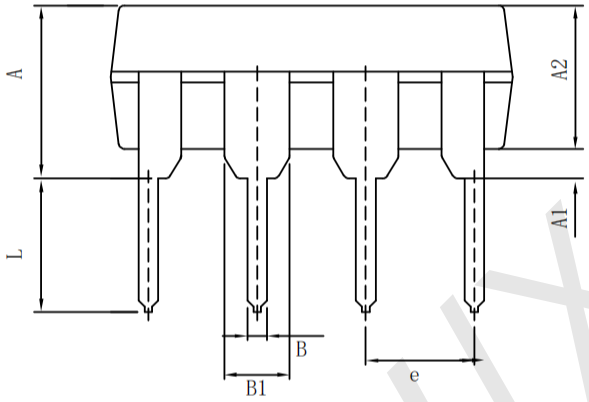
Large-Signal Frequency Response

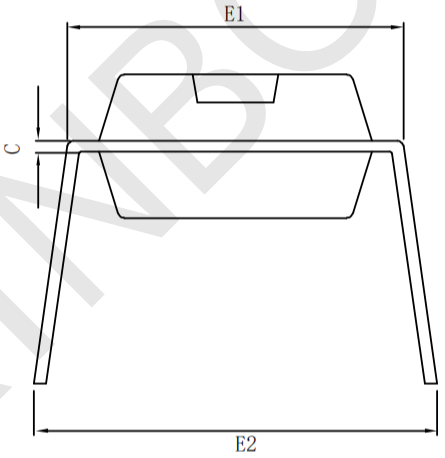
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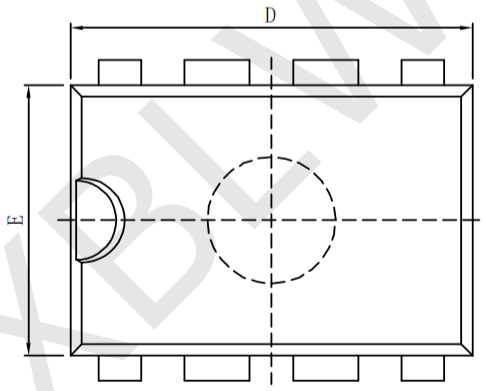
Package Information

- DIP-8

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



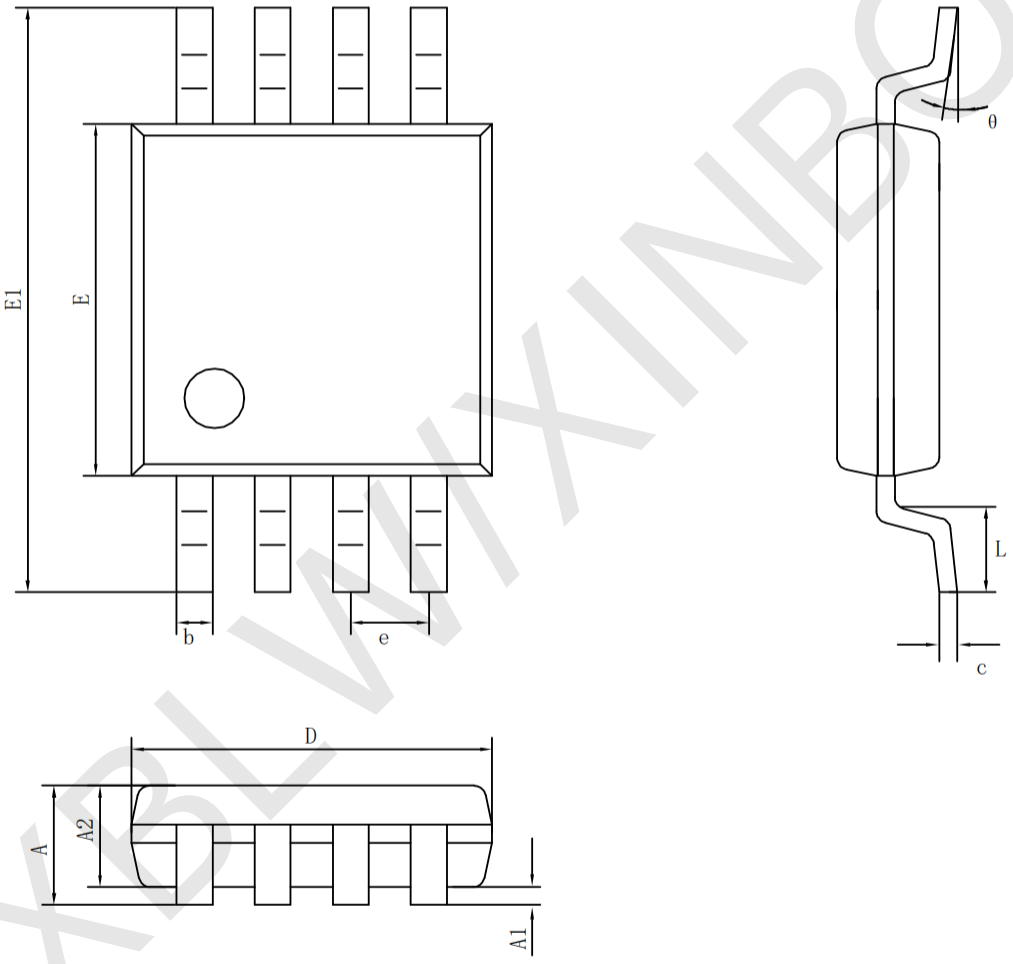




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· MSOP-8

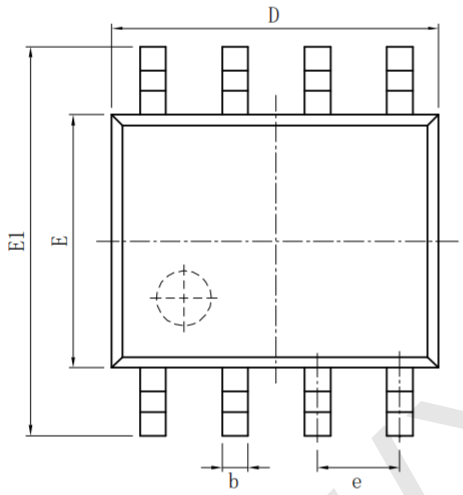
Size / Symbol	Dimensions In Millimeters		Size / Symbol	Dimensions In Inches	
	Min(mm)	Max(mm)		Min(in)	Max(in)
A	0.820	1.100	A	0.320	0.043
A1	0.020	0.150	A1	0.001	0.006
A2	0.750	0.950	A2	0.030	0.037
b	0.250	0.380	b	0.010	0.015
c	0.090	0.230	c	0.004	0.009
D	2.900	3.100	D	0.114	0.122
e	0.65 (BSC)		e	0.026(BSC)	
E	2.900	3.100	E	0.114	0.122
E1	4.750	5.050	E1	0.187	0.199
L	0.400	0.800	L	0.016	0.031
θ	0°	6°	θ	0°	6°

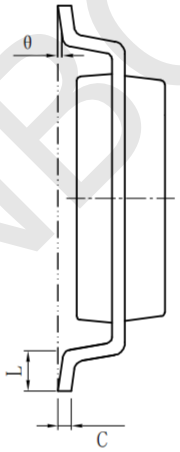


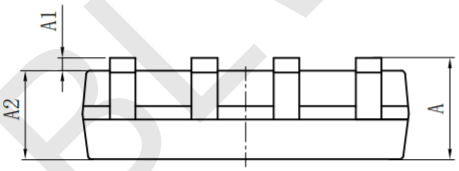
XBLW XINBOLE

- SOP-8

Size / Symbol	Dimensions In Millimeters		Size / Symbol	Dimensions In Inches	
	Min(mm)	Max(mm)		Min(in)	Max(in)
A	1.350	1.750	A	0.053	0.069
A1	0.100	0.250	A1	0.004	0.010
A2	1.350	1.550	A2	0.053	0.061
b	0.330	0.510	b	0.013	0.020
c	0.170	0.250	c	0.006	0.010
D	4.700	5.100	D	0.185	0.200
E	3.800	4.000	E	0.150	0.157
E1	5.800	6.200	E1	0.228	0.224
e	1.270(BSC)		e	0.050(BSC)	
L	0.400	1.270	L	0.016	0.050
θ	0°	8°	θ	0°	8°



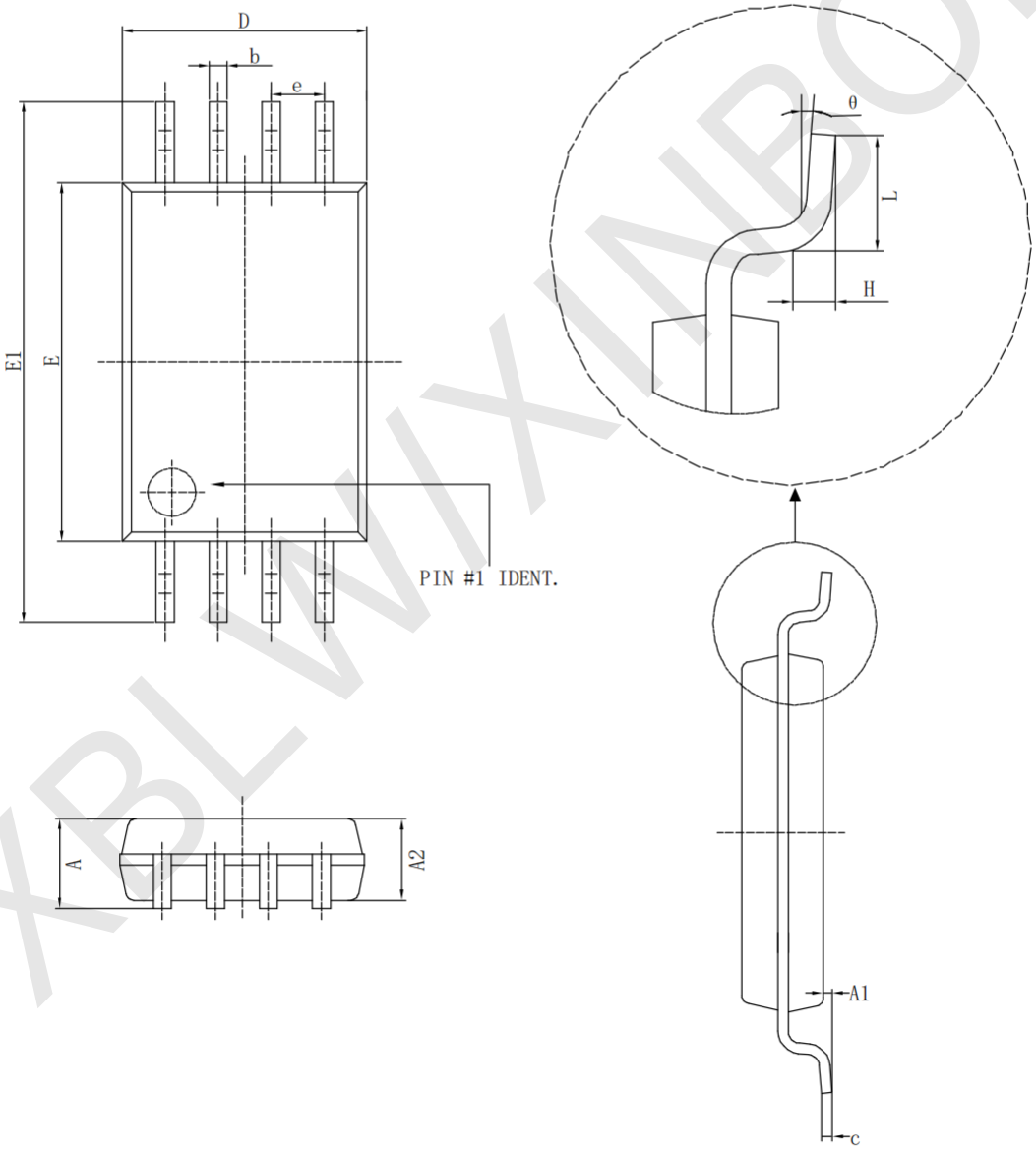




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· TSSOP-8

Size / Symbol	Dimensions In Millimeters		Size / Symbol	Dimensions In Inches	
	Min(mm)	Max(mm)		Min(in)	Max(in)
D	2.900	3.100	D	0.114	0.122
E	4.300	4.500	E	0.169	0.177
b	0.190	0.300	b	0.007	0.012
c	0.090	0.200	c	0.004	0.008
E1	6.250	6.550	E1	0.246	0.258
A		1.100	A		0.043
A2	0.800	1.000	A2	0.031	0.039
A1	0.020	0.150	A1	0.001	0.006
e	0.65(BSC)		e	0.026(BSC)	
L	0.500	0.700	L	0.020	0.028
H	0.25(TYP)		H	0.01(TYP)	
θ	1°	7°	θ	1°	7°



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