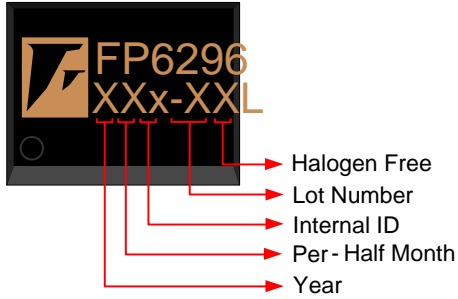




Marking Information

SOP-8L(EP)



Halogen Free: Halogen free product indicator

Lot Number: :DIHU ORW QXPEHU↑V ODVW Wz

For Example → Lot : 123456 → XXx-56L

Internal ID: Internal Identification Code

Per-Half Month: Production period indicator in half month time unit

For Example : \$:)LUVW +DOI 0RQWK
% : 6HFRQG +DOI 0RQW
& :)LUVW +DOI 0RQWK
' : 6HFRQG +DOI 0RQW

Year: 3URGXFWLRQ \HDU↑V ODVW GLJLW



Ordering Information

Part Number	Operating Temperature	Package	MOQ	Description
FP6296XR-G1	-25°C ~ 85°C	SOP-8L(EP)	2500EA	Tape & Reel

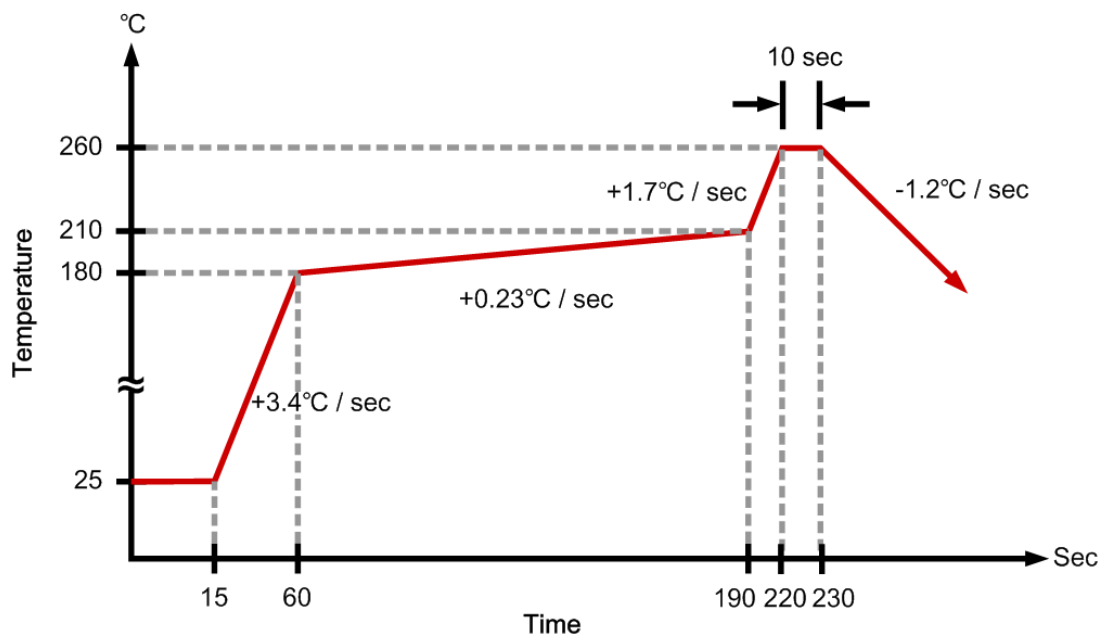
Absolute Maximum Ratings

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply Voltage	HVDD		0		12	V
LX Voltage	V _{LX}		0		14	V
Others Pin Voltage			0		6	V
Thermal Resistance (Junction to Ambient)	J _A				+60	°C / W
Thermal Resistance (Junction to Case)	J _C				+10	°C / W
Junction Temperature	T _J				+150	°C
Operating Temperature	T _{OP}		-25		+85	°C
Storage Temperature	T _{ST}		-65		+150	°C
Lead Temperature		(soldering, 10 sec)			+260	°C

Note1:

J_A is measured in the natural convection at T_A=25°C on a low effective thermal conductivity test board of JEDEC 51-3 thermal measurement standard.

IR Re-flow Soldering Curve



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Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply Voltage	HVDD		2.7		12	V
Operating Temperature Range	T _A	Ambient Temperature	-25		85	°C

DC Electrical Characteristics (HVDD=12V, T_A=25°C, unless otherwise specified)

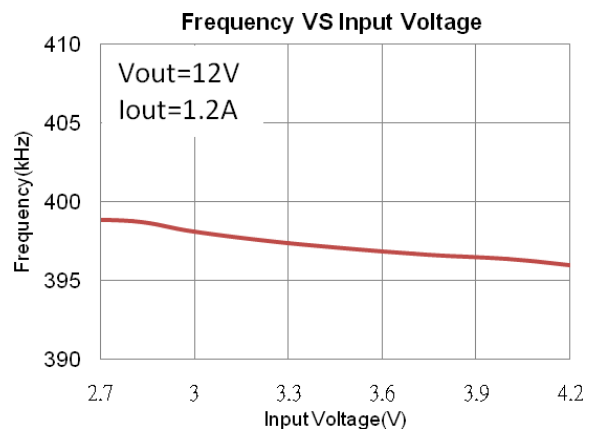
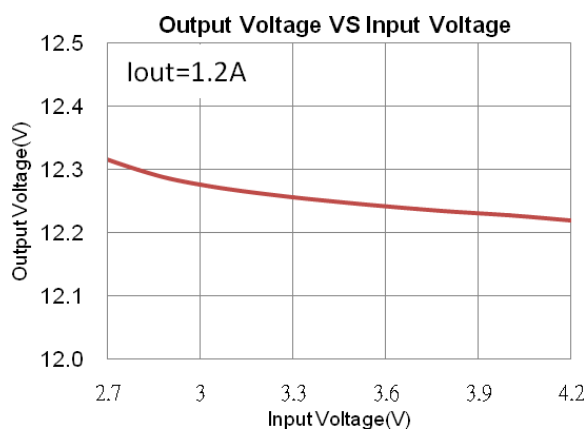
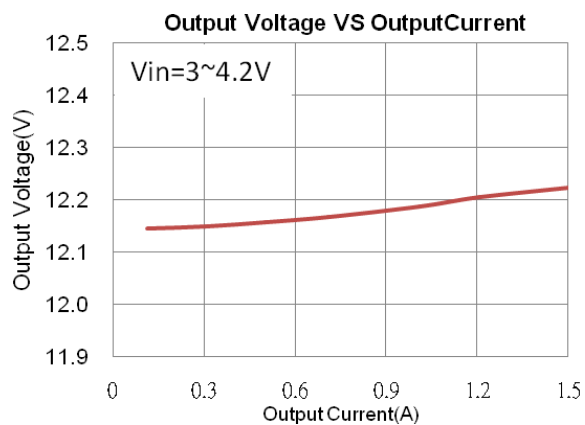
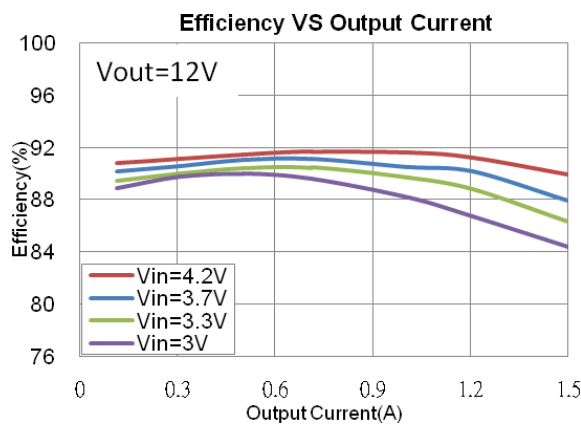
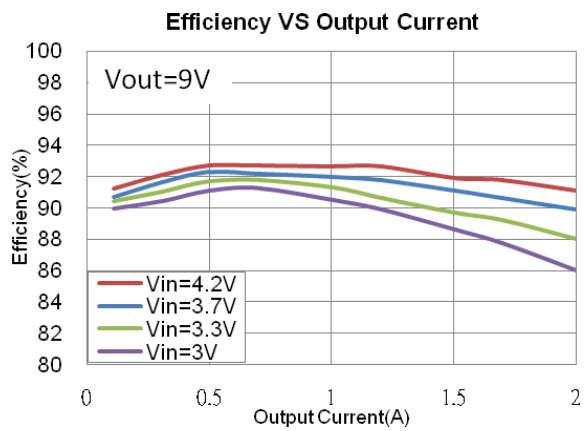
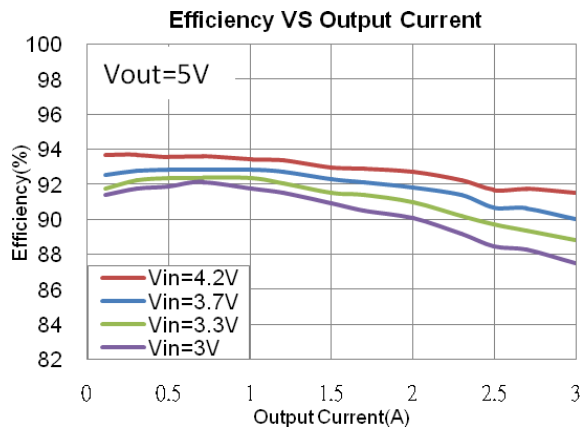
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
System Supply Input						
Input Supply Range	HVDD		2.7		12	V
Under Voltage Lockout	V _{UVLO}			2.2		V
UVLO Hysteresis				0.1		V
Quiescent Current	I _{DD}	V _{FB} =1.3V, No switching		0.45		mA
Average Supply Current	I _{DD}	V _{FB} =1.1V, Switching		4		mA
Shutdown Supply Current	I _{DD}	V _{EN} =GND			1	μA
Input Supply Voltage	V _{CC}	HVDD=12V, V _{CC} no current	4.75	5	5.25	V
Oscillator						
Operation Frequency	F _{OSC}		340	400	460	KHz
Frequency Change with Voltage	Δf / ΔV	HVDD=2.5V to 12V		5		%
Maximum Duty Cycle	T _{DUTY}			90		%
Reference Voltage						
Reference Voltage	V _{REF}		1.176	1.2	1.224	V
Line Regulation		HVDD=2.5V : 12V		0.2		% / V
Error Amplifier						
COMP Pin Sink Current	I _{SINK}			45		μA
COMP Pin Source Current	I _{SOURCE}			45		μA
Enable Control						
Enable Voltage	V _{EN}		1.1			V
Shutdown Voltage	V _{EN}				0.6	V
MOSFET						
On Resistance of Driver	R _{DS(ON)}	V _{CC} =5V, I _{LX} =0.5A		15		m
Protection						
OCP Current	I _{OCP}			10		A
Adjustable OCP Current	I _{OCP}	With External Resistor ú 150k~51k	2		10	A
OTP Temperature	T _{OTP}			+150		°C

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Typical Operating Characteristics

($T_A=25^\circ\text{C}$; unless otherwise specified)



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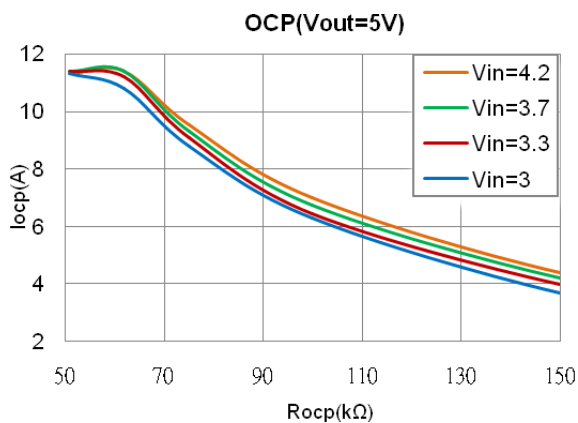
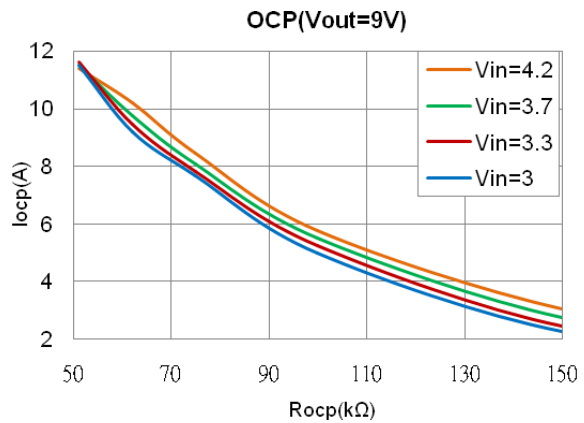
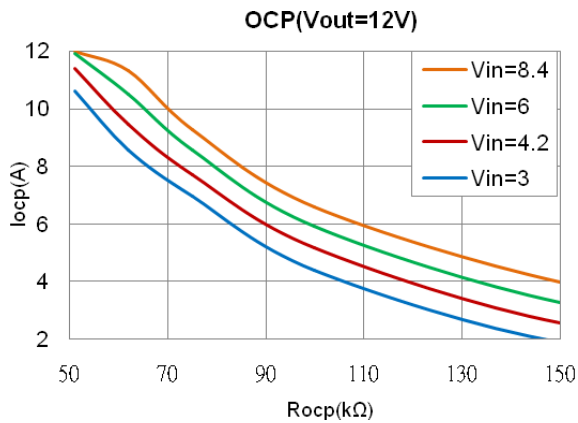
Function Description

Operation

The FP6296 is a current mode boost converter. The switching frequency is 400KHz and operates with pulse width modulation (PWM). Build-in 14V / 10A MOSFET provides a high output voltage. The control loop architecture is peak current mode control; therefore slope compensation circuit is added to the current signal to allow stable operation for duty cycles larger than 50%.

Current Limit Program

A resistor between OC and GND pin programs peak switch current. The resistor value should be between 150k to 51k . The current limit will be set from 2A to 10A. Keep traces at this pin as short as possible. Do not put capacitance at this pin.





Over Temperature Protection (OTP)

FP6296 will turn off the power MOSFET automatically when the internal junction temperature is over 150°C. The power MOSFET wake up when the junction temperature drops 20°C under the OTP threshold temperature.

Enable Mode / Shutdown Mode

Drive the EN pin to ground to shutdown the IC. Shutdown mode forces to turn off all internal circuitry, and reduces the HVDD supply current to 1uA (max). The EN pin rising threshold is 1.1V.



Application Information

Inductor Selection

Inductance value is decided based on different condition. 3.3uH to 10uH inductor value is recommended for general application circuit. There are three important inductor specifications, DC resistance, saturation current and core loss. Low DC resistance has better power efficiency.

Capacitor Selection

The output capacitor is required to maintain the DC voltage. Low ESR capacitors are preferred to reduce the output voltage ripple. Ceramic capacitor of X5R and X7R are recommended, which have low equivalent series resistance (ESR) and wider operation temperature range.

Diode Selection

Schottky diodes with fast recovery times and low forward voltages are recommended. Ensure the diode average and peak current rating exceed the average output current and peak inductor current. In

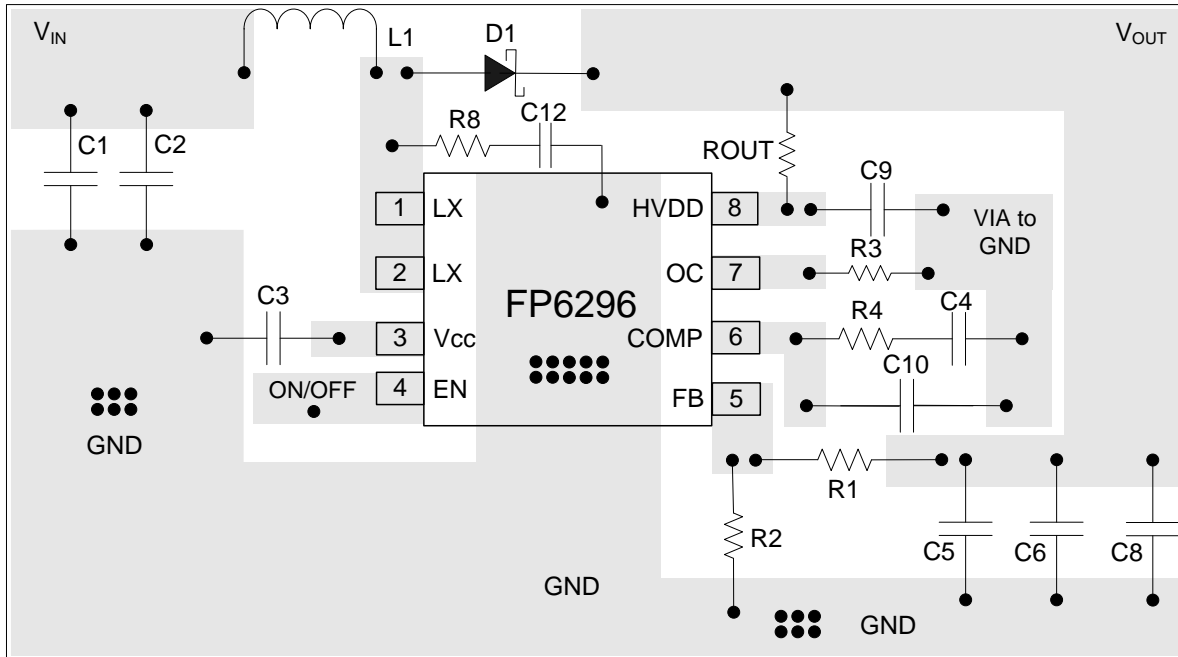
Output Voltage Programming

The output voltage is set by a resistive voltage divider from the output voltage to FB. The output voltage is:

$$V_{OUT} = 1.2V \cdot \frac{R1}{R2}$$

Layout Considerations

1. The power traces, consisting of the GND trace, the LX trace and the V_{IN} trace should be kept short, direct and wide.
2. LX •L 1 and D1 switching node, wide and short trace to reduce EMI.
3. The resistive divider R1 and R2 must be connected to FB pin directly as closely as possible.
4. FB is a sensitive node. Please keep it away from switching node, LX.
5. The GND of the IC, C_{IN} and C_{OUT} should be connected close together directly to a ground plane.
6. The ground of C_{OUT} V K R X O G E H F R Q Q H F W H G F O R V H D Q G W R J H W K H U G L U H



Suggested Layout t

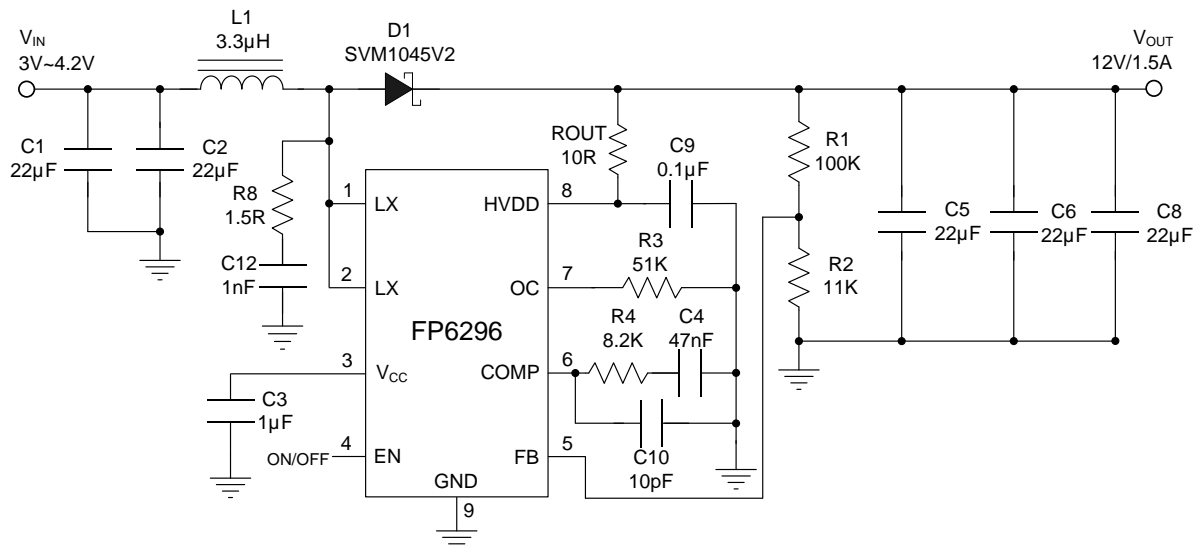
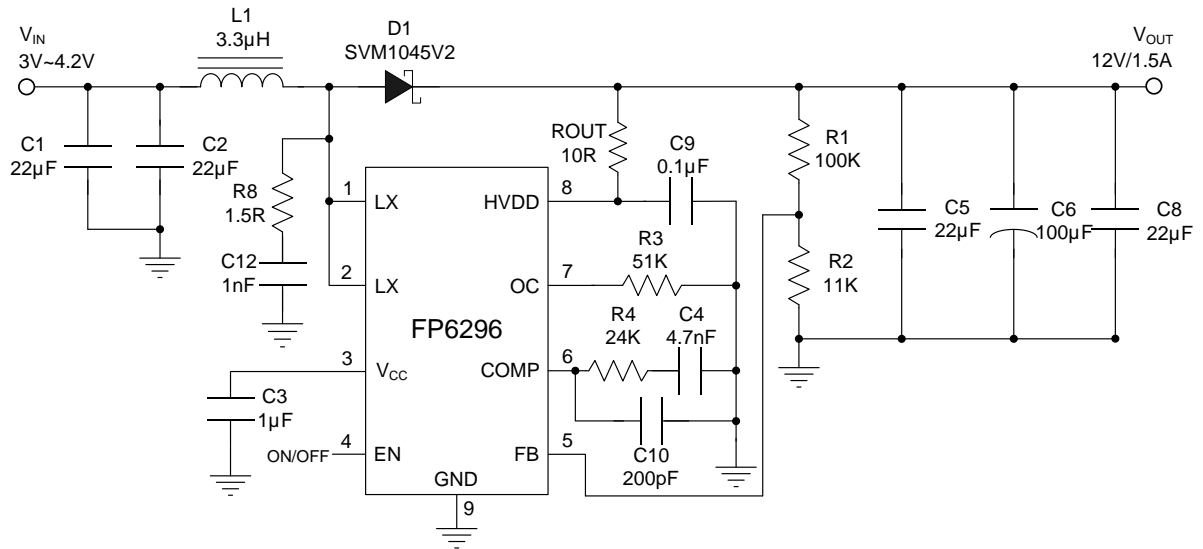
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Website: <http://www.feeling-tech.com.tw>

Rev. 0.60



Typical Application

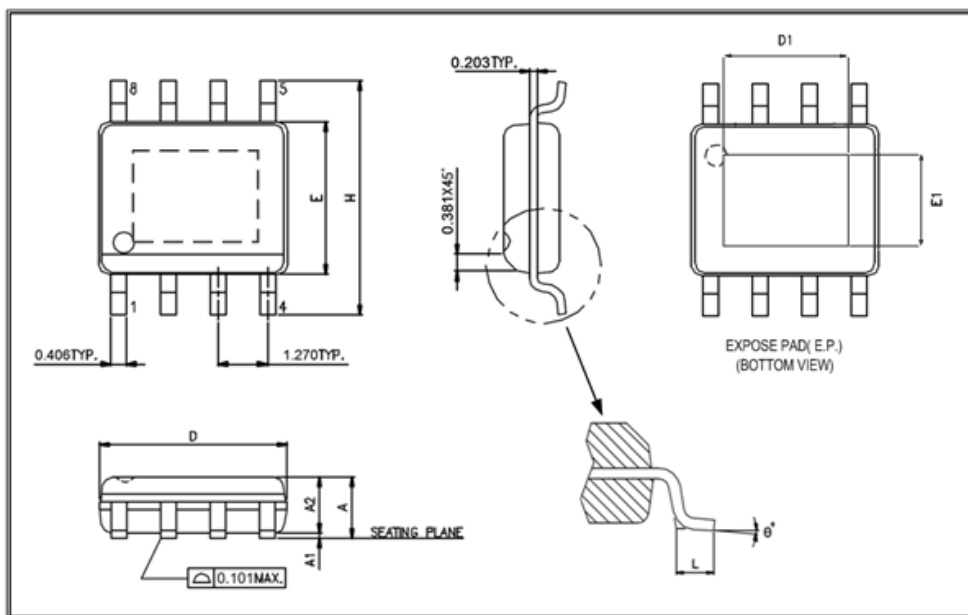


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Package Outline

SOP-8L(EP)



UNIT: mm

Symbols	Min. (mm)	Max. (mm)
A	1.30	1.70
A1	0	0.15
A2	1.25	1.55
D	4.70	5.10
E	3.80	4.00
H	5.80	6.20
L	0.40	1.27

Exposed PAD Dimensions:

Symbols	Min. (mm)	Max. (mm)
D1	2.60	3.45
E1	1.90	2.56

Note:

1. Package dimensions are in compliance with JEDEC outline: MS-012 AA.
2. 'LPHQVLRQ ' ' GRHV QRW LQFOXGH PROGLQJ IODVK SURWUXVLRQV RU JD
3. 'LPHQVLRQ ³ (' GRHV QDWXROFOXGIBHSLQWHU