

## GENERAL DESCRIPTION

The EST7610 provides protection circuits, power good output (PGO), fault protection latch (FPL\_N), and a protection detector function (PDON\_N) control. It can minimize external components of switching power supply systems in personal computer.

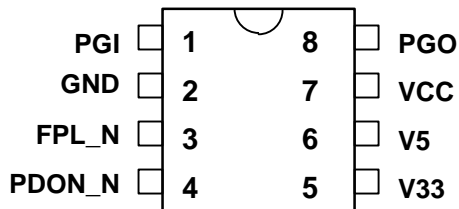
The Over Voltage Detector (OVD) monitors 3.3V, 5V, 12V input voltage level. The Under Voltage Detector (UVD) monitors 3.3V, 5V input voltage level. When OVD or UVD detect the fault voltage level, the FPL\_N is latched HIGH and PGO go low. The latch can be reset by PDON\_N go HIGH. There is 2.4 ms delay time for PDON\_N turn off FPL\_N.

When OVD and UVD detect the right voltage level, the power good output (PGO) will be issue.

## FEATURES

- The Over Voltage Detector (OVD) monitors 3.3V, 5V, 12V input voltage level.
- The Under Voltage Detector (UVD) monitors 3.3V, 5V input voltage level.
- Both of the power good output (PGO) and fault protection latch (FPL\_N) are Open Drain Output.
- 75 ms time delay for UVD.
- 300 ms time delay for PGO.
- 38 ms for PDON\_N input signal De-bounce.
- 73 us for internal signal De-glitches.
- 2.4 ms time delay for PDON\_N turn-off FPL\_N.

## PIN ASSIGNMENT AND PACKAGE TYPE



## ORDERING INFORMATION

<b>PACKAGE</b>	<b>8-Pin Plastic DIP</b>	<b>8-Pin Plastic SOP</b>
<b>MARKING</b>	<b>EST7610A</b>	<b>EST7610AS</b>
<b>PACKING</b>	<b>Tube</b>	<b>Tube or Tape&amp;Reel</b>

## PIN DESCRIPTION

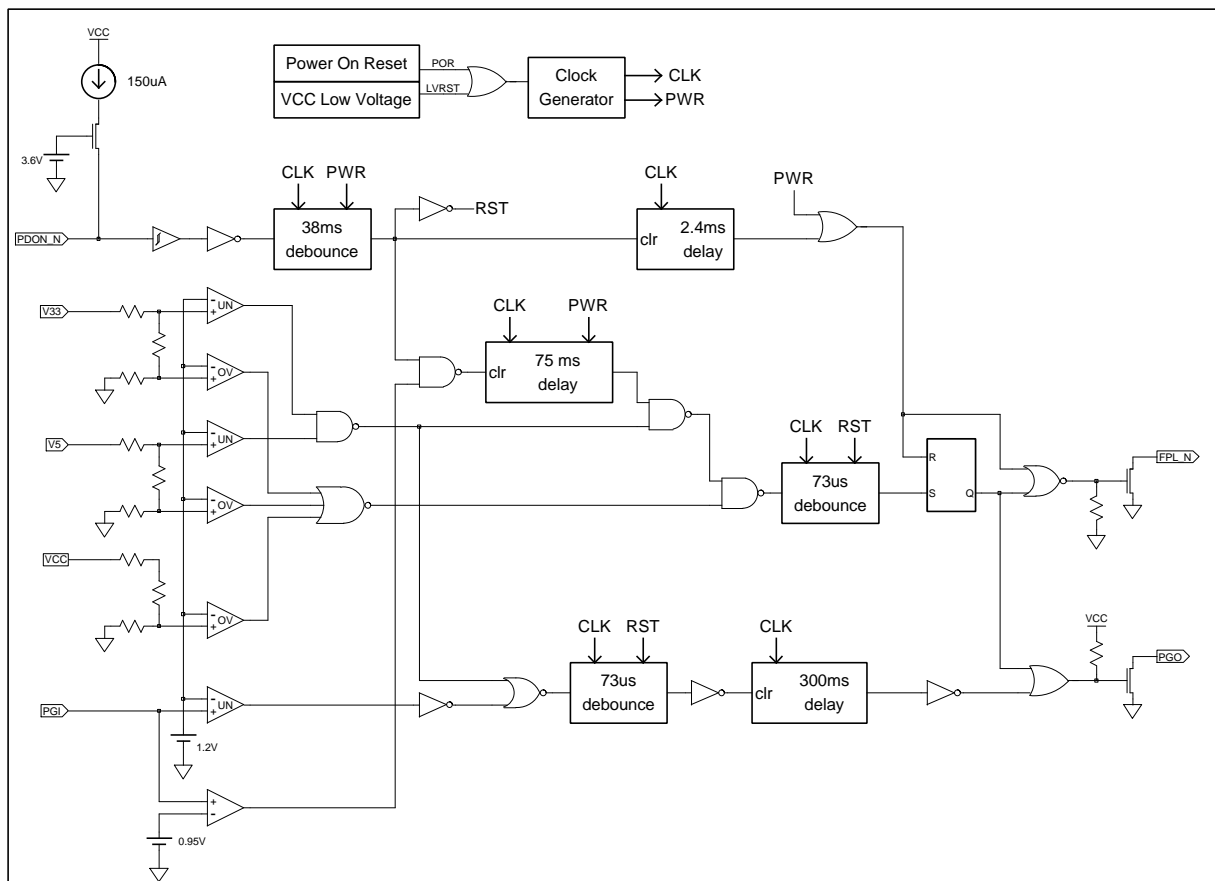
Pin No.	Pin Name	TYPE	Description
1	PGI	I	power good input pin
2	GND	P	Ground
3	FPL_N	O	fault protection latch output pin(open drain output)
4	PDON_N	I	protection detector function ON/OFF control input pin
5	V33	I	3.3V input pin
6	V5	I	5V input pin
7	VCC	I	Supply voltage / 12V input pin
8	PGO	O	power good output pin(open drain output)

**FUNCTION TABLE**

PGI	PDON_N	UV	OV	FPL_N	PGO
< 0.95V	L	no	no	L	L
< 0.95V	L	no	yes	H	L
< 0.95V	L	yes	no	L	L
0.95 < PGI < 1.2	L	no	no	L	L
0.95 < PGI < 1.2	L	no	yes	H	L
0.95 < PGI < 1.2	L	yes	no	H	L
PGI > 1.2	L	no	no	L	H
PGI > 1.2	L	no	yes	H	L
PGI > 1.2	L	yes	no	H	L
x	H	x	x	H	L

x = don't care

**BLOCK DIAGRAM**



**RECOMMENDED OPERATING CONDITIONS**

Parameter		Conditions	Min.	Typ.	Max.	Unit
Supply voltage, VCC			4	12	15	V
Input voltage	PDON_N, V5, V33, PGI				7	V
Output voltage	FPL_N				15	V
	PGO				7	V
Operating temperature			-40		125	
Output sink current	FPL_N				30	mA
	PGO				10	mA
Supply voltage rising time			1			ms

**ELECTRICAL CHARACTERISTICS, at Ta=25°C and VCC=5V.**

**Over Voltage Detection**

Parameter		Condition	Min.	Typ.	Max.	Unit
Over voltage threshold	V33		3.7	3.9	4.1	V
	V5		5.7	6.1	6.5	V
	Vcc / V12		12.8	13.4	13.9	V
I <sub>LEAKAGE</sub> Leakage current (FPL_N)	V(FPL_N) = 5V		5			uA
V <sub>OL</sub> Low level output voltage (FPL_N)	I <sub>sink</sub> 10mA		0.3			V
	I <sub>sink</sub> 30mA		0.7			

**PGI and PGO**

Parameter		Condition	Min.	Typ.	Max.	Unit
Under voltage threshold	V33		2.0	2.2	2.4	V
	V5		3.3	3.5	3.7	V
Input threshold voltage(PGI)	PGI1		1.16	1.20	1.24	V
	PGI2		0.90	0.95	1.00	
I <sub>LEAKAGE</sub> Leakage current(PGO)	PGO = 5V		5			uA
V <sub>OL</sub> Low level output voltage(PGO)			0.4			V

**PDON\_N**

Parameter		Condition	Min.	Typ.	Max.	Unit
Input pull-up current		PDON_N= 0V		150		uA
High-level input voltage			2.0			V
Low-level input voltage					0.8	V

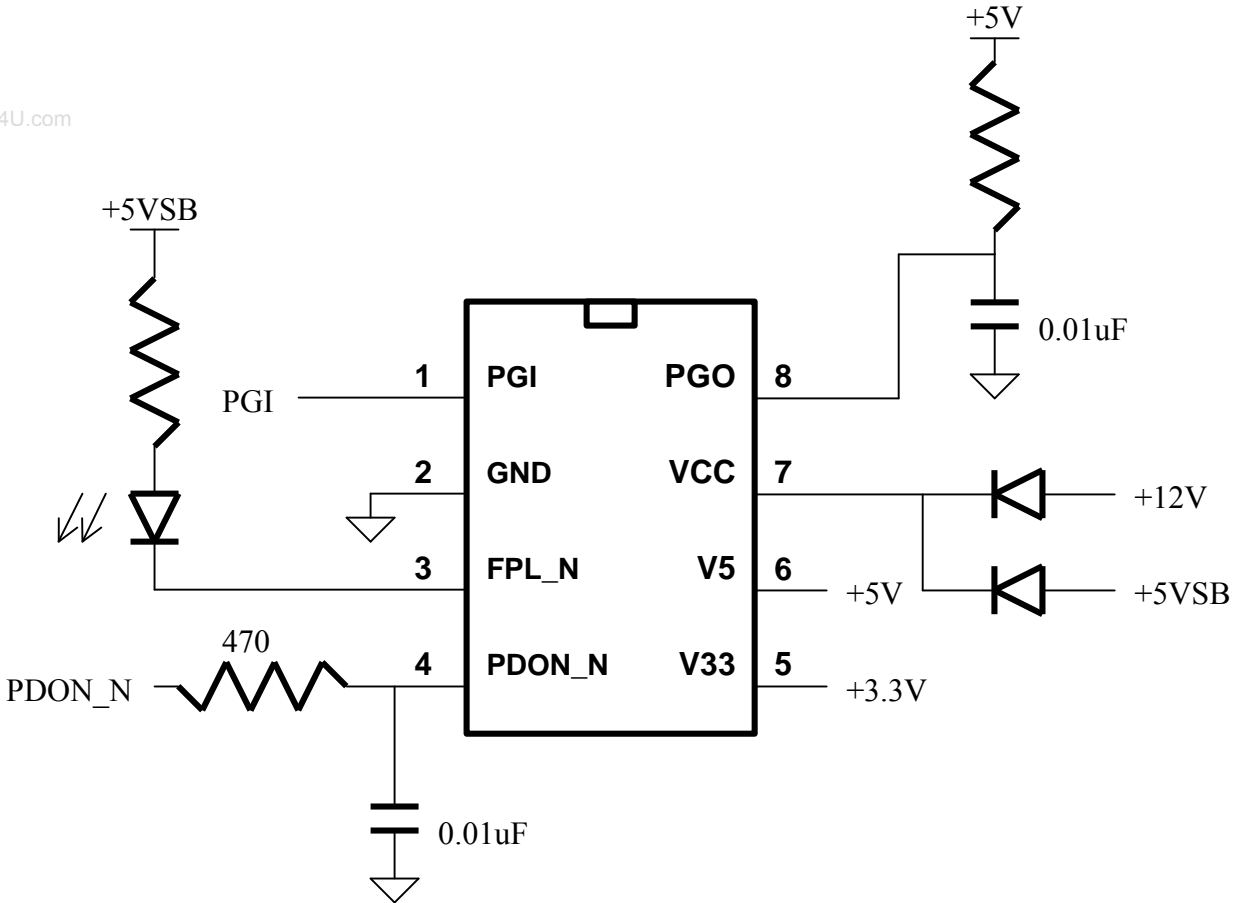
**TOTAL DEVICE**

Parameter		Condition	Min.	Typ.	Max.	Unit
I <sub>CC</sub> Supply current		PDON_N= 5V			1	mA
V <sub>CC</sub> low voltage				3		V

**SWITCHING CHARACTERISTICS, Vcc=5V**

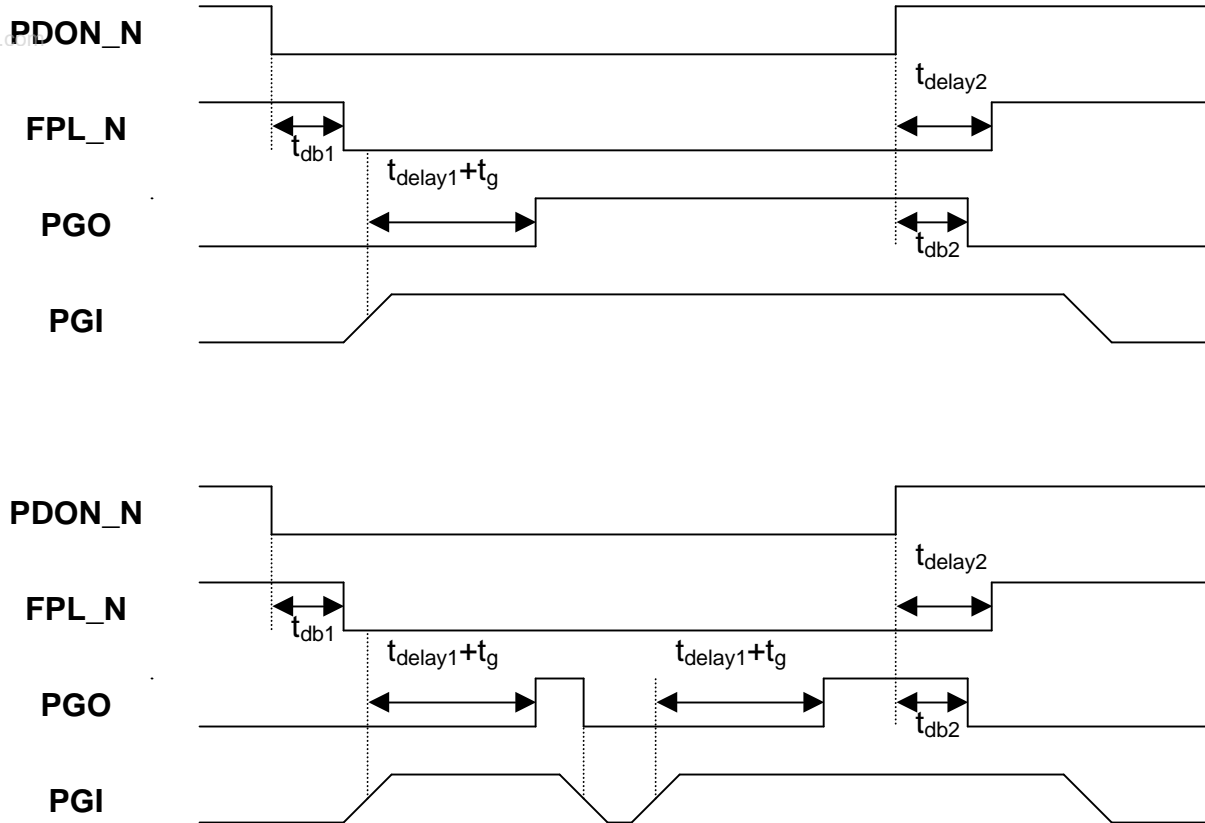
Parameter		Condition	Min.	Typ.	Max.	Unit
t <sub>db1</sub>	De-bounce time (PDON_N)		32	38	61	mS
t <sub>dleav1</sub>	Delay time (PGI to PGO)		200	300	490	mS
t <sub>db2</sub>	De-bounce time (PDON_N)		32	38	61	mS
t <sub>g</sub>	De-glitch time		63	73	120	uS
t <sub>delay2</sub>	PDON_N to FPL_N delay time		t <sub>db2</sub> +2.0	t <sub>db2</sub> +2.4	t <sub>db2</sub> +3.8	mS
t <sub>delay3</sub>	Internal UVD delay time	FPL_N go low & every time PGI > 0.95V	65	75	122	mS

APPLICATION CIRCUIT

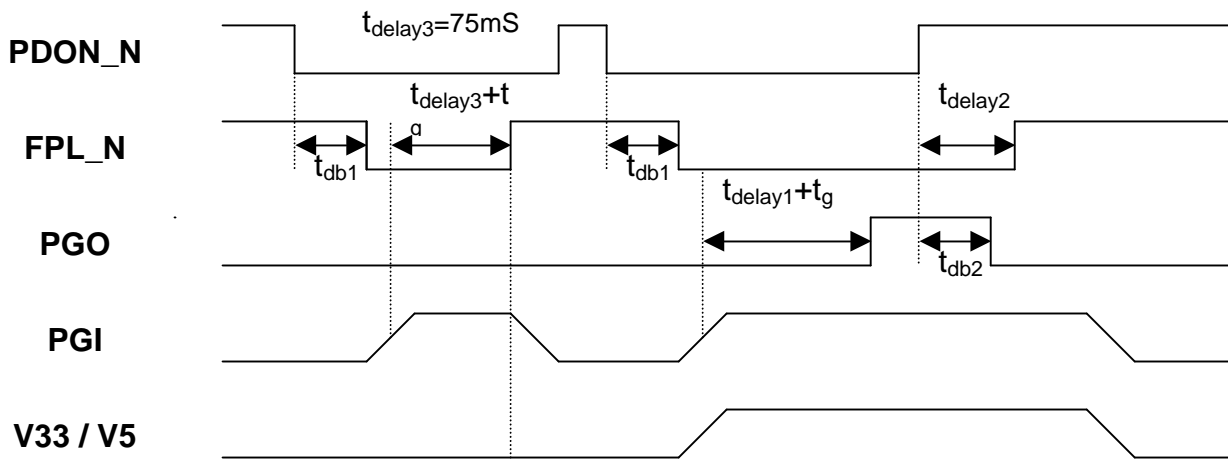
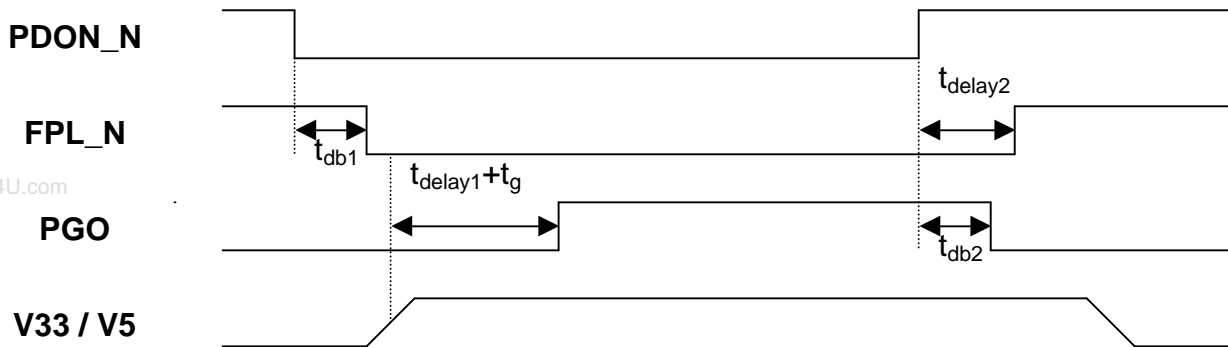


APPLICATION TIMMING

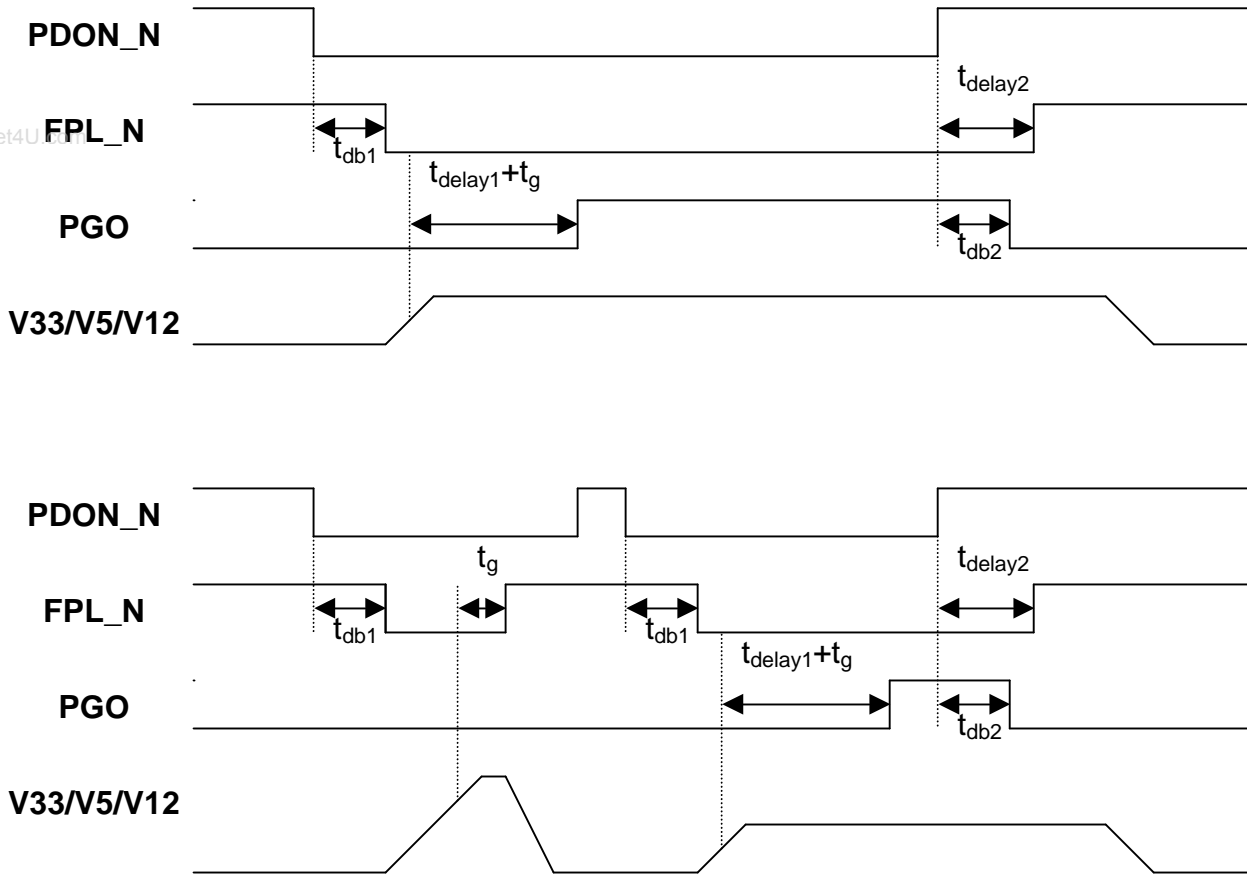
1.) PGI (UNDER\_VOLTAGE) :



2.) V33, V5 (UNDER\_VOLTAGE) :

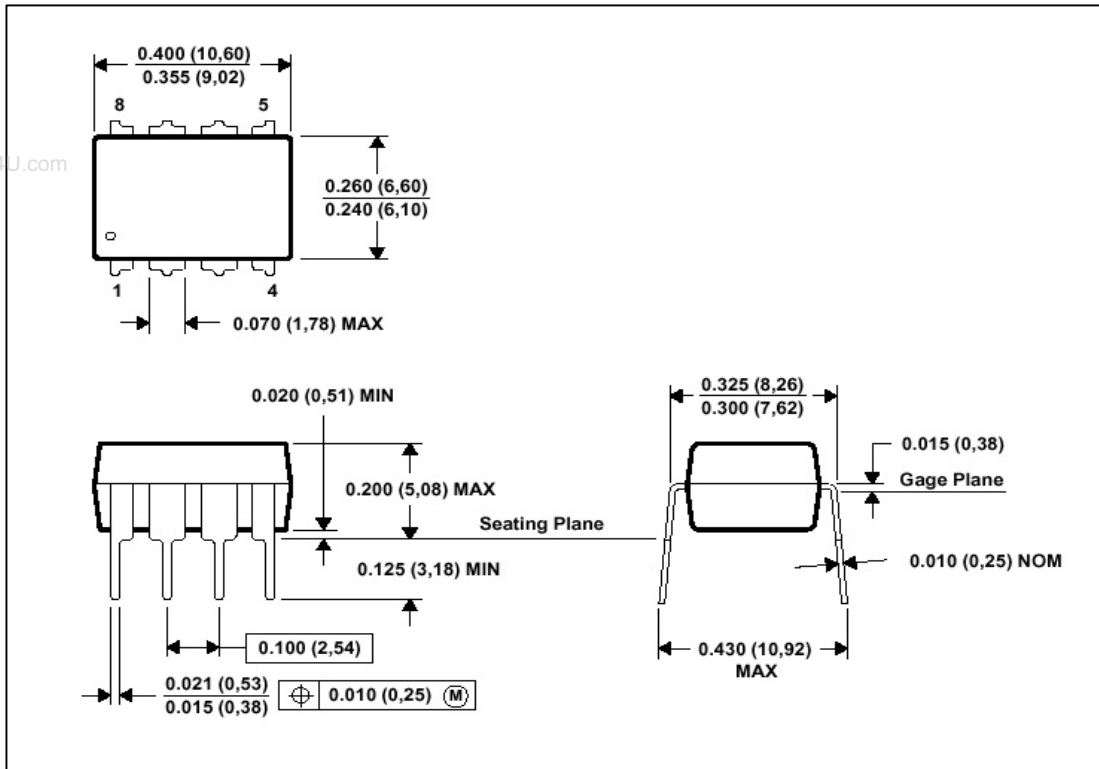


3.) V33, V5, V12 (OVER\_VOLTAGE) :



## MECHANICAL INFORMATION

## PLASTIC DUAL-IN-LINE PACKAGE



NOTE 1 : All linear dimensions are in inches ( millimeters ) .

NOTE 2 : This drawing is subject to change without notice.

NOTE 3 : Falls within JEDEC MS-001