



偉詮電子股份有限公司  
**Weltrend Semiconductor, Inc.**

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# **WT751002S**

## **PC POWER SUPPLY SUPERVISOR**

### **Data Sheet**

**REV. 1.00**

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## GENERAL DESCRIPTION

The WT751002S provides protection circuits, power good output (PGO), fault protection latch (FPOB), and a protection detector function (PSONB) control. It can minimize external components of switching power supply systems in personal computer.

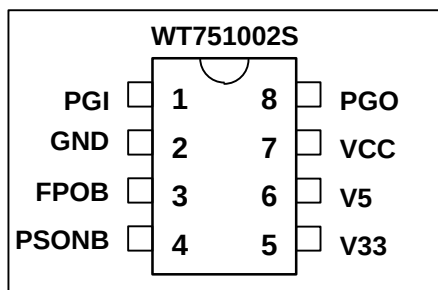
The Over Voltage Detector (OVD) monitors V33, V5 and VCC input voltage level. The Under Voltage Detector (UVD) monitors V33 and V5 input voltage level. When OVD or UVD detect the fault voltage level, the FPOB is latched HIGH and PGO go low. When PGI detect the fault voltage level, the FPOB would be kept LOW and PGO go low. The latch can be reset by PSONB go HIGH. There is 3.5 ms delay time for PSONB turn off FPOB.

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

## FEATURES

- The Over Voltage Detector (OVD) monitors V33, V5 and VCC input voltage.
- The Under Voltage Detector (UVD) monitors V33 and V5 input voltage.
- Both of the power good output (PGO) and fault protection latch (FPOB) are Open Drain Output.
- 75 ms time delay for UVD.
- 300 ms time delay for PGO.
- 38 ms for PSONB input signal De-bounce.
- 73 us for PGI and UVD internal signal De-glitches.
- 55 us for OVD internal signal De-glitches.
- 3.5 ms time delay for PSONB turn-off FPOB.
- The UVD would be disabled when PGI < 0.95V.

## PIN ASSIGNMENT AND PACKAGE TYPE



## ORDERING INFORMATION

| PACKAGE        | 8-Pin Plastic DIP | 8-Pin Plastic SOP | CHIP           |
|----------------|-------------------|-------------------|----------------|
|                | WT751002S-N085    | WT751002S-S085    | WT751002S-HXXX |
| Lead-Free (Pb) | WT751002S-N085 Pb | WT751002S-S085 Pb |                |

※ The Top-Side Marking would be added a dot (●) in the right side for lead-free package.

**PIN DESCRIPTION**

| Pin Name | TYPE | Description                                     |
|----------|------|-------------------------------------------------|
| PGI      | I    | Power good input signal pin                     |
| GND      | P    | Ground                                          |
| FPOB     | O    | Fault protection output pin, open drain output  |
| PSONB    | I    | On/Off switch input                             |
| V33      | I    | 3.3V over voltage & under voltage               |
| V5       | I    | 5V over voltage & under voltage                 |
| VCC      | I    | Power supply                                    |
| PGO      | O    | Power good output signal pin, open drain output |

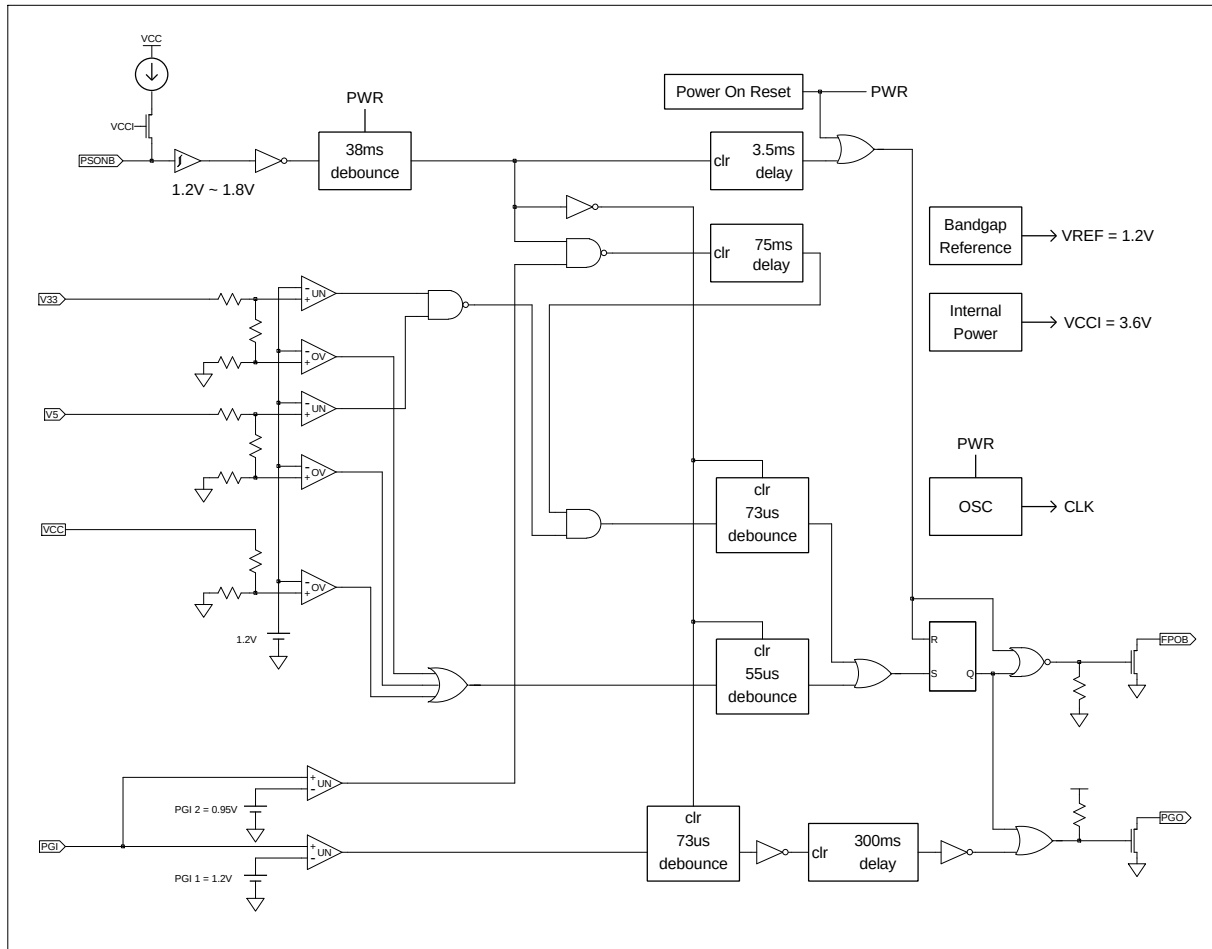
**FUNCTION TABLE**

| PGI                | PDON_N | UVD | OVD | FPL_N | PGO |
|--------------------|--------|-----|-----|-------|-----|
| < 0.95V            | L      | No  | No  | L     | L   |
| < 0.95V            | L      | No  | Yes | H     | L   |
| < 0.95V            | L      | Yes | No  | L     | L   |
| 0.95V < PGI < 1.2V | L      | No  | No  | L     | L   |
| 0.95V < PGI < 1.2V | L      | No  | Yes | H     | L   |
| 0.95V < PGI < 1.2V | 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

**WT751002S- 080**



## ABSOLUTE MAXIMUM RATINGS

| Parameter             |                     | Min. | Max.                | Unit |
|-----------------------|---------------------|------|---------------------|------|
| Supply voltage, VCC   |                     | -0.3 | 16                  | V    |
| Input voltage         | PGI, PSONB, V5, V33 | -0.3 | VCC + 0.3 (Max. 7V) | V    |
| Output voltage        | PGO                 | -0.3 | 7                   | V    |
|                       | FPOB                | -0.3 | 16                  | V    |
| Operating temperature |                     | -40  | 125                 | °C   |
| Storage temperature   |                     | -55  | 150                 | °C   |

\*Note: Stresses above those listed may cause permanent damage to the devices

## RECOMMENDED OPERATING CONDITIONS

| Parameter                  |                     | Conditions | Min. | Typ. | Max. | Unit |
|----------------------------|---------------------|------------|------|------|------|------|
| Supply voltage, VCC        |                     |            | 4    | 12   | 15   | V    |
| Input voltage              | PGI, PSONB, V5, V33 |            |      |      | 7    | V    |
| Output voltage             | PGO                 |            |      |      | 7    | V    |
|                            | FPOB                |            |      |      | 15   | V    |
| Output sink current        | FPOB                | 0.3V       |      |      | 10   | mA   |
|                            | PGO                 | 0.3V       |      |      | 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  | 6.2  | V    |
|                                                 | VCC |                          | 12.9 | 13.4 | 13.9 | V    |
| I <sub>LEAKAGE</sub> Leakage current (FPOB)     |     | V(FPOB) = 5V             | 5    |      |      | uA   |
| V <sub>OL</sub> Low level output voltage (FPOB) |     | I <sub>sink</sub> = 10mA |      |      | 0.3  | V    |

### Under Voltage Detection, PGI, 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 | V    |
| I <sub>LEAKAGE</sub> Leakage current (PGO)     |      | PGO = 5V                 | 5    |      |      | uA   |
| V <sub>OL</sub> Low level output voltage (PGO) |      | I <sub>sink</sub> = 10mA |      |      | 0.3  | V    |

### PSONB

| Parameter                | Condition | Min. | Typ. | Max. | Unit |
|--------------------------|-----------|------|------|------|------|
| Input pull-up current    | PSONB= 0V |      | 150  |      | uA   |
| High-level input voltage |           | 1.8  |      |      | V    |
| Low-level input voltage  |           |      |      | 1.2  | V    |

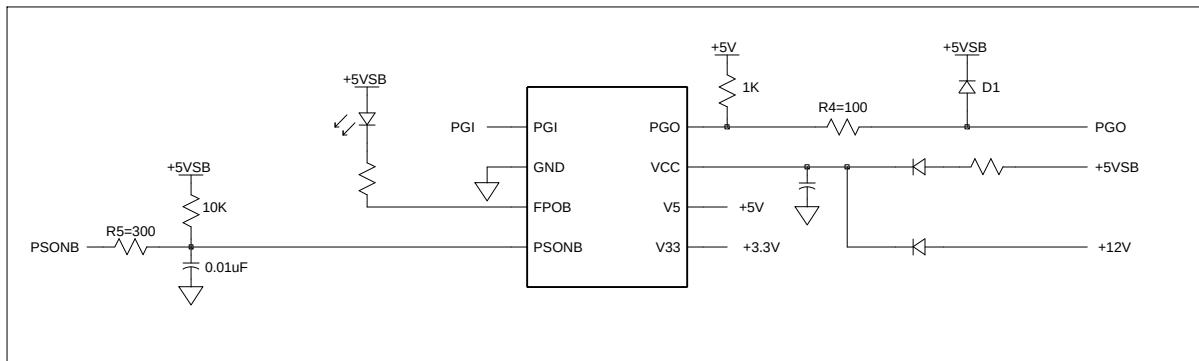
## TOTAL DEVICE

| Parameter                                   | Condition  | Min. | Typ. | Max. | Unit |
|---------------------------------------------|------------|------|------|------|------|
| I <sub>cc</sub> Supply current              | PDON_N= 5V |      |      | 1    | mA   |
| V <sub>cc</sub> start-up voltage            |            |      | 3.4  |      | V    |
| V <sub>cc</sub> stop voltage after start-up |            |      | 3.0  |      | V    |

## SWITCHING CHARACTERISTICS, V<sub>cc</sub>=5V

| Parameter                                    | Condition                                  | Min.                  | Typ.                  | Max.                  | Unit |
|----------------------------------------------|--------------------------------------------|-----------------------|-----------------------|-----------------------|------|
| t <sub>db1</sub> De-bounce time (PSONB)      |                                            | 24                    | 38                    | 52                    | mS   |
| t <sub>delay1</sub> Delay time (PGI to PGO)  |                                            | 200                   | 300                   | 400                   | mS   |
| t <sub>db2</sub> De-bounce time (PSONB)      |                                            | 24                    | 38                    | 52                    | mS   |
| t <sub>q1</sub> De-glitch time for PGI       |                                            | 47                    | 73                    | 100                   | uS   |
| t <sub>q2</sub> De-glitch time for UVD       |                                            | 47                    | 73                    | 100                   | uS   |
| t <sub>q3</sub> De-glitch time for OVD       |                                            | 35                    | 55                    | 75                    | uS   |
| t <sub>delay2</sub> PSONB to FPOB delay time |                                            | t <sub>db2</sub> +2.0 | t <sub>db2</sub> +3.5 | t <sub>db2</sub> +5.0 | mS   |
| t <sub>delay3</sub> Internal UVD delay time  | After FPOB go low or every time PGI > 1.2V | 49                    | 75                    | 100                   | mS   |

## APPLICATION CIRCUIT

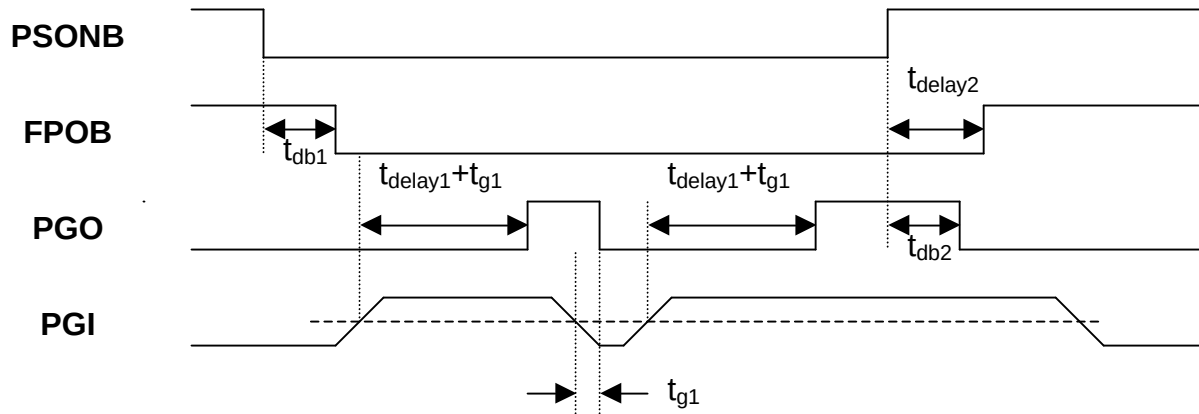


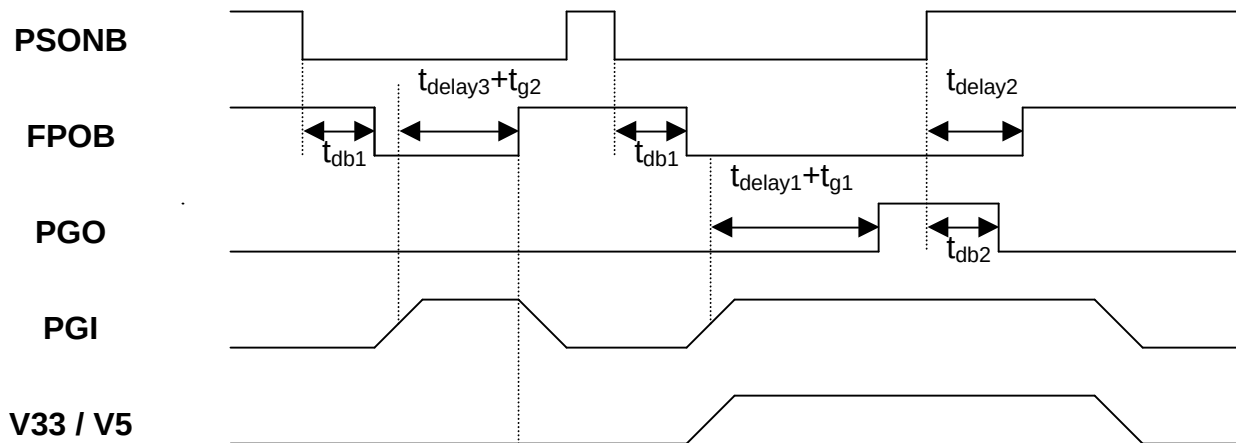
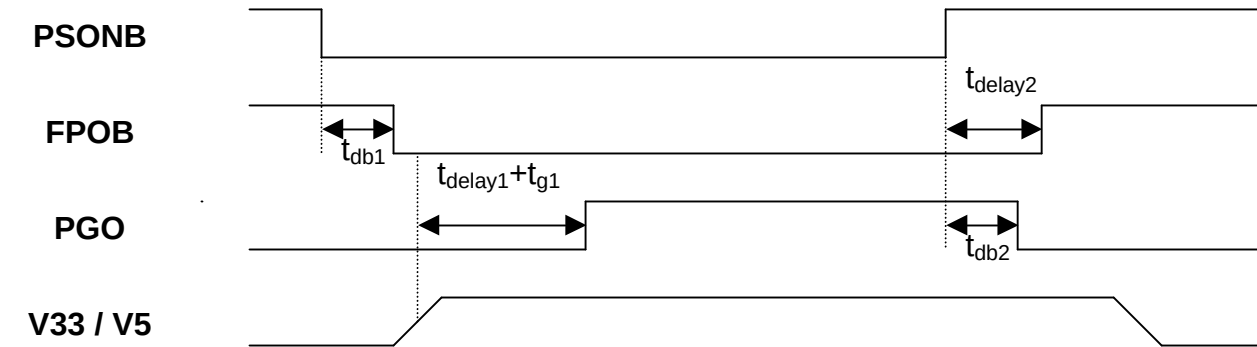
NOTE1 : The series resistor R5 at PSONB can not be omitted. (R5 = 300Ω is suggested)

NOTE2 : The series resistor R4 = 100Ω and diode D1 at PGO is suggested.

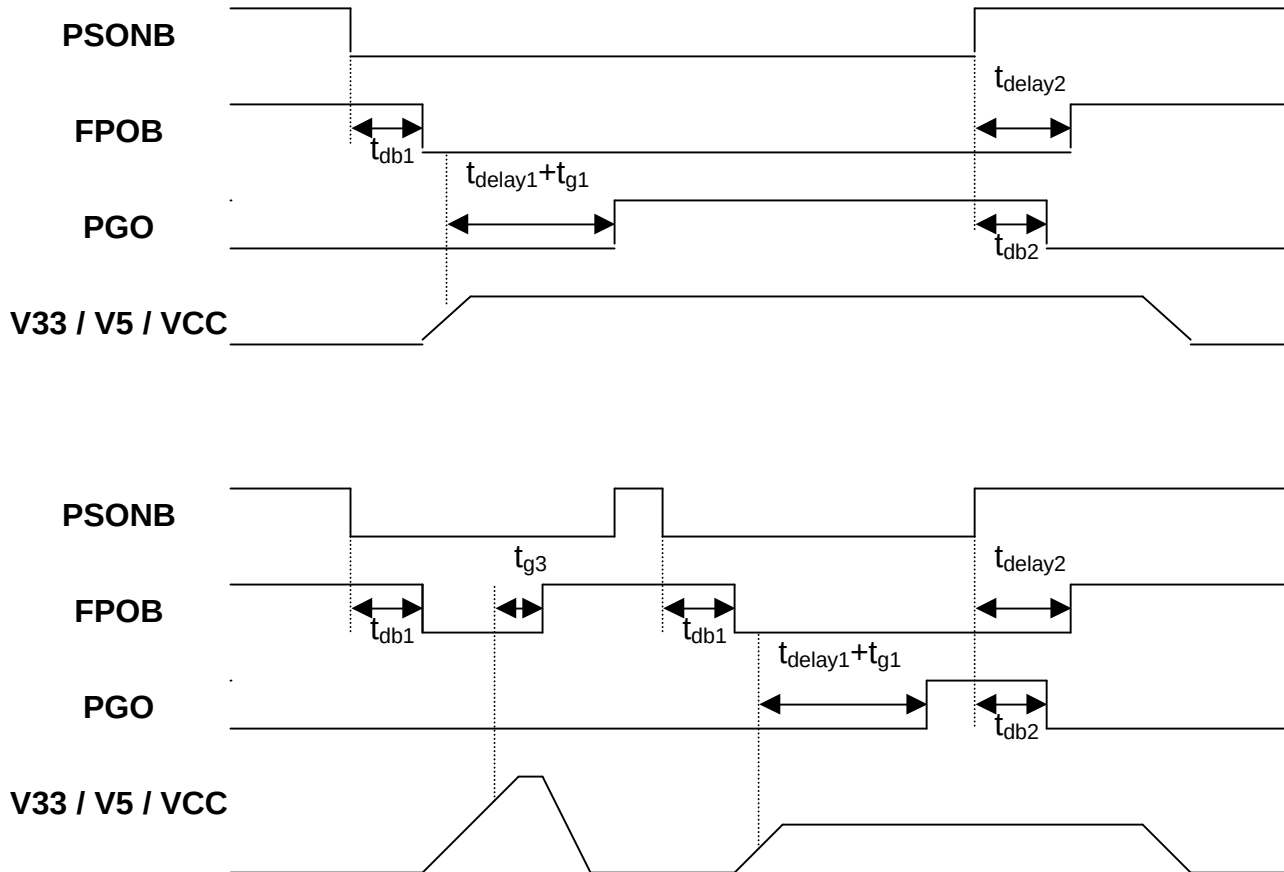
## APPLICATION TIMMING

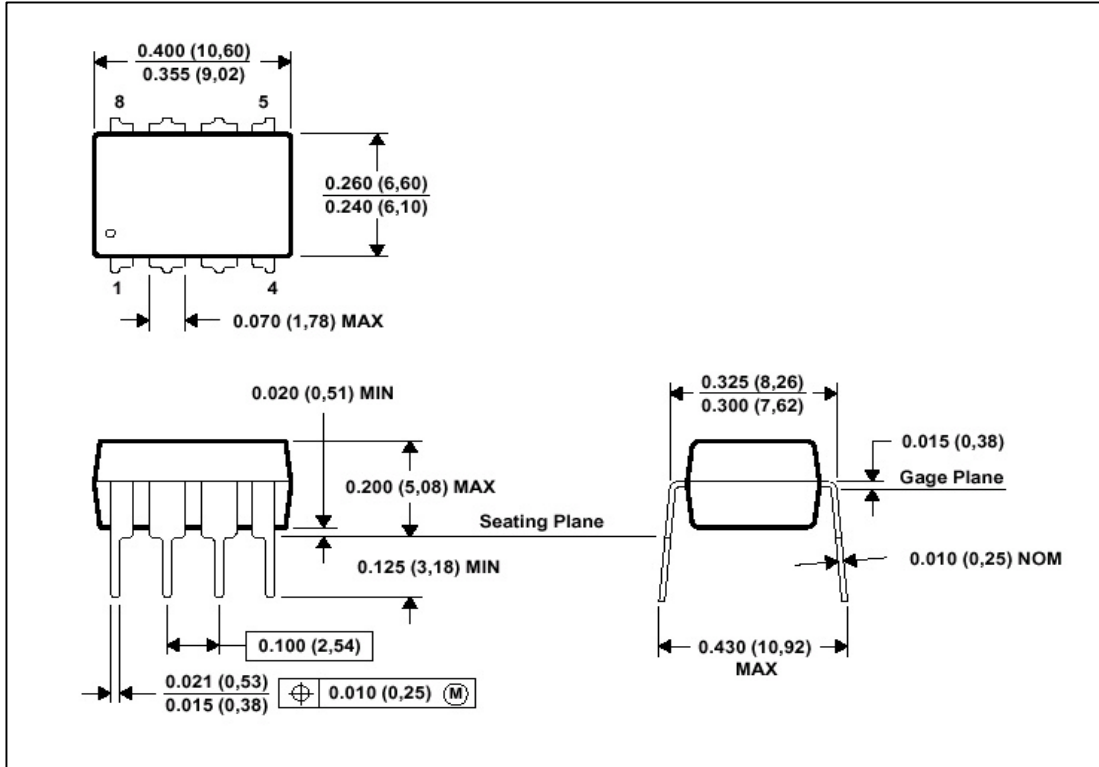
### 1.) PGI (UNDER\_VOLTAGE) :



**2.) V33 / V5 UVD :**




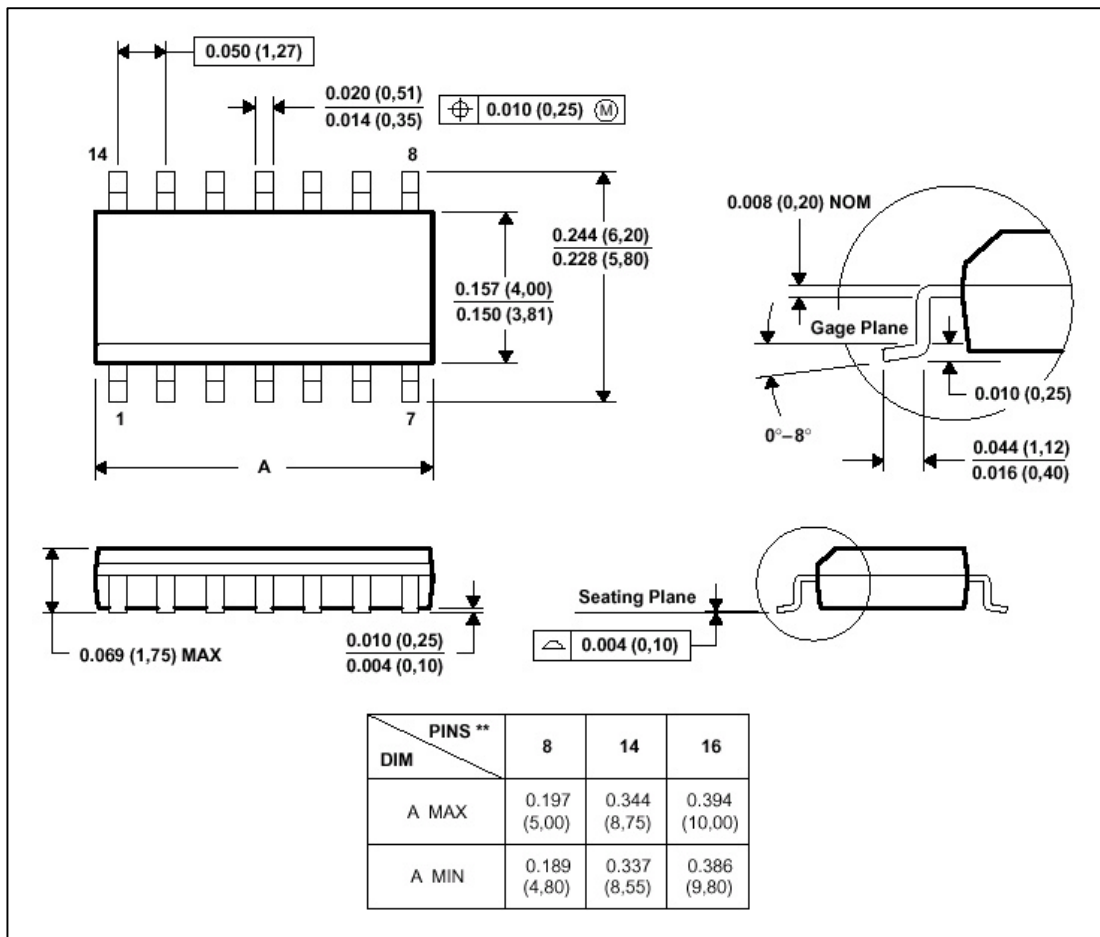
**3.) V33 / V5 / VCC OVP :**


**MECHANICAL INFORMATION**
**PLASTIC DUAL-IN-LINE 8PIN 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

**PLASTIC SMALL-OUTLINE 8PIN 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-012