

## PC POWER SUPPLY SUPERVISORS

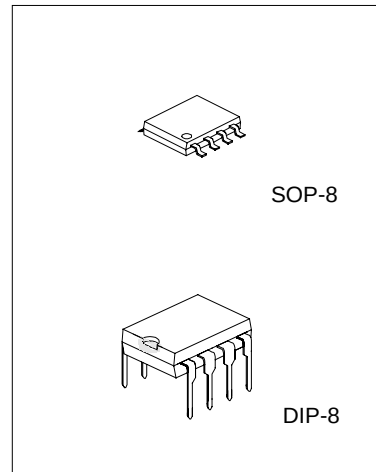
### DESCRIPTION

The UTC 3511 provides protection circuits, power good output (PGO), fault protection latch (FPL\_N), and 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 goes LOW. The latch can be reset by PDON\_N going HIGH. There is 2.4ms delay time for PDON\_N turning off FPL\_N.

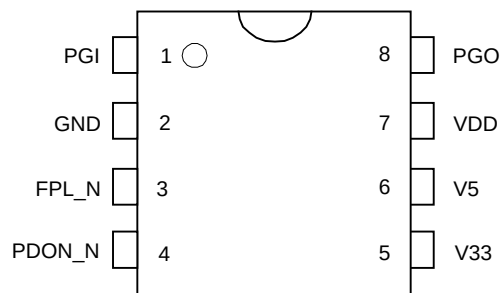
When OVD and UVD detect the right voltage level, the power good output (PGO) will be issue.



### 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 the 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 CONFIGURATION



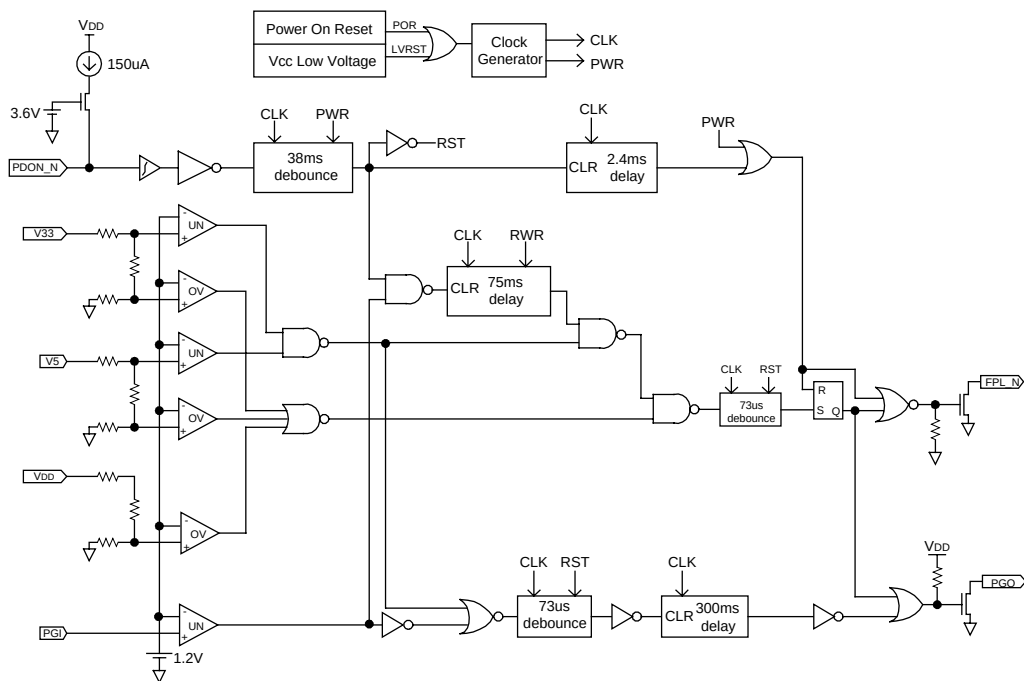
# UTC 3511

# CMOS IC

## 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       | VDD      | I    | Supply voltage/12V input pin                          |
| 8       | PGO      | O    | Power good output pin(open drain output)              |

## BLOCK DIAGRAM



## ABSOLUTE MAXIMUM RATINGS

| PARAMETER             | SYMBOL               | RATINGS   | UNIT |
|-----------------------|----------------------|-----------|------|
| Supply voltage        | V <sub>DD</sub>      | -0.3 ~ 16 | V    |
| Input Voltage         | PDON_N, V5, V33, PGI | -0.3 ~ 7  | V    |
| Output Voltage        | FPL_N                | -0.3 ~ 16 | V    |
|                       | PGO                  | -0.3 ~ 7  | V    |
| Operating temperature | T <sub>opr</sub>     | -40 ~ 125 | °C   |
| Storage temperature   | T <sub>stg</sub>     | -55 ~ 150 | °C   |

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

# UTC

UNISONIC TECHNOLOGIES CO., LTD. 2

QW-R502-015,B

## RECOMMENDED OPERATING CONDITIONS

| PARAMETER                  | SYMBOL               | MIN | TYP | MAX | UNIT |
|----------------------------|----------------------|-----|-----|-----|------|
| Supply Voltage             | V <sub>DD</sub>      | 3.8 | 12  | 15  | V    |
| Input Voltage              | PDON_N, V5, V33, PGI |     |     | 7   | V    |
| Output Voltage             | FPL_N                |     |     | 15  | V    |
|                            | PGO                  |     |     | 7   | V    |
| Output Sink Current        | FPL_N                |     |     | 30  | mA   |
|                            | PGO                  |     |     | 10  | mA   |
| Supply Voltage Rising Time | Trs                  | 1   |     |     | ms   |

ELECTRICAL CHARACTERISTICS (Ta=25°C, V<sub>DD</sub>=5V)

## Over Voltage Detection

| PARAMETER                        | SYMBOL                | TEST CONDITIONS         | MIN  | TYP. | MAX  | UNIT |
|----------------------------------|-----------------------|-------------------------|------|------|------|------|
| Over voltage threshold           | V33                   |                         | 3.7  | 3.9  | 4.1  | V    |
|                                  | V5                    |                         | 5.7  | 6.1  | 6.5  |      |
|                                  | V <sub>DD</sub> / V12 |                         | 12.8 | 13.4 | 13.9 |      |
| Leakage current (FPL_N)          | I <sub>LEAKAGE</sub>  | FPL_N=5V                |      | 5    |      | uA   |
| Low level output voltage (FPL_N) | V <sub>OL</sub>       | I <sub>sink</sub> =10mA |      | 0.3  |      | V    |
|                                  |                       | I <sub>sink</sub> =30mA |      | 0.7  |      |      |

## PGI and PGO

| PARAMETER                      | SYMBOL               | TEST CONDITIONS         | MIN  | TYP. | MAX  | UNIT |
|--------------------------------|----------------------|-------------------------|------|------|------|------|
| Under voltage threshold        | V33                  |                         | 2.55 | 2.69 | 2.83 | V    |
|                                | V5                   |                         | 4.1  | 4.3  | 4.47 |      |
| Input threshold voltage (PGI)  | V <sub>PGI</sub>     |                         | 1.16 | 1.20 | 1.24 |      |
| Leakage current (PGO)          | I <sub>LEAKAGE</sub> | PGO=5V                  |      | 5    |      | uA   |
| Low level output voltage (PGO) | V <sub>OL</sub>      | I <sub>sink</sub> =10mA |      | 0.4  |      | V    |

## PDON\_N

| PARAMETER                | SYMBOL          | TEST CONDITIONS | MIN | TYP. | MAX | UNIT |
|--------------------------|-----------------|-----------------|-----|------|-----|------|
| Input pull-up current    | I <sub>I</sub>  | PDON_N=0V       |     | 150  |     | uA   |
| High-level input voltage | V <sub>IH</sub> |                 | 2.4 |      |     | V    |
| Low-level input voltage  | V <sub>IL</sub> |                 |     |      | 1.2 | V    |

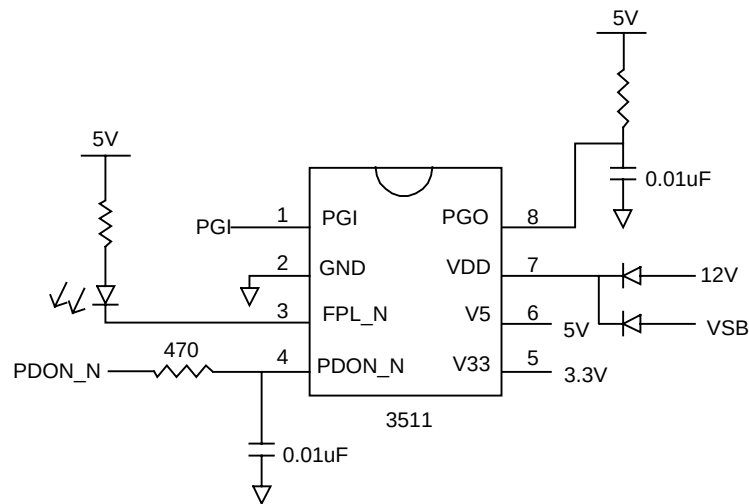
## TOTAL DEVICE

| PARAMETER      | SYMBOL          | TEST CONDITIONS | MIN | TYP. | MAX | UNIT |
|----------------|-----------------|-----------------|-----|------|-----|------|
| Supply current | I <sub>CC</sub> | PDON_N=5V       |     |      | 1   | mA   |
| low voltage    | V <sub>DD</sub> |                 |     | 3    |     | V    |

SWITCHING CHARACTERISTICS, VDD=5V

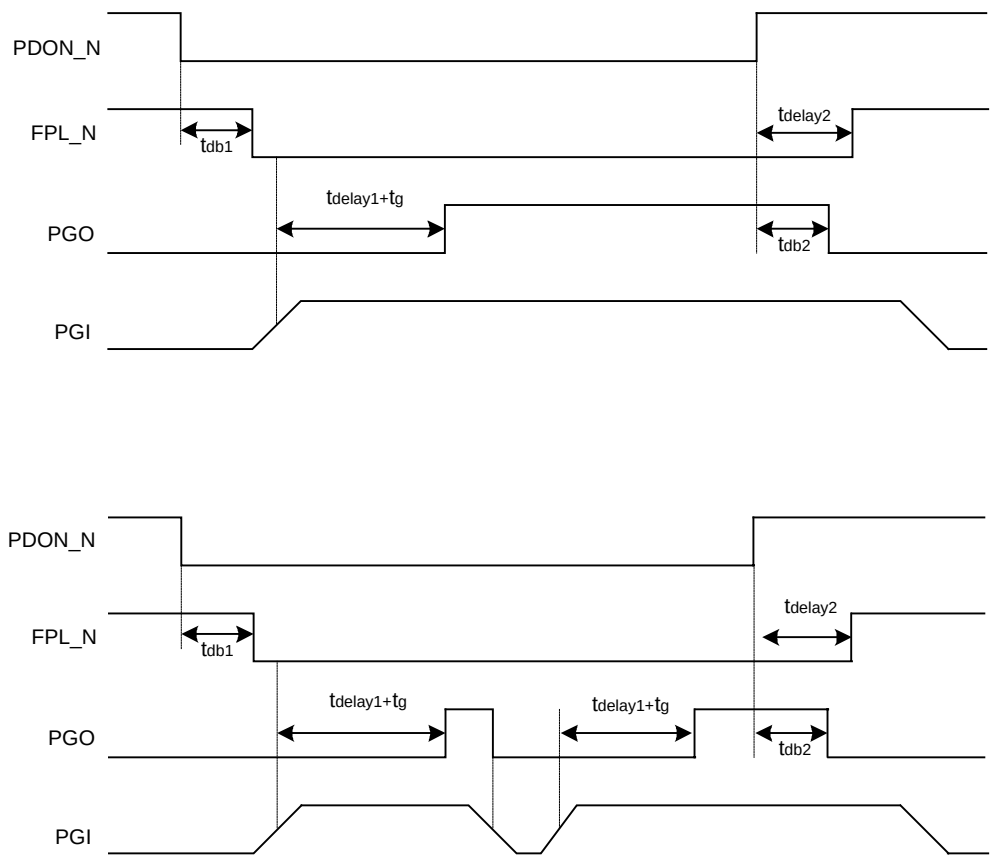
| PARAMETER                  | SYMBOL  | TEST CONDITIONS                       | MIN      | TYP.     | MAX      | UNIT |
|----------------------------|---------|---------------------------------------|----------|----------|----------|------|
| De-bounce time (PDON_N)    | tdb1    |                                       | 32       | 38       | 61       | ms   |
| Delay time (PGI to PGO)    | tdelay  | Ta=-40°C ~ 125°C                      | 200      | 300      | 490      | ms   |
| De-bounce time (PDON_N)    | tdb2    |                                       | 32       | 38       | 61       | ms   |
| De-glitch time             | tg      |                                       | 63       | 73       | 120      | us   |
| PDON_N to FPL_N delay time | tdelay2 |                                       | Tdb2+2.0 | Tdb2+2.4 | Tdb2+3.8 | ms   |
| Internal UVD delay time    | tdelay3 | FPL_N go low & every<br>Time PGI>1.2V | 65       | 75       | 122      | ms   |

APPLICATION CIRCUIT

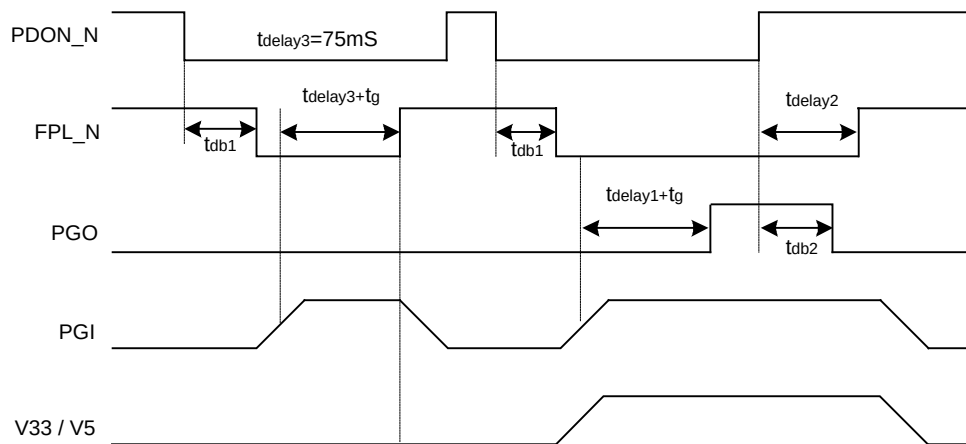
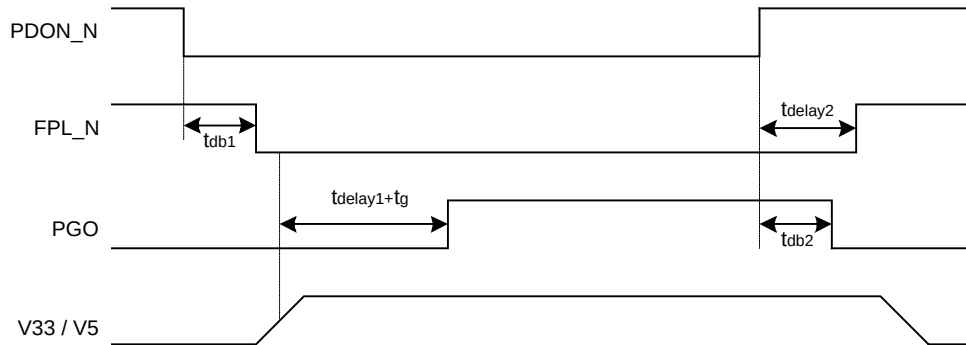


APPLICATION TIMMING

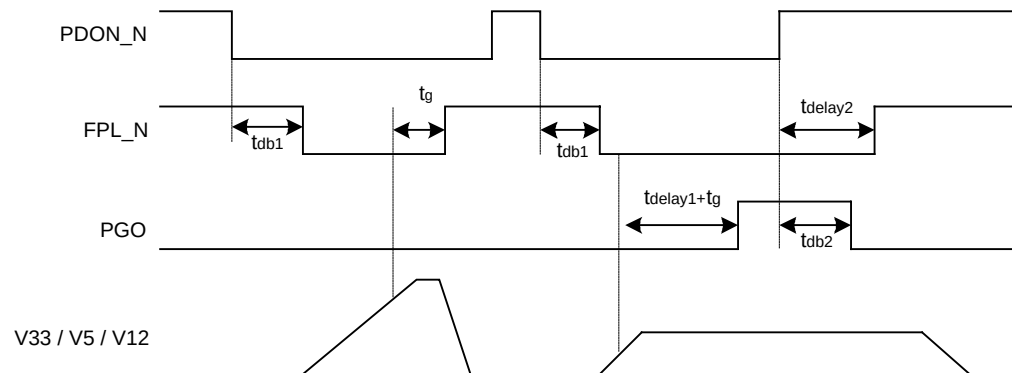
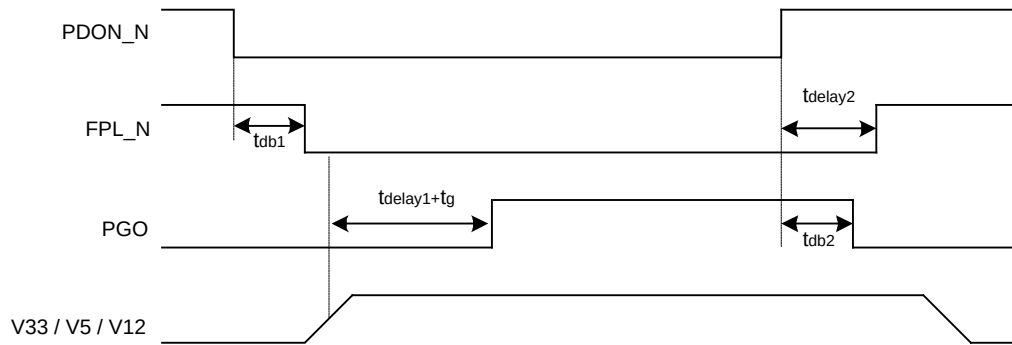
1. PGI (UNDER\_VOLTAGE):



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



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



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