

M62030FP

VOLTAGE DETECTING, SYSTEM RESETTING IC SERIES

GENERAL DESCRIPTION

The M62030FP is a voltage threshold detector designed for detection of an input voltage/supply voltage and generation of a system reset pulse for almost all logic circuits such as microcontroller.

It contains a delay circuit which provides 200 μ s (typ) delay and 4 modes of delays [25ms, 50ms, 100ms, 200ms (typ)] in the input voltage detection type and in the supply voltage detection type, respectively.

FEATURES

- Built-in 2 functional circuits for detecting voltage
- Built-in delay circuit to provide long delay time (without external delay capacitors)
- Selectable 4 modes of delay time [25msec, 50msec, 100msec, 200msec(typ)]
- Few external components
- Small 8-pin SOP package

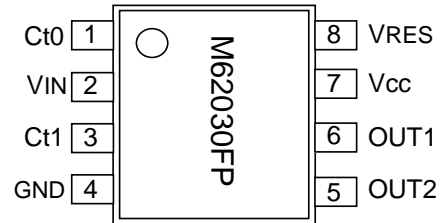
APPLICATION

- Reset circuits of MCU, MPU and logics

RECOMMEND OPERATING CONDITION

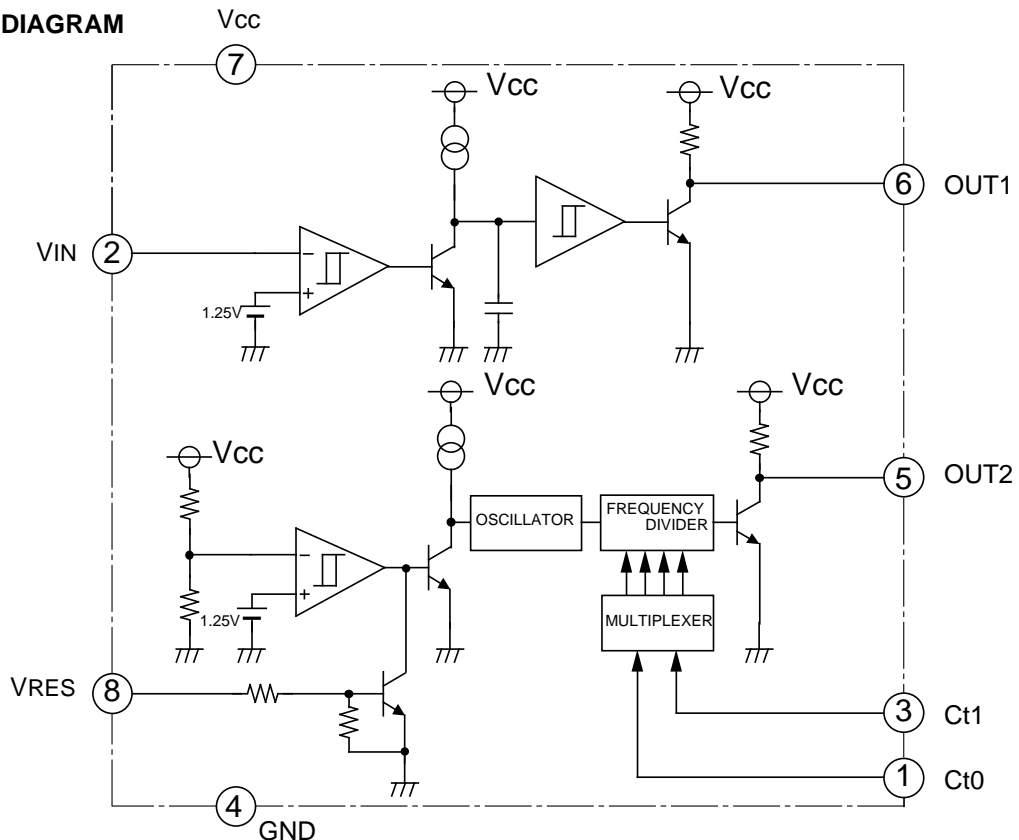
- Supply voltage range 2V to 10V

PIN CONFIGURATION (TOP VIEW)



Outline 8P2S-A

BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS (Ta=25°C, unless otherwise noted)

| Symbol | Parameter | Conditions | Ratings | Unit |
|----------|--------------------------|------------|------------|-------|
| Vcc | Supply voltage | | -0.3 to 10 | V |
| ISINK1,2 | Output Sink Current | Output1,2 | 8.0 | mA |
| VO | Output voltage | | -0.3 to 10 | V |
| VRES | Self reset input voltage | | -0.3 to 10 | V |
| Pd | Power dissipation | | 300 | mW |
| Ktheta | Thermal Derating | Ta 25°C | 3.0 | mW/°C |
| Topr | Operating temperature | | -20 to 75 | °C |
| Tstg | Storage temperature | | -40 to 125 | °C |

ELECTRICAL CHARACTERISTICS (Ta = -20 to 75°C, unless otherwise noted)

< Reset circuit 1 >

| Symbol | Parameter | Test Conditions | Limits | | | Unit |
|--------|--|---------------------------|--------|------|------|------|
| | | | Min | Typ | Max | |
| VS1 | Detecting voltage 1 | Ta= 25°C | 1.20 | 1.25 | 1.30 | V |
| Vs1 | Hysteresis voltage 1 | Ta= 25°C | 9 | 15 | 23 | mV |
| TPLH1 | Output "L to H" propagation delay time 1 | CL=100pF, Ta= 25°C | 80 | 200 | 500 | µs |
| VOL1 | Low output voltage 1 | VIN<1.2V, IOL=5mA, Vcc=5V | | 0.2 | 0.4 | V |
| VIN | Input voltage | Vcc 7V | -0.3 | | Vcc | V |
| | | Vcc > 7V | -0.3 | | 7.0 | |
| IIN | Input Current | VIN=1.25V | | 100 | 500 | nA |

< Reset circuit 2 >

| Symbol | Parameter | Test Conditions | Limits | | | Unit | |
|---------|--|-----------------------------|----------------------|------|-----|------|----|
| | | | Min | Typ | Max | | |
| VS2 | Detecting voltage 2 | Ta= 25°C | 4.0 | 4.2 | 4.4 | V | |
| VS2 | Hysteresis voltage 2 | Ta= 25°C | 30 | 50 | 100 | mV | |
| TPLH2 | Output "L to H" propagation delay time 2 | Ct0="L", Ct1="H" | | 25 | | ms | |
| | | Ct0="H", Ct1="L" | | 50 | | ms | |
| | | Ct0="H", Ct1="H" or opening | CL=100pF Ta= 25°C | | 100 | | ms |
| | | Ct0="L", Ct1="L" | | | 200 | | ms |
| VOL2 | Low output voltage 2 | Vcc=4.0V, IOL=5mA | | 0.2 | 0.4 | V | |
| VRESH | Self Reset | Input High voltage | | 2 | Vcc | V | |
| IRESH | | Input High current | VRES=2V | | 80 | µA | |
| VRESL | | Input Low voltage | | -0.3 | | 0.8 | V |
| VCt0,1H | Ct0 Ct1 | Input High voltage | | 1.4 | | V | |
| VCt0,1L | | Input Low voltage | | | 0.6 | V | |
| ICt0,1H | | Input High current | | | 75 | µA | |
| ICt0,1L | | Input Low current | | | 75 | µA | |

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ELECTRICAL CHARACTERISTICS (Ta = -20 to 75°C, unless otherwise noted)

< Common specification >

| Symbol | Parameter | Test Conditions | Limits | | | Unit |
|---------|--|---|---------|---------|---------|------|
| | | | Min | Typ | Max | |
| Vcc | Supply Voltage | | 2 | | 10 | V |
| Icc1 | Circuit Current in OFF | Vcc=5V | | 1.0 | 2.0 | mA |
| Icc2 | Circuit Current in ON | Both circuit "ON" state. Contain pull-up resistor | | 2.0 | 4.0 | mA |
| Vs/ T | Detecting Voltage Temperature Coefficient | | | 0.01 | | %/°C |
| Vs/ T | The hysteresis voltage temperature coefficient | | | 0.01 | | %/°C |
| TPLH/ T | Propagation delay time temperature coefficient | | | 0.10 | | %/°C |
| VOH | Output High Voltage | IOH = -40μA | Vcc-0.6 | Vcc-0.4 | Vcc-0.2 | V |
| TPHL | Output "H to L" propagation delay time | CL = 100pF | | 10 | | μs |
| VOPL *1 | Threshold Operating Voltage | Ta = 25°C | | 0.67 | 0.8 | V |
| R | Built-in pull-up resistor | | 5 | 10 | 15 | k |

Note*1: Minimum supply voltage to keep output low

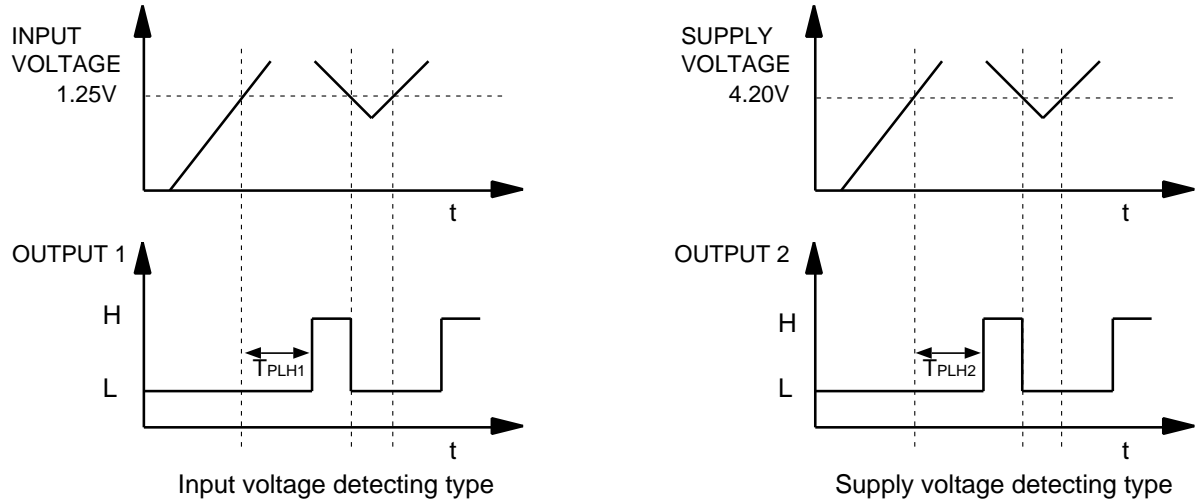
PIN DESCRIPTION

| Terminal No. | Symbol | Functional Description | | | | | |
|--------------|--------|--|-----|------|------|-------|-------|
| 1 | Ct0 | Setting delay time. It is possible to set 4 kinds of delay times by inputting "H" or "L" into these two terminal. | | 25ms | 50ms | 100ms | 200ms |
| | | | Ct0 | L | H | H | L |
| | | | Ct1 | H | L | H | L |
| 3 | Ct1 | | | | | | |
| 2 | VIN | Detecting voltage input | | | | | |
| 4 | GND | Ground | | | | | |
| 6 | OUT1 | Output terminal 1 (Delay time 200μs settlement output) | | | | | |
| 5 | OUT2 | Output terminal 2 (Delay time variable type output) | | | | | |
| 7 | Vcc | Supply voltage | | | | | |
| 8 | VRES | It outputs "L" and "H" to OUT2 terminal when the VRES input is "H" and "L", respectively. | | | | | |

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FUNCTION DIAGRAM



EXAMPLE OF APPLICATION CIRCUIT

1) The application to microprocessor system

Note 1. The Input voltage detection type can be used as the voltage supervisor of microprocessor system like the following circuit.

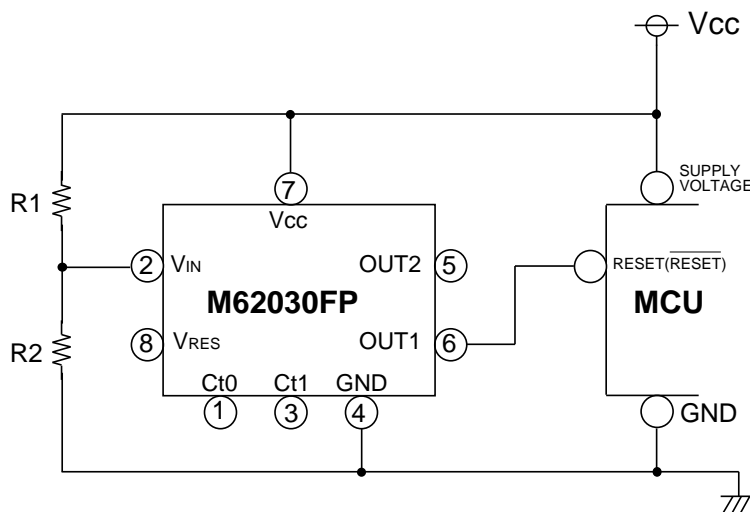
In this case, a detection power supply voltage is approximately $1.25 \times (R1+R2) / R2$ (v).

The detecting supply voltage can be set between 2V and 10V.

Note 2. The detecting voltage can be adjusted by changing R1 and/or R2 in the following circuit.

The detection accuracy is $\pm 4\%$.

Note 3. It has a delay capacitor and the delay time is about 200 μ s.

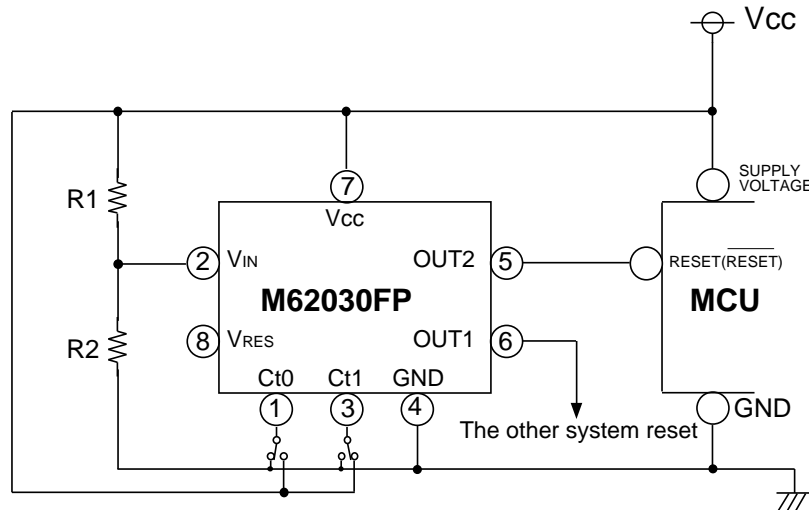


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2) The Variable setup time type

Note 1. A delay time of the supply voltage detection type can be set to one among 25ms, 50ms, 100ms and 200ms by the combination of pin 1 and pin 3.



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