

M62030FP

Voltage Detecting, System Resetting IC Series

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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 (25 ms, 50 ms, 100 ms, 200 ms (Typ)) in the input voltage detection type and in the supply voltage detection type, respectively.

Features

- Built-in two functional circuits for detecting voltage
- Built-in delay circuit to provide long delay time (without external delay capacitors)
- Selectable four modes of delay time (25 ms, 50 ms, 100 ms, 200 ms (Typ))
- Few external parts
- Small 8-pin SOP package

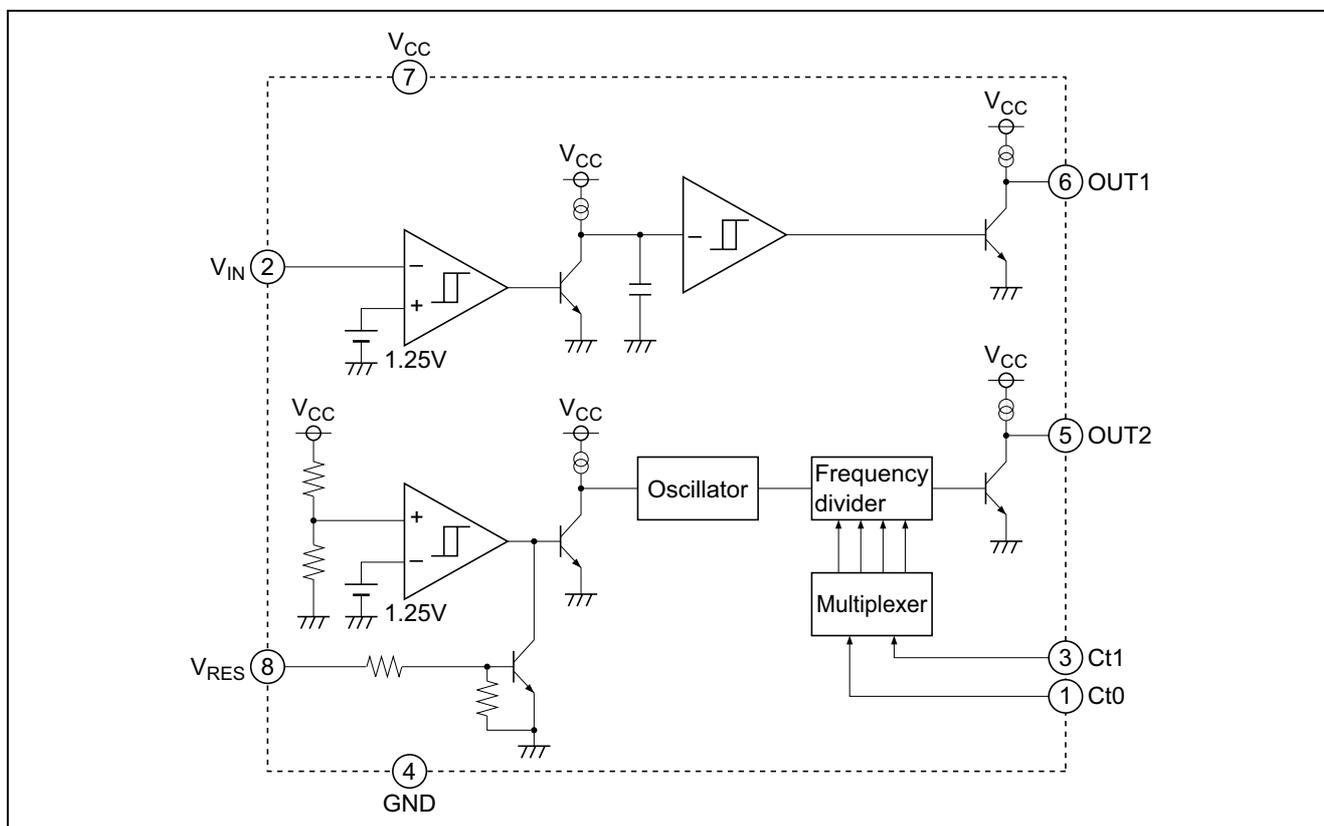
Application

- Reset circuits of MCU, MPU and logics

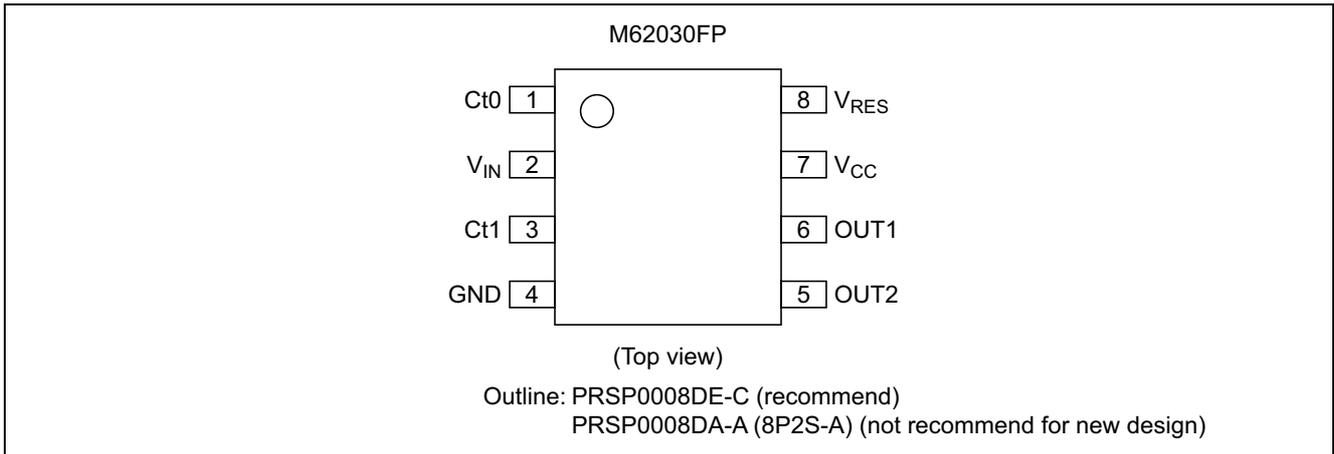
Recommended Operating Condition

- Supply voltage range: 2 V to 10 V

Block Diagram



Pin Arrangement



Pin Description

Pin No.	Symbol	Functional Description															
1	Ct0	Setting delay time.															
3	Ct1	It is possible to set four kinds of delay times by inputting "H" or "L" into these two terminal.															
		<table border="1"> <tr> <td></td> <td>25 ms</td> <td>50 ms</td> <td>100 ms</td> <td>200 ms</td> </tr> <tr> <td>Ct0</td> <td>L</td> <td>H</td> <td>H</td> <td>L</td> </tr> <tr> <td>Ct1</td> <td>H</td> <td>L</td> <td>H</td> <td>L</td> </tr> </table>		25 ms	50 ms	100 ms	200 ms	Ct0	L	H	H	L	Ct1	H	L	H	L
	25 ms	50 ms	100 ms	200 ms													
Ct0	L	H	H	L													
Ct1	H	L	H	L													
2	V _{IN}	Detecting voltage input															
4	GND	Ground															
6	OUT1	Output terminal 1 (Delay time 200 μs settlement output)															
5	OUT2	Output terminal 2 (Delay time variable type output)															
7	V _{CC}	Supply voltage															
8	V _{RES}	It outputs "L" and "H" to OUT2 terminal when the V _{RES} input is "H" and "L", respectively.															

Absolute Maximum Ratings

(Ta = 25°C, unless otherwise noted)

Item	Symbol	Rating	Unit	Conditions
Supply voltage	V _{CC}	-0.3 to +10	V	
Output sink current	I _{sink1, 2}	8.0	mA	Output1, 2
Output voltage	V _O	-0.3 to +10	V	
Self reset input voltage	V _{RES}	-0.3 to +10	V	
Power dissipation	P _d	300	mW	
Thermal derating	K _θ	3.0	mW/°C	Ta ≥ 25°C
Operating temperature	Topr	-20 to +75	°C	
Storage temperature	Tstg	-40 to +125	°C	

Electrical Characteristics

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

Reset Circuit 1

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Detecting voltage 1	V _{S1}	1.20	1.25	1.30	V	Ta = +25°C
Hysteresis voltage 1	ΔV _{S1}	9	15	23	mV	Ta = +25°C
Output "L" to "H" propagation delay time	T _{PLH1}	80	200	500	μs	C _L = 100pF, Ta = +25°C
Low output voltage 1	V _{OL1}	—	0.2	0.4	V	V _{IN} < 1.2V, I _{OL} = 5mA
Input voltage	V _{IN}	-0.3 * ¹	—	V _{CC} * ²	V	V _{CC} ≤ 7V
		-0.3 * ¹	—	7.0		V _{CC} > 7V
Input current	I _{IN}	—	100	500	nA	V _{IN} = 1.25V

- Notes: 1. -2 V (Pulse width = 20 ns or less)
 2. V_{CC} + 1 V (Pulse width = 20 ns or less)

Reset Circuit 2

Item	Symbol	Min	Typ	Max	Unit	Test Conditions	
Detecting voltage 2	V _{S2}	4.0	4.2	4.4	V	Ta = +25°C	
Hysteresis voltage 2	ΔV _{S2}	30	50	100	mV	Ta = +25°C	
Output "L" to "H" propagation delay time	T _{PLH2}	—	25	—	ms	Ct0 = "L", Ct1 = "H"	
		—	50	—		Ct0 = "H", Ct1 = "L"	
		—	100	—		Ct0 = "H", Ct1 = "H" or opening	
		—	200	—		Ct0 = "L", Ct1 = "L"	
Low output voltage 2	V _{OL2}	—	0.2	0.4	V	V _{CC} = 4.0V, I _{OL} = 5mA	
Self reset	Input high voltage	V _{RESH}	2	—	V _{CC} * ²	V	Ta = +25°C
	Input high current	I _{RESH}	—	—	80	μA	V _{RES} = 2V, Ta = +25°C
	Input low voltage	V _{RESL}	-0.3 * ¹	—	0.8	V	Ta = +25°C
Ct0 Ct1	Input high voltage	V _{Ct0, 1H}	2.2	—	—	V	Ta = +25°C
	Input low voltage	V _{Ct0, 1L}	—	—	1.8	V	Ta = +25°C
	Input high current	I _{Ct0, 1H}	—	50	—	μA	Ta = +25°C
	Input low current	I _{Ct0, 1L}	—	50	—	μA	Ta = +25°C

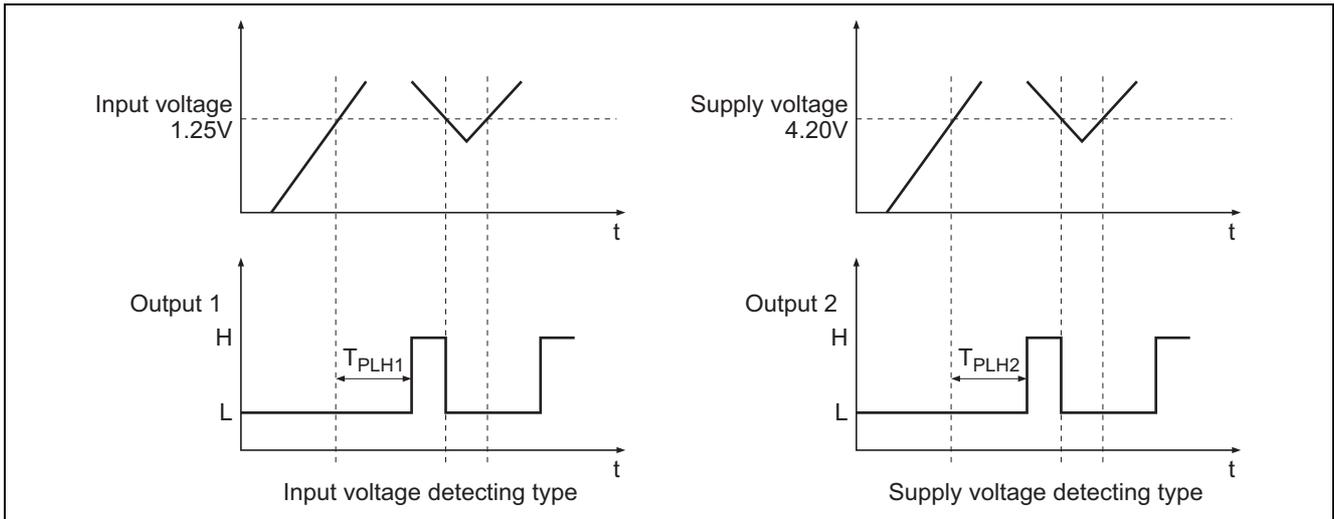
- Notes: 1. -2 V (Pulse width = 20 ns or less)
 2. V_{CC} + 1 V (Pulse width = 20 ns or less)

Common Specification

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Supply voltage	V _{CC}	2	—	10	V	
Circuit current in OFF	I _{CC1}	—	1.0	2.0	mA	V _{CC} = 5V
Circuit current in ON	I _{CC2}	—	2.0	4.0	mA	Both circuit "ON" state, contain pull-up resistor
Detecting voltage temperature coefficient	V _S /ΔT	—	0.01	—	%/°C	
The hysteresis voltage temperature coefficient	ΔV _S /ΔT	—	0.01	—	%/°C	
Propagation delay time temperature coefficient	T _{PLH} /ΔT	—	0.10	—	%/°C	
Output high voltage	V _{OH}	V _{CC} -0.6	V _{CC} -0.4	V _{CC} -0.2	V	I _{OH} = -40μA
Output "H" to "L" propagation delay time	T _{PHL}	—	10	—	μs	C _L = 100pF
Threshold operating voltage	V _{OPL}	—	0.7	—	V	Ta = +25°C
Built-in pull-up resistor	R	5	10	15	kΩ	

- Notes: 3. The lowest power-supply voltage in which output Low can be maintained

Operating Waveform



Example of Application Circuit

1. The Application to Microcomputer System

- 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 2 V and 10 V.
- The detecting voltage can be adjusted by changing R1 and/or R2 in the figure 1.
The detection accuracy is $\pm 4\%$.
- It has a delay capacitor and the delay time is about 200 μ s.

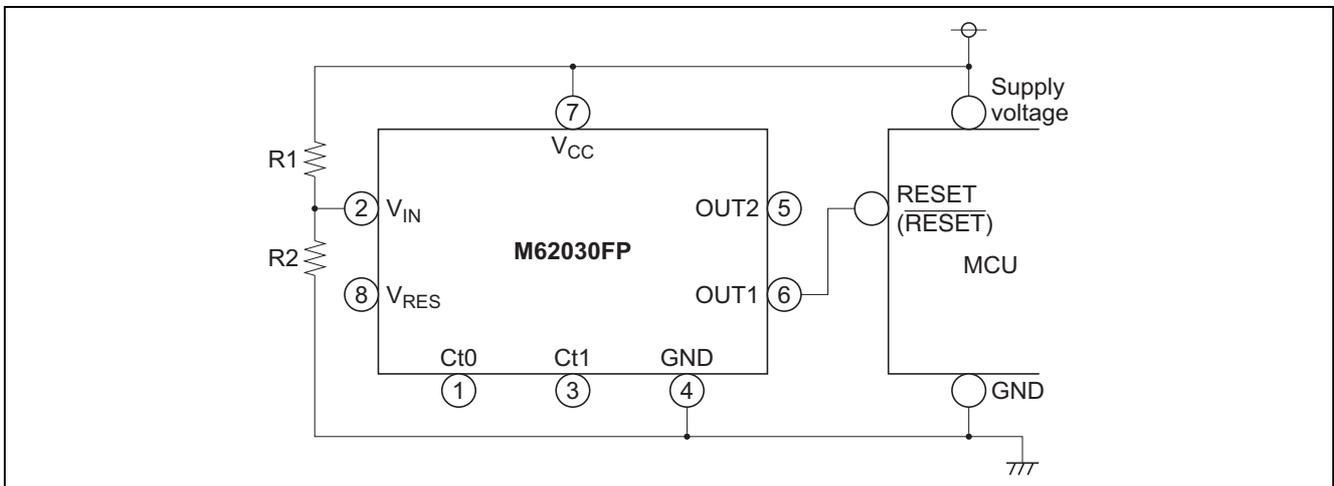


Figure 1 The Application to Microcomputer System

2. The Variable Setup Time Type

Note: A delay time of the supply voltage detection type can be set to one among 25 ms, 50 ms, 100 ms and 200 ms by the combination of pin1 and pin 3.

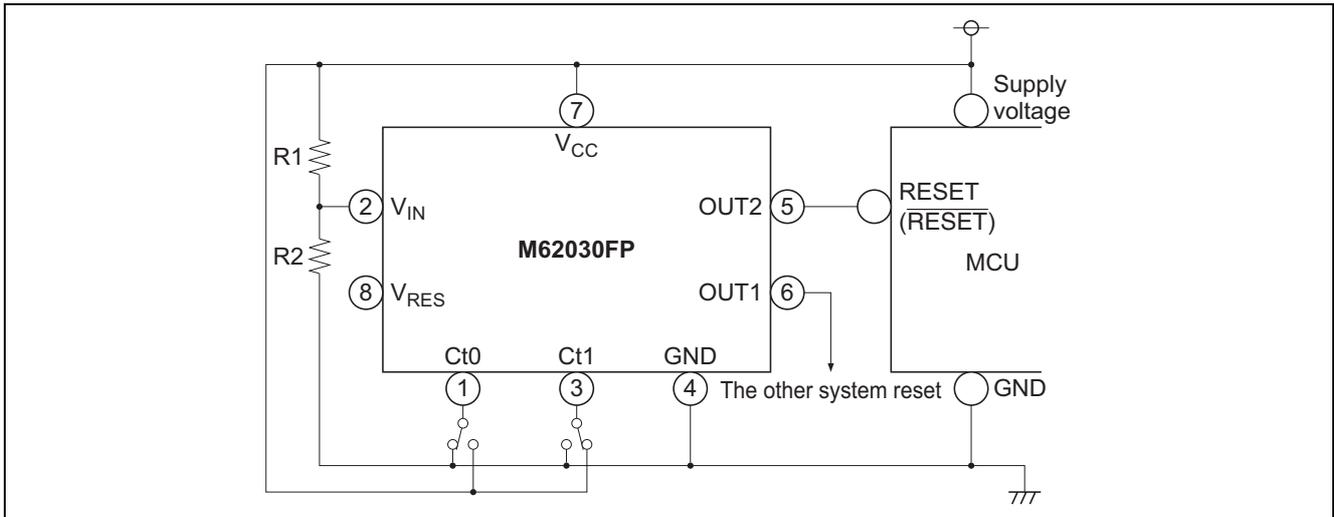
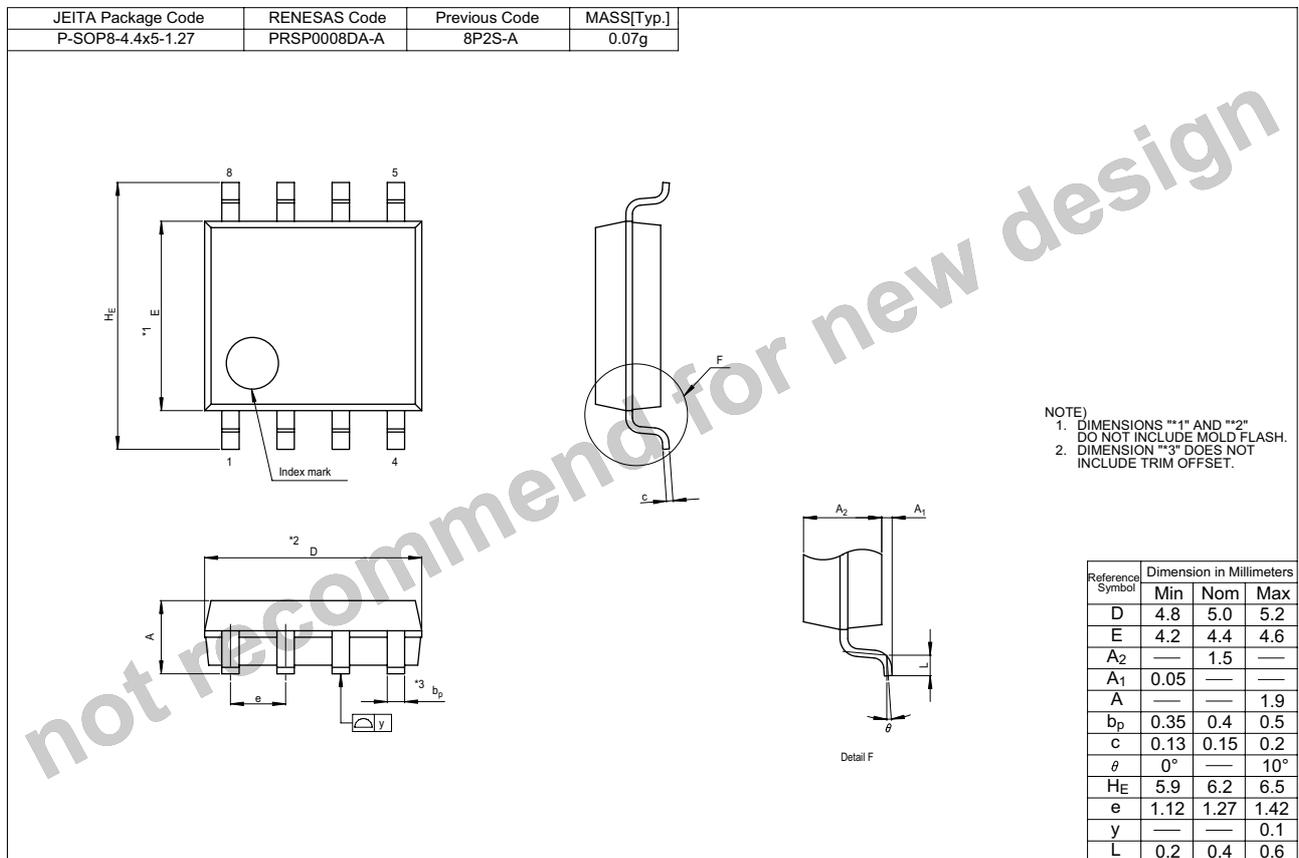
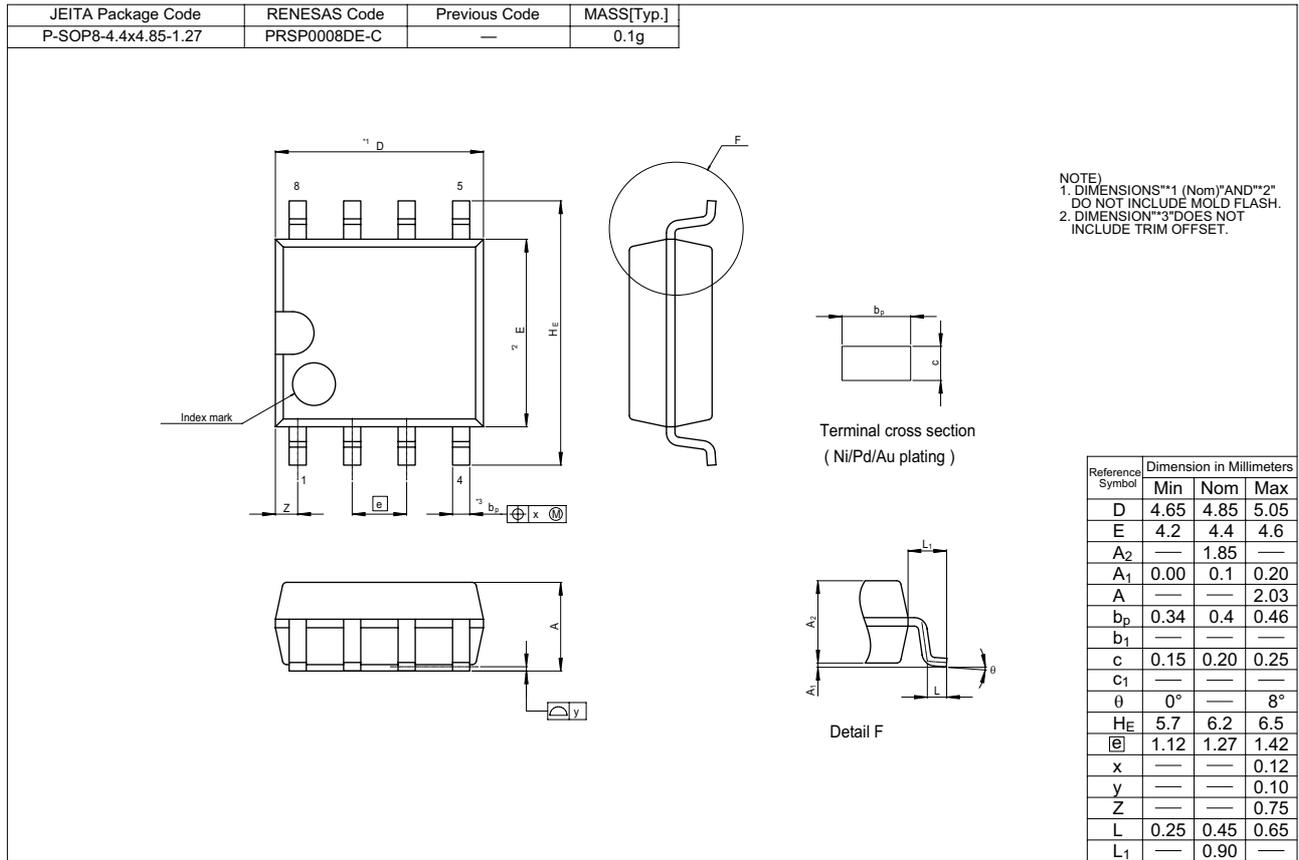


Figure 2 The Variable Setup Time Type

Package Dimensions



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