RNA55A125FLP

CMOS System Reset IC

R03DS0053EJ0301
Rev.3.01
Mar 01, 2013

Description

RNA55A125 is microcomputer and system reset signal to be generated.
Detection voltage is set with external resistors can be, the internal reference voltage is 1.25 V.
Although the method is used to generate an internal counter when reset delay time, can freely set by an external resistor.

Features

- Reset detection voltage: 1.25 V ± 2.0%
- Delay time: 200 ms (R_{OSC} = 1 MΩ setting)
- Circuit current: 10 μA
- Open drain output
- Wide supply voltage range: 1.8 V to 5.5 V

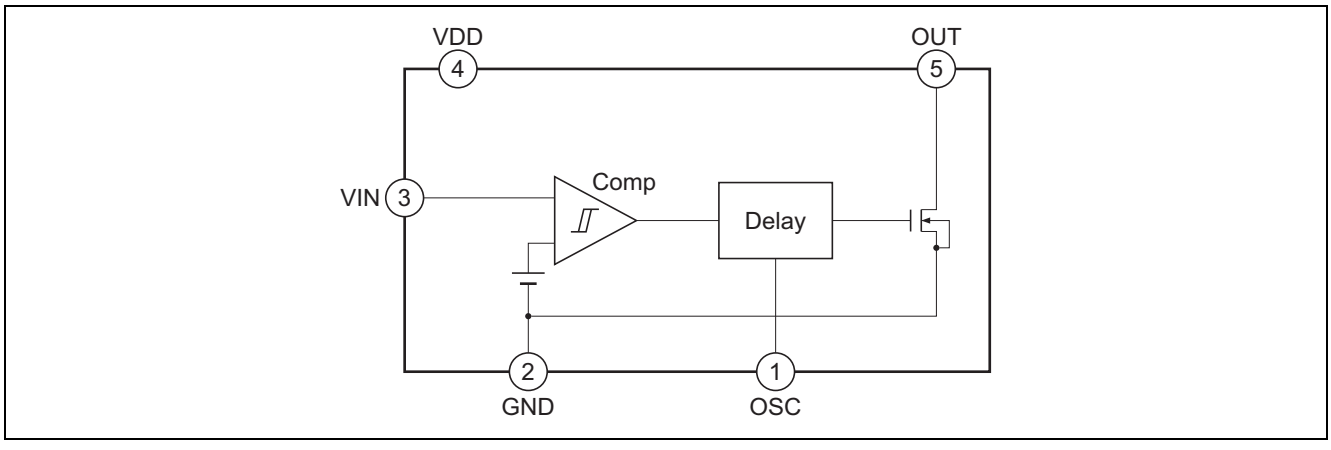
Ordering Information

Part Name	Package Type	Package Code	Package Abbreviation	Taping Abbreviation (Quantity)	Surface Treatment
RNA55A125FLPH1	MPAK-5	PLSP0005ZB-A	LP	H (3,000 pcs/reel)	1 (Sn/Bi)

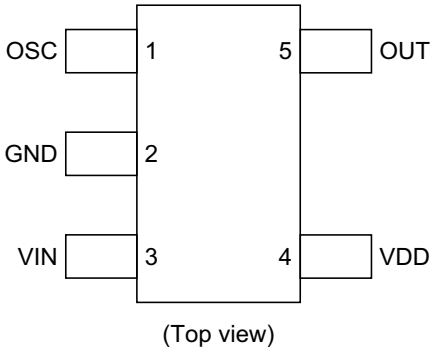
Application

- Power supply voltage monitoring for microprocessors
- Computers and notebook computers
- Digital still camera, digital video camera, and PDA
- Industrial equipment

Block Diagram



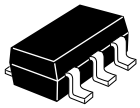
Pin Arrangement



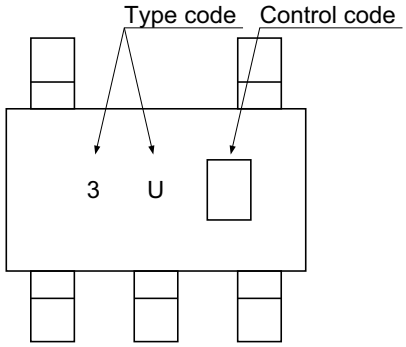
(Top view)

Marking Indication

RNA55A125FLP (Example)



MPAK-5

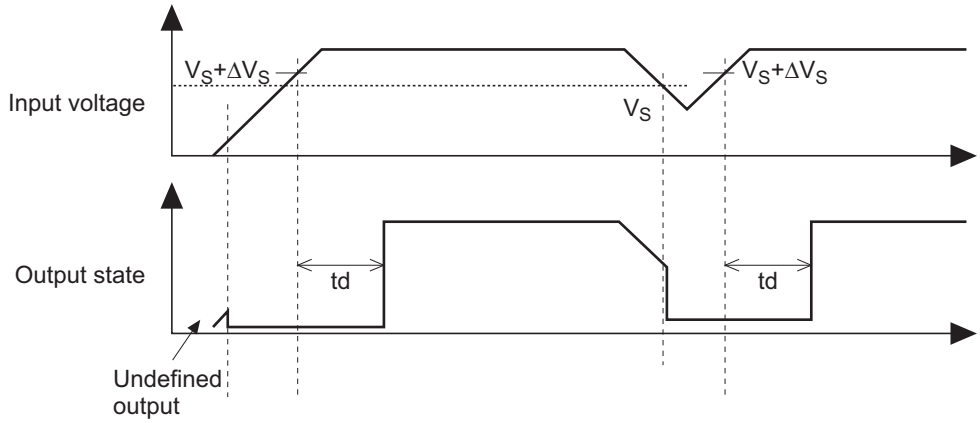


Control code	Starting in January "A", "B", "C", "D", "E", "F", "G", "H", "J", "K", "L", "M"

Pin Description

Pin No.	Pin Name	I/O	Function
1	OSC	—	• Connect a resistor for setting the delay time. • 200 ms is obtained is 1 MΩ. • Range of resistance: 500(kΩ) to 2(MΩ)
2	GND	—	• Ground
3	VIN	I	• Input pin for reset detection. • Supply voltage applied to resistor divider.
4	VDD	—	• Sorcing power-supply voltage.
5	OUT	O	• Open drain output • Low will be output when the reset detection • Range pull-up resistance: 2.2(kΩ) to 100(kΩ)

Operational Waveform Diagram



td = Delay time setting range
100 ms to 400 ms (Standard setting: 200 ms)

Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage	V_{DD}	6.5	V
Output voltage (open-drain type)	V_{OUT}	–0.3 to +6.5	V
Input voltage	V_{IN}	–0.3 to V_{DD}	V
Output current	I_{OUT}	6	mA
Power dissipation	Pd	120 (Ta = 25°C)	mW
Operating temperature	Topr	–40 to +85	°C
Storage temperature	Tstg	–40 to +125	°C

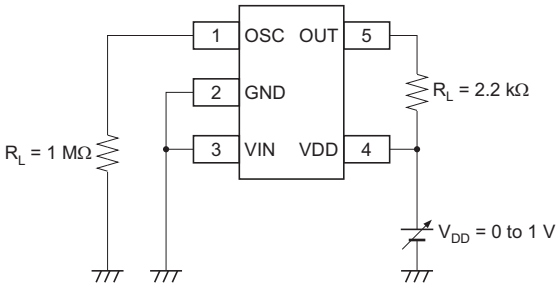
Electrical Characteristics

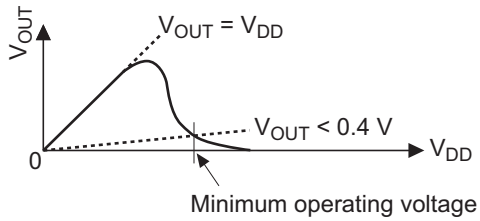
(V_{DD} = 3.3 V, Ta = 25°C, unless otherwise noted)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Threshold operating voltage	V_{OUL}	—	—	0.9	V	R_L = 2.2 (kΩ), V_{OUT} < 0.4 V
Circuit current	I_{DD}	—	10	20	μA	V_{DD} = 5.0 V, V_{OUT} = Hi (V_{DD})
Detecting voltage	V_S	1.225	1.25	1.275	V	
Detecting voltage temperature coefficient	$V_S/\Delta T$	—	±100	—	ppm/°C	
Hysteresis voltage	V_{HYS}	3	5	8	%	
Output low voltage	V_{OL}	—	0.2	0.4	V	I_{OUT} = 4 mA, V_{DD} = 3.5 V
Input leakage current	Iin	–10	0	10	nA	
Output leakage current	I_{LK}	—	—	30	nA	V_{OUT} = V_{DD} = 5.0 V
Delay time	td	140	200	260	ms	R_{OSC} = 1 MΩ

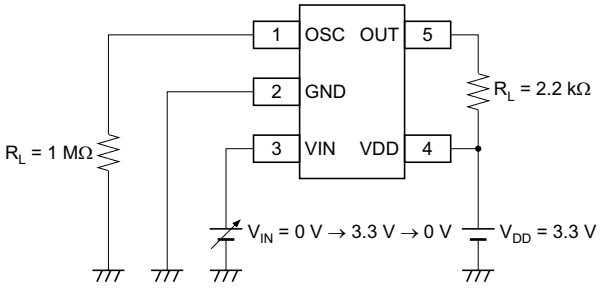
Test Circuit

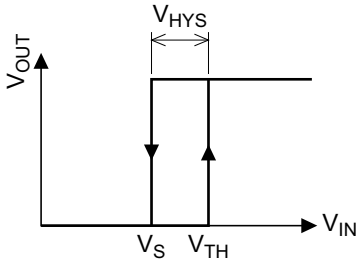
Threshold Operating Voltage V_{OUL}





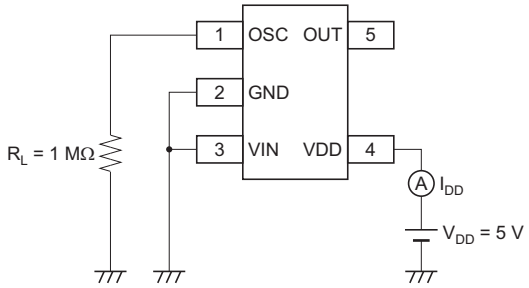
Detecting Voltage & Hysteresis V_S & V_{HYS}



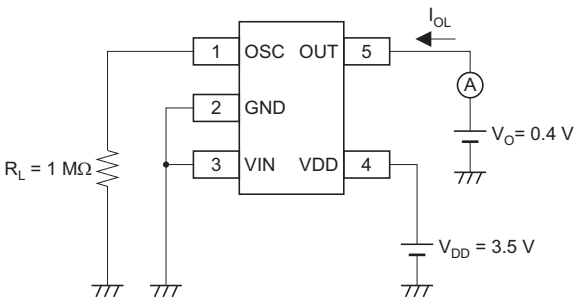


V_S: Detection voltage
V_{TH}: Release voltage

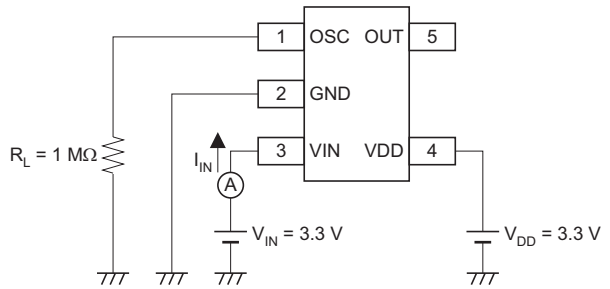
Circuit Current I_{DD}



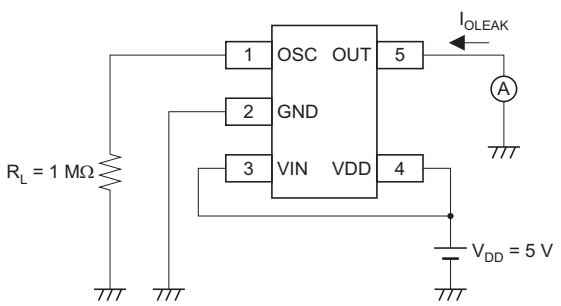
Output Low Voltage V_O



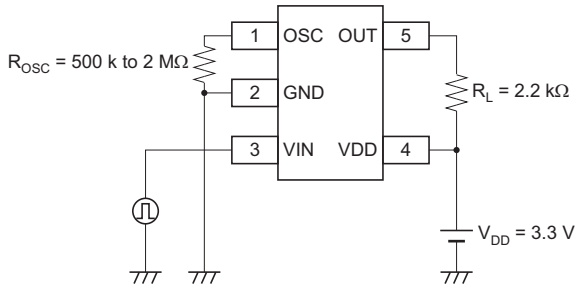
Input Leakage Current Iin

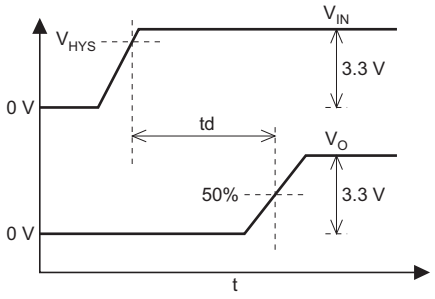


Output Leakage Current I_{LK}



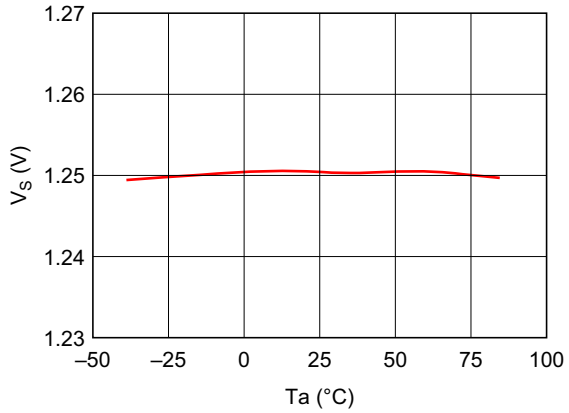
Delay Time td



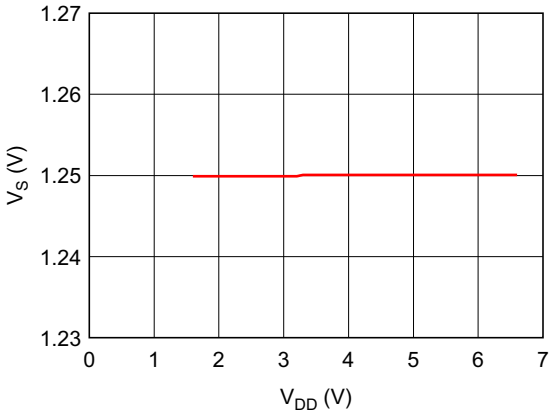


Characteristic Curves

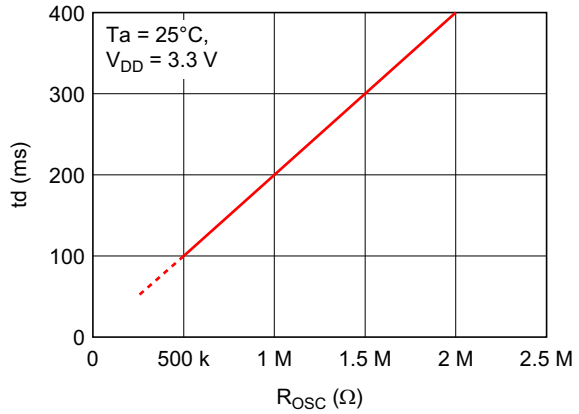
Detection Voltage vs. Ambient Temperature



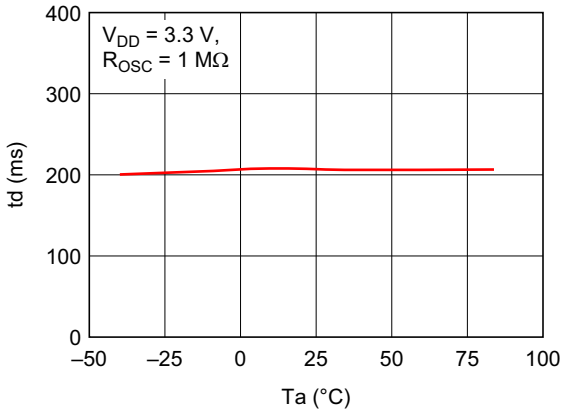
Detection Voltage vs. Supply Voltage



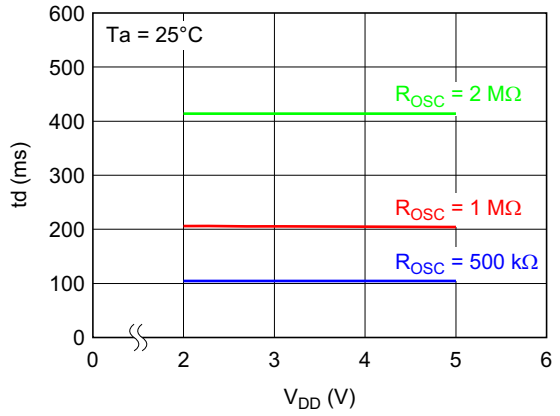
Delay Time vs. Resistance



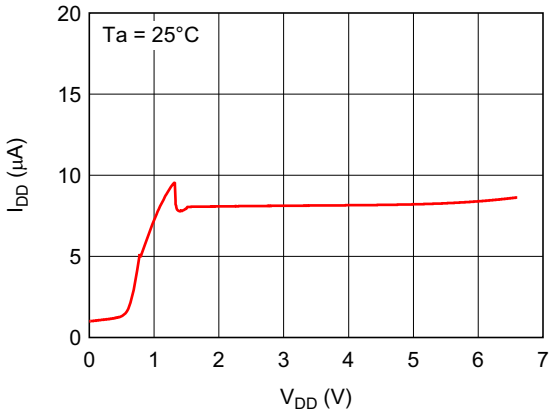
Delay Time vs. Ambient Temperature

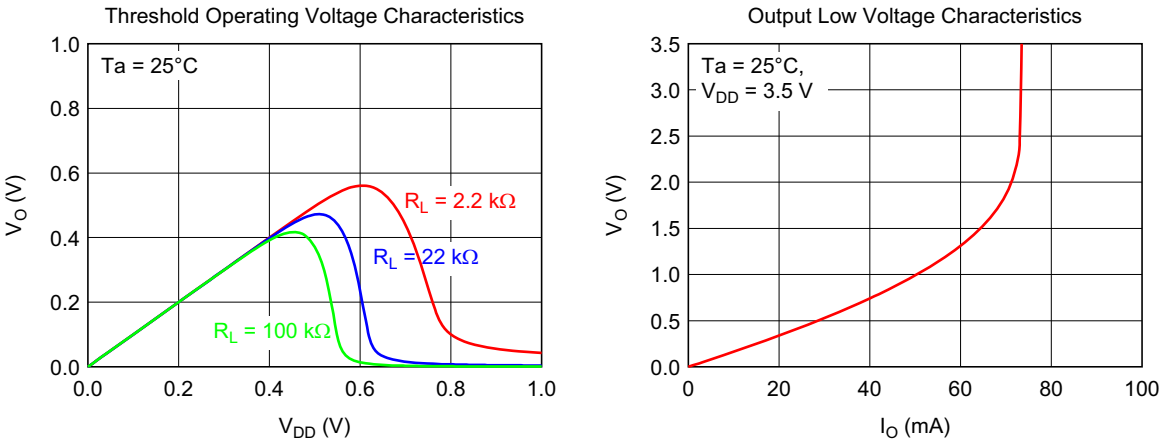


Delay Time vs. Supply Voltage

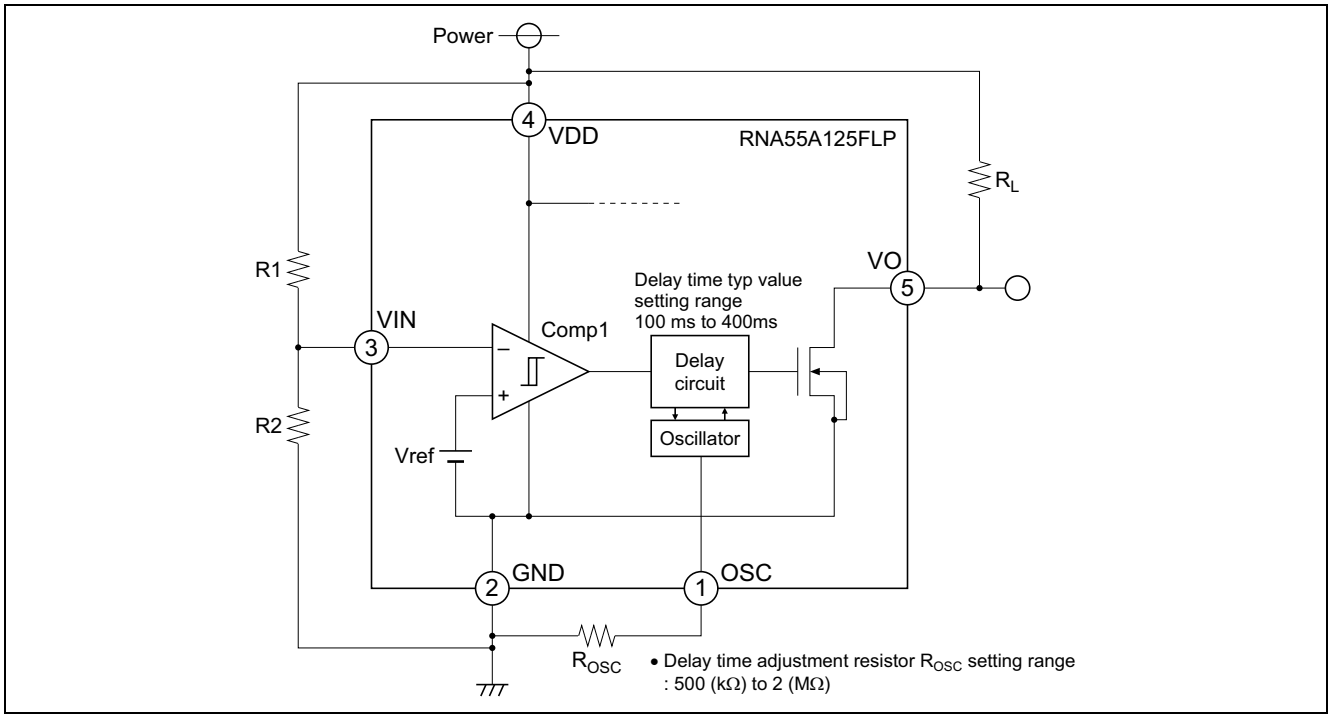


Circuit Current vs. Supply Voltage




Threshold Operating Voltage Characteristics
Ta = 25°C
R_L = 2.2 kΩ
R_L = 22 kΩ
R_L = 100 kΩ
V_O (V)
V_{DD} (V)
0.0
0.2
0.4
0.6
0.8
1.0
Output Low Voltage Characteristics
Ta = 25°C,
V_{DD} = 3.5 V
V_O (V)
I_O (mA)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
0
20
40
60
80
100

Block Diagram



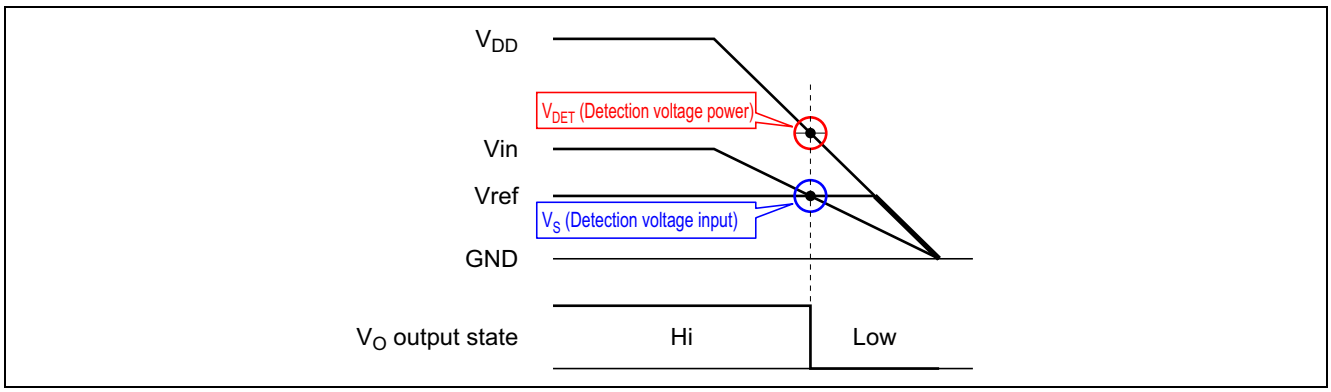
Detection Voltage Power Setting Information

[Way of thinking]

Detection voltage input is V_S
Detection voltage power is V_{DET}

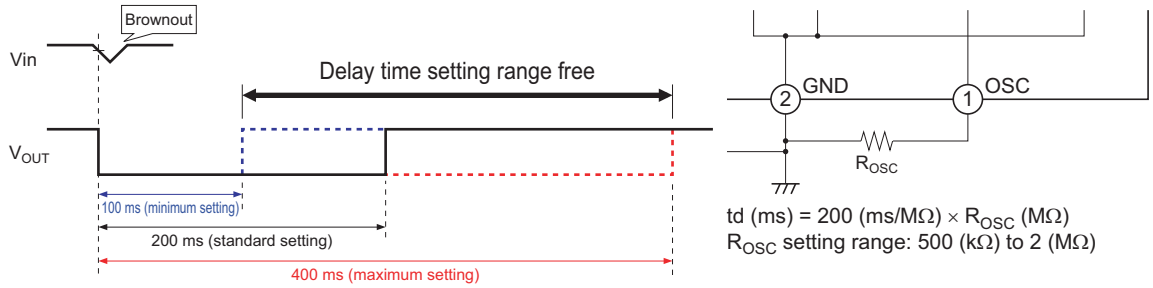
$$V_{DET} = V_S \times (R1 + R2) / R2$$

can write. In addition, V_S = 1.25 V it is (typ).



Delay Time Setting Information

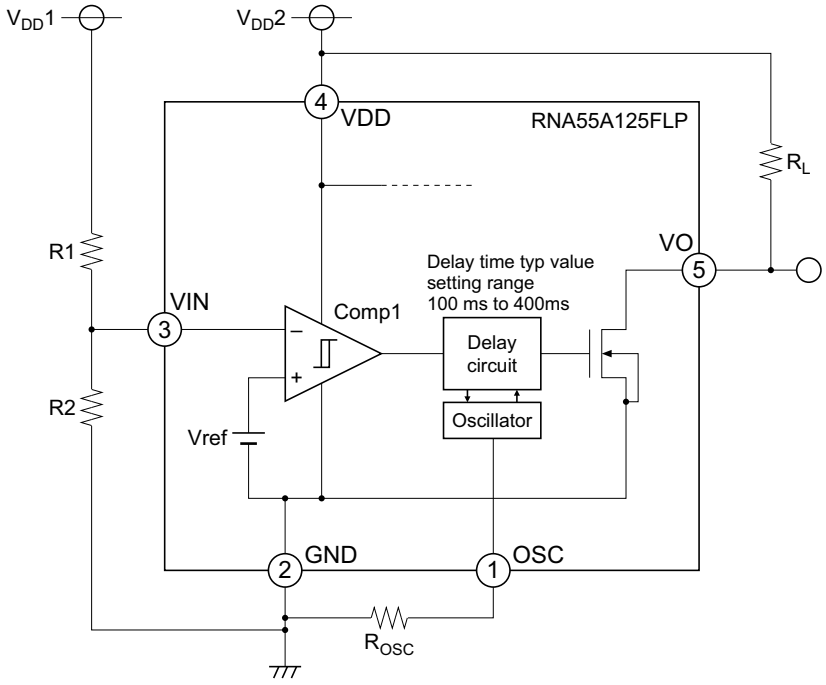
Delay circuit of product, using a counter and oscillator scheme, within setting range, it can be set freely using (R_{OSC}) features an external resistor.



Note: External resistor R_{OSC} for delay time, please make sure mounting.
(Terminal is prohibited OPEN OSC, VDD short, short for GND.)

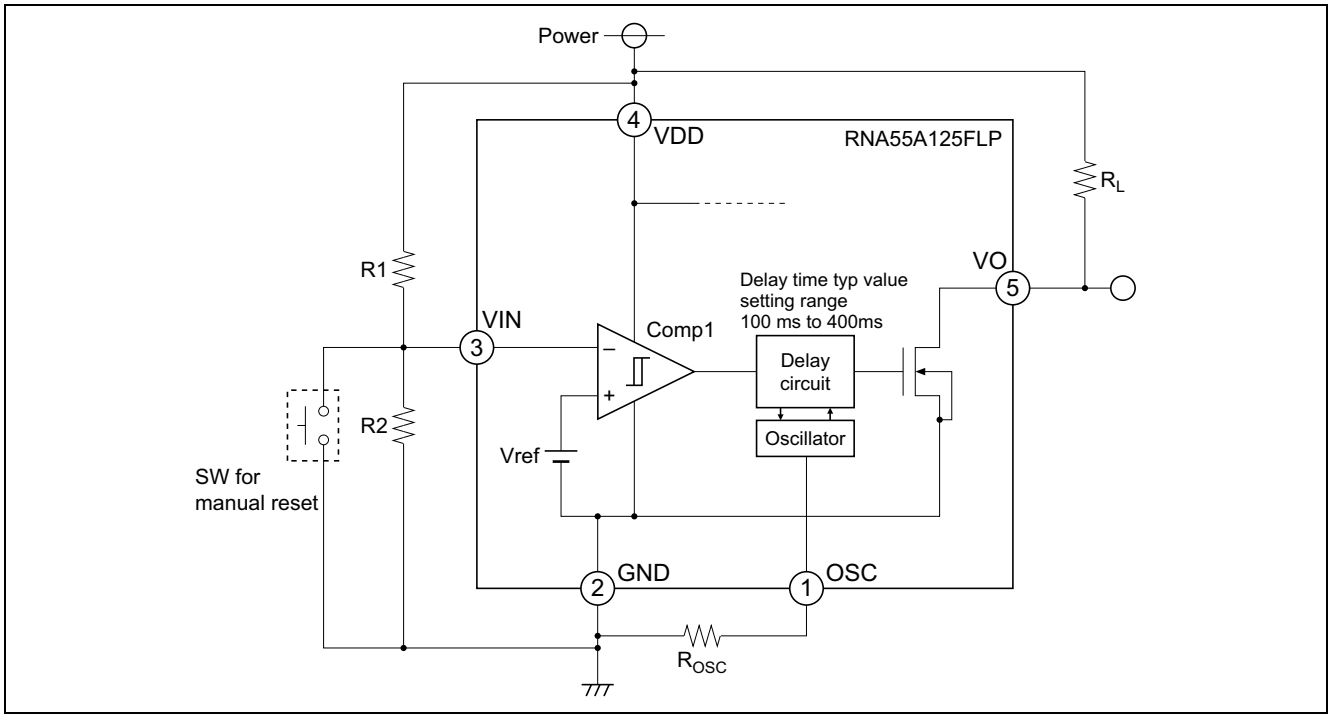
Input Terminal Setting

Vin is, it is assumed that the input divided voltage of V_{DD} is basically.
It is also possible to use two independent power supply as shown in the figure below.



Use a Manual Reset

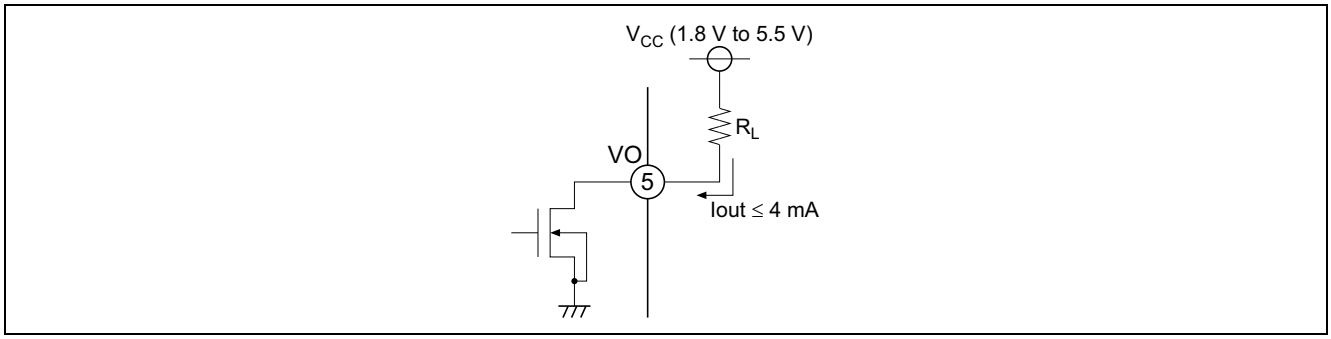
Provided that short-circuit path between Vin to GND terminals as shown below, you form manual reset circuit is possible.
(There is a manual reset by applying a voltage of less than Vref (1.25 V) to terminal Vin.)



Output Load

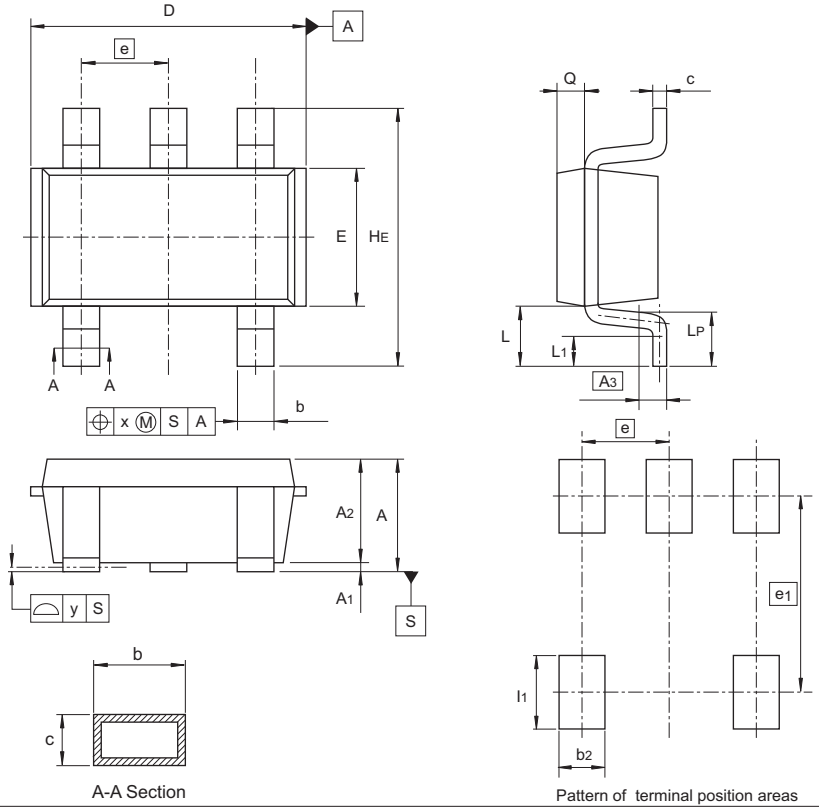
Since open-drain type, the output terminal without depending on the power supply voltage although you can set the output voltage level H, please observe the following notes.

- Should be in the range (1.8 V ~ 5.5 V) value of the supply voltage within the recommended range.
  In addition, the absolute maximum ratings over 6.5 V, so that I do not even for a moment is applied note.
- For the R_L output pull-up resistor, the output current of the L level (Iout output inflow current) is set as a guideline wish below 4 mA.
  Do not exceed the absolute maximum rating (6 mA) even for a moment also to set.



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
MPAK-5	SC-74A	PLSP0005ZB-A	MPAK-5 / MPAK-5V	0.015g



Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
A	1.0	–	1.4
A_1	0	–	0.1
A_2	1.0	1.1	1.3
$\boxed{A_3}$	–	0.25	–
b	0.35	0.4	0.5
c	0.11	0.16	0.26
D	2.8	2.95	3.1
E	1.5	1.6	1.8
$\boxed{e}$	–	0.95	–
H_E	2.5	2.8	3.0
L	0.3	–	0.7
L_1	0.1	–	0.5
L_P	0.2	–	0.6
x	–	–	0.05
y	–	–	0.05
b_2	–	–	0.55
$\boxed{e_1}$	–	2.15	–
l_1	–	–	0.85
Q	–	0.3	–

Notice

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation of these circuits, software, and information in the design of your equipment. Renesas Electronics assumes no responsibility for any losses incurred by you or third parties arising from the use of these circuits, software, or information.
2. Renesas Electronics has used reasonable care in preparing the information included in this document, but Renesas Electronics does not warrant that such information is error free. Renesas Electronics assumes no liability whatsoever for any damages incurred by you resulting from errors in or omissions from the information included herein.
3. Renesas Electronics does not assume any liability for infringement of patents, copyrights, or other intellectual property rights of third parties by or arising from the use of Renesas Electronics products or technical information described in this document. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
4. You should not alter, modify, copy, or otherwise misappropriate any Renesas Electronics product, whether in whole or in part. Renesas Electronics assumes no responsibility for any losses incurred by you or third parties arising from such alteration, modification, copy or otherwise misappropriation of Renesas Electronics product.
5. Renesas Electronics products are classified according to the following two quality grades: "Standard" and "High Quality". The recommended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below.
   "Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; and industrial robots etc.
   "High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control systems; anti-disaster systems; anti-crime systems; and safety equipment etc.
   Renesas Electronics products are neither intended nor authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems, surgical implantations etc.), or may cause serious property damages (nuclear reactor control systems, military equipment etc.). You must check the quality grade of each Renesas Electronics product before using it in a particular application. You may not use any Renesas Electronics product for any application for which it is not intended. Renesas Electronics shall not be in any way liable for any damages or losses incurred by you or third parties arising from the use of any Renesas Electronics product for which the product is not intended by Renesas Electronics.
6. You should use the Renesas Electronics products described in this document within the range specified by Renesas Electronics, especially with respect to the maximum rating, operating supply voltage range, movement power voltage range, heat radiation characteristics, installation and other product characteristics. Renesas Electronics shall have no liability for malfunctions or damages arising out of the use of Renesas Electronics products beyond such specified ranges.
7. Although Renesas Electronics endeavors to improve the quality and reliability of its products, semiconductor products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Further, Renesas Electronics products are not subject to radiation resistance design. Please be sure to implement safety measures to guard them against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a Renesas Electronics product, such as safety design for hardware and software including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult, please evaluate the safety of the final products or systems manufactured by you.
8. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. Please use Renesas Electronics products in compliance with all applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive. Renesas Electronics assumes no liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
9. Renesas Electronics products and technology may not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You should not use Renesas Electronics products or technology described in this document for any purpose relating to military applications or use by the military, including but not limited to the development of weapons of mass destruction. When exporting the Renesas Electronics products or technology described in this document, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations.
10. It is the responsibility of the buyer or distributor of Renesas Electronics products, who distributes, disposes of, or otherwise places the product with a third party, to notify such third party in advance of the contents and conditions set forth in this document, Renesas Electronics assumes no responsibility for any losses incurred by you or third parties as a result of unauthorized use of Renesas Electronics products.
11. This document may not be reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
12. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products, or if you have any other inquiries.

(Note 1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its majority-owned subsidiaries.

(Note 2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

RENESAS

SALES OFFICES Renesas Electronics Corporation http://www.renesas.com

Refer to "http://www.renesas.com/" for the latest and detailed information.

Renesas Electronics America Inc.
2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
Tel: +1-408-588-6000, Fax: +1-408-588-6130

Renesas Electronics Canada Limited
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
Tel: +1-905-898-5441, Fax: +1-905-898-3220

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K
Tel: +44-1628-651-700, Fax: +44-1628-651-804

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-65030, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd., Pudong District, Shanghai 200120, China
Tel: +86-21-5877-1818, Fax: +86-21-6887-7858 / -7898

Renesas Electronics Hong Kong Limited
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2886-9318, Fax: +852 2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei, Taiwan
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

Renesas Electronics Singapore Pte. Ltd.
80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre Singapore 339949
Tel: +65-6213-0200, Fax: +65-6213-0300

Renesas Electronics Malaysia Sdn.Bhd.
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.
11F., Samik Lavied' or Bldg., 720-2 Yeoksam-Dong, Kangnam-Ku, Seoul 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141

Colophon 2.2