

RNA51943A, B

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Voltage Detecting, System Resetting IC Series

Description

RNA51943A,B are semiconductor integrated circuits designed for detecting supply voltage and resetting all types of logic circuits such as CPUs.

They find extensive applications, including battery checking circuit, level detecting circuit and waveform shaping circuit.

Features

- Few external parts
- Wide supply voltage range: 2 V to 17 V
- Wide application range
- Ordering Information

| Part Name | Package Type | Package Code | Package Abbreviation | Taping Abbreviation (Quantity) | Surface Treatment |
|---------------|--------------|--------------|----------------------|--------------------------------|-------------------|
| RNA51943AUPH1 | UPAK | PLZZ0004CA-A | UP | H (1,000 pcs / Reel) | 1 (Sn-Bi) |
| RNA51943BUPH1 | UPAK | PLZZ0004CA-A | UP | H (1,000 pcs / Reel) | 1 (Sn-Bi) |

Application

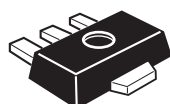
- Reset circuit of Pch, Nch, CMOS, microcomputer, CPU and MCU, Reset of logic circuit, Battery check circuit, switching circuit back-up voltage, level detecting circuit, waveform shaping circuit, delay waveform generating circuit, DC/DC converter, over voltage protection circuit

Recommended Operating Condition

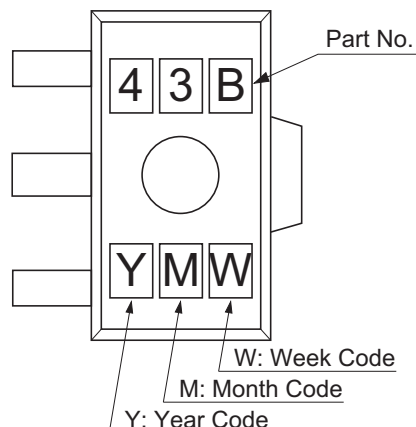
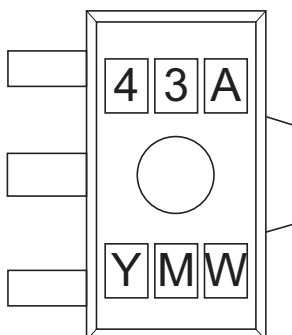
- Supply voltage range: 2 V to 17 V

Outline and Article Indication

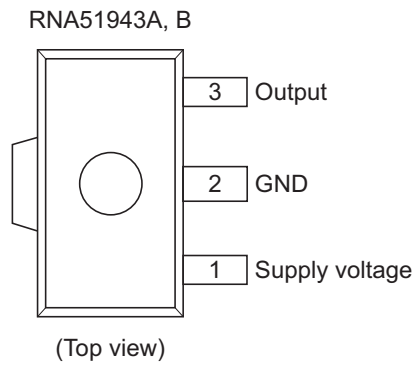
- RNA51943A, B



UPAK

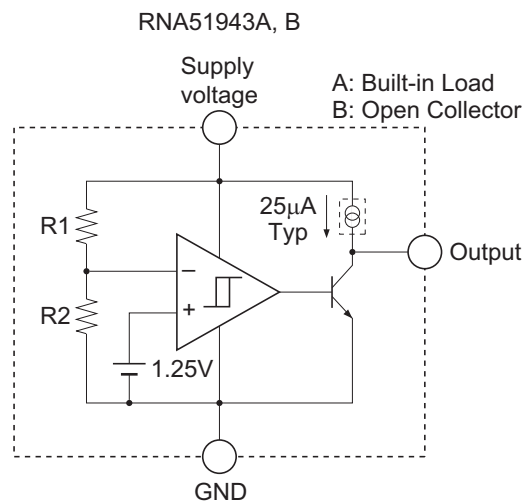


Pin Arrangement

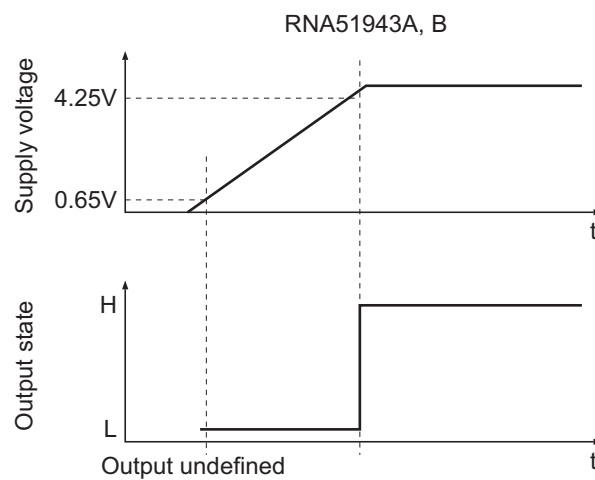


Outline: PLZZ0004CA-A (UPAK)

Block Diagram



Operating Waveform



Absolute Maximum Ratings

(Ta = 25°C, unless otherwise noted)

| Item | Symbol | Ratings | Unit | Conditions |
|-----------------------|-------------------|--------------------|-------|--|
| Supply voltage | V _{CC} | 18 | V | |
| Output sink current | I _{sink} | 6 | mA | |
| Output voltage | V _O | V _{CC} | V | Type A (output with constant current load) |
| | | 18 | | Type B (open collector output) |
| Power dissipation | P _d | 800 * ¹ | mW | |
| Thermal derating | K _θ | 7 | mW/°C | Refer to the thermal derating curve. |
| Operating temperature | T _{opr} | −40 to +85 | °C | |
| Storage temperature | T _{stg} | −55 to +125 | °C | |

Note: 1. 15 mm × 25 mm × 0.7 mm alumina ceramic board, Ta ≤ 25°C. If Ta > 25°C, derate by 6.4 mW/°C.

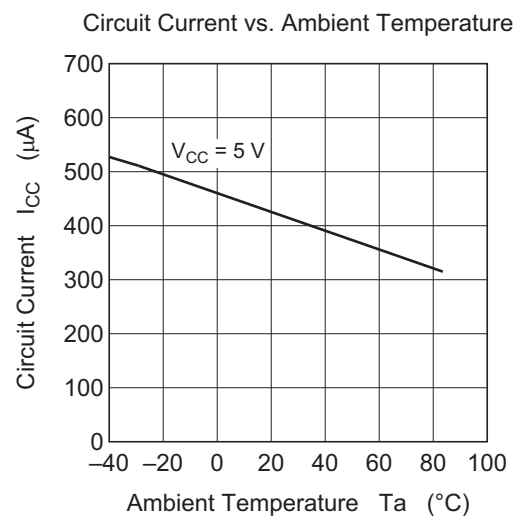
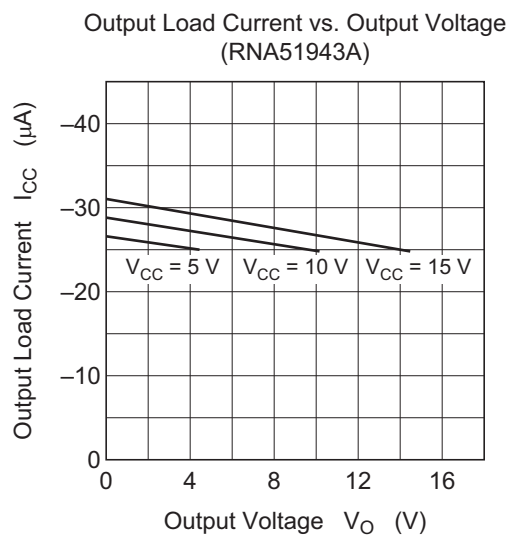
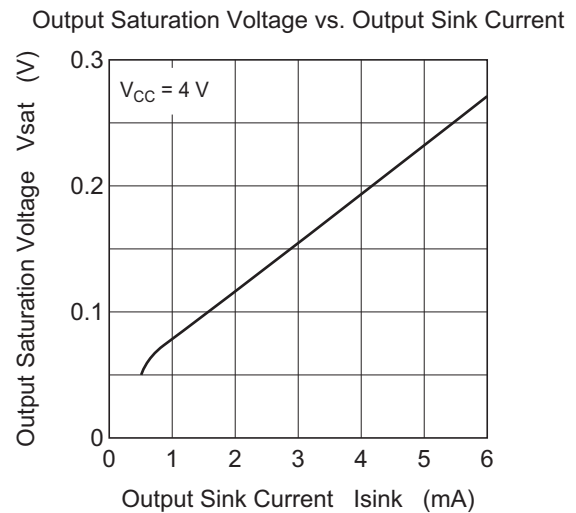
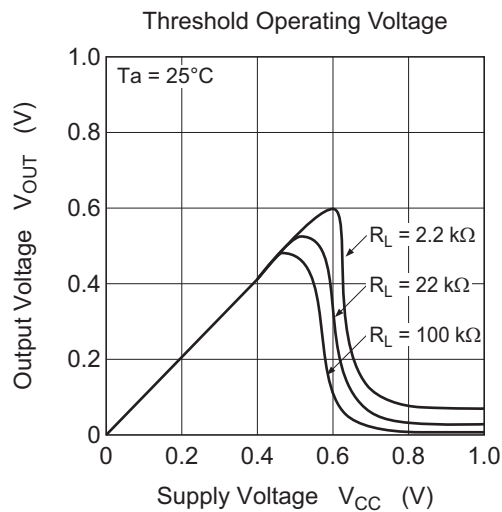
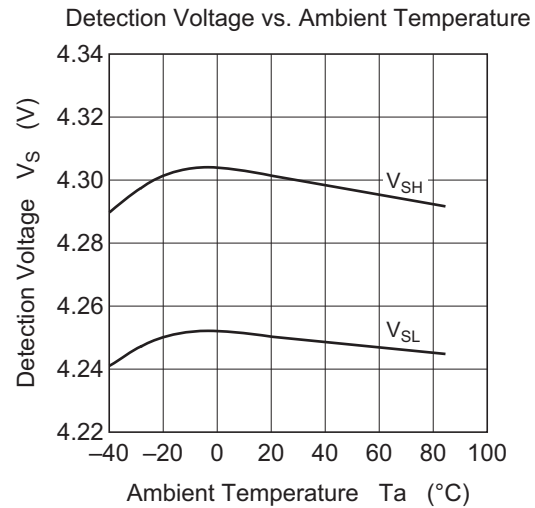
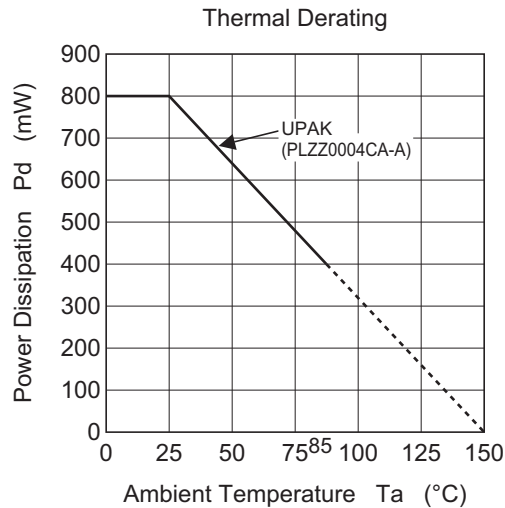
Electrical Characteristics

(Ta = 25°C, unless otherwise noted)

- “L” reset type

| Item | Symbol | Min | Typ | Max | Unit | Test Conditions | |
|---|--------------------|----------------------|-----------------------|------|------|--|---|
| Detecting voltage | V _S | 4.05 | 4.25 | 4.45 | V | | |
| Hysteresis voltage | ΔV _S | 30 | 50 | 80 | mV | | |
| Detecting voltage temperature coefficient | V _S /ΔT | — | 0.01 | — | %/°C | | |
| Circuit current | I _{CC} | — | 370 | 560 | μA | Type A, V _{CC} = 5V | |
| | | — | 340 | 510 | | Type B, V _{CC} = 5V | |
| Output saturation voltage | V _{sat} | — | 0.2 | 0.4 | V | V _{CC} = 4V, I _{sink} = 4mA | |
| Threshold operating voltage | V _{OPL} | — | 0.67 | 0.8 | V | L reset type minimum supply voltage for IC operation | R _L = 2.2kΩ, V _{sat} ≤ 0.4V |
| | | — | 0.55 | 0.7 | | | R _L = 100kΩ, V _{sat} ≤ 0.4V |
| Output leakage current | I _{OH} | — | — | 30 | nA | Type B | |
| Output load current | I _{OC} | −40 | −25 | −17 | μA | Type A, V _{CC} = 5V, V _O = 1/2 × V _{CC} | |
| Output high voltage | V _{OH} | V _{CC} −0.2 | V _{CC} −0.06 | — | V | Type A | |
| Propagation delay time | t _{PHL} | — | 6 | — | μs | Response time when V _{CC} changes H → L | |
| | t _{PLH} | — | 3 | — | | Response time when V _{CC} changes L → H | |

Typical Characteristics



Example of Application Circuit

Reset Circuit of RNA51943

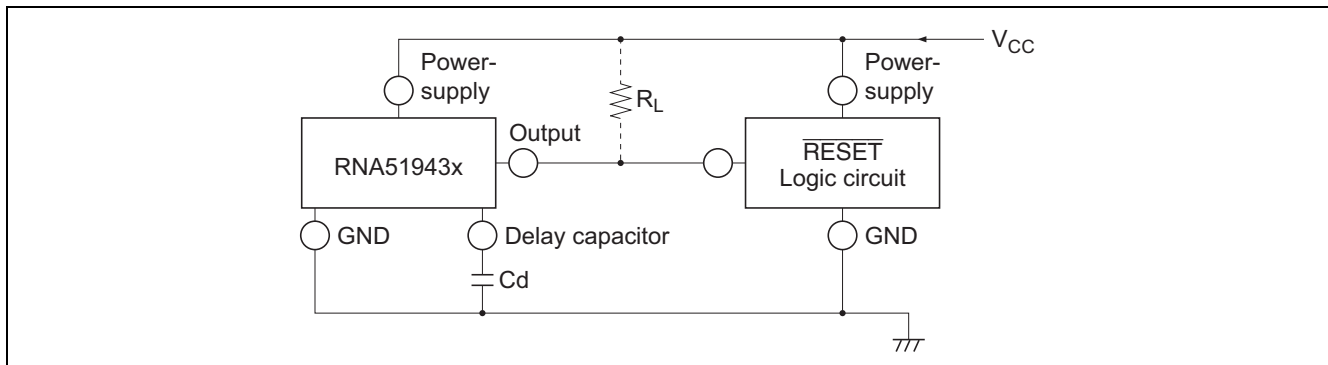
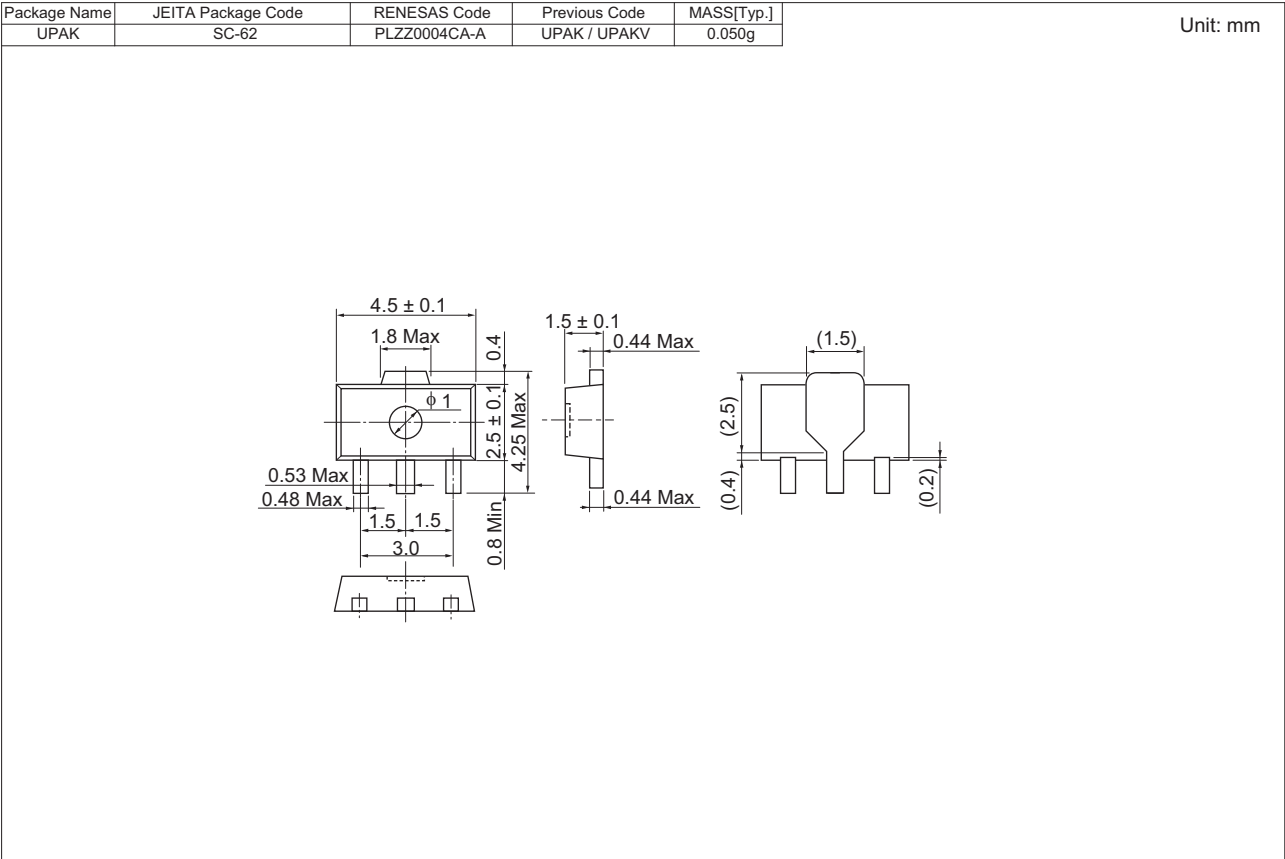


Figure 1 Reset Circuit of RNA51943

- Notes:
1. If the RNA5194xx and the logic circuit share a common power source, type A (built-in load type) can be used whether a pull-up resistor is included in the logic circuit or not.
 2. The logic circuit preferably should not have a pull-down resistor, but if one is present, add load resistor R_L to overcome the pull-down resistor.
 3. It is better to use the RNA5195xx series to cause a delay, but if the delay is caused by the RNA5194xx, the delay capacitor C_d is applied between the output and GND.
 4. When a negative supply voltage is used, the supply voltage side of RNA5194xx and the GND side are connected to GND and the negative supply voltage respectively.

Package Dimensions



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