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New Japan Radio Co.,Ltd.

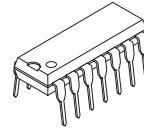
www.njr.com

VOLTAGE COMPARATOR

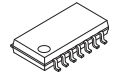
■ GENERAL DESCRIPTION

The NJM319 is precision high-speed dual comparator fabricated on a single monolithic chip. It is designed to operate over a wide range of supply voltages down to single 5V logic and ground. The uncommitted collector of the output stage makes the NJM319 compatible with RTL, DTL and TTL as well as capable of driving lamps and relays at currents up to 25mA.

■ PACKAGE OUTLINE



NJM319D



NJM319M

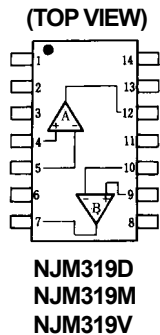


NJM319V

■ FEATURES

- Operating Voltage +5V~+18V(Single Supply)
 ±5V~±18V(Dual Supply)
- Single Supply Operation
- Response Time 80ns typ.
- Output Current 25mA @ Sink Current
- Package Outline DIP14, DMP14, SSOP14
- Bipolar Technology

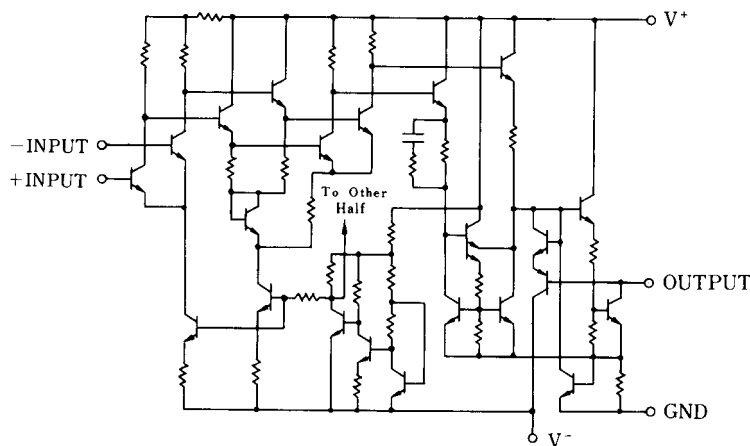
■ PIN CONFIGURATION



PIN FUNCTION

- | | |
|-------------------|--------------------|
| 1. NC | 8. B GND |
| 2. NC | 9. B +INPUT |
| 3. A GND | 10. B -INPUT |
| 4. A +INPUT | 11. V ⁺ |
| 5. A -INPUT | 12. A OUTPUT |
| 6. V ⁻ | 13. NC |
| 7. B OUTPUT | 14. NC |

■ EQUIVALENT CIRCUIT (1/2 Shown)



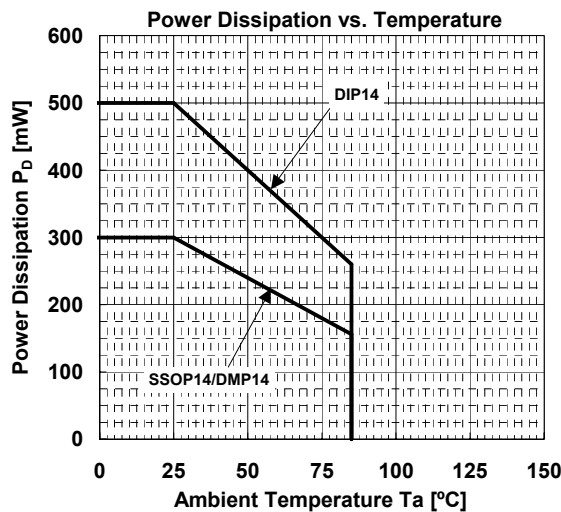
NJM319

■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-----------------------------------|------------------|------------------------------------|-------------|
| Supply Voltage | V^+V^- | ± 18 | V |
| Input Voltage | V_{IC} | ± 15 (note1) | V |
| Differential Input Voltage | V_{ID} | ± 5 (note2) | V |
| Power Dissipation | P_D | (DIP14) 500 (DMP14, SSOP14) 300 | mW |
| Output to Negative Supply Voltage | ΔV_{O-N} | 36 | V |
| Output to GND | ΔV_{O-G} | 36 | V |
| GND to Negative Supply Voltage | ΔV_{G-N} | 25 | V |
| GND to Positive Supply Voltage | ΔV_{G-P} | 18 | V |
| Operating Temperature Range | T_{opr} | -40 to +85 | $^{\circ}C$ |
| Storage Temperature Range | T_{stg} | -40 to +125 | $^{\circ}C$ |

(note1) For supply voltage less than $\pm 15V$, the absolute maximum input voltage is equal to the supply voltage.

(note2) Do not apply voltage more than $\pm 5V$ at the point between +INPUT and -INPUT.



■ RECOMMENDED OPERATING VOLTAGE ($T_a=25^{\circ}C$)

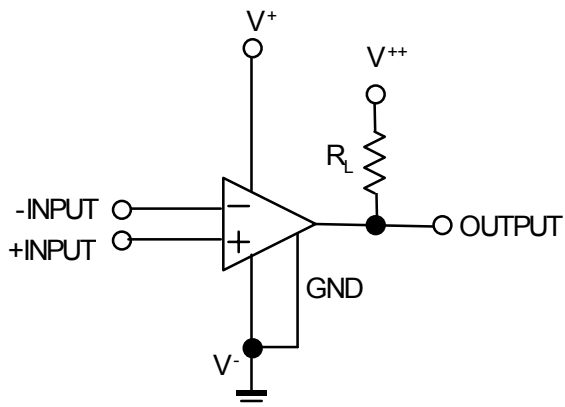
| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--------------------------------|-----------|---|------|------|------|------|
| Dual Supply | V^+ | GND=0V | +5 | - | +18 | V |
| | V^- | | -18 | - | 0 | |
| Single Supply | V^+ | GND= V^- | +5 | - | +18 | V |
| GND to Positive Supply Voltage | V_{G-P} | This Voltage is with respect to the GND terminal. | +5 | - | +18 | V |

■ ELECTRICAL CHARACTERISTICS

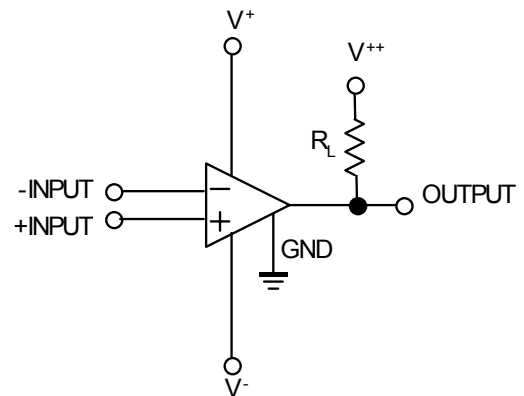
(Ta=25°C, V⁺/V⁻=±15V)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|-------------------------|-------------------|--|------|------------|------|------|
| Input Offset Voltage | V _{IO} | R _S ≤ 5kΩ | - | 2.0 | 8.0 | mV |
| Input Offset Current | I _{IO} | | - | 80 | 200 | nA |
| Input Bias Current | I _B | | - | 250 | 1000 | nA |
| Voltage Gain | A _V | | 78 | 92 | - | dB |
| Input Voltage Range | V _{ICM} | V ⁺ =15V, V ⁻ =-15V | - | - 13 to 13 | - | V |
| | | V ⁺ =5V, V ⁻ =0V | - | 1 to 3 | - | V |
| Response Time | t _R | V _{IN} ⁺ : 100mV Step Input, 5mV Over Drive | - | 80 | - | ns |
| Saturation Voltage | V _{SAT} | V _{IN} ⁺ ≤ -10mV, I _{SINK} =25mA | - | 0.75 | 1.5 | V |
| Output Leakage Current | I _{LEAK} | V _{IN} ⁺ ≥ 10mV, V=GND=0V, V _{OUT} =35V | - | 0.2 | 10 | μA |
| Positive Supply Current | I ⁺ 1 | V ⁺ =5V, V ⁻ =0V | - | 4.3 | - | mA |
| Positive Supply Current | I ⁺ 2 | | - | 8 | 12.5 | mA |
| Negative Supply Current | I ⁻ | | - | 3 | 5 | mA |

■ TYPICAL APPLICATION

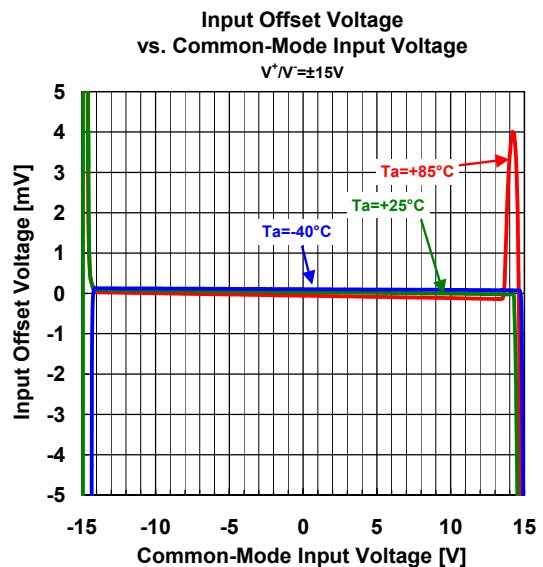
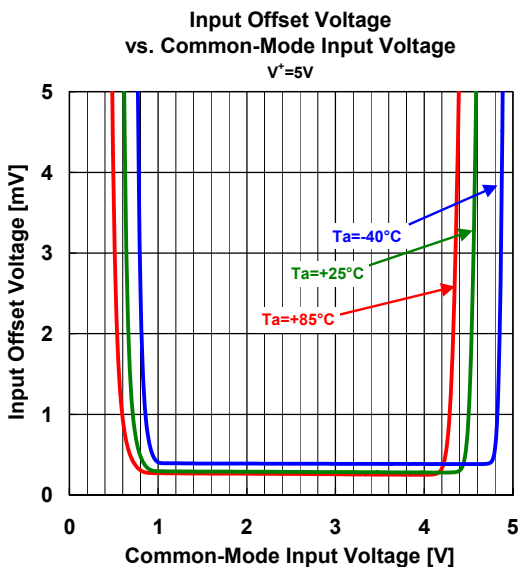
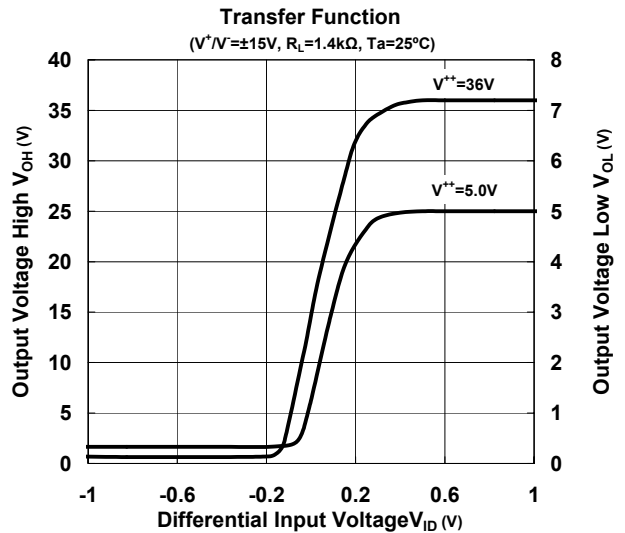
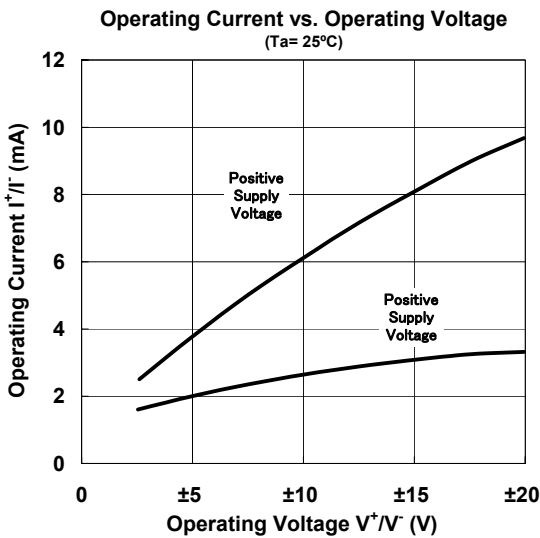
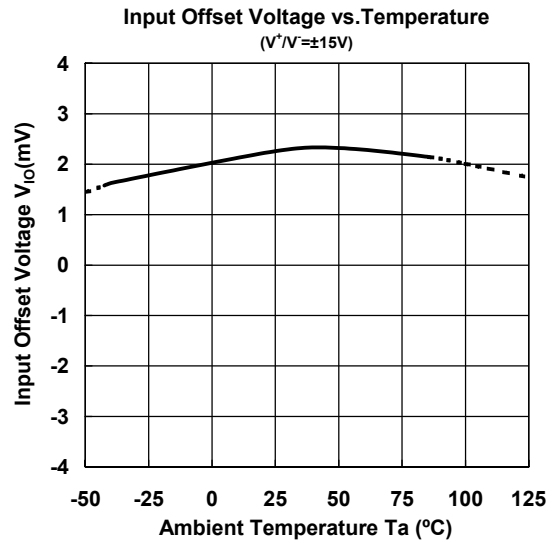
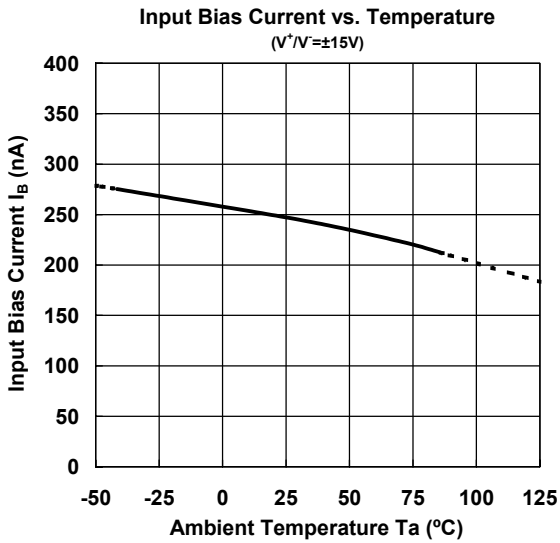


Single Supply

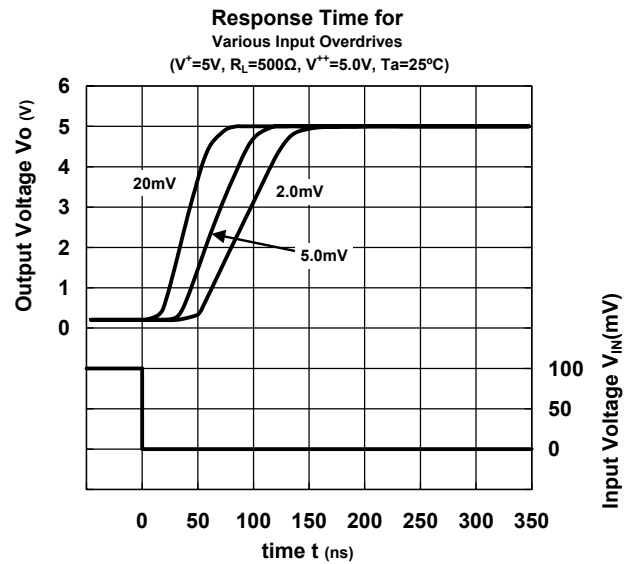
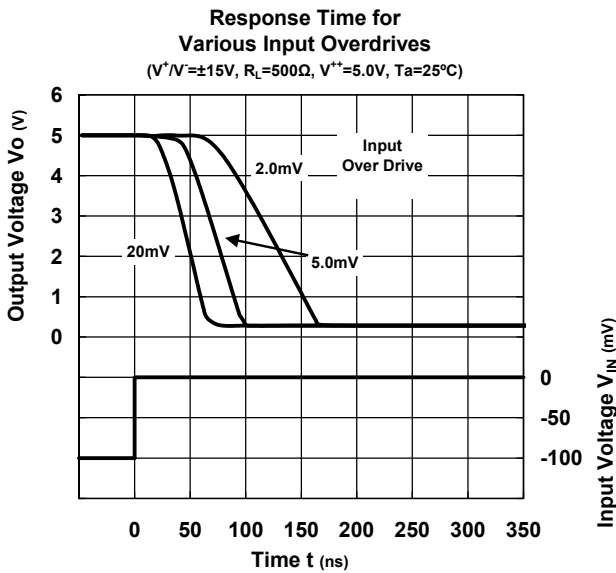
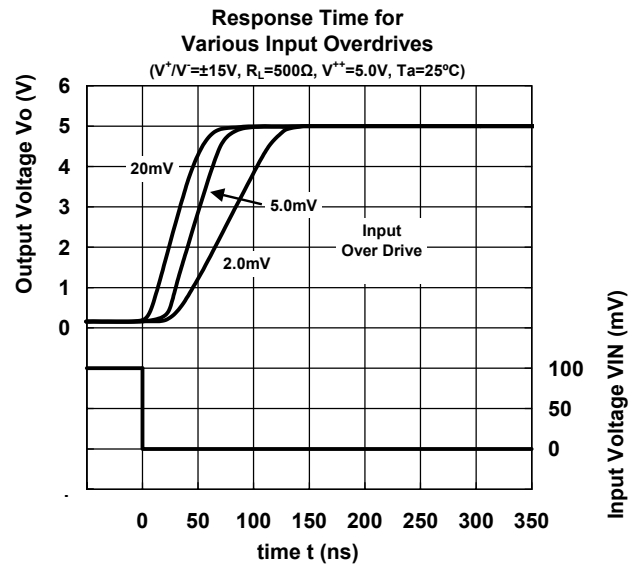
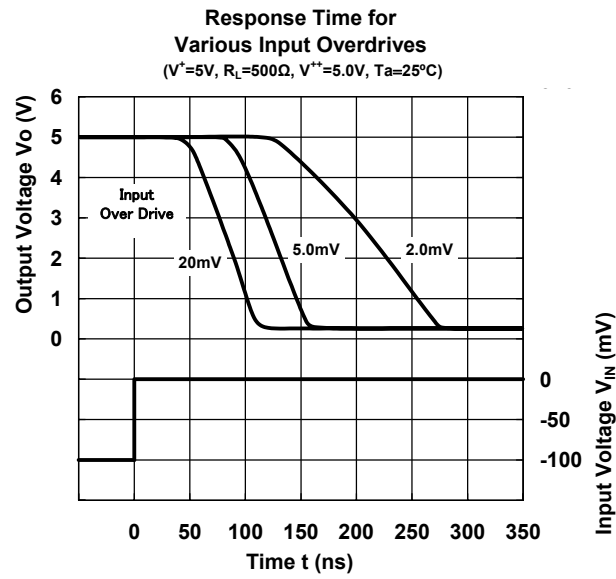


Dual Supply

■ TYPICAL CHARACTERISTICS

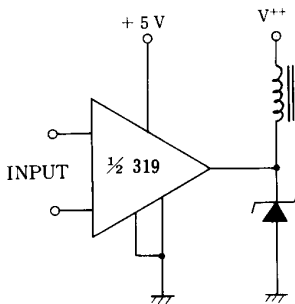


■ TYPICAL CHARACTERISTICS

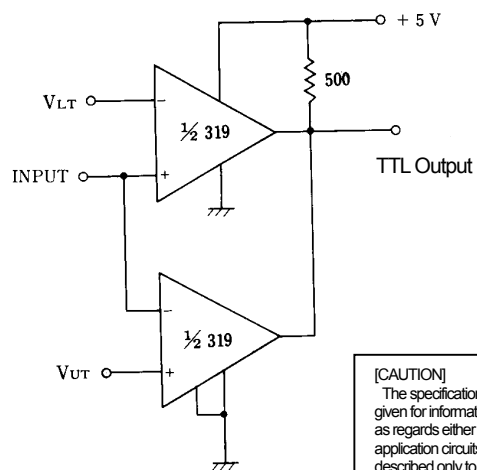


■ TYPICAL APPLICATIONS

Relay Driver



Window Detector



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