NJU7102A/04A

C-MOS COMPARATOR WITH C-MOS OUTPUT

■ GENERAL DESCRIPTION

The NJU7102A and 04A dual and quad C-MOS Comparators performing wide operating voltage from 3 to 14V, low operating current and low offset voltage.

The NJU7102A and 04A operated on a single-power-supply can interface with most of TTL and C-MOS type standard logic ICs.

 $(V_{DD}=3\sim 14V)$

(118=1pA)

(9 µA/circuit typ.)

(0~3.8V at VDD=5V)

DIP/DMP 8 (NJU7102A) DIP/DMP 14 (NJU7104A)

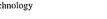
FEATURES

JRC

- Single-Power-Supply
- Wide Operating Voltage
- Low Operating Current
- Wide Common Mode Input Voltage
- High Input Impedance
- Low Bias Current
- Low Offset Voltage
- C-MOS (Push-Pull) Output
- Package Outline

C-MOS Technology

PIN CONFIGURATION







NJU7102AD



NJU7102AM





NJU7104AD

14 OUT3

13 OUT4

12 GND

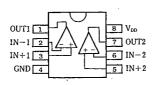
11 IN+4

10 IN-4

9 IN+3

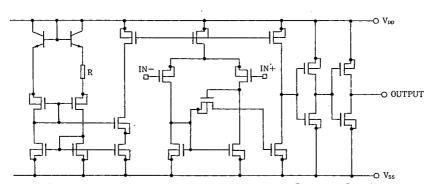
8 IN-3

NJU7104AM









New Japan Radio Co., Ltd.

IN+1 7 NJU7104AD/AM

OUT1 1

0UT2 2

IN-24

IN+2 5

IN-1 6

V_{DD} 3

(Ta=25℃, VDD=5V)

ABSOLUTE MAXIMUM BATINGS -

| ABSOLUTE MAXIMUM RATINGS | | | | |
|----------------------------|-------------------|--------------|------|--|
| PARAMETER | SYMBOL | RATINGS | UNIT | |
| Supply Voltage | V _{DD} · | 16 | v | |
| Differential Input Voltage | VID | ±16 (Note1) | v | |
| Input Voltage | Vi | 16 | v | |
| Output Voltage | Vo | 16 | v | |
| Output Current | lo | 20 | mA | |
| Power Dissipation | PD | (DIP8) 500 | mW | |
| | | (DIP14) 700 | | |
| | | (DMP8) · 300 | | |
| | | (DMP14) 300 | | |
| Operating Temperature | Topr | 0~+70 | C | |
| Storage Temperature | Tstg | -40~+125 | C | |

(Note1) If the supply voltage (VDD) is less than 16V, the input voltage must not over the VDD level though 16V is limit specified.

ELECTRICAL CHARACTERISTICS

| PARAMETER | SYMBOL | CONDITIONS | 1 | NJU7102A | | | NJU7104A | | |
|---------------------------------|--------|---------------------------------------|-----|----------|-------------|-----|----------|------|------|
| | | | MIN | ТҮР | MAX | MIN | TYP | MAX | UNIT |
| Operating Voltage | Vdd | | 3 | - | 14 | 3 | 1 | 14 | v |
| Input Offset Voltage | Vio | VIC=VICMin (Note2) | - | 1.2 | 12 | - | 1.2 | 12 | mV |
| Input Offset Current | lio | · · · · · · · · · · · · · · · · · · · | - | 1 | - | _ | 1 | _ | pА |
| Input Bias Current | Ів | | - | 1 | - | _ | 1 | - | pА |
| Input Common Mode Voltage Range | Vicm | | 0 | | 3.8 | 0 | - | 3.8 | v |
| Output Voltage | Vон | V _{ID} =+1V, Iон=+5V | 4.5 | 4.7 | | 4.5 | 4.7 | _ | v |
| | Vol | VID=+1V, IOL=+6mA | | 0.22 | 0.30 | - | 0.234 | 0.30 | v |
| Common Mode Rejection Ratio | CMR | VIC=VICMin | _ | 82 | | - | 78 | - | dB |
| Supply Voltage Rejection Ratio | SVR | V _{DD} =5~10V | - | 90 | | | 92 | - | dB |
| Operating Current | ldd | No Load, Vo=0V | | 18 | 40 | _ | 36 | 80 | μA |

(Note2) This condition is available for operating voltage V_{DD} =5~10V and driving voltage is over 4.5V or under 0.3V.

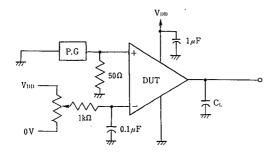
SWITCHING CHARACTERISTICS

(Ta=25°C, VDD=5V f=10kHz, CL=15pF)

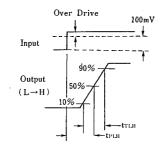
| PARAMETER SYMBOL | | | NJU7102A | | NJU7104A | | | | | |
|-------------------------------|--------------|---------------------|----------------|-----|----------|-----|-----|------|-----|------|
| | SYMBOL | OL CONDITIONS | | MIN | TYP | MAX | MIN | ТҮР | MAX | UNIT |
| Propagation Delay | | V _{IC} =0V | Over Drive=5mV | _ | 3.0 | - | - | 2.3 | - | μs |
| High to Low | tPHL. | | TTL level step | — | 0.17 | - | - | 0.17 | - | |
| Propagation Delay | tplh | V _{IC} =0V | Over Drive=5mV | - | .1.9 | - | - | 1.3 | — | - μs |
| Low to High | | | TTL level step | | 0.8 | - | - | 0.8 | - | |
| Output Signal Falling Time | tTHL. | Over Drive=50mV | | | 30 | _ | - | 30 | _ | ns |
| Output Signal Rising Time | t TLH | Over Drive=50mV | | | 70 | - | - | 70 | | ns |

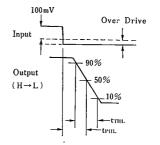
NJU7102A/04A

MEASUREMENT CIRCUIT



TIMING WAVEFORM





5

5-30

MEMO

[CAUTION] The specifications on this databook are only given for information , without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.