# QUARTZ CRYSTAL OSCILLATOR

## ■ GENERAL DESCRIPTION

The NJU6362A is a C-MOS quartz crystal oscillator which consists of an oscillation amplifier and 3-state output buffer.

The oscillation frequency is as wide as up to 50MHz and the symmetry of 45-55% is realized over full oscillation frequency range.

The oscillation amplifier incorporates feed-back resistance and oscillation capacitors (Cg, Cd), therefore, it requires no external component except quartz crystal.

## ■ FEATURES

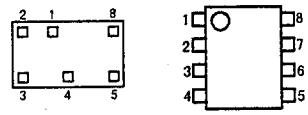
- Operating Voltage — 3.0~6.0V
- Maximum Oscillation Frequency — 50MHz
- Low Operating Current
- High Fan-out — LSTTL 10
- 3-state Output Buffer
- Oscillation Capacitors Cg and Cd on-chip
- Oscillation Output Stand-by Function
- Package Outline — Chip/EMP8
- C-MOS Technology

## ■ PACKAGE OUTLINE

NJU6362AC NJU6362AE

## ■ PAD LOCATION/PIN CONFIGURATION

Chip EMP8




## ■ COORDINATES

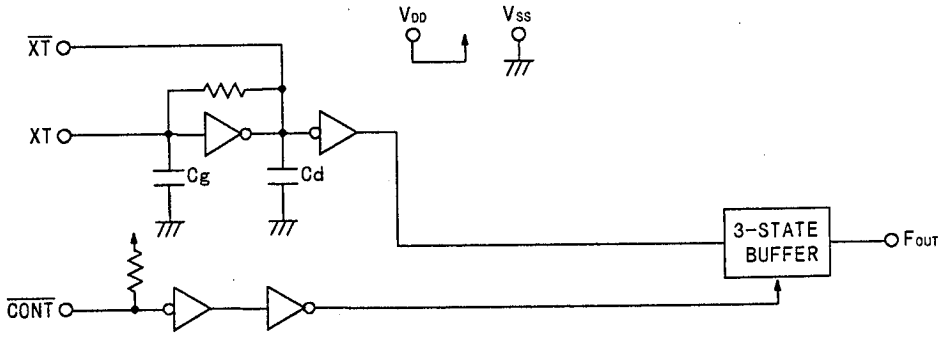
| No. | PAD | X | Y |
|---|---|---|---|
| 1 | CONT | 515 | 648 |
| 2 | XT | 231 | 648 |
| 3 | $\overline{XT}$ | 231 | 168 |
| 4 | $V_{SS}$ | 734 | 152 |
| 5 | $F_{OUT}$ | 1091 | 172 |
| 6 | NC | — | — |
| 7 | NC | — | — |
| 8 | $V_{DD}$ | 1091 | 628 |

Chip Size : 1.29x0.8mm

Chip Thickness : 400±30μm

Note) There are no PAD of No. 6 and 7 on the chip.

## ■ BLOCK DIAGRAM



## ■ TERMINAL DESCRIPTION

| No. | SYMBOL | FUNCTION |
|---|---|---|
| 1 | $\overline{CONT}$ | 3-State Output Control<br>$\overline{CONT}$ / $F_{OUT}$<br>H or Open / Output frequency $f_o$<br>L / Output High Impedance |
| 2<br>3 | XT<br>$\overline{XT}$ | Quartz Crystal Connecting terminals |
| 4 | $V_{SS}$ | GND |
| 5 | $F_{OUT}$ | Output frequency $f_o$ |
| 8 | $V_{DD}$ | + 5V |

## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Supply Voltage | $V_{DD}$ | -0.5 ~ +7.0 | V |
| Input Voltage | $V_{IN}$ | $V_{SS}$-0.5 ~ $V_{DD}$+0.5 | V |
| Output Voltage | $V_O$ | -0.5 ~ $V_{DD}$+0.5 | V |
| Input Current | $I_{IN}$ | ±10 | mA |
| Output Current | $I_O$ | ±25 | mA |
| Power Dissipation (EMP) | $P_D$ | 200 | mW |
| Operating Temperature Range | Topr | -40 ~ + 85 | °C |
| Storage Temperature Range | Tstg | -65 ~ +150 | °C |

## ■ ELECTRICAL CHARACTERISTICS

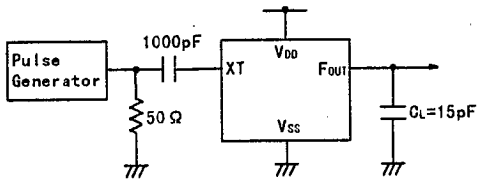
( Ta=25°C, $V_{DD}$=5V )

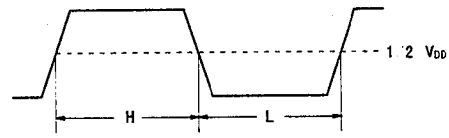
| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Operating Voltage | $V_{DD}$ | | 3 | | 6 | V |
| Operating Current | $I_{DD}$ | fosc=16MHz, No load | | | 10 | mA |
| Stand-by Current | Ist | $\overline{CONT}$=XT=$V_{SS}$, No load (Note) | | | 1 | uA |
| Input Voltage | $V_{IH}$ | | 3.5 | | 5.0 | V |
| | $V_{IL}$ | | 0 | | 1.5 | |
| Output Current | $I_{OH}$ | $V_{OH}$=4.5V | 5.5 | | | mA |
| | $I_{OL}$ | $V_{OL}$=0.5V | 5.5 | | | |
| Input Current | $I_{IN}$ | $\overline{CONT}$=$V_{SS}$ | 125 | 250 | 500 | μA |
| 3-st. Off-leakage Current | $I_{OZ}$ | $\overline{CONT}$=$V_{SS}$, $F_{OUT}$=$V_{DD}$ or $V_{SS}$ | | | ±0.1 | μA |
| Internal Capacitor | Cg/Cd | | | 28 | | pF |
| Max. Oscillation Freq. | $f_{MAX}$ | | 50 | | | MHz |
| Output Signal Symmetry | SYM | $C_L$=15pF at 1/2$V_{DD}$ | 45 | 50 | 55 | % |
| Output Signal Rise Time | $t_r$ | $C_L$=15pF, 10%-90% | | | 8 | ns |
| Output Signal Fall Time | $t_f$ | $C_L$=15pF, 90%-10% | | | 8 | ns |

Note) Excluding input current on $\overline{CONT}$ terminal.

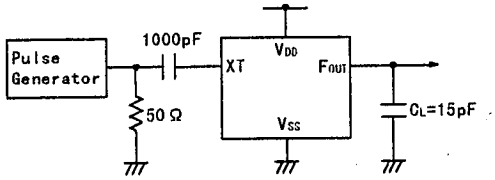
■ MEASUREMENT CIRCUITS

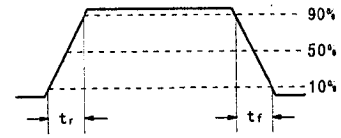
(1) Output Signal Symmetry ($C_L$=15pF)




(2) Output Signal Rise / Fall Time ($C_L$=15pF)



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