

QUARTZ CRYSTAL OSCILLATOR
■ GENERAL DESCRIPTION

The NJU6372 series is a C-MOS quartz crystal oscillator which consists of an oscillation amplifier, 3-stage divider and 3-state output buffer.

This series are classed into three groups A to D, H to L and Q to T according to their oscillation frequency range mentioned in the line-up table.

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

The 3-stage divider generates f_o , $f_o/2$, $f_o/4$ and $f_o/8$ and only one frequency selected by internal circuits is output.

The 3-state output buffer is C-MOS compatible and capable of 10 LSTTL driving.

■ FEATURES

- Operating Voltage. — 4.0~6.0V
- Maximum Oscillation Frequency (See Line-Up Table)
- Low Operating Current
- High Fan-out — LSTTL 10
- 3-state Output Buffer
- Selected Frequency Output (mask option)
 - Only one frequency out of f_o , $f_o/2$, $f_o/4$ and $f_o/8$ output
- Oscillation Capacitors Cg and Cd on-chip
- Oscillation and/or Output Stand-by Function
- Package Outline — CHIP/EMP 8
- C-MOS Technology

■ LINE-UP TABLE

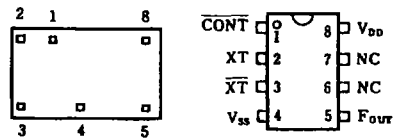
Type No.	Recommended Osc. Freq.	Output Freq.	Cg, Cd
NJU6372A 6372B 6372C 6372D	From 20 to 35MHz	f_o $f_o/2$ $f_o/4$ $f_o/8$	28pF
NJU6372H 6372J 6372K 6372L	From 30 to 50MHz	f_o $f_o/2$ $f_o/4$ $f_o/8$	20pF
NJU6372Q 6372R 6372S 6372T	From 45 to 75MHz	f_o $f_o/2$ $f_o/4$ $f_o/8$	17pF

■ PACKAGE OUTLINE


NJU6372XC



NJU6472XE

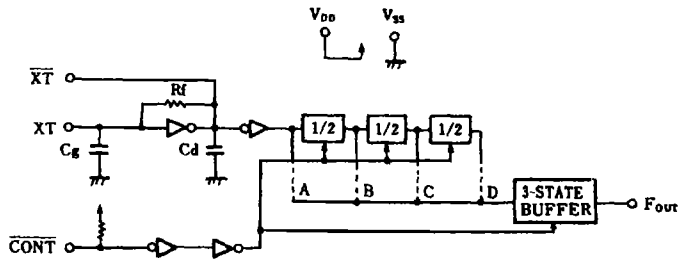
■ PIN CONFIGURATION/PAD LOCATION

■ COORDINATES

 Unit: μm

No.	PAD	X	Y
1	CONT	515	648
2	XT	231	648
3	XT	231	168
4	V _{SS}	734	152
5	F _{OUT}	1091	172
6	NC	-	-
7	NC	-	-
8	V _{DD}	1091	628

Chip Size : 1.29 X 0.8mm
 Chip Thickness : 400 μm ±30 μm
 (Note) No. 6 and 7 terminals are only for package type information. There are no PAD on the chip.

■ BLOCK DIAGRAM



■ TERMINAL DESCRIPTION

NO.	SYMBOL	F U N C T I O N
1	$\overline{\text{CONT}}$	3-State Output Control and Divider Reset
		$\overline{\text{CONT}}$ Output (F_{OUT})
		H Output either one frequency from f_0 , $f_0/2$, $f_0/4$ and $f_0/8$
		L Output High Impedance and Divider Reset
2	XT	Quartz Crystal Connecting Terminals
3	$\overline{\text{XT}}$	
5	F_{OUT}	Output either one frequency from f_0 , $f_0/2$, $f_0/4$ and $f_0/8$
8	V_{DD}	+ 5V
4	V_{SS}	GND

■ 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	-30 ~ + 75	°C
Storage Temperature Range	Tstg	-40 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS

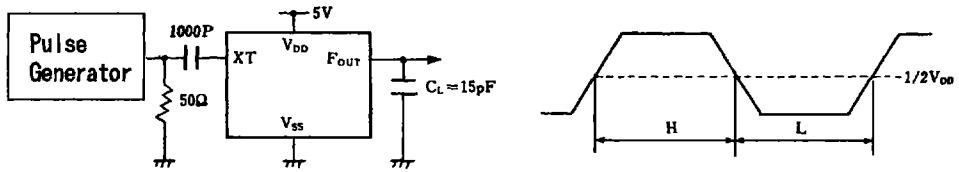
 (Ta=25°C, V_{DD}=5V)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	V _{DD}		4	5	6	V
Operating Current	I _{DD1}	A,B,C,D f _{OSC} =24MHz, No Load			15	mA
	I _{DD2}	H,J,K,L f _{OSC} =48MHz, No Load			25	
	I _{DD3}	Q,R,S,T f _{OSC} =48MHz, No Load			28	
Stand-by Current	I _{st}	CONT, XT=V _{SS} , No Load (Note)			1	μA
Input Voltage	V _{IH}		3.5		5.0	V
	V _{IL}		0		1.5	
Output Current	I _{OH}	V _{OH} =4.5V	4			mA
	I _{OL}	V _{OL} =0.5V	4			
Input Current	I _{IN}	CONT Terminal, CONT=V _{SS}	125	250	500	μA
3-St Off-leakage Current	I _{OZ}	CONT=V _{SS} , F _{OUT} =V _{SS} or V _{DD}			±0.1	μA
Internal Capacitor	C _g , Cd	A,B,C,D Version, f _{OSC} =24MHz		28		pF
		H,J,K,L Version, f _{OSC} =48MHz		20		
		Q,R,S,T Version, f _{OSC} =48MHz		17		
Max. Oscillation Freq.	f _{MAX}	A,B,C,D Version	35			MHz
		H,J,K,L Version	50			
		Q,R,S,T Version	75			
Output Signal Symmetry	SYM	C _L =15pF at 1/2V _{DD}	45	50	55	%
Output Signal Rise Time	t _r	C _L =15pF, 10% - 90%			6	ns
Output Signal Fall Time	t _f	C _L =15pF, 90% - 10%			6	ns

Note) Excluding input current on CONT terminal.

■ MEASUREMENT CIRCUITS

(1) Output Signal Symmetry ($C_L=15\text{pF}$)



(2) Output Signal Rise / Fall Time ($C_L=15\text{pF}$)

