PRELIMINARY

QUARTZ CRYSTAL OSCILLATOR

■ GENERAL DESCRIPTION

The NJU6371 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 TTL compatible and capable of 10 TTL driving.

■ FEATURES

- Operating Voltage. — 4.0~6.0V
- Maximum Oscillation Frequency (See Line-Up Table)
- Low Operating Current
- High Fan-out — TTL 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

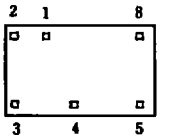
Type No.	Recommended Osc. Freq.	Output Freq.	Cg,Cd
NJU6371A 6371B 6371C 6371D	From 20 to 35MHz	f_O $f_O/2$ $f_O/4$ $f_O/8$	28pF
NJU6371H 6371J 6371K 6371L	From 30 to 50MHz	f_O $f_O/2$ $f_O/4$ $f_O/8$	20pF
NJU6371Q 6371R 6371S 6371T	From 45 to 75MHz	f_O $f_O/2$ $f_O/4$ $f_O/8$	17pF

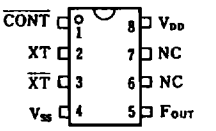
■ PACKAGE OUTLINE

NJU6371XC

NJU6371XE

■ PIN CONFIGURATION/PAD LOCATION





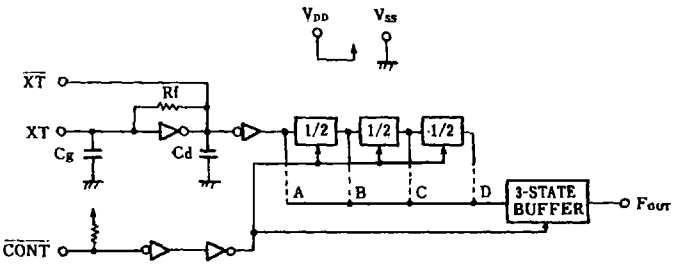
■ COORDINATES

Unit: μm

No.	PAD	X	Y
1	$\overline{CONT}$	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 : 1.29 X 0.8mm
Chip Thickness : 400μm±30μm
(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	FUNCTION
1	CONT	3-State Output Control and Divider Reset CONT: H — FOUT: Output either one frequency from f_o, $f_o/2$, $f_o/4$ and $f_o/8$ CONT: L — FOUT: Output High Impedance and Divider Reset
2 3	XT XT	Quartz Crystal Connecting Terminals
5	FOUT	Output either one frequency from f_o, $f_o/2$, $f_o/4$ and $f_o/8$
8	VDD	+ 5V
4	VSS	GND

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

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	℃
Storage Temperature Range	Tstg	-40 ~ +125	℃

■ ELECTRICAL CHARACTERISTICS

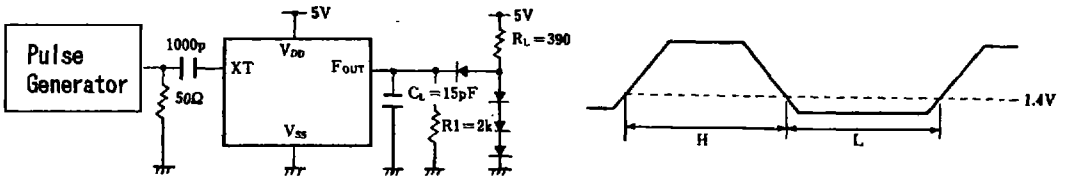
(Ta=25℃, V_{DD}=5V)

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	Ist	$\overline{CONT}$,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_{DD}=5V, V_{OH}=4.5V	4			mA
	I_{OL}	V_{DD}=5V, V_{OL}=0.5V	16			
Input Current	I_{IN}	$\overline{CONT}$ Terminal, $\overline{CONT}$=V_{SS}	125	250	500	μA
3-St Off-leakage Current	I_{OZ}	$\overline{CONT}$=V_{SS}, F_{OUT}=V_{SS} or V_{DD}			±0.1	μA
Internal Capacitor	Cg,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		
Oscillation Frequency	f_O	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, RL=390Ω at 1.4V	45	50	55	%
Output Signal Rise Time	t_r	C_L=15pF, R_L=390Ω, 2.4V-0.4V			6	ns
Output Signal Fall Time	t_f	C_L=15pF, R_L=390Ω, 2.4V-0.4V			4	ns

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

■ MEASUREMENT CIRCUITS

(1) Output Signal Symmetry (C_L=15pF, R_L=390Ω)



(2) Output Signal Rise/Fall Time (C_L=15pF, R_L=390Ω)