

QUARTZ CRYSTAL OSCILLATOR

■ GENERAL DESCRIPTION

The NJU6322 series is a C-MOS quartz crystal oscillator which consists of an oscillation amplifier, 3-stage divider 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(C_g , C_d), 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.

■ PACKAGE OUTLINE

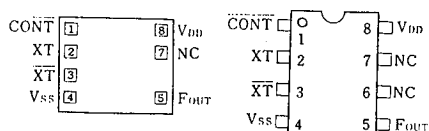


NJU6322XC



NJU6322XE

■ PIN CONFIGURATION/PAD LOCATION



■ FEATURES

- Operating Voltage -- 3.0~6.0V
- Maximum Oscillation Frequency -- 50MHz
- 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 C_g and C_d on-chip
- Oscillation and/or Output Stand-by Function
- Package Outline -- CHIP/EMP 8
- C-MOS Technology

■ COORDINATES

Unit: μm

No.	PAD	X	Y
1	CONT	170	649
2	XT	170	483
3	XT	170	316
4	VSS	170	143
5	FOUT	1094	143
6	NC	-	-
7	NC	1094	462
8	VDD	1094	649

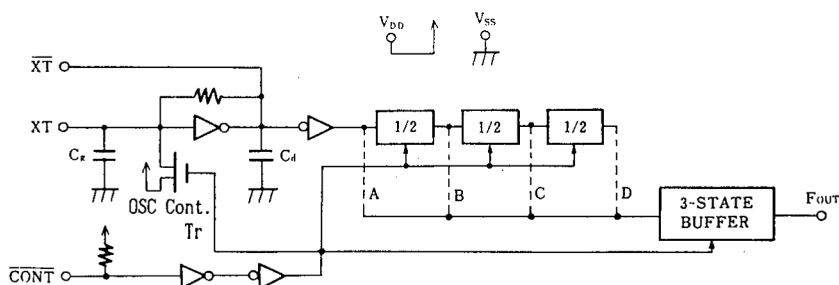
Chip Size : 1.24 X 0.8mm

Chip Thickness : $400\mu\text{m} \pm 30\mu\text{m}$

(Note) No. 6 and 7 terminals are only for package type information. There is No.7 PAD on the chip but no No.6.

■ LINE-UP TABLE

Type No.	Output Frequency	C_g	C_d	Osc. Stop Function
NJU6322L	f_o	23pF	23pF	NO
NJU6322M	$f_o/2$	23pF	23pF	NO
NJU6322N	$f_o/4$	23pF	23pF	NO
NJU6322U	$f_o/8$	23pF	23pF	NO
NJU6322K	f_o	12.5pF	12.5pF	YES
NJU6322W	f_o	12.5pF	12.5pF	NO
NJU6322P	f_o	NO	NO	NO
NJU6322T	f_o	NO	NO	NO

■ BLOCK DIAGRAM


(Note) Oscillation stop function is available only for NJU6322K.
Other series have only output stand-by function.

■ TERMINAL DESCRIPTION

No.	SYMBOL	F U N C T I O N
1	CONT	Oscillation Stop Control and Divider Reset
		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 In the NJU6322K also oscillation stop
2	XT	Quartz Crystal Connecting Terminals
3	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)

P A R A M E T E R	SYMBOL	R A T I N G S	UNIT
Supply Voltage	V _{DD}	-0.5 ~ +7.0	V
Input Voltage	V _{IN}	-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

(Note) Decoupling capacitor should be connected between V_{DD} and V_{SS} due to the stabilized operation for the circuit.

ELECTRICAL CHARACTERISTICS

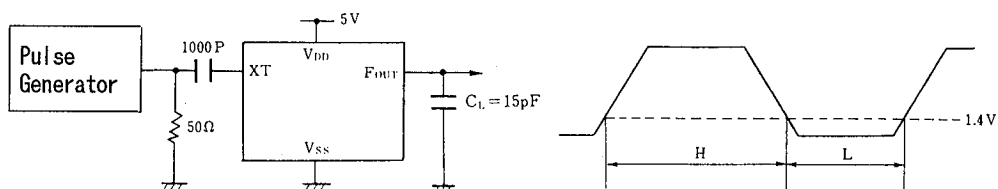
(Ta=25°C, V_{DD}=5V)

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	I _{st}	$\overline{\text{CONT}}, \text{XT} = V_{SS}$, 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}	$\overline{\text{CONT}}$ Terminal, $\overline{\text{CONT}} = V_{SS}$				400	μA
Internal Capacitor	C _g , C _d	L, M, N, U Version			23		pF
		K Version			12.5		
		P, T Version			-		
Max. Oscillation Freq.	f _{MAX}	V _{DD} =5V, C _L =15pF		50			MHz
Output Signal Symmetry	SYM	V _{DD} =5V, C _L =15pF at 1.4V		45	50	55	%
Output Signal Rise Time	t _{r1}	V _{DD} =5V	20% - 80%			8	ns
	t _{r2}	C _L =15pF	R _L =390Ω, 0.4V-2.4V			6	
Output Signal Fall Time	t _{f1}	V _{DD} =5V	80% - 20%			6	ns
	t _{f2}	C _L =15pF	R _L =390Ω, 2.4V-0.4V			4	

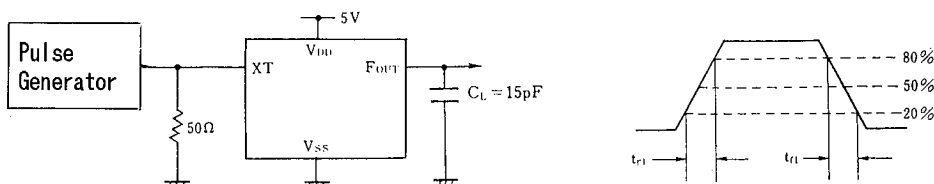
Note) Excluding input current on $\overline{\text{CONT}}$ terminal.

■ MEASUREMENT CIRCUITS

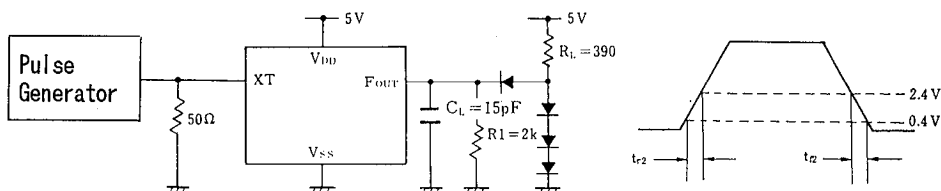
(1) Output Signal Symmetry ($C_L=15\text{pF}$)



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



(3) Output Signal Rise / Fall Time ($C_L=15\text{pF}$, $R_L=390\Omega$)



NJU6322 Series

MEMO

[CAUTION]

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