

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

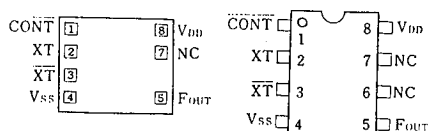


NJU6322XC



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

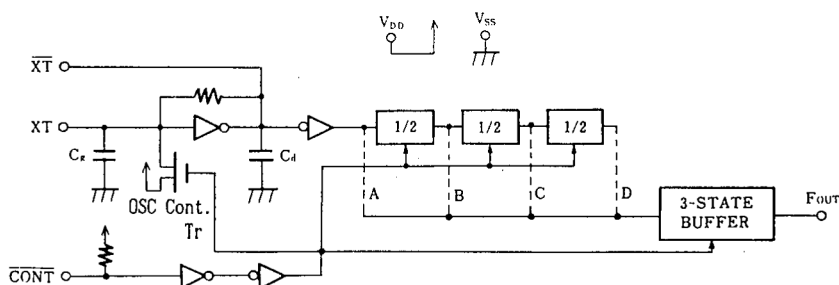
Chip Size : 1.24 X 0.8mm

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 3	XT XT	Quartz Crystal Connecting Terminals
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}	-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

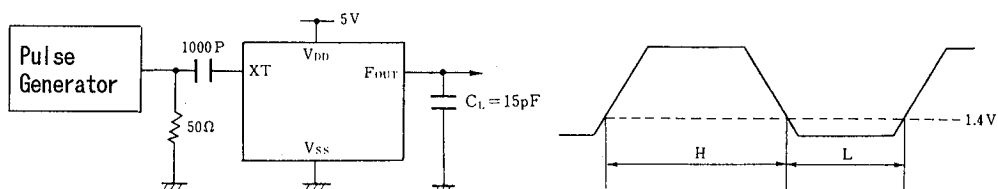
(Ta=25°C, V_{DD}=5V)

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	

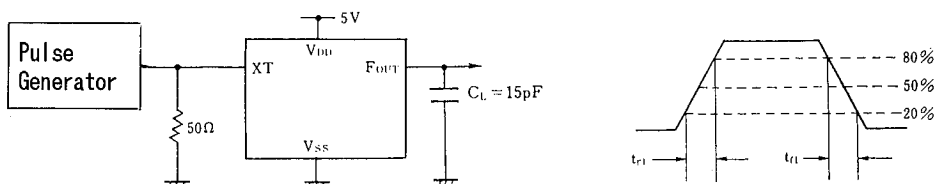
Note) Excluding input current on $\overline{\text{CONT}}$ terminal.

■ MEASUREMENT CIRCUITS

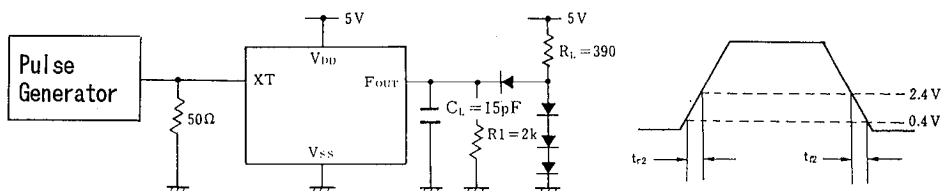
(1) Output Signal Symmetry ($C_L=15\text{pF}$)



(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]

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.