

QUARTZ CRYSTAL OSCILLATOR

■ GENERAL DESCRIPTION

The NJU6324 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(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.

■ PACKAGE OUTLINE

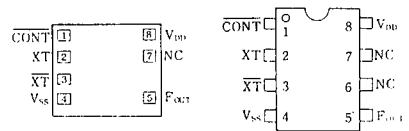


NJU6324XC



NJU6324XE

■ PIN CONFIGURATION/PAD LOCATION



■ FEATURES

- Operating Voltage -- 3.0~6.0V
- Maximum Oscillation Frequency -- 50MHz
- 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

■ COORDINATES

 Unit: μm

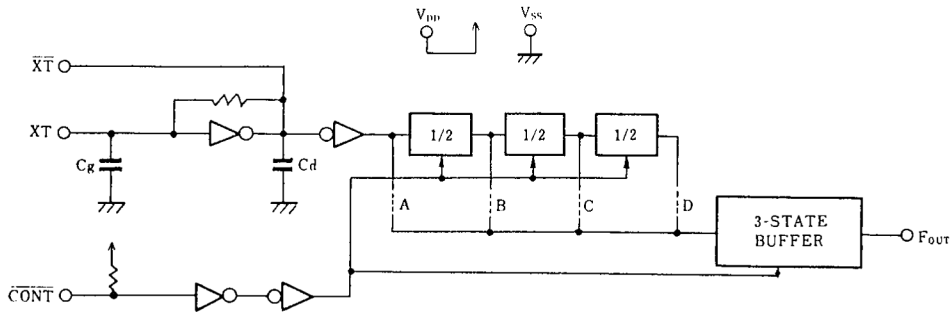
No.	PAD	X	Y
1	CONT	170	649
2	XT	170	483
3	XT	170	316
4	VSS	170	143
5	FOUT	1094	143
6	NC	-	-
7	NC	1094	462
8	VDD	1094	649

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	Cg	Cd
NJU6324L	f_o	23pF	23pF
NJU6324M	$f_o/2$	23pF	23pF
NJU6324N	$f_o/4$	23pF	23pF
NJU6324U	$f_o/8$	23pF	23pF

■ BLOCK DIAGRAM


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■ TERMINAL DESCRIPTION

NO.	SYMBOL	F U N C T I O N
1	$\overline{\text{CONT}}$	3-State Output Control and Divider Reset
		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

 ($T_a=25^\circ\text{C}$)

P A R A M E T E R	S Y M B O L	R A T I N G S	U N I T
Supply Voltage	V_{DD}	-0.5 ~ 7.0	V
Input Voltage	V_{IN}	-0.5 ~ $V_{\text{DD}}+0.5$	V
Output Voltage	V_{O}	-0.5 ~ $V_{\text{DD}}+0.5$	V
Input Current	I_{IN}	± 10	mA
Output Current	I_{O}	± 25	mA
Power Dissipation (EMP)	P_{D}	200	mW
Operating Temperature Range	T_{opr}	-40 ~ + 85	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-65 ~ +150	$^\circ\text{C}$

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

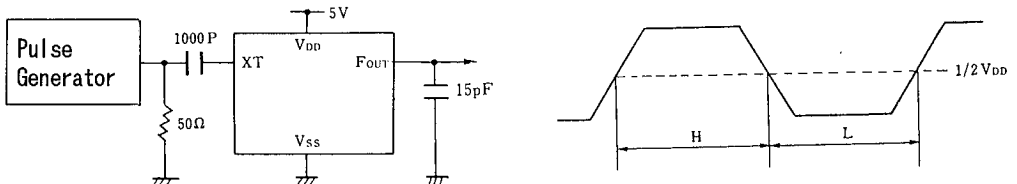
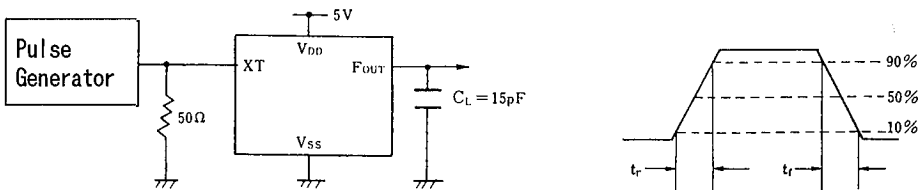
■ ELECTRICAL CHARACTERISTICS

 ($T_a=25^\circ\text{C}$, $V_{DD}=5\text{V}$)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	V_{DD}		3		6	V
Operating Current	I_{DD}	$f_{osc}=16\text{MHz}$, No load			10	mA
Stand-by Current	I_{st}	$\overline{\text{CONT}}, \text{XT}=\overline{V_{SS}}$, No load (Note)			1	μA
Input Voltage	V_{IH}		3.5		5.0	V
	V_{IL}		0		1.5	
Output Current	I_{OH}	$V_{DD}=5\text{V}$, $V_{OH}=4.5\text{V}$	4			mA
	I_{OL}	$V_{DD}=5\text{V}$, $V_{OL}=0.5\text{V}$	4			
Input Current	I_{IN}	$\overline{\text{CONT}}$ Terminal, $\overline{\text{CONT}}=\overline{V_{SS}}$			400	μA
Internal Capacitor	C_g, C_d			23		pF
Max. Oscillation Freq.	f_{MAX}	$V_{DD}=5\text{V}$, $C_L=15\text{pF}$	50			MHz
Output Signal Symmetry	SYM	$V_{DD}=5\text{V}$, $C_L=15\text{pF}$ at $1/2V_{DD}$	45	50	55	%
Output Signal Rise Time	t_r	$V_{DD}=5\text{V}$, $C_L=15\text{pF}$, 10% - 90%			8	ns
Output Signal Fall Time	t_f	$V_{DD}=5\text{V}$, $C_L=15\text{pF}$, 90% - 10%			8	ns

 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 ($C_L=15\text{pF}$)


NJU6324 Series

MEMO

[CAUTION]

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