



QUARTZ CRYSTAL OSCILLATOR

■ GENERAL DESCRIPTION

The NJU6329 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.

The difference between NJU6329 and NJU6322 series is pin configuration only.

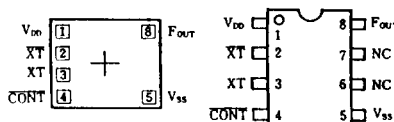
■ PACKAGE OUTLINE


NJU6329XC



NJU6329XE

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■ 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 of f_o , $f_o/2$, $f_o/4$ and $f_o/8$ output
- Oscillation Capacitor C_g and C_d on-chip
- Oscillation and/or Output Stand-by Function
- Package Outline — CHIP/EMP8
- C-MOS Technology

■ COORDINATES

 Unit: μm

No.	PAD	X	Y
1	V_{DD}	-450	257
2	XT	-450	84
3	XT	-450	-83
4	CONT	-450	-249
5	V_{SS}	475	-249
8	F_{OUT}	475	257

Chip Size : 1.24 X 0.8mm
 Chip Center : $X=0\mu\text{m}, Y=0\mu\text{m}$
 Chip Thickness : $400\mu\text{m} \pm 30\mu\text{m}$

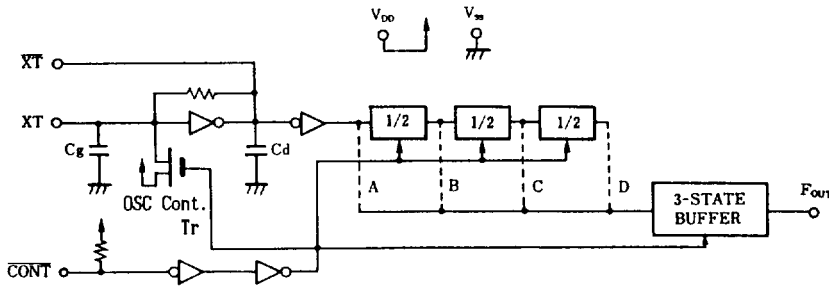
(Note) No. 6 and 7 terminals are only for package type information. There are no PAD on the chip.

■ LINE-UP TABLE

Type No.	Output Freq.	C_g	C_d	Osc.Stop Function
NJU6329A	f_o	23pF	23pF	No
NJU6329B	$f_o/2$	23pF	23pF	No
NJU6329C	$f_o/4$	23pF	23pF	No
NJU6329D	$f_o/8$	23pF	23pF	No



■ BLOCK DIAGRAM



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■ TERMINAL DESCRIPTION

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

(Note) Reference the Line-Up Table

■ ABSOLUTE MAXIMUM RATINGS

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

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	-0.5 ~ +7.0	V
Input Voltage	V_{IN}	$V_{SS}-0.5 \sim V_{DD}+0.5$	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	P_D	200 (EMP)	mW
Operating Temperature Range	T_{OPR}	-40 ~ + 85	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +125	$^\circ\text{C}$

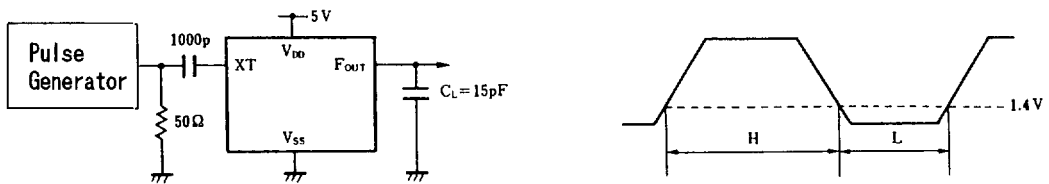

ELECTRICAL CHARACTERISTICS

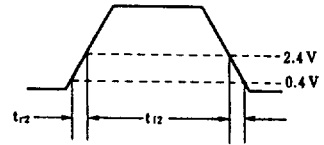
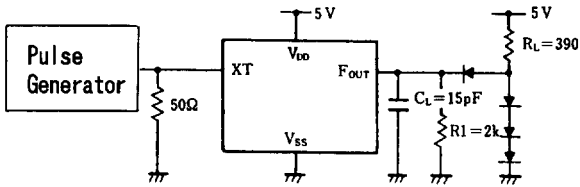
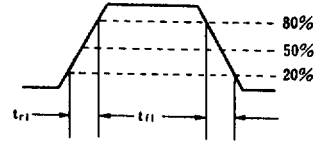
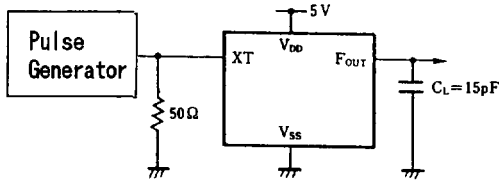
 (Ta=25°C, V_{DD}=5V)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	V _{DD}		3		6	V
Operating Current	I _{DD}	f _{OSC} =16MHz, No Load			15	mA
Stand-by Current	I _{st}	$\overline{\text{CONT}}, \text{XT}=\text{V}_{\text{SS}}$, 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, $\overline{\text{CONT}}=\text{V}_{\text{SS}}$			400	μA
3-St Off-leakage Current	I _{OZ}	$\overline{\text{CONT}}=\text{V}_{\text{SS}}$, F _{OUT} =V _{SS} or V _{DD}			±0.1	μA
Internal Capacitor	C _g , C _d	f _{osc} =16MHz		23		pF
Max. Oscillation Freq.	f _{MAX}		50			MHz
Output Signal Symmetry	SYM	C _L =15pF at 1.4V	45	50	55	%
Output Signal Rise Time	t _{r1}	C _L =15pF, 20~80%			8	ns
	t _{r2}	C _L =15pF, R _L =390Ω, 0.4~2.4V			6	
Output Signal Fall Time	t _{f1}	C _L =15pF, 80~20%			6	ns
	t _{f1}	C _L =15pF, R _L =390Ω, 2.4~0.4V			4	

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

MEASUREMENT CIRCUITS

 (1) Output Signal Symmetry (C_L=15pF)



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


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