PRELIMINARY

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(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.

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

■ PACKAGE OUTLINE

NJU6329XC

NJU6329XE

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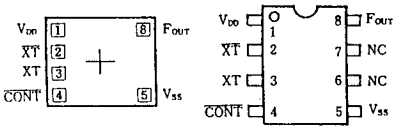
■ PIN CONFIGURATION/PAD LOCATION



■ 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 Cg and Cd on-chip
- Oscillation and/or Outpu Stand-by Function
- Package Outline -- CHIP/EMP8
- C-MOS Technology

■ COORDINATES

Unit: μm

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

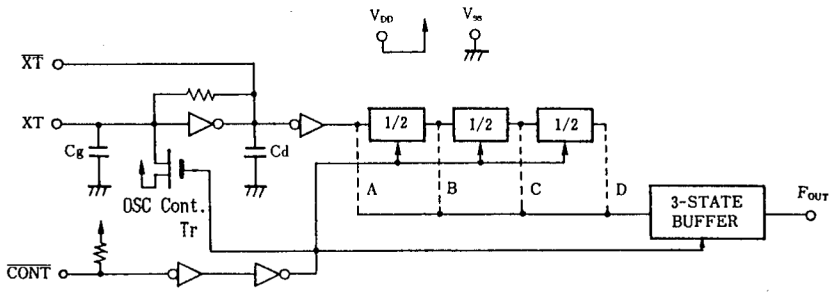
Chip Size : 1.24 X 0.8mm
Chip Center : X=0μm, Y=0μm
Chip Thickness : 400μm±30μm

(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.	Cg	Cd	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 $\overline{CONT}$ / 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

(Ta=25℃)

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}	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	P_D	200 (EMP)	mW
Operating Temperature Range	T_{opr}	-40 ～ + 85	℃
Storage Temperature Range	T_{stg}	-55 ～ +125	℃

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

■ ELECTRICAL CHARACTERISTICS

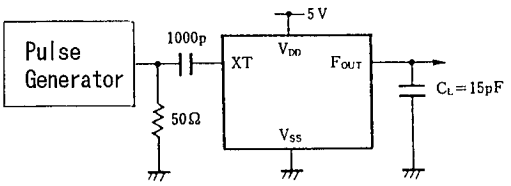
(Ta=25℃, V_{DD}=5V)

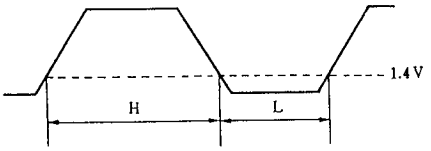
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	V_{DD}		3		6	V
Operating Current	I_{DD}	f_{OSC}=16MHz, No Load			15	mA
Stand-by Current	Ist	$\overline{CONT}$,XT=V_{SS}, No Load (Note)			1	μA
Input Voltage	V_{IH}		3.5		5.0	V
	V_{IL}		0		1.5	
Output Current	I_{OH}	V_{DD}=5V, V_{OH}=4.5V	4			mA
	I_{OL}	V_{DD}=5V, V_{OL}=0.5V	16			
Input Current	I_{IN}	$\overline{CONT}$ Terminal, $\overline{CONT}$=V_{SS}			400	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	fosc=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 $\overline{CONT}$ terminal.

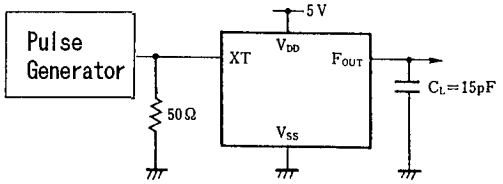
■ MEASUREMENT CIRCUITS

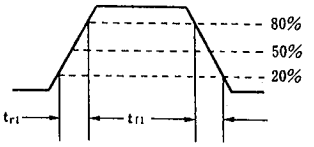
(1) Output Signal Symmetry (C_L=15pF)

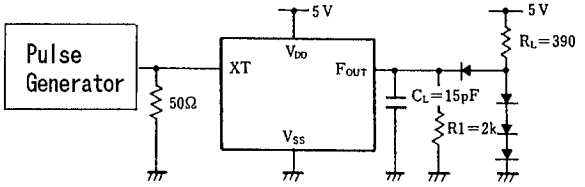


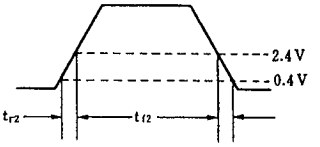


(2) Output Signal Rise/Fall Time (C_L=15pF)









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