

QUARTZ CRYSTAL OSCILLATOR

■ GENERAL DESCRIPTION

The NJU6361A is a C-MOS quartz crystal oscillator which consists of an oscillation amplifier, 3-stage divider, output frequency selector and inverter 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 outputs  $f_o$ ,  $f_o/2$ ,  $f_o/4$  and  $f_o/8$  to the output frequency selector and it determined one output frequency according to the combination of two input-signal.

The inverter output buffer is C-MOS compatible and capable of 10 LSTTL driving.

■ PACKAGE OUTLINE

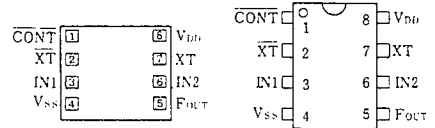


NJU6361AC



NJU6361AE

■ PIN CONFIGURATION/PAD LOCATION



■ FEATURES

- Operating Voltage -- 3.0~6.0V
- Maximum Oscillation Frequency -- 50MHz
- Low Operating Current
- High Fan-out -- LSTTL 10
- Inverter Output Buffer
- Selected Frequency Output
  - 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 Output Stand-by Function
- Package Outline -- CHIP/EMP 8
- C-MOS Technology

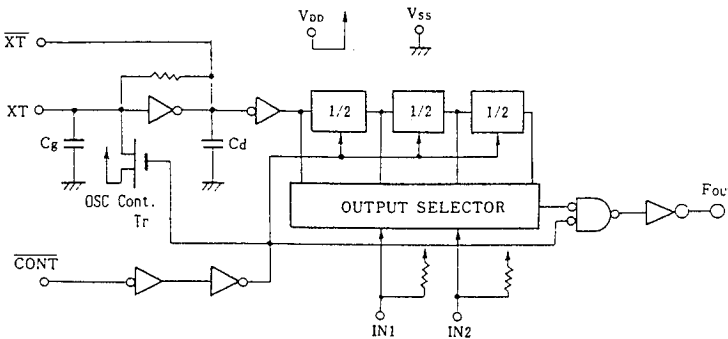
■ COORDINATES

Unit:  $\mu\text{m}$

No.	PAD	X	Y
1	CONT	165	651
2	XT	165	484
3	IN1	165	317
4	VSS	165	149
5	F <sub>OUT</sub>	1113	149
6	IN2	1113	317
7	XT	1113	484
8	V <sub>DD</sub>	1113	651

Chip Size : 1.28 X 0.8mm  
 Chip Thickness : 400 $\mu\text{m}$ ±30 $\mu\text{m}$

■ BLOCK DIAGRAM



**■ TERMINAL DESCRIPTION**

NO.	SYMBOL	F U N C T I O N			
1	CONT	Oscillation Stop Control and Divider Reset			
		CONT	F <sub>OUT</sub>		
		H	Output either one frequency from f <sub>0</sub> , f <sub>0</sub> /2, f <sub>0</sub> /4, and f <sub>0</sub> /8		
		L	Oscillation stop and Divider Reset		
2	XT	Quartz Crystal Connecting Terminals			
7	XT				
8	V <sub>DD</sub>	+ 5V			
3	IN1	3-State Divider Outputs selected by IN1 and IN2			
6	IN2		IN1	IN2	F <sub>OUT</sub>
			H	H	f <sub>0</sub>
			L	H	f <sub>0</sub> /2
			H	L	f <sub>0</sub> /4
L	L	f <sub>0</sub> /8			
5	F <sub>OUT</sub>	Output either one frequency from f <sub>0</sub> , f <sub>0</sub> /2, f <sub>0</sub> /4, and f <sub>0</sub> /8			
4	V <sub>SS</sub>	GND			

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**■ ABSOLUTE MAXIMUM RATINGS**

( Ta=25°C )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>DD</sub>	-0.5 ~ +7.0	V
Input Voltage	V <sub>IN</sub>	-0.5 ~ V <sub>DD</sub> +0.5	V
Output Voltage	V <sub>O</sub>	-0.5 ~ V <sub>DD</sub> +0.5	V
Input Current	I <sub>IN</sub>	±10	mA
Output Current	I <sub>O</sub>	±25	mA
Power Dissipation (EMP)	P <sub>D</sub>	200	mW
Operating Temperature Range	T <sub>opr</sub>	-40 ~ + 85	°C
Storage Temperature Range	T <sub>stg</sub>	-65 ~ +150	°C

**■ ELECTRICAL CHARACTERISTICS**

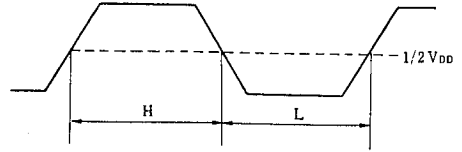
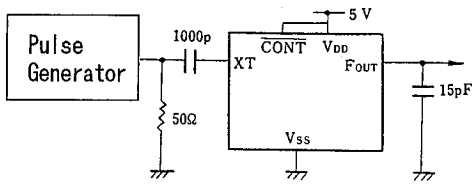
 ( Ta=25°C, V<sub>DD</sub>=5V )

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	V <sub>DD</sub>		3		6	V
Operating Current	I <sub>DD</sub>	f <sub>osc</sub> =16MHz, No load			10	mA
Stand-by Current	I <sub>st</sub>	CONT, XT=V <sub>SS</sub> , No load (Note)			1	μA
Input Voltage	V <sub>IH</sub>		3.5		5.0	V
	V <sub>IL</sub>		0		1.5	
Output Current	I <sub>OH</sub>	V <sub>DD</sub> =5V, V <sub>OH</sub> =4.5V	4			mA
	I <sub>OL</sub>	V <sub>DD</sub> =5V, V <sub>OL</sub> =0.5V	4			
Input Current	I <sub>IN</sub>	CONT, IN1, IN2 Terminals CONT, IN1, IN2=V <sub>SS</sub>			400	μA
Internal Capacitor	C <sub>g</sub>	A Version		21		pF
	C <sub>d</sub>	A Version		23		
	C <sub>g</sub> , C <sub>d</sub>	P Version		-		
Max. Oscillation Freq.	f <sub>MAX</sub>	V <sub>DD</sub> =5V, C <sub>L</sub> =15pF	50			MHz
Output Signal Symmetry	SYM	V <sub>DD</sub> =5V, C <sub>L</sub> =15pF at 1/2V <sub>DD</sub>	45	50	55	%
Output Signal Rise Time	t <sub>r</sub>	V <sub>DD</sub> =5V, C <sub>L</sub> =15pF, 10% - 90%			8	ns
Output Signal Fall Time	t <sub>f</sub>	V <sub>DD</sub> =5V, C <sub>L</sub> =15pF, 90% - 10%			8	ns

Note ) Excluding input current on CONT terminal.

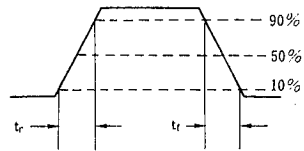
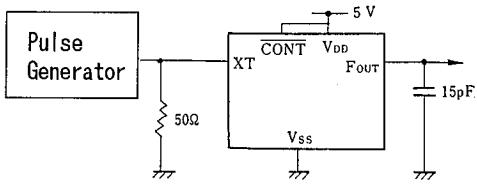
■ MEASUREMENT CIRCUITS

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



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



## MEMO

**[CAUTION]**

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