QUARTZ CRYSTAL OSCILLATOR

■ GENERAL DESCRIPTION

The NJU6318 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.

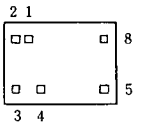
The 3-state output buffer is TTL compatible and capable of 10 TTL driving. And the input level of $\overline{CONT}$ terminal is also TTL compatible.

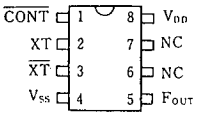
■ PACKAGE OUTLINE

NJU6318XC

NJU6318XE

■ 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 Cg and Cd on-chip
- Oscillation and/or Output Stand-by Function
- Package Outline -- CHIP/EMP 8
- C-MOS Technology

■ LINE-UP TABLE

Type No.	Output Frequency	Cg	Cd
NJU6318A	f_O	23pF	23pF
NJU6318B	$f_O/2$	23pF	23pF
NJU6318C	$f_O/4$	23pF	23pF
NJU6318D	$f_O/8$	23pF	23pF
NJU6318W	f_O	12.5pF	12.5pF
NJU6318P	f_O	NO	NO

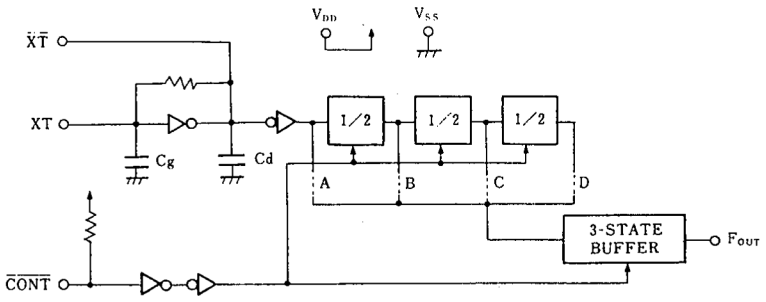
■ COORDINATES

Unit: μm

No.	PAD	X	Y
1	$\overline{CONT}$	350	655
2	XT	130	630
3	$\overline{XT}$	140	175
4	V_{SS}	300	130
5	F_{OUT}	1185	145
6	NC	-	-
7	NC	-	-
8	V_{DD}	1185	650

Chip Size : 1.33 X 0.8mm
Chip Thickness : 400μm±30μm
(Note) No. 6 and 7 terminals are only for package type information. There are no PAD on the chip.

■ BLOCK DIAGRAM



4

■ TERMINAL DESCRIPTION

NO.	SYMBOL	FUNCTION
1	$\overline{CONT}$	3-State Output Control and Divider Reset $\overline{CONT}$ = H: Output either one frequency from f_O, $f_O/2$, $f_O/4$ and $f_O/8$ $\overline{CONT}$ = L: Output High Impedance and Divider Reset
2 3	XT $\overline{XT}$	Quartz Crystal Connecting terminals
5	F_{OUT}	Output either one frequency from f_O, $f_O/2$, $f_O/4$ and $f_O/8$
8	V_{DD}	+ 5V
4	V_{SS}	GND

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

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	℃
Storage Temperature Range	Tstg	-65 ~ +150	℃

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

■ ELECTRICAL CHARACTERISTICS

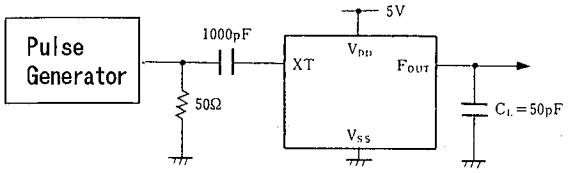
(Ta=25℃, V_{DD}=5V)

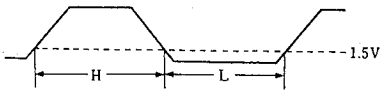
PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNIT
Operating Voltage	V_{DD}			3		6	V
Operating Current	I_{DD}	fosc=16MHz, No load				15	mA
Stand-by Current	Ist	$\overline{CONT}$,XT=V_{SS}, No load (Note1)				1	μA
Input Voltage	V_{IH}			2.0			V
	V_{IL}					0.8	
Output Current	I_{OH}	V_{DD}=5V, V_{OH}=4.5V		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
Internal Capacitor	Cg				Note 2		pF
	Cd				Note 2		
Max. Oscillation Freq.	f_{MAX}	V_{DD}=5V		50			MHz
Output Signal Symmetry	SYM	C_L=50pF at 1.5V		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 1) Excluding input current on $\overline{CONT}$ terminal.
Note 2) Refer to Line-Up Table.

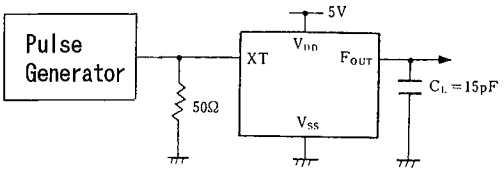
■ MEASUREMENT CIRCUITS

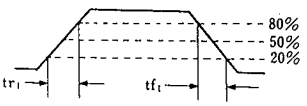
(1) Output Signal Symmetry (C_L=50pF)



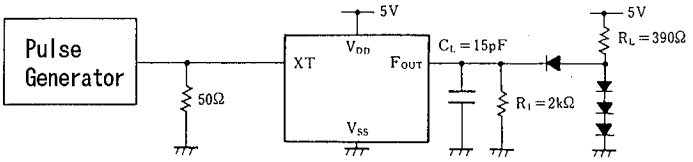


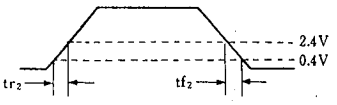
(2) Output Signal Rise/Fall Time (C_L=15pF)





(3) Output Signal Rise/Fall Time (C_L=15pF, R_L=390Ω)





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.