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_0, $f_0/2$, $f_0/4$ and $f_0/8$ and only one frequency selected by internal circuits is output.
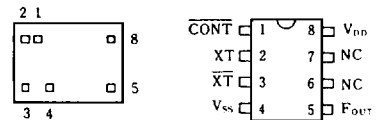
The 3-state output buffer is TTL compatible and capable of 10 TTL driving. And the input level of $\overline{CONT}$ terminal is also TTL compatible.

■ 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_0, $f_0/2$, $f_0/4$ and $f_0/8$ output
- Oscillation Capacitors Cg and Cd on-chip
- Oscillation and/or Output Stand-by Function
- Package Outline   -- CHIP/EMP 8
- C-MOS Technology

■ PACKAGE OUTLINE


NJU6318XC   NJU6318XE

■ PIN CONFIGURATION/PAD LOCATION

CONT	1	8	V_{DD}
XT	2	7	NC
$\overline{XT}$	3	6	NC
V_{SS}	4	5	F_{OUT}

■ 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.

■ LINE-UP TABLE

Type No.	Output Frequency	Cg	Cd
NJU6318A	f_0	23pF	23pF
NJU6318B	$f_0/2$	23pF	23pF
NJU6318C	$f_0/4$	23pF	23pF
NJU6318D	$f_0/8$	23pF	23pF
NJU6318W	f_0	12.5pF	12.5pF
NJU6318P	f_0	NO	NO

■ BLOCK DIAGRAM
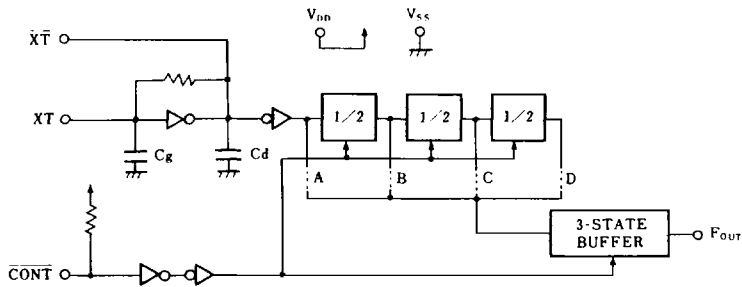
■ TERMINAL DESCRIPTION

NO.	SYMBOL	FUNCTION
1	$\overline{CONT}$	3-State Output Control and Divider Reset <table><tr><td>CONT</td><td>F_{OUT}</td></tr><tr><td>H</td><td>Output either one frequency from $f_0, f_0/2, f_0/4$ and $f_0/8$</td></tr><tr><td>L</td><td>Output High Impedance and Divider Reset</td></tr></table>
2 3	XT $\overline{XT}$	Quartz Crystal Connecting terminals
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   (Ta=25℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	$-0.5 \sim +7.0$	V
Input Voltage	V_{IN}	$-0.5 \sim V_{DD}+0.5$	V
Output Voltage	V_O	$-0.5 \sim V_{DD}+0.5$	V
Input Current	I_{IN}	±10	mA
Output Current	I_O	±25	mA
Power Dissipation (EMP)	P_D	200	mW
Operating Temperature Range	Topr	$-40 \sim +85$	℃
Storage Temperature Range	Tstg	$-65 \sim +150$	℃

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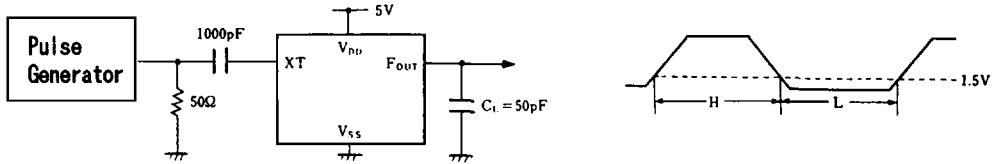
(2) Output Signal Rise/Fall Time (C_L=15pF)
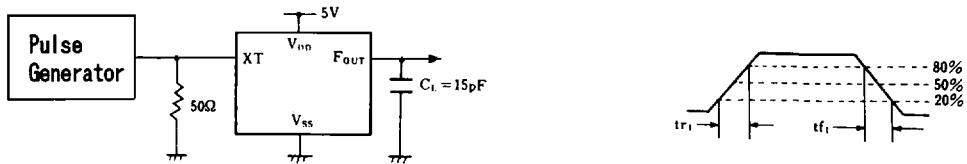
(3) Output Signal Rise/Fall Time (C_L=15pF, R_L=390Ω)