

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(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. And the input level of $\overline{CONT}$ terminal is also TTL compatible.

■ PACKAGE OUTLINE

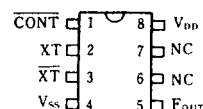
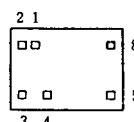


NJU6318XC



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 C_g and C_d on-chip
- Oscillation and/or Output Stand-by Function
- Package Outline -- CHIP/EMP 8
- C-MOS Technology

■ 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 : $400\mu\text{m} \pm 30\mu\text{m}$

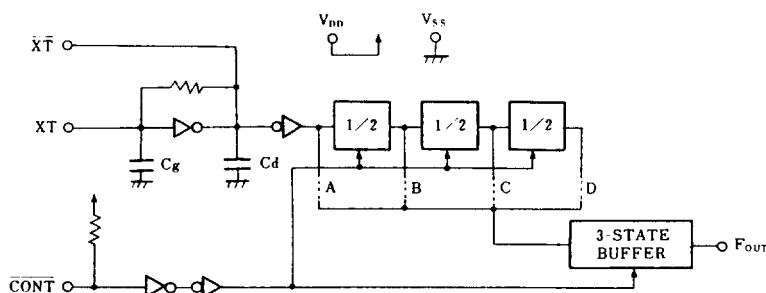
(Note) No. 6 and 7 terminals are only for package type information. There are no PAD on the chip.

■ LINE-UP TABLE

Type No.	Output Frequency	C_g	C_d
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



BLOCK DIAGRAM



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TERMINAL DESCRIPTION

NO.	SYMBOL	F U N C T I O N
1	CONT	3-State Output Control and Divider Reset
		CONT FOUT
		H Output either one frequency from $f_0, f_0/2, f_0/4$ and $f_0/8$
		L Output High Impedance and Divider Reset
2	XT	Quartz Crystal Connecting terminals
3	XT	
5	FOUT	Output either one frequency from $f_0, f_0/2, f_0/4$ and $f_0/8$
8	VDD	+ 5V
4	VSS	GND

ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

P A R A M E T E R	SYMBOL	R A T I N G S	UNIT
Supply Voltage	VDD	-0.5 ~ +7.0	V
Input Voltage	VIN	-0.5 ~ VDD+0.5	V
Output Voltage	VO	-0.5 ~ VDD+0.5	V
Input Current	IIN	±10	mA
Output Current	IO	±25	mA
Power Dissipation (EMP)	PD	200	mW
Operating Temperature Range	Topr	-40 ~ + 85	°C
Storage Temperature Range	Tstg	-65 ~ +150	°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}	fosc=16MHz, No load			15	mA
Stand-by Current	I _{st}	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}	CONT Terminal, CONT=V _{SS}			400	μA
Internal Capacitor	C _g			Note 2		pF
	C _d			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	

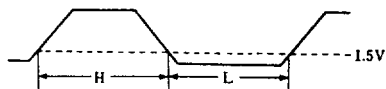
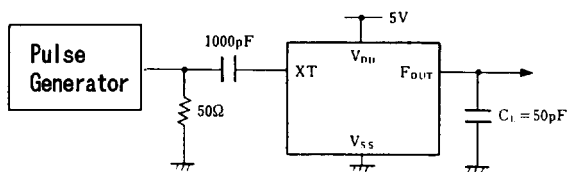
Note 1) Excluding input current on CONT terminal.

Note 2) Refer to Line-Up Table.

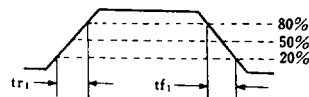
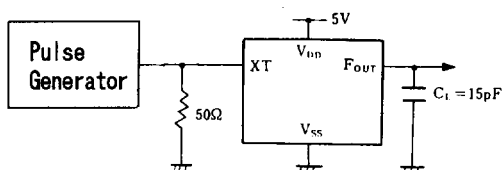


■ MEASUREMENT CIRCUITS

(1) Output Signal Symmetry ($C_L=50\text{pF}$)


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



(3) Output Signal Rise/Fall Time ($C_L=15\text{pF}$, $R_L=390\Omega$)

