

QUARTZ CRYSTAL OSCILLATOR

■ GENERAL DESCRIPTION

The NJU6339 series is a C-MOS quartz crystal oscillator which consists of an oscillation amplifier, 3-stage divider and 3-state output buffer.

This series are classed into three groups A to D, H to L and Q to T according to their oscillation frequency range mentioned in the line-up table.

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 C-MOS compatible and capable of 10 LSTTL driving.

The difference between NJU6339 and NJU6332 series is pin configuration only.

■ FEATURES

- Operating Voltage. — 4.0~6.0V
- Maximum Oscillation Frequency (See Line-Up Table)
- Low Operating Current
- High Fan-out — LSTTL 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

■ LINE-UP TABLE

Type No.	Recommended Osc. Freq.	Output Freq.	C_g, C_d
NJU6339A 6339B 6339C 6339D	From 20 to 35MHz	f_o $f_o/2$ $f_o/4$ $f_o/8$	28pF
NJU6339H 6339J 6339K 6339L	From 30 to 50MHz	f_o $f_o/2$ $f_o/4$ $f_o/8$	20pF
NJU6339Q 6339R 6339S 6339T	From 45 to 75MHz	f_o $f_o/2$ $f_o/4$ $f_o/8$	17pF

■ PACKAGE OUTLINE

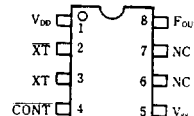
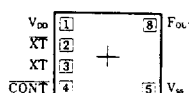


NJU6339XC



NJU6339XE

■ PIN CONFIGURATION/PAD LOCATION

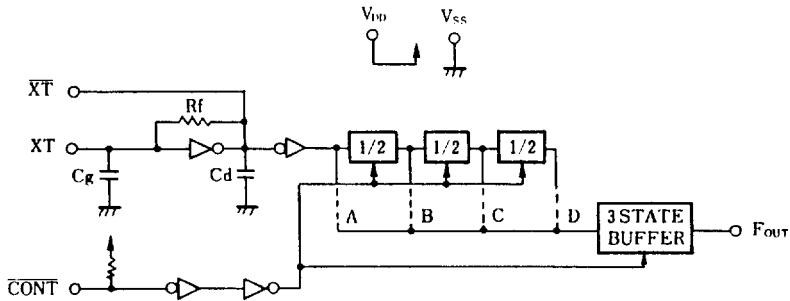


■ COORDINATES

Unit: μm

No.	PAD	X	Y
1	V_{DD}	-408	248
2	XT	-408	81
3	XT	-408	-86
4	CONT	-408	-248
5	V_{SS}	464	-248
8	F_{OUT}	464	248

Chip Size : 1.29 X 0.8mm
 Chip Center : $X=0\mu m, Y=0\mu m$
 Chip Thickness : $400\mu m \pm 30\mu m$
 (Note) No. 6 and 7 terminals are only for package type information. There are no PAD on the chip.


■ BLOCK DIAGRAM

■ 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		
		<table><tr><td>CONT</td><td>F_{OUT}</td></tr></table>	CONT	F _{OUT}
		CONT	F _{OUT}	
		<table><tr><td>H</td><td>Output either one frequency from f_o, f_o/2, f_o/4 and f_o/8</td></tr></table>	H	Output either one frequency from f _o , f _o /2, f _o /4 and f _o /8
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<table><tr><td>L</td><td>Output High Impedance and Divider Reset</td></tr></table>	L	Output High Impedance and Divider Reset		
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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) Reference the Line-Up Table

■ ABSOLUTE MAXIMUM RATINGS

($T_a=25^\circ\text{C}$)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	-0.5 ~ +7.0	V
Input Voltage	V_{IN}	$V_{SS}-0.5 \sim V_{DD}+0.5$	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	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 ~ +125	$^\circ\text{C}$


■ ELECTRICAL CHARACTERISTICS

 ($T_a=25^{\circ}\text{C}$, $V_{DD}=5\text{V}$)

P A R A M E T E R	S Y M B O L	C O N D I T I O N S	M I N	T Y P	M A X	U N I T
Operating Voltage	V_{DD}		4		6	V
Operating Current	I_{DD1}	A,B,C,D, $f_{osc}=24\text{MHz}$, No Load			15	mA
	I_{DD2}	H,J,K,L, $f_{osc}=48\text{MHz}$, No Load			20	
	I_{DD3}	Q,R,S,T, $f_{osc}=48\text{MHz}$, No Load			25	
Stand-by Current	I_{st}	$\overline{\text{CONT}}, X_T=V_{SS}$, No Load (Note)			1	μA
Input Voltage	V_{IH}		3.5		5.0	V
	V_{IL}		0		1.5	
Output Current	I_{OH}	$V_{DD}=5\text{V}$, $V_{OH}=4.5\text{V}$	4			mA
	I_{OL}	$V_{DD}=5\text{V}$, $V_{OL}=0.5\text{V}$	4			
Input Current	I_{IN}	$\overline{\text{CONT}}$ Terminal, $\overline{\text{CONT}}=V_{SS}$	125	250	500	μA
3-St Off-leakage Current	I_{oz}	$\overline{\text{CONT}}=V_{SS}$, $F_{OUT}=V_{SS}$ and V_{DD}			± 0.1	μA
Internal Capacitor	C_g, C_d	A,B,C,D Version, $f_{osc}=24\text{MHz}$		28		pF
		H,J,K,L Version, $f_{osc}=48\text{MHz}$		20		
		Q,R,S,T Version, $f_{osc}=48\text{MHz}$		17		
Maximum Oscillation Frequency	f_{MAX}	A,B,C,D Version	35			MHz
		H,J,K,L Version	50			
		Q,R,S,T Version	75			
Output Signal Symmetry	SYM	$C_L=15\text{pF}$, $R_L=390\Omega$, at $1/2V_{DD}$	45	50	55	%
Output Signal Rise Time	t_r	$C_L=15\text{pF}$, 10~90%			6	ns
Output Signal Fall Time	t_f	$C_L=15\text{pF}$, 90~10%			4	ns

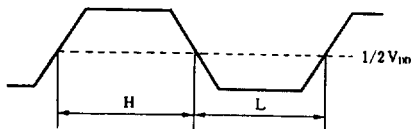
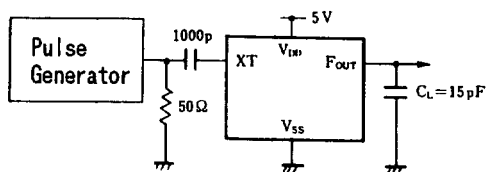
 Note) Excluding input current on $\overline{\text{CONT}}$ terminal.

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■ MEASUREMENT CIRCUITS

(1) Output Signal Symmetry ($C_L=15\text{pF}$)



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

