PRELIMINARY

1.8V Operation 3rd. Over Tone Quartz Crystal Oscillator

■GENERAL DESCRIPTION

The NJU6379D is a C-MOS IC for 3rd. overtone quartz crystal oscillator that consists of an oscillation amplifier and 3-state output buffer, and can oscillate at 1.8V very low voltage.

The NJU6379D has ability to oscillate from 60 to 70 MHz.

The oscillation amplifier is realized very low stand-by current using NAND circuit.

The 3-stage output buffer is C-MOS compatible.

■PACKAGE OUTLINE

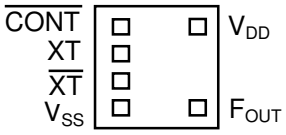
NJU6379DC-D

■FEATURES

- ●Operating Voltage 1.8 to 2.8V
- ●Maximum Oscillation Frequency 70MHz
- ●Low Operating Current
- ●High Fan-out I_{OH}/I_{OL}= 4mA @2.5V
- ●Oscillation Stop and Output Stand-by Function
- ●3-State Output Buffer
- ●Oscillation Capacitors Cg and Cg on-chip
- ●Package Outline Thin-Chip
- ●C-MOS Technology

■PAD LOCATION

Thin-Chip



■LINE-UP TABLE

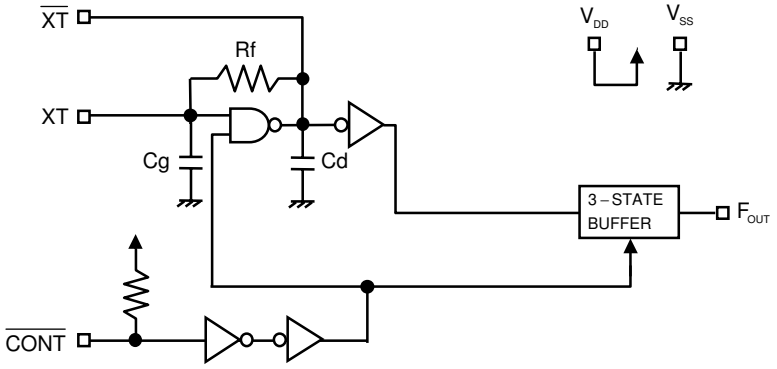
Type No.	Recommended Oscillation Frequency Range	Output Frequency	Cg/Cd
NJU6379D	60 to 70 MHz	f_0	8.5/9pF

■COORDINATES

No	Pad Name	X	Y
1	$\overline{CONT}$	-178	231
2	XT	-178	77
3	$\overline{XT}$	-178	-77
4	V_{SS}	-178	-231
5	F_{OUT}	206	-231
8	V_{DD}	206	231

Starting Point:Chip Center Unit[um]
Chip Size:0.7x0.75mm
Thin-Chip Thickness:200±20um
Pad Size:90x90um

■BLOCK DIAGRAM



■TREMINAL DESCRIPTION

SYMBOL	FUNCTION	
$\overline{CONT}$	Oscillation and 3-state Output Buffer Control	
	$\overline{CONT}$	F_{OUT}
	H or OPEN	Output Frequency f_0
	L	Oscillation Stop and High impedance Output
XT	Quartz Crystal Connecting Terminals	
$\overline{XT}$		
V_{SS}	V_{SS}=0V	
F_{OUT}	Frequency Output	
V_{DD}	V_{DD}=2.5V	

Note1) Refer to the line-up table.

■ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V_{DD}	-0.5 to +7.0	V
Input Voltage	V_{IN}	V_{SS}-0.5 to V_{DD}+0.5	V
Output Voltage	V_O	-0.5 to V_{DD}+0.5	V
Input Current	I_{IN}	±10	mA
Output Current	I_O	±25	mA
Operating Temperature Range	Topr	-40 to +85	°C
Storage Temperature Range	Tstg	-55 to +125	°C

Note2) If the supply voltage(V_{DD}) is less than 7.0V, the input voltage must not over the V_{DD} level though 7.0V is limit specified.

Note3) Decupling capacitor should be connected between V_{DD} and V_{SS} due to the stabilized operation for the circuit.

■ELECTRICAL CHARACTERISTICS

(Ta=25°C)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	V_{DD}		1.8		2.8	V

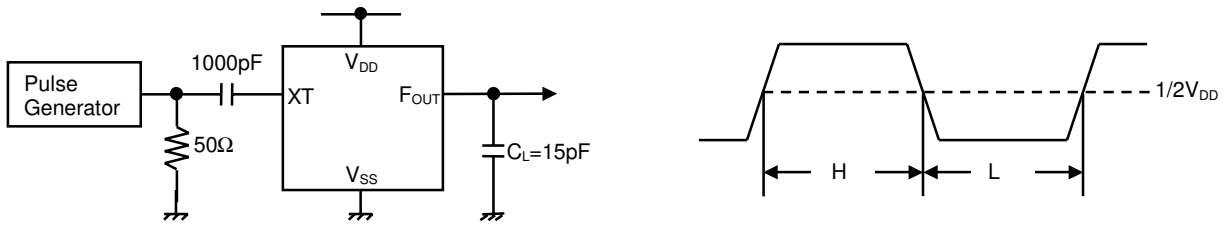
(V_{DD}=2.5V,Ta=25°C)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Current	I_{DD}	D version, fosc=70MHz,C_L=15pF			8	
Oscillation Stopping Current	I_{STB}	$\overline{CONT}$ =V_{SS}, No load		2	5	uA
Stand-by Current	Ist	$\overline{CONT}$ =XT=V_{SS}, No load Note4)			1	uA
Input Voltage	V_{IH}		2		2.5	V
	V_{IL}		0		0.5	V
Output Current	I_{OH}	V_{OH}=2.25V	4			mA
	I_{OL}	V_{OL}=0.25V	4			mA
Input Current	I_{IN}	$\overline{CONT}$ =0.8V_{DD}		7.5	12.0	uA
		$\overline{CONT}$ =0.2V_{DD}		1.2	2.0	uA
3-state Off Leakage Current	I_{OZ}	$\overline{CONT}$ =V_{SS}, F_{OUT}= V_{DD} or V_{SS}			±0.1	uA
Feedback Resistance	Rf	D version,XT=V_{DD}		4.2		KΩ
Internal Capacitor	Cg/Cd	D version,f_{OSC}=70MHz		8.5/9		pF
Maximum Oscillation Frequency	F_{MAX}	D version	70			MHz
Output Signal Symmetry	SYM	C_L=15pF, @V_{DD}/2	45	50	55	%
Output Signal Rise Time	tr	C_L=15pF,10%~90%		3	6	ns
Output Signal Fall Time	tf	C_L=15pF,90%~10%		3	6	ns
Output Disable time	T_{PLZ}	C_L=15pF,R_{UP}=10kΩ			200	ns
Output Enable Time	T_{PZL}	C_L=15pF,R_{UP}=10kΩ			200	ns

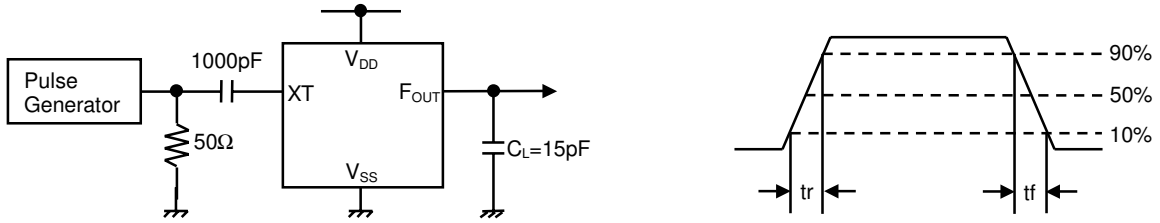
Note4) Excluding input current on $\overline{CONT}$ Terminal.

■MEASURMENT CIRCUITS

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



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



(3)Output Disable/Enable Time(C_L=15pF,R_{UP}=10kΩ)