Product Specification

50MHz VCXO IC

■GENERAL DESCRIPTION

The NJU6343 is a single chip C-MOS IC for VCXO that consists of an oscillation amplifier and 3-state output buffer. The NJU6343 integrates all components used in VCXO module, and there is no need for completing VCXO module to prepare any external components except a quartz crystal.

It can vary its output frequency by controlling voltage at V_C terminal.

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

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

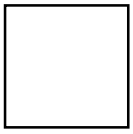
■PACKAGE OUTLINE

NJU6343C

■FEATURES

- ●Operating Voltage 2.7 to 3.6V
- ●Maximum Oscillation Frequency 50MHz(T.B.D.)
- ●Frequency Pulling Range ±100ppm
- ●Low Operating Current
- ●High Fan-out I_{OH}/I_{OL}= T.B.D @3.0V
- ●Oscillation Stop and Output Stand-by Function
- ●3-State Output Buffer
- ●A Variable Capacitor on-chip
- ●Package Outline Chip
- ●C-MOS Technology

■PAD LOCATION

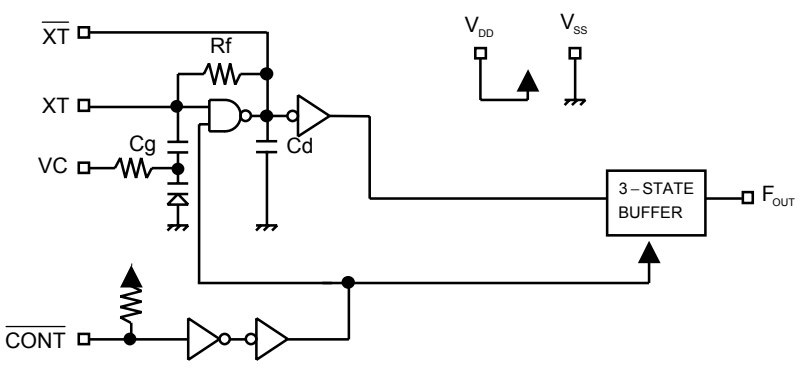


■COORDINATES

No	Pad Name	X	Y
1	$\overline{CONT}$		
2	XT		
3	$\overline{XT}$		
4	V_{SS}		
	F_{OUT}		
	V_C		
	V_{DD}		

Starting Point:Chip Center Unit[um]
Chip Size:1.6x1.6mm
Thin-Chip Thickness:260±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 / Frequency Output corresponding to Control Voltage.
	L / Oscillation Stop and High impedance Output
XT	Quartz Crystal Connecting Terminals
$\overline{XT}$	
V_{SS}	V_{SS}=0V
F_{OUT}	Frequency Output
V_C	Frequency Control
V_{DD}	V_{DD}=3.0V

■ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V_{DD}	-0.5 to +7.0	V
Control Voltage	V_C	V_{SS}-0.5 to V_{DD}+0.5	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

Note1) 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.

Note2) 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}		2.7		3.6	V

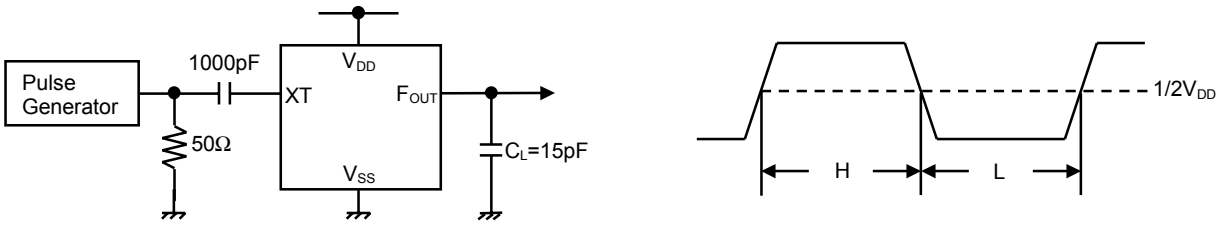
■ELECTRICAL CHARACTERISTICS (V_{DD}=3.0, V_C=V_{DD}/2, Ta=25°C)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Current	I_{DD}	fosc=16MHz, V_C=V_{DD}/2, C_L=15pF		T.B.D		mA
Oscillation Stopping Current	I_{STB}	$\overline{CONT}$ =V_{SS}, V_C=V_{DD}/2, No load		2	5	uA
Stand-by Current	Ist	$\overline{CONT}$ XT=V_{SS}, V_C=V_{DD}/2, No load Note3)			1	uA
Input Voltage	V_{IH}		2.4		3.0	V
	V_{IL}		0		0.6	V
Output Current	I_{OH}	V_{OH}=2.7V	T.B.D			mA
	I_{OL}	V_{OL}=0.3V	T.B.D			mA
Input Current	I_{IN}	$\overline{CONT}$ =0.8V_{DD}		10	15	uA
		$\overline{CONT}$ =0.2V_{DD}		1.8	3.0	uA
3-state Off Leakage Current	I_{OZ}	$\overline{CONT}$ =V_{SS}, V_C=V_{DD}/2, F_{OUT}= V_{DD} or V_{SS}			±0.1	uA
Feedback Resistance	Rf	Preliminary		T.B.D		kΩ
Internal Capacitor	Cg/Cd	fosc=16MHz		T.B.D		pF
Control Voltage	V_C		0		V_{DD}	V
Frequency Pulling Range	Δf_C	V_C=0 to V_{DD}	-100		+100	ppm
Maximum Oscillation Frequency	F_{MAX}		50			MHz
Output Signal Symmetry	SYM	C_L=15pF, V_C=V_{DD}/2, @V_{DD}/2	45	50	55	%
		C_L=30pF, V_C=V_{DD}/2, @V_{DD}/2	45	50	55	
Output Signal Rise Time	tr	C_L=15pF, V_C=V_{DD}/2, 10% to 90%		3	6	ns
		C_L=30pF, V_C=V_{DD}/2, 10% to 90%		3	6	
Output Signal Fall Time	tf	C_L=15pF, V_C=V_{DD}/2, 90% to 10%		3	6	ns
		C_L=30pF, V_C=V_{DD}/2, 90% to 10%		3	6	
Output Disable time	T_{PLZ}	C_L=15pF, V_C=V_{DD}/2, R_{UP}=10kΩ			200	ns
Output Enable Time	T_{PZL}	C_L=15pF, V_C=V_{DD}/2, R_{UP}=10kΩ			200	ns

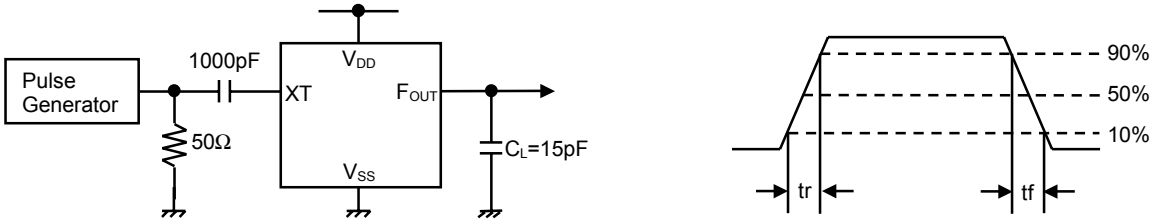
Note3) Excluding input current on $\overline{CONT}$ Terminal.

■MEASURMENT CIRCUITS

(1)Output Signal Symmetry(C_L=15pF, V_C=1/2V_{DD})



(2)Output Signal Rise/Fall Time(C_L=15pF, V_C=1/2V_{DD})



(3)Output Disable/Enable Time(C_L=15pF, R_{UP}=10kΩ, V_C=1/2V_{DD})