

Voltage Controlled Crystal Oscillator (VCXO)

VG – 4231CA

Preliminary

- Reflowable and high density mounting type SMD.(5×7 mm)
- Using the heat-resisting type AT cut quartz crystal.
allows almost the same temperature soldering as universal SMD IC.
- Using C-MOS IC allows low current consumption.
- Operating supply voltage : 3.3 V 5V.output frequency:16.000MHz~41.000MHz.
- Output enable function(OE) can be used for low current consumption applications.
- Hight stability VCXO.

■ Specifications

1. Absolute Maximum Ratings

Item	Symbol	C (3.3 V)	H (5.0 V)	Condition
Supply voltage	V_{DD}	-0.3 V to 7.0 V		V_{DD} -GND
Control voltage	V_{IN}	-0.3 V to $V_{DD}+0.3$ V		VC,OE
Storage temperature	T_{STG}	-40 °C to +125 °C		
Soldering condition	T_{SOL}	Under +240°C within 10 s x 2 times		

2. Operating Condition

Item	Symbol	C	H	Condition
Supply voltage	V_{DD}	3.0 V ~ 3.6 V	4.5 V ~ 5.5 V	V_{DD} -GND
Control voltage	VC	1.65 V ± 1.50 V	2.5 V ± 2.0 V	VC-GND
Operating temperature	T_{OPT}	-20 °C to +70 °C		D
		-40 °C to +85 °C		G
Output load	CL	15 pF Max.		C-MOS level

3. Frequency Characteristics

Item	Symbol	C	H	Condition
Output Frequency	f_o	16.0000MHz ~ 41.000MHz		
Frequency stability[×10 ⁻⁶]	$\Delta f/f_o$	±35 Max.		D
		±50 Max.		G
Aging[×10 ⁻⁶]	f_A	±5 Max.		Ta=+25 °C, 1st year

Note : Frequency stability is including calibration tolerance, reflow soldering drift,
operating temperature range (T_{OPT}), operating voltage range and load change (CL).

4. Frequency Control

Item	Symbol	C	H	Condition
Input impedance	Z_{IN}	50 kΩ Min.		VC-GND (DC)
Frequency adjustment range[×10 ⁻⁶]	Δf_C	±130 Min.		R
Transfer function	-	Positive		
Absolute Pull range[×10 ⁻⁶]	APR	± 80 Min.		D
		± 65 Min.		G

Note : Absolute Pull range is the minimum guaranteed frequency shift from f_o over Frequency stability and 10 years aging.

5. . Electrical Characteristic

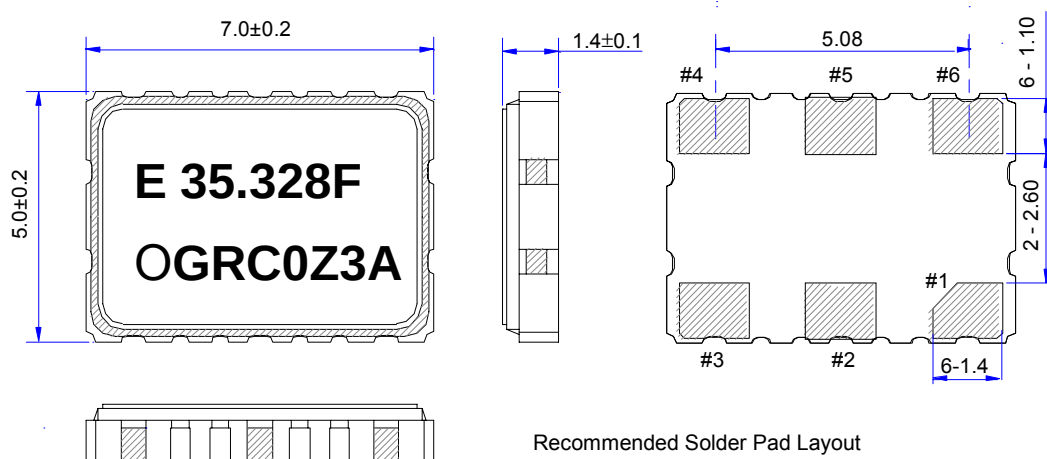
Item	Symbol	C	H	Condition
Supply current	I_{DD}	10 mA Max.	20 mA Max.	No load
Output disable current	I_{OE}	7 mA Max.	15 mA Max.	OE=GND
Start-up time	t_{OSC}	10 ms Max.		90 % V_{DD} to be 0 s

6. Output Characteristics

Item	Symbol	C	H	Condition
OE input voltage	V _{IH}	70 % V _{DD} Min.		OE termination
	V _{IL}	30 % V _{DD} Max.		
Duty	t _w /t	40 % ~ 60 %		1/2V _{DD} level
High output voltage	V _{OH}	V _{DD} -0.4 V Min.		I _{OH} =-0.8 mA/3.3V,-4 mA/5 V
Low output voltage	V _{OL}	0.4 V Max.		I _{OL} =3.2 mA/3.3 V,4 mA/5 V
Output rise time	t _{TLH}	4.0 ns Max.		20 %→80 % V _{DD}
Output fall time	t _{THL}	4.0 ns Max.		80 %→20 % V _{DD}

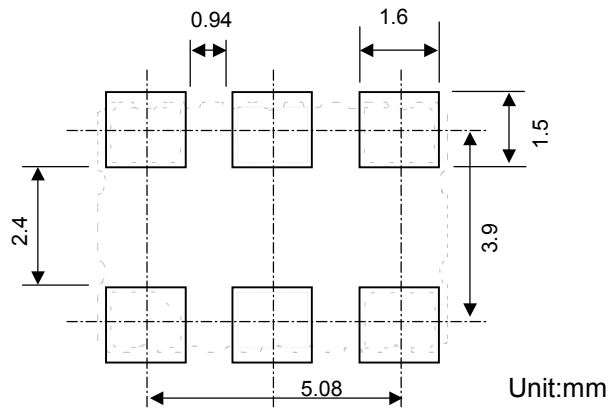
Note : We recommend placing a 0.1 μ F capacitor between V_{DD} and GND to obtain stable operation and protect against power line ripple.

■ External Dimensions



No.	Pin terminal	
	F Type	T Type
#1	VC	VC
#2	NC	OE
#3	GND	GND
#4	OUT	OUT
#5	OE	NC
#6	V_{DD}	V_{DD}

Recommended Solder Pad Layout



■ Numbering Information

<u>E</u> <u>35.328</u> <u>F</u>	1.Symbol	2.Output Frequency (MHz)	3.OE pin
1 2			
<u>GRC</u> <u>0Z3A</u>	4.Design Code	5.Product number	
4 5			

Design Code

Code	Frequency stability	Operating temperae	Frequency pullrange	Out put Frequency
DRC / DRH	$\pm 35 \times 10^{-6}$	-20 °C ~ +70 °C	$\pm 130 \times 10^{-6}$	16MHz $\leq f_0 \leq$ 41MHz
GRC/ GRH	$\pm 50 \times 10^{-6}$	-40 °C ~ +85 °C		

--C (3.3 V), --H (5.0V)