



# Voltage Controlled Crystal Oscillators (VCXO) Surface Mount Type KV7050B-C3 Series



CMOS/ 3.3V/ 7.0×5.0mm



RoHS Compliant

## Features

- Miniature ceramic package
- CMOS output
- High frequency to 170MHz
- Highly reliable with seam welding
- Supply voltage  $V_{CC}=3.3V$
- Excellent Jitter performance

Table 1

| Freq. Tol.<br>Code | $\times 10^{-6}$ | Operating<br>Temperature<br>Range (°C) | Note                                            |
|--------------------|------------------|----------------------------------------|-------------------------------------------------|
| 0                  | $\pm 50$         | -10 to +70                             | Standard specifications                         |
| S                  | $\pm 30$         | -10 to +70                             | Please contact us for<br>available frequencies. |
| G                  | $\pm 50$         | -40 to +85                             |                                                 |

## How to Order

KV7050B 24.576 C 3 □ □ 00  
① ② ③ ④ ⑤ ⑥ ⑦

- ①Series  
②Output Frequency  
③Output Type (CMOS)  
④Supply Voltage (3.3V)  
⑤Frequency Tolerance (See Table 1)  
⑥Symmetry/ INH Function/ Input Resistance  
D:  $1.5 \leq f_o \leq 70\text{MHz}$   
N:  $70 \leq f_o \leq 170\text{MHz}$   
⑦Individual Specification  
(STD Specification is "00".)

Packaging (Tape & Reel 1000 pcs./ reel)

## Specifications

| Item                                               | Symbol      | Conditions                                                                                                                                                                     | Min.                                                                                                              | Max.                                                                                   | Unit             |
|----------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------|
| Output Frequency Range <sup>Note1</sup>            | $f_o$       |                                                                                                                                                                                | 1.5                                                                                                               | 170                                                                                    | MHz              |
| Frequency Tolerance <sup>Note2</sup>               | $f_{tol}$   | Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1 year @25°C), Shock and vibration<br>Temp.: -10 to +70°C/ -40 to +85°C | -50                                                                                                               | +50                                                                                    | $\times 10^{-6}$ |
|                                                    |             | Temp.: -10 to +70°C                                                                                                                                                            | -30                                                                                                               | +30                                                                                    |                  |
| Absolute Pull Range                                | APR         | $1.5 \leq f_o \leq 30\text{MHz}$<br>$30 < f_o \leq 170\text{MHz}$                                                                                                              | $\pm 100$<br>$\pm 50$                                                                                             | —                                                                                      | $\times 10^{-6}$ |
| Control Voltage                                    | $V_c$       |                                                                                                                                                                                | 0                                                                                                                 | +3.3                                                                                   | V                |
| Storage Temperature Range                          | $T_{stg}$   |                                                                                                                                                                                | -55                                                                                                               | +125                                                                                   | °C               |
| Operating Temperature Range                        | $T_{use}$   | Standard Specifications<br>Extend (Option)                                                                                                                                     | -10<br>-40                                                                                                        | +70<br>+85                                                                             | °C               |
| Max. Supply Voltage                                | —           | $1.5 \leq f_o \leq 80\text{MHz}$<br>$80 < f_o \leq 170\text{MHz}$                                                                                                              | -0.5<br>-0.5                                                                                                      | +7.0<br>+5.0                                                                           | V                |
| Supply Voltage                                     | $V_{CC}$    |                                                                                                                                                                                | +2.97                                                                                                             | +3.63                                                                                  | V                |
| Current Consumption                                | $I_{CC}$    | $1.5 \leq f_o \leq 80\text{MHz}$<br>$80 < f_o \leq 170\text{MHz}$                                                                                                              | —<br>—                                                                                                            | 15<br>30                                                                               | mA               |
| Disable Current                                    | $I_{dis}$   | $1.5 \leq f_o \leq 80\text{MHz}$<br>$80 < f_o \leq 170\text{MHz}$                                                                                                              | —<br>—                                                                                                            | 10<br>15                                                                               | mA               |
| Symmetry                                           | SYM         | @50% $V_{CC}$                                                                                                                                                                  | 45                                                                                                                | 55                                                                                     | %                |
| Rise/ Fall Time<br>(10% $V_{CC}$ to 90% $V_{CC}$ ) | $T_r/ T_f$  | $1.5 \leq f_o \leq 30\text{MHz}$<br>$30 < f_o \leq 80\text{MHz}$<br>$80 < f_o \leq 170\text{MHz}$                                                                              | —<br>—<br>—                                                                                                       | 8<br>5<br>2.5                                                                          | ns               |
| Low Level Output Voltage                           | $V_{OL}$    |                                                                                                                                                                                | —                                                                                                                 | 10% $V_{CC}$                                                                           | V                |
| High Level Output Voltage                          | $V_{OH}$    |                                                                                                                                                                                | 90% $V_{CC}$                                                                                                      | —                                                                                      | V                |
| Output Load                                        | $L_{CMOS}$  | CMOS Output                                                                                                                                                                    | —                                                                                                                 | 15                                                                                     | pF               |
| Input Voltage Range                                | $V_{IN}$    |                                                                                                                                                                                | 0                                                                                                                 | +3.3                                                                                   | V                |
| Low Level Input Voltage                            | $V_{IL}$    |                                                                                                                                                                                | —                                                                                                                 | 30% $V_{CC}$                                                                           | V                |
| High Level Input Voltage                           | $V_{IH}$    |                                                                                                                                                                                | 70% $V_{CC}$                                                                                                      | —                                                                                      | V                |
| Input Resistance                                   | —           | Code⑥ : D<br>Code⑥ : G or N                                                                                                                                                    | 100<br>5                                                                                                          | —                                                                                      | k ohm<br>Mohm    |
| Disable Time                                       | $t_{dis}$   | $1.5 \leq f_o \leq 30\text{MHz}$<br>$30 \leq f_o \leq 170\text{MHz}$                                                                                                           | —<br>—                                                                                                            | 100<br>200                                                                             | ns               |
| Enable Time                                        | $t_{ena}$   | $1.5 \leq f_o \leq 80\text{MHz}$<br>$80 < f_o \leq 170\text{MHz}$                                                                                                              | —<br>—                                                                                                            | 100<br>2                                                                               | ns<br>ms         |
| Start-up Time                                      | $t_{str}$   | @Minimum operating voltage to be 0 sec.                                                                                                                                        | —                                                                                                                 | 10                                                                                     | ms               |
| Phase Jitter                                       | $J_{Phase}$ | @155.52MHz<br>BW : 12kHz to 20MHz                                                                                                                                              | —                                                                                                                 | 0.4                                                                                    | ps               |
| Phase Noise                                        | —           | @155.52MHz                                                                                                                                                                     | @10Hz offset<br>@100Hz offset<br>@1kHz offset<br>@10kHz offset<br>@100kHz offset<br>@1MHz offset<br>@10MHz offset | Typ. -70<br>Typ. -102<br>Typ. -128<br>Typ. -147<br>Typ. -158<br>Typ. -160<br>Typ. -161 | dBc/ Hz          |

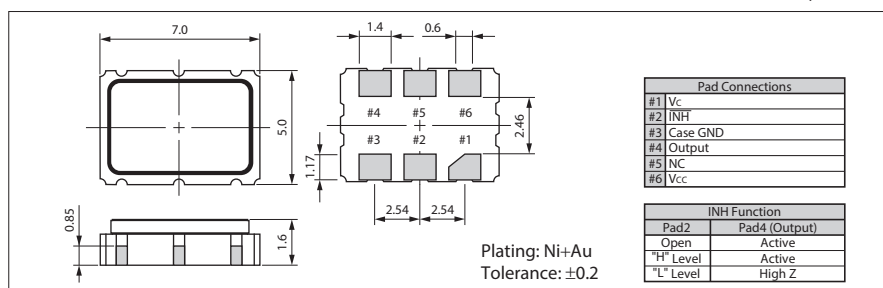
Note : All electrical characteristics are defined at the maximum load and operating temperature range.

Note1: Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

Note2: Please contact us for the Frequency tolerance of -40 to +85°C.

## Dimensions

(Unit: mm)



## Recommended Land Pattern

(Unit: mm)

