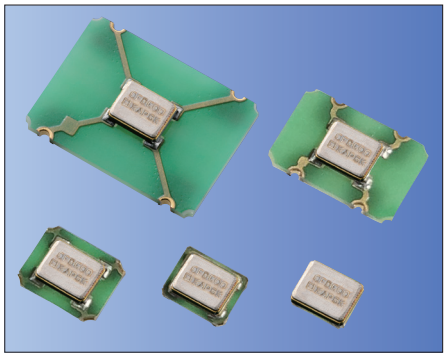
CMOS/ 1.8V, 2.5V, 3.3V, 5.0V / 2.0×1.6, 2.5×2.0, 3.2×2.5, 5.0×3.2, 7.0×5.0mm



RoHS Compliant

Features

- Frequency Range 1.5 to 160MHz
- CMOS output
- Wide Supply Voltage
  - 1.6 to 3.63V (Ver.E)
  - 2.5,3.3,5.0V(Ver.N)
- Low current consumption
- Option: Low Phase Noise Version

Applications

- Consumer/ Networking/ Industrial/ Audio Codec/ Amuse

Table 1

Freq. Tol. Code	Freq. Tol. × 10^{-6}	Operating Temperature Range (°C)	Note
0	± 50	−10 to +70	Standard specifications
S	± 30		With only certain frequencies
U	± 25		
G	± 50	−40 to +85	
6	± 50	−40 to +105	

How to Order

KC2520K 25.0000 C □ □ □ 00
① ② ③ ④ ⑤ ⑥ ⑦

①Series
②Output Frequency (25.0000: 25MHz)
③Output Type (C: CMOS)
④Supply Voltage
Standard : Version E

1	1.8V/ 2.5V/ 3.3V compatible
2	2.5V/ 3.3V compatible

Low Phase Noise : Version N

2	2.5V	3	3.3V
5	5.0V		

⑤Frequency Tolerance (See Table 1)
⑥Symmetry/ INH Function

E	45/ 55%
N	45/ 55%

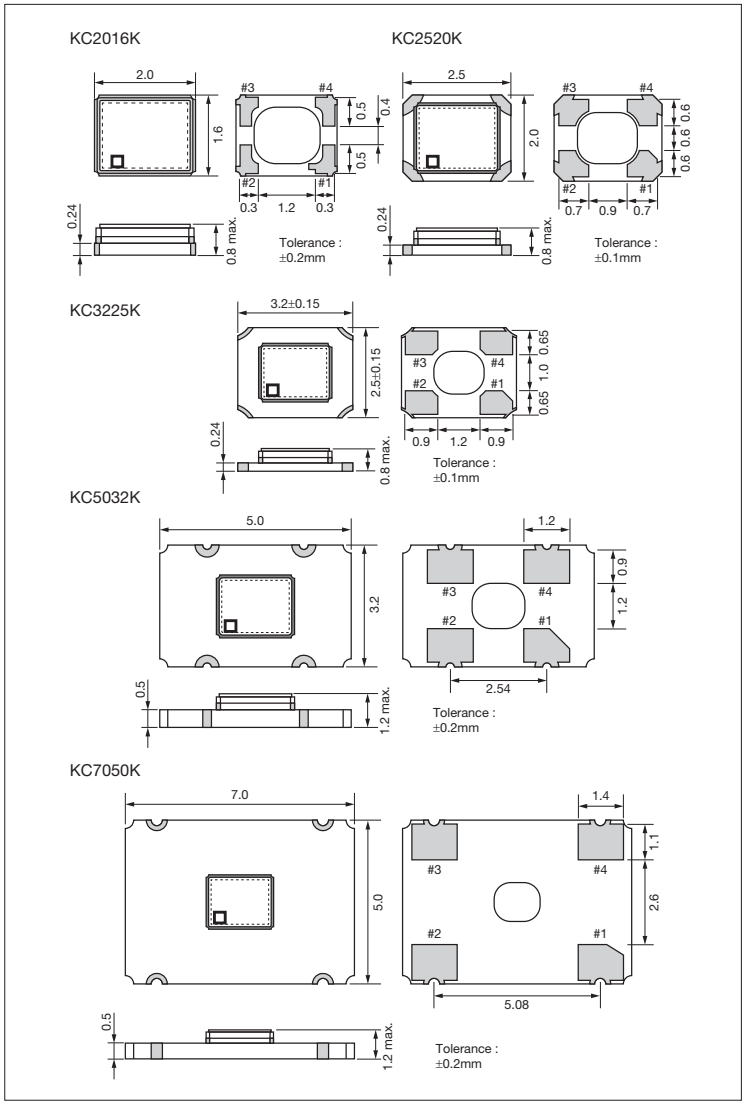
⑦Individual Specification
(STD Specification is "00".)

Packaging Tape & Reel

KC7050K/ KC5032K	1000 pcs./ reel
KC3225K/ KC2520K/ KC2016K	2000 pcs./ reel

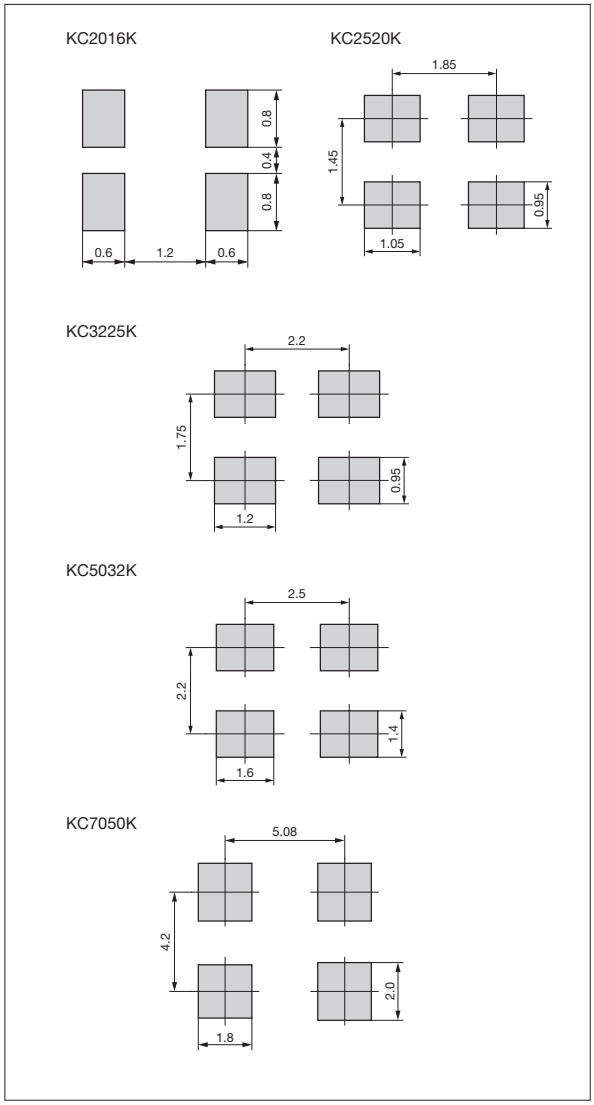
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)



CMOS/ 1.8V, 2.5V, 3.3V, 5.0V / 2.0×1.6, 2.5×2.0, 3.2×2.5, 5.0×3.2, 7.0×5.0mm

Specifications

Item	Symbol	Conditions		Version E (Standard) Min.	Version E (Standard) Max.	Version N (Low Phase Noise) Min.(codeU)	Version N (Low Phase Noise) Max.(codeU)	Unit
Output Frequency Range[Note1]	fo			1.5	160	1.5	80	MHz
Frequency Tolerance	f_tol	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1 year @25°C), Shock and vibration	Temp.: −10 to +70°C/ −40 to +85°C/ −40 to +105°C	−50	+50	−50	+50	×10⁻⁶
			Temp.: −10 to +70°C	−30	+30	−30	+30	
			Temp.: −10 to +70°C	−25	+25	−25	+25	
Frequency Aging	f_age	@25°C First year		−3	+3	−3	+3	×10⁻⁶/ y
Storage Temperature Range	T_stg			−55	+125	−55	+125	°C
Operating Temperature Range	T_use			−10	+70	−10	+70	°C
				−40	+85	−40	+85	
				−40	+105	−40	+105	
Max. Supply Voltage	—			−0.3	+4.0	−0.3	+7.0	V
Supply Voltage	Vcc	Code④ : 1/ E : 1.5≤F0≤125MHz		+1.60	+3.63	—	—	V
		Code④ : 2/ E : 125<F0≤160MHz		+2.25	+3.63	—	—	
		Code④ : 2/ N : 1.5≤F0≤80MHz		—	—	+2.25(+2.38)	+2.75(+2.62)	
		Code④ : 3/ N : 1.5≤F0≤80MHz		—	—	+2.97(+3.14)	+3.63(+3.46)	
		Code④ : 5/ N : 1.5≤F0≤80MHz		—	—	+4.5(+4.75)	+5.5(+5.25)	
Current Consumption (Maximum Loaded)	Icc	1.5≤F0≤24MHz	E : 1.6≤Vcc≤2.25V	—	2.5	—	—	mA
			E : 2.25<Vcc≤2.8V/ N : 2.25≤Vcc≤2.75V	—	3.0	—	4	
			E : 2.8<Vcc≤3.63V/ N : 2.97≤Vcc≤3.63V	—	3.5	—	6	
			N : 4.50≤Vcc≤5.50V	—	—	—	24	
		24<F0≤40MHz	E : 1.6≤Vcc≤2.25V	—	3.5	—	—	
			E : 2.25<Vcc≤2.8V/ N : 2.25≤Vcc≤2.75V	—	4.5	—	5	
			E : 2.8<Vcc≤3.63V/ N : 2.97≤Vcc≤3.63V	—	5.0	—	7	
			N : 4.50≤Vcc≤5.50V	—	—	—	24	
		40<F0≤62.5MHz	E : 1.6≤Vcc≤2.25V	—	5.0	—	—	
			E : 2.25<Vcc≤2.8V/ N : 2.25≤Vcc≤2.75V	—	5.5	—	8	
			E : 2.8<Vcc≤3.63V/ N : 2.97≤Vcc≤3.63V	—	6.0	—	11	
			N : 4.50≤Vcc≤5.50V	—	—	—	24	
		62.5<F0≤80MHz	E : 1.6≤Vcc≤2.25V	—	6.0	—	—	
			E : 2.25<Vcc≤2.8V/ N : 2.25≤Vcc≤2.75V	—	6.5	—	14	
			E : 2.8<Vcc≤3.63V/ N : 2.97≤Vcc≤3.63V	—	8.0	—	18	
			N : 4.50≤Vcc≤5.50V	—	—	—	40	
		80<F0≤125MHz	E : 1.6≤Vcc≤2.25V	—	11.0	—	—	
			E : 2.25<Vcc≤2.8V	—	14.0	—	—	
			E : 2.8<Vcc≤3.63V	—	17.0	—	—	
		125<F0≤160MHz	E : 2.25<Vcc≤2.8V	—	25.0	—	—	
			E : 2.8<Vcc≤3.63V	—	27.0	—	—	
Stand-by Current	I_std	1.5≤Fo≤80MHz		—	5.0	—	10.0	μA
		80≤Fo≤125MHz		—	5.0	—	—	
		125≤Fo≤160MHz		—	10.0	—	—	
Symmetry	SYM	@50% Vcc		45	55	45	55	%
Rise/ Fall Time (10% to 90% Output Level)	Tr/ Tf	1.5≤F0≤80MHz	E : 1.6≤Vcc≤2.25V	—	6.0	—	—	ns
			E : 2.25<Vcc≤2.8V/ N : 2.25≤Vcc≤2.75V	—	5.0	—	6.0	
			E : 2.8<Vcc≤3.63V/ N : 2.97≤Vcc≤3.63V	—	4.5	—	5.0	
			N : 4.50≤Vcc≤5.50V	—	—	—	8.0	
		80<F0≤125MHz	E : 1.6<Vcc≤3.63V	—	4.0	—	—	
		125<F0≤160MHz	E : 2.25<Vcc≤3.63V	—	2.5	—	—	
Low Level Output Voltage	Vol	E : Iol= 4mA		—	10% Vcc	—	10% Vcc	V
		N (1.5≤Fo≤62.5MHz) : Iol= 4mA						
		N (62.5<Fo≤80MHz) : Iol= 8mA						
High Level Output Voltage	Voh	E : Ioh= −4mA		90% Vcc	—	90% Vcc	—	V
		N (1.5≤Fo≤62.5MHz) : Ioh= −4mA						
		N (62.5<Fo≤80MHz) : Ioh= −8mA						
Output Load	L_CMOS			15		30		pF
Low Level Input Voltage	Vil			—	30% Vcc	—	30% Vcc	V
High Level Input Voltage	Vih			70% Vcc	—	70% Vcc	—	V

CMOS/ 1.8V, 2.5V, 3.3V, 5.0V / 2.0×1.6, 2.5×2.0, 3.2×2.5, 5.0×3.2, 7.0×5.0mm

Item	Symbol	Conditions		Version E (Standard)		Version N (Low Phase Noise)		Unit
				Min.	Max.	Min.(codeU)	Max.(codeU)	
Disable Time	$t_{\_dis}$	1.5≤F0≤80MHz		—	200	—	150	ns
		80<F0≤125MHz		—	200	—	—	
		125<F0≤160MHz		—	100	—	—	
Enable Time	$t_{\_ena}$			—	5	—	5	ms
Start-up Time	$t_{\_str}$	1.5≤F0≤80MHz	@Minimum operating voltage to be 0 sec.	—	5	—	5	ms
		80<F0≤125MHz		—	5	—	—	
		125<F0≤160MHz		—	10	—	—	
1 Sigma Jitter	J_{Sigma}	1.5≤F0≤80MHz	Measured with Wavecrest SIA-3000	—	5	—	4	ps
		80<F0≤125MHz		—	5	—	—	
		125<F0≤160MHz		—	3	—	—	
Peak to Peak Jitter	J_{PK-PK}	1.5≤F0≤80MHz		—	50	—	40	ps
		80<F0≤125MHz		—	50	—	—	
		125<F0≤160MHz		—	25	—	—	
Phase Jitter	J_{Phase}	@25MHz	BW : 12kHz to 20MHz	—	1.0	—	0.5	ps
Phase Noise	—	@25MHz	@10Hz offset	Typ. −89		Typ. −92		dBc/ Hz
			@100Hz offset	Typ. −119		Typ. −126		
			@1kHz offset	Typ. −143		Typ. −151		
			@10kHz offset	Typ. −157		Typ. −160		
			@100kHz offset	Typ. −160		Typ. −167		
			@1MHz offset	Typ. −162		Typ. −170		
			@10MHz offset	Typ. −162		Typ. −170		

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.

Pad Connections	
#1	INH
#2	Case GND
#3	Output
#4	Vcc

INH Function	
Pad1	Pad3 (Output)
Open	Active
"H" Level	Active
"L" Level	High Z (No-Oscillation)