

CMOS/ 1.8V, 2.5V, 3.3V Compatible/ 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 80MHz
- CMOS output
- Wide Supply Voltage 1.6 to 3.63V
- Low current consumption
- Option: Low Phase Noise Version

**Table 1**

Freq. Code	Tol. × 10 <sup>-6</sup>	Operating Temperature Range (°C)	Note
0	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25	-40 to +85	With only certain frequencies
G	± 50		
6	± 50		

Packaging Tape & Reel  
 KC7050K/ KC5032K : 1000 pcs/ reel  
 KC3225K/ KC2520K/ KC2016K : 2000 pcs/ reel

**How to Order**

KC2520K 25.0000 C 1 0 E 00  
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type 2.0×1.6mm: KC2016K  
2.5×2.0mm: KC2520K  
3.2×2.5mm: KC3225K  
5.0×3.2mm: KC5032K  
7.0×5.0mm: KC7050K
- ② Output Frequency (25.0000: 25MHz)
- ③ Output Type (C: CMOS)
- ④ Supply Voltage  
1 : 1.8V/ 2.5V/ 3.3V Multi Voltage (Version E : Standard)  
2 : 2.5V (Version N : Low Phase Noise)  
3 : 3.3V (Version N : Low Phase Noise)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ INH Function  
E : 45/ 55%, Stand-by  
N : 45/ 55%, Stand-by, Low Phase Noise
- ⑦ Customer Special Model Suffix (STD Specification is "00")

**Dimensions**

(Unit: mm)



**Recommended Land Pattern**

(Unit: mm)



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**Specifications**

Item	Symbol	Conditions		Version E (Standard)		Version N (Low Phase Noise)		Units
				Min.	Max.	Min.	Max.	
Output Frequency Range <sup>Note1</sup>	fo			1.5	80	1.5	80	MHz
Frequency Tolerance	f <sub>tol</sub>	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1 year @25°C), Shock and vibration	Op. Temp.: -10 to +70°C/ -40 to +85°C/ -40 to +105°C	-50	+50	-50	+50	×10 <sup>-6</sup>
			Op. Temp.: -10 to +70°C	-30	+30	-30	+30	
			Op. Temp.: -10 to +70°C	-25	+25	-25	+25	
Frequency Aging	f <sub>age</sub>	@25°C First year		-3	+3	-3	+3	×10 <sup>-6</sup> /y
Storage Temperature Range	T <sub>stg</sub>			-55	+125	-55	+125	°C
Operating Temperature Range	T <sub>use</sub>			-10	+70	-10	+70	°C
				-40	+85	-40	+85	
				-40	+105	-40	+105	
Max. Supply Voltage	—			-0.3	+4.0	-0.3	+4.0	V
Supply Voltage	V <sub>cc</sub>	Code ④ : 1		+1.60	+3.63	—	—	V
		Code ④ : 2		—	—	+2.25	+2.75	
		Code ④ : 3		—	—	+2.97	+3.63	
Current Consumption (Maximum Loaded/ 1.5≤F0<24MHz)	I <sub>cc</sub>	E : 1.6≤V <sub>cc</sub> ≤2.25V		—	2.5	—	—	mA
		E : 2.25<V <sub>cc</sub> ≤2.8V/ N : 2.25≤V <sub>cc</sub> ≤2.75V		—	3.0	—	4	
		E : 2.8<V <sub>cc</sub> ≤3.63V/ N : 2.97≤V <sub>cc</sub> ≤3.63V		—	3.5	—	6	
Current Consumption (Maximum Loaded/ 24≤F0<40MHz)	I <sub>cc</sub>	E : 1.6≤V <sub>cc</sub> ≤2.25V		—	3.5	—	—	
		E : 2.25<V <sub>cc</sub> ≤2.8V/ N : 2.25≤V <sub>cc</sub> ≤2.75V		—	4.5	—	5	
		E : 2.8<V <sub>cc</sub> ≤3.63V/ N : 2.97≤V <sub>cc</sub> ≤3.63V		—	5.0	—	7	
Current Consumption (Maximum Loaded/ 40<F0≤62.5MHz)	I <sub>cc</sub>	E : 1.6≤V <sub>cc</sub> ≤2.25V		—	5.0	—	—	
		E : 2.25<V <sub>cc</sub> ≤2.8V/ N : 2.25≤V <sub>cc</sub> ≤2.75V		—	5.5	—	8	
		E : 2.8<V <sub>cc</sub> ≤3.63V/ N : 2.97≤V <sub>cc</sub> ≤3.63V		—	6.0	—	11	
Current Consumption (Maximum Loaded/ 62.5<F0≤80MHz)	I <sub>cc</sub>	E : 1.6≤V <sub>cc</sub> ≤2.25V		—	6.0	—	—	
		E : 2.25<V <sub>cc</sub> ≤2.8V/ N : 2.25≤V <sub>cc</sub> ≤2.75V		—	6.5	—	14	
		E : 2.8<V <sub>cc</sub> ≤3.63V/ N : 2.97≤V <sub>cc</sub> ≤3.63V		—	8.0	—	18	
Stand-by Current	I <sub>std</sub>			—	5	—	5	μA
Symmetry	SYM	@50% V <sub>cc</sub>		45	55	45	55	%
Rise/ Fall Time (10% to 90% Output Level)	tr/ tf	E : 1.6≤V <sub>cc</sub> ≤2.25V		—	6	—	—	ns
		E : 2.25<V <sub>cc</sub> ≤2.8V/ N : 2.25≤V <sub>cc</sub> ≤2.75V		—	5	—	6	
		E : 2.8<V <sub>cc</sub> ≤3.63V/ N : 2.97≤V <sub>cc</sub> ≤3.63V		—	4.5	—	5	
Low Level Output Voltage	V <sub>OL</sub>	I <sub>OL</sub> =4mA		—	10% V <sub>cc</sub>	—	10% V <sub>cc</sub>	V
High Level Output Voltage	V <sub>OH</sub>	I <sub>OH</sub> =-4mA		90% V <sub>cc</sub>	—	90% V <sub>cc</sub>	—	V
Output Load	L <sub>CMOS</sub>			15 <sup>Note2</sup>		15 <sup>Note2</sup>		pF
Low Level Input Voltage	V <sub>IL</sub>			—	30% V <sub>cc</sub>	—	30% V <sub>cc</sub>	V
High Level Input Voltage	V <sub>IH</sub>			70% V <sub>cc</sub>	—	70% V <sub>cc</sub>	—	V
Disable Time	t <sub>dis</sub>			—	200	—	150	ns
Enable Time	t <sub>ena</sub>			—	5	—	5	ms
Start-up Time	t <sub>str</sub>	@Minimum operating voltage to be 0 sec.		—	3	—	5	ms
1 Sigma Jitter	J <sub>Sigma</sub>	Measured with Wavecrest SIA-3000		—	5	—	4	ps
Peak to Peak Jitter	J <sub>PK-PK</sub>			—	50	—	40	ps
Phase Jitter	J <sub>Phase</sub>	BW : 12kHz to 20MHz		—	1.0	—	0.5	ps
Phase Noise	—	@25MHz	@10Hz offset	-89	-92			dBc/ Hz
			@100Hz offset	-119	-126			
			@1kHz offset	-143	-151			
			@10kHz offset	-157	-160			
			@100kHz offset	-160	-167			
			@1MHz offset	-162	-170			
@10MHz offset	-162	-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.

Note2: Please contact us for Output Load 30pF.

Pad Connections	
#1	Enable/ Disable
#2	Case GND
#3	Output
#4	V <sub>cc</sub>

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