

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. $\times 10^{-6}$ | 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 ^{Note1} | fo | | 1.5 | 80 | 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 | Op. Temp.: -10 to +70°C / -40 to +85°C / -40 to +105°C | -50 | +50 | -50 | +50 | ×10 ⁻⁶ |
| | | | Op. Temp.: -10 to +70°C | -30 | +30 | -30 | +30 | |
| | | | Op. 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 | +4.0 | V | |
| Supply Voltage | V _{cc} | 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 _{cc} | E : 1.6≤V _{cc} ≤2.25V | — | 2.5 | — | — | mA | |
| | | E : 2.25<V _{cc} ≤2.8V / N : 2.25≤V _{cc} ≤2.75V | — | 3.0 | — | 4 | | |
| | | E : 2.8<V _{cc} ≤3.63V / N : 2.97≤V _{cc} ≤3.63V | — | 3.5 | — | 6 | | |
| Current Consumption (Maximum Loaded/ 24≤F0<40MHz) | I _{cc} | E : 1.6≤V _{cc} ≤2.25V | — | 3.5 | — | — | | |
| | | E : 2.25<V _{cc} ≤2.8V / N : 2.25≤V _{cc} ≤2.75V | — | 4.5 | — | 5 | | |
| | | E : 2.8<V _{cc} ≤3.63V / N : 2.97≤V _{cc} ≤3.63V | — | 5.0 | — | 7 | | |
| Current Consumption (Maximum Loaded/ 40<F0≤62.5MHz) | I _{cc} | E : 1.6≤V _{cc} ≤2.25V | — | 5.0 | — | — | | |
| | | E : 2.25<V _{cc} ≤2.8V / N : 2.25≤V _{cc} ≤2.75V | — | 5.5 | — | 8 | | |
| | | E : 2.8<V _{cc} ≤3.63V / N : 2.97≤V _{cc} ≤3.63V | — | 6.0 | — | 11 | | |
| Current Consumption (Maximum Loaded/ 62.5<F0≤80MHz) | I _{cc} | E : 1.6≤V _{cc} ≤2.25V | — | 6.0 | — | — | | |
| | | E : 2.25<V _{cc} ≤2.8V / N : 2.25≤V _{cc} ≤2.75V | — | 6.5 | — | 14 | | |
| | | E : 2.8<V _{cc} ≤3.63V / N : 2.97≤V _{cc} ≤3.63V | — | 8.0 | — | 18 | | |
| Stand-by Current | I _{std} | | — | 5 | — | 5 | μA | |
| Symmetry | SYM | @50% V _{cc} | 45 | 55 | 45 | 55 | % | |
| Rise/ Fall Time (10% to 90% Output Level) | tr/ tf | E : 1.6≤V _{cc} ≤2.25V | — | 6 | — | — | ns | |
| | | E : 2.25<V _{cc} ≤2.8V / N : 2.25≤V _{cc} ≤2.75V | — | 5 | — | 6 | | |
| | | E : 2.8<V _{cc} ≤3.63V / N : 2.97≤V _{cc} ≤3.63V | — | 4.5 | — | 5 | | |
| Low Level Output Voltage | V _{OL} | I _{OL} =4mA | — | 10% V _{cc} | — | 10% V _{cc} | V | |
| High Level Output Voltage | V _{OH} | I _{OH} =-4mA | 90% V _{cc} | — | 90% V _{cc} | — | V | |
| Output Load | L _{CMOS} | | 15 ^{Note2} | | 15 ^{Note2} | | pF | |
| Low Level Input Voltage | V _{IL} | | — | 30% V _{cc} | — | 30% V _{cc} | V | |
| High Level Input Voltage | V _{IH} | | 70% V _{cc} | — | 70% V _{cc} | — | V | |
| Disable Time | t _{dis} | | — | 200 | — | 150 | ns | |
| Enable Time | t _{ena} | | — | 5 | — | 5 | ms | |
| Start-up Time | t _{str} | @Minimum operating voltage to be 0 sec. | — | 3 | — | 5 | ms | |
| 1 Sigma Jitter | J _{Sigma} | Measured with Wavecrest SIA-3000 | — | 5 | — | 4 | ps | |
| Peak to Peak Jitter | J _{PK-PK} | | — | 50 | — | 40 | ps | |
| Phase Jitter | J _{Phase} | | 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 _{cc} |

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