



Ph Free

RoHS Compliant

Features

- Miniature ceramic package
2.5 (L) × 2.0 (W) × 0.7 (H) mm (Typ.)
- Highly reliable with seam welding
- CMOS output
- Supply voltage V_{CC} =1.8V/ 2.5V/ 3.3V
Compatible Low Power Supply Consumption
- Wide Operating Voltage Range 1.62 to 3.63V

Table 1

Freq. Tol. Code	Freq. Tol. $\times 10^{-6}$	Operating Temperature Range (°C)	Note
O	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
F	± 100	-40 to +85	With only certain frequencies
G	± 50		

How to Order

KC2520B 25.0000 C 1 0 E 00
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (2.5×2.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (1.8V, 2.5V, 3.3V Compatible)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 2000 pcs./ reel)

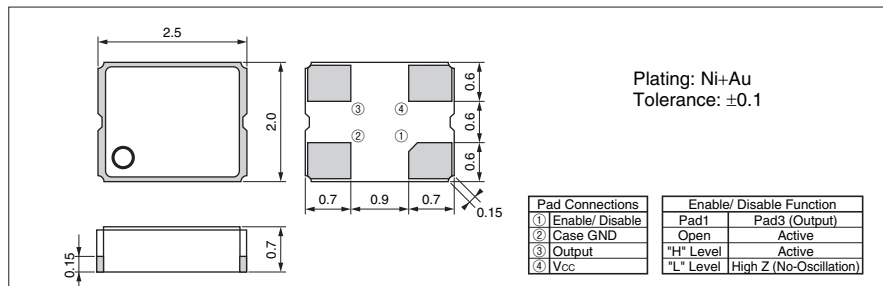
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	f_o		1.5	50	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.: -40 to +85°C	-100	+100	$\times 10^{-6}$
			Op. Temp.: -10 to +70°C/ -40 to +85°C	-50	+50	
			Op. Temp.: -10 to +70°C	-30	+30	
			Op. Temp.: -10 to +70°C	-25	+25	
Storage Temperature Range	T_{stg}		-55	+125	°C	
Operating Temperature Range	T_{use}	Standard Specifications	-10	+70	°C	
		Extend (Option)	-40	+85		
Max. Supply Voltage	—		-0.5	+6	V	
Supply Voltage	V_{CC}	Freq. Tol.Code: O, S, F, U, G	1.62	3.63	V	
Current Consumption (Maximum Loaded)	I_{CC}	$1.5 \leq f_o \leq 24\text{MHz}$	—	3.5	mA	
		$24 < f_o \leq 40\text{MHz}$	—	5		
		$40 < f_o \leq 50\text{MHz}$	—	6		
Stand-by Current	I_{std}		—	10	μA	
Symmetry	SYM	@ 50% V_{CC}	45	55	%	
Rise/ Fall Time (10% V_{CC} to 90% V_{CC} Maximum Loaded)	t_r / t_f		—	5	nS	
Low Level Output Voltage	V_{OL}	$I_{OL} = 4\text{mA}$	—	10% V_{CC}	V	
High Level Output Voltage	V_{OH}	$I_{OH} = -4\text{mA}$	90% V_{CC}	—	V	
Output Load	CL	CMOS Output	—	15	pF	
Input Voltage Range	V_{IN}		0	V_{CC}	V	
Low Level Input Voltage	V_{IL}		—	30% V_{CC}	V	
High Level Input Voltage	V_{IH}		70% V_{CC}	—	V	
Disable Time	t_{dis}		—	100	nS	
Enable Time	t_{ena}		—	5	mS	
Start-up Time	t_{str}	@ Minimum operation voltage to be 0 sec.	—	10	mS	

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
 Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

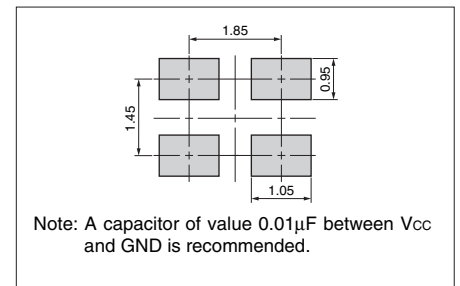
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)



Clock Oscillators Surface Mount Type

KC2520B-C2 Series



CMOS/ 2.5V, 3.3V Compatible/ 2.5×2.0mm



Ph Free

RoHS Compliant

Features

- Miniature ceramic package
2.5 (L) × 2.0 (W) × 0.7 (H) mm (Typ.)
- Highly reliable with seam welding
- CMOS output
- Supply voltage V_{CC} =2.5V/ 3.3V Compatible
Low Power Supply Consumption
- Wide Operating Voltage Range 2.25 to 3.63V

Table 1

Freq. Tol. Code	Freq. Tol. $\times 10^{-6}$	Operating Temperature Range (°C)	Note
0	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
F	± 100	-40 to +85	With only certain frequencies
G	± 50		

How to Order

KC2520B 25.0000 C 2 0 E 00
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (2.5×2.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (2.5V, 3.3V Compatible)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 2000 pcs./ reel)

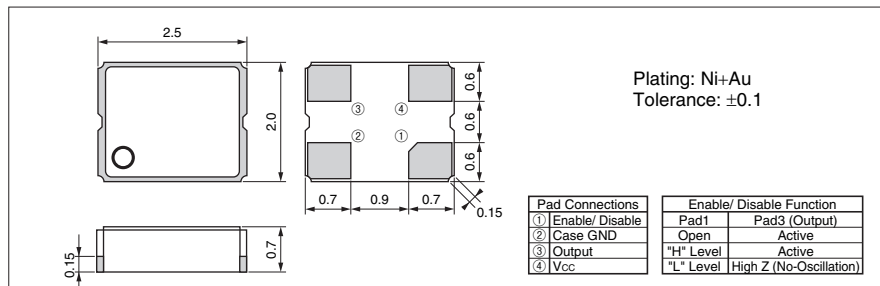
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	f_o		1.5	54	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.: -40 to +85°C	-100	+100	$\times 10^{-6}$
			Op. Temp.: -10 to +70°C/ -40 to +85°C	-50	+50	
			Op. Temp.: -10 to +70°C	-30	+30	
			Op. Temp.: -10 to +70°C	-25	+25	
Storage Temperature Range	T_{stg}		-55	+125	°C	
Operating Temperature Range	T_{use}	Standard Specifications	-10	+70	°C	
		Extend (Option)	-40	+85		
Max. Supply Voltage	—		-0.5	+6	V	
Supply Voltage	V_{CC}	Freq. Tol. Code: 0, S, F, U, G	2.25	3.63	V	
Current Consumption (Maximum Loaded)	I_{CC}	$1.5 \leq f_o \leq 24$ MHz	—	3	mA	
		$24 < f_o \leq 40$ MHz	—	4		
		$40 < f_o \leq 54$ MHz	—	5		
Stand-by Current	I_{std}		—	10	μ A	
Symmetry	SYM	@ 50% V_{CC}	45	55	%	
Rise/ Fall Time (10% V_{CC} to 90% V_{CC} Maximum Loaded)	t_r / t_f		—	5	nS	
Low Level Output Voltage	V_{OL}	$I_{OL} = 4$ mA	—	10% V_{CC}	V	
High Level Output Voltage	V_{OH}	$I_{OH} = -4$ mA	90% V_{CC}	—	V	
Output Load	CL	CMOS Output	—	15	pF	
Input Voltage Range	V_{IN}		0	V_{CC}	V	
Low Level Input Voltage	V_{IL}		—	30% V_{CC}	V	
High Level Input Voltage	V_{IH}		70% V_{CC}	—	V	
Disable Time	t_{dis}		—	100	nS	
Enable Time	t_{ena}		—	5	mS	
Start-up Time	t_{str}	@ Minimum operation voltage to be 0 sec.	—	10	mS	

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
 Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

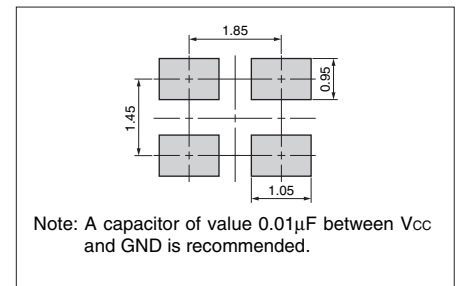
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)





Pb Free

RoHS Compliant

KC2520A-C1 Series

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=1.8V$
Lower voltage available

Table 1

Freq. Tol. Code	$\times 10^{-6}$	Operating Temperature Range (°C)	Note
0	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25	-40 to +85	With only certain frequencies
F	± 100		
G	± 50		

How to Order

KC2520A 25.0000 C 1 0 E 00
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (2.5×2.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (1.8V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 2000 pcs./ reel)



Pb Free

RoHS Compliant

KC2520A-C2 Series

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=2.5V$
Lower voltage available

Table 1

Freq. Tol. Code	$\times 10^{-6}$	Operating Temperature Range (°C)	Note
0	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25	-40 to +85	With only certain frequencies
F	± 100		
G	± 50		

How to Order

KC2520A 25.0000 C 2 0 E 00
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (2.5×2.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (2.5V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 2000 pcs./ reel)



Pb Free

RoHS Compliant

KC2520A-C3 Series

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=3.3V$

Table 1

Freq. Tol. Code	$\times 10^{-6}$	Operating Temperature Range (°C)	Note
0	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25	-40 to +85	With only certain frequencies
F	± 100		
G	± 50		

How to Order

KC2520A 25.0000 C 3 0 E 00
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (2.5×2.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (3.3V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 2000 pcs./ reel)

Specifications

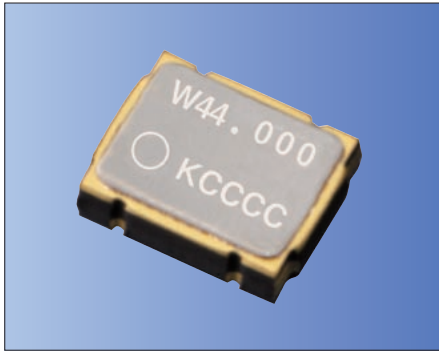
Type	Output Frequency Range (MHz)	Supply Voltage (V_{CC})	Frequency Tolerance (ppm)	Current Consumption (mA)	Output Load (pF)
KC2520A-C1	1.5 to 50	1.8±5%, 10%	± 25 ± 30 ± 50 ± 100	max. 5	15
KC2520A-C2	1.5 to 50	2.5±5%, 10%		max. 6	
KC2520A-C3	1.5 to 50	3.3±5%, 10%		max. 8	

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

Clock Oscillators Surface Mount Type KC3225A-C2 Series (K25-2C Series)



CMOS/ 2.5V/ 3.2×2.5mm



Ph Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=2.5V$
Lower voltage available
- $\pm 25 \times 10^{-6}$ available

Table 1

Freq. Tol. 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
F	± 100		
G	± 50		

How to Order

KC3225A 25.0000 C 2 0 E 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (3.2×2.5mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (2.5V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 2000 pcs./ reel)

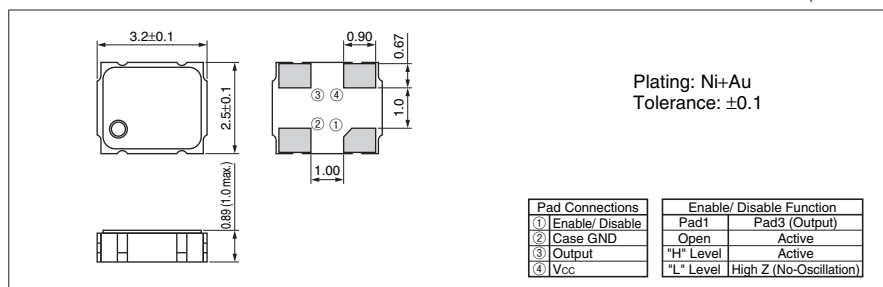
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	f_o		1.5	125	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.: -40 to +85°C	-100	+100	$\times 10^{-6}$
			Op. Temp.: -10 to +70°C/ -40 to +85°C	-50	+50	
			Op. Temp.: -10 to +70°C	-30	+30	
			Op. Temp.: -10 to +70°C	-25	+25	
Storage Temperature Range	T_{stg}		-55	+125	°C	
Operating Temperature Range	T_{use}	Standard Specifications	-10	+70	°C	
		Extend (Option)	-40	+85		
Max. Supply Voltage	—		-0.5	+7	V	
Supply Voltage	V_{CC}	Freq. Tol.Code: 0, S, F	2.38	2.62	V	
		Freq. Tol.Code: U, G	2.43	2.57		
Current Consumption (Maximum Loaded)	I_{CC}	1.5≤ f_o ≤26MHz	—	4	mA	
		26< f_o ≤50MHz	—	6		
		50< f_o ≤67.5MHz	—	9		
		67.5< f_o ≤95MHz	—	14		
		95< f_o ≤125MHz	—	18		
Stand-by Current	I_{std}		—	10	μA	
Symmetry	SYM	@50% V_{CC}	45	55	%	
Rise/ Fall Time (10% V_{CC} to 90% V_{CC} Maximum Loaded)	t_r/ t_f	1.5≤ f_o ≤67.5MHz	—	6	nS	
		67.5< f_o ≤125MHz	—	4		
Low Level Output Voltage	V_{OL}	$I_{OL}=-4mA$	—	10% V_{CC}	V	
High Level Output Voltage	V_{OH}	$I_{OH}=-4mA$	90% V_{CC}	—	V	
Output Load	CL	CMOS Output	—	15	pF	
Input Voltage Range	V_{IN}		0	V_{CC}	V	
Low Level Input Voltage	V_{IL}		—	30% V_{CC}	V	
High Level Input Voltage	V_{IH}		70% V_{CC}	—	V	
Disable Time	t_{dis}		—	150	nS	
Enable Time	t_{ena}		—	5	mS	
Start-up Time	t_{str}	@ Minimum operation voltage to be 0 sec.	—	10	mS	
1 Sigma Jitter	J_{Sigma}	Measured with Wavecrest DTS-2079 VISI 6.3.1	1.5≤ f_o ≤60MHz	—	8	pS
			60< f_o ≤125MHz	—	5	pS
Peak to Peak Jitter	J_{PK-PK}		1.5≤ f_o ≤60MHz	—	80	pS
			60< f_o ≤125MHz	—	40	pS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

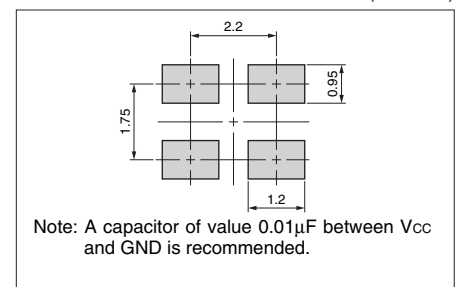
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)



Clock Oscillators Surface Mount Type KC3225A-C3 Series (K25-3C Series)



CMOS/ 3.3V/ 3.2×2.5mm



Ph Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=3.3V$
- $\pm 25 \times 10^{-6}$ available

Table 1

Freq. Tol. Code	Tol. $\times 10^{-6}$	Operating Temperature Range (°C)	Note
0	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
F	± 100	-40 to +85	With only certain frequencies
G	± 50		

How to Order

KC3225A 25.0000 C 3 0 E 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (3.2×2.5mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (3.3V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 2000 pcs./ reel)

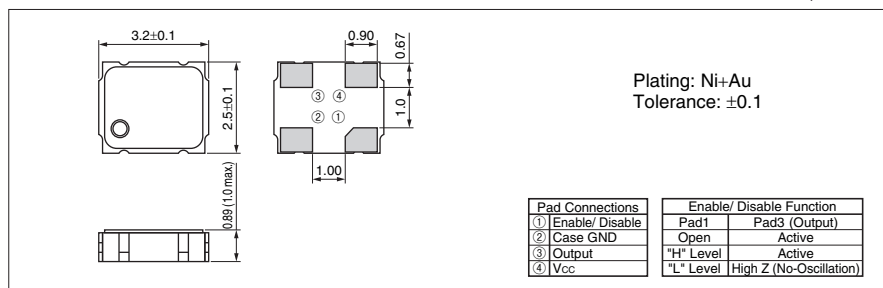
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	fo		1.5	125	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.: -40 to +85°C	-100	+100	$\times 10^{-6}$
			Op. Temp.: -10 to +70°C/ -40 to +85°C	-50	+50	
			Op. Temp.: -10 to +70°C	-30	+30	
			Op. Temp.: -10 to +70°C	-25	+25	
Storage Temperature Range	T _{stg}		-55	+125	°C	
Operating Temperature Range	T _{use}	Standard Specifications	-10	+70	°C	
		Extend (Option)	-40	+85		
Max. Supply Voltage	—		-0.5	+7	V	
Supply Voltage	V _{CC}	Freq. Tol.Code: 0, S, F	2.97	3.63	V	
		Freq. Tol.Code: U, G	3.14	3.46		
Current Consumption (Maximum Loaded)	I _{CC}	1.5<fo≤26MHz	—	6	mA	
		26<fo≤50MHz	—	8		
		50<fo≤67.5MHz	—	12		
		67.5<fo≤95MHz	—	20		
		95<fo≤125MHz	—	25		
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@ 50% V _{CC}	45	55	%	
Rise/ Fall Time (10% V _{CC} to 90% V _{CC} Maximum Loaded)	tr/ tf	1.5<fo≤67.5MHz	—	5	nS	
		67.5<fo≤125MHz	—	3		
Low Level Output Voltage	V _{OL}	I _{OL} =4mA	—	10% V _{CC}	V	
High Level Output Voltage	V _{OH}	I _{OH} =-4mA	90% V _{CC}	—	V	
Output Load	CL	CMOS Output	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{CC}	V	
Low Level Input Voltage	V _{IL}		—	30% V _{CC}	V	
High Level Input Voltage	V _{IH}		70% V _{CC}	—	V	
Disable Time	t _{dis}		—	150	nS	
Enable Time	t _{ena}		—	5	mS	
Start-up Time	t _{str}	@ Minimum operation voltage to be 0 sec.	—	10	mS	
1 Sigma Jitter	J _{Sigma}	Measured with Wavecrest DTS-2079 V/SI 6.3.1	1.5<fo≤60MHz	—	8	pS
			60<fo≤125MHz	—	5	pS
Peak to Peak Jitter	J _{PK-PK}		1.5<fo≤60MHz	—	80	pS
			60<fo≤125MHz	—	40	pS

Note: All electrical characteristics are defined at the maximum load and operating temperature range. Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

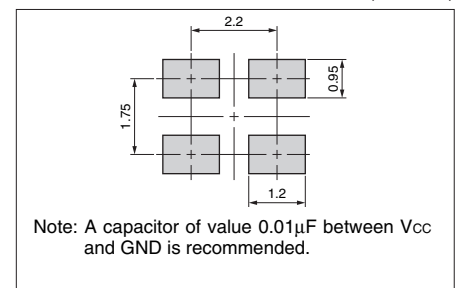
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)



Clock Oscillators Surface Mount Type KC5032C-C1 Series (K30-1C Series)



CMOS/ 1.8V/ 5.0×3.2mm



Ph Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=1.8V$
Lower voltage available
- $\pm 25 \times 10^{-6}$, $\pm 20 \times 10^{-6}$ available

Table 1

Freq. Tol. Code	Tolerance $\times 10^{-6}$	Operating Temperature Range (°C)	Note
O	± 50	-10 to +70	Standard specifications
S	± 30		With only certain frequencies
U	± 25		
W	± 20		
F	± 100	-40 to +85	
G	± 50		

How to Order

KC5032C 25.0000 C 1 0 E 00
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (5.0×3.2mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (1.8V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)

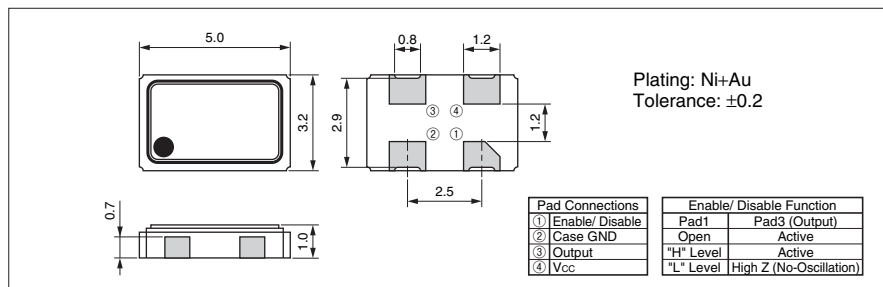
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	f_o		1.8	39.99	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.: -40 to +85°C	-100	+100	$\times 10^{-6}$
			Op. Temp.: -10 to +70°C/ -40 to +85°C	-50	+50	
			Op. Temp.: -10 to +70°C	-30	+30	
			Op. Temp.: -10 to +70°C	-25	+25	
			Op. Temp.: -10 to +70°C	-20	+20	
Storage Temperature Range	T_{stg}		-55	+125	°C	
Operating Temperature Range	T_{use}	Standard Specifications	-10	+70	°C	
		Extend (Option)	-40	+85		
Max. Supply Voltage	—		-0.5	+3.6	V	
Supply Voltage	V_{CC}	Freq. Tol.Code: 0, S, F	1.71	1.89	V	
		Freq. Tol.Code: U, G, W	1.75	1.85		
Current Consumption (Maximum Loaded)	I_{CC}	1.8< f_o <25MHz	—	3	mA	
Stand-by Current	I_{std}	25< f_o <39.99MHz	—	4		
Symmetry	SYM	@50% V_{CC}	45	55	%	
Rise/ Fall Time (10% V_{CC} to 90% V_{CC} Maximum Loaded)	t_r / t_f		—	9	nS	
Low Level Output Voltage	V_{OL}	$I_{OL}=-2.8mA$	—	10% V_{CC}	V	
High Level Output Voltage	V_{OH}	$I_{OH}=-2.8mA$	90% V_{CC}	—	V	
Output Load	CL	CMOS Output	—	15	pF	
Input Voltage Range	V_{IN}		0	V_{CC}	V	
Low Level Input Voltage	V_{IL}		—	30% V_{CC}	V	
High Level Input Voltage	V_{IH}		70% V_{CC}	—	V	
Disable Time	t_{dis}		—	150	nS	
Enable Time	t_{ena}		—	5	mS	
Start-up Time	t_{str}	@Minimum operation voltage to be 0 sec.	—	10	mS	
1 Sigma Jitter	JSigma	Measured with Wavecrest DTS-2079 VISI 6.3.1	—	8	pS	
Peak to Peak Jitter	JPK-PK		—	80	pS	

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
 Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

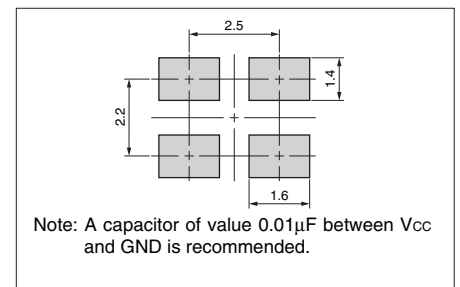
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)



Clock Oscillators Surface Mount Type KC5032C-C2 Series (K30-2C Series)



CMOS/ 2.5V/ 5.0×3.2mm



Ph Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=2.5V$
Lower voltage available
- $\pm 25 \times 10^{-6}$, $\pm 20 \times 10^{-6}$ available

Table 1

Freq. Tol. Code	Tol. $\times 10^{-6}$	Operating Temperature Range (°C)	Note
O	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
W	± 20	-40 to +85	With only certain frequencies
F	± 100		
G	± 50		

How to Order

KC5032C 25.0000 C 2 0 E 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (5.0×3.2mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (2.5V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)

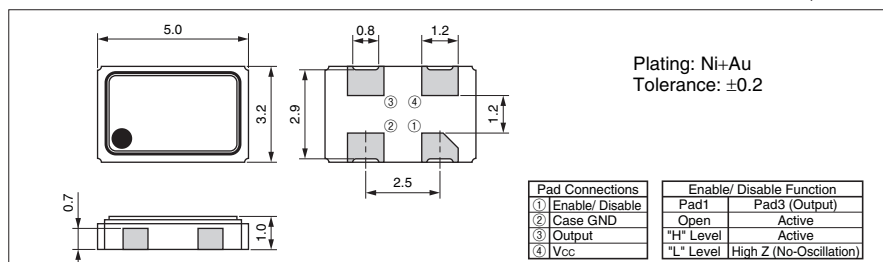
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	f_o		1.8	125	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.: -40 to +85°C	-100	+100	$\times 10^{-6}$
			Op. Temp.: -10 to +70°C/ -40 to +85°C	-50	+50	
			Op. Temp.: -10 to +70°C	-30	+30	
			Op. Temp.: -10 to +70°C	-25	+25	
Storage Temperature Range	T_{stg}		-55	+125	°C	
Operating Temperature Range	T_{use}	Standard Specifications	-10	+70	°C	
		Extend (Option)	-40	+85		
Max. Supply Voltage	—		-0.5	+7	V	
Supply Voltage	V_{CC}	Freq. Tol.Code: O, S, F	2.25	2.75	V	
		Freq. Tol.Code: U, G	2.38	2.62		
		Freq. Tol.Code: W	2.43	2.57		
Current Consumption (Maximum Loaded)	I_{CC}	$1.8 \leq f_o \leq 20\text{MHz}$	—	5	mA	
		$20 < f_o \leq 40\text{MHz}$	—	10		
		$40 < f_o \leq 60\text{MHz}$	—	15		
		$60 < f_o \leq 85\text{MHz}$	—	20		
		$85 < f_o \leq 100\text{MHz}$	—	22		
Stand-by Current	I_{std}		—	10	μA	
Symmetry	SYM	@ 50% V_{CC}	45	55	%	
Rise/ Fall Time (10% V_{CC} to 90% V_{CC} Maximum Loaded)	t_r / t_f	$1.8 \leq f_o \leq 40\text{MHz}$	—	7	nS	
		$40 < f_o \leq 85\text{MHz}$	—	4		
		$85 < f_o \leq 125\text{MHz}$	—	3		
Low Level Output Voltage	V_{OL}	$I_{OL} = 4\text{mA} / 8\text{mA} (40\text{MHz} < f_o)$	—	10% V_{CC}	V	
High Level Output Voltage	V_{OH}	$I_{OH} = -4\text{mA} / -8\text{mA} (40\text{MHz} < f_o)$	90% V_{CC}	—	V	
Output Load	CL	CMOS Output	—	15	pF	
Input Voltage Range	V_{IN}		0	V_{CC}	V	
Low Level Input Voltage	V_{IL}		—	30% V_{CC}	V	
High Level Input Voltage	V_{IH}		70% V_{CC}	—	V	
Disable Time	t_{dis}		—	150	nS	
Enable Time	t_{ena}		—	5	mS	
Start-up Time	t_{str}	@ Minimum operation voltage to be 0 sec.	—	10	mS	
1 Sigma Jitter	J_{Sigma}	Measured with Wavecrest DTS-2079 VISI 6.3.1	$1.8 \leq f_o < 40\text{MHz}$	—	8	pS
			$40 \leq f_o \leq 100\text{MHz}$	—	5	pS
			$100 < f_o \leq 125\text{MHz}$	—	4	pS
Peak to Peak Jitter	J_{PK-PK}		$1.8 \leq f_o < 40\text{MHz}$	—	80	pS
			$40 \leq f_o \leq 100\text{MHz}$	—	40	pS
			$100 < f_o \leq 125\text{MHz}$	—	30	pS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

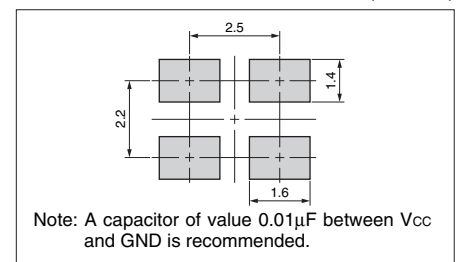
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)



Clock Oscillators Surface Mount Type KC5032C-C3 Series (K30-3C Series)



CMOS/ 3.3V/ 5.0×3.2mm



Ph Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=3.3V$
- $\pm 25 \times 10^{-6}$, $\pm 20 \times 10^{-6}$ available

Table 1

Freq. Tol. Code	Tolerance $\times 10^{-6}$	Operating Temperature Range (°C)	Note
0	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
W	± 20	-40 to +85	With only certain frequencies
F	± 100		
G	± 50		

How to Order

KC5032C 25.0000 C 3 0 E 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (5.0×3.2mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (3.3V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)

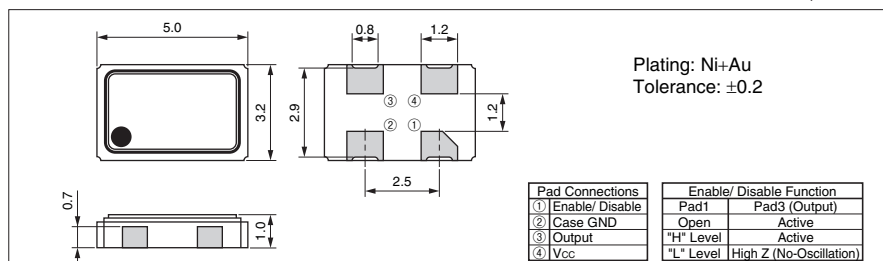
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	fo		1.8	170	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.: -40 to +85°C	-100	+100	$\times 10^{-6}$
			Op. Temp.: -10 to +70°C/ -40 to +85°C	-50	+50	
			Op. Temp.: -10 to +70°C	-30	+30	
			Op. Temp.: -10 to +70°C	-25	+25	
Storage Temperature Range	T _{stg}	Standard Specifications		-55	+125	°C
			Extend (Option)	-10	+70	
Operating Temperature Range	T _{use}	Standard Specifications	-40	+85	°C	
Max. Supply Voltage	—		-0.5	+7	V	
Supply Voltage	V _{CC}	Freq. Tol.Code: 0, S, F	2.97	3.63	V	
		Freq. Tol.Code: U, G	3.14	3.46		
		Freq. Tol.Code: W	3.20	3.40		
Current Consumption (Maximum Loaded)	I _{CC}	1.8≤fo≤20MHz	—	10	mA	
		20<fo≤40MHz	—	15		
		40<fo≤60MHz	—	30		
		60<fo≤100MHz	—	35		
		100<fo≤135MHz	—	45		
		135<fo≤170MHz	—	60		
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@50% V _{CC}	45	55	%	
Rise/ Fall Time (10% V _{CC} to 90% V _{CC} Maximum Loaded)	tr/ tf	1.8≤fo≤26MHz	—	10	nS	
		26<fo≤45MHz	—	8		
		45<fo≤100MHz	—	5		
		100<fo≤170MHz	—	2.5		
Low Level Output Voltage	V _{OL}	I _{OL} =8mA	—	10% V _{CC}	V	
High Level Output Voltage	V _{OH}	I _{OH} =-8mA	90% V _{CC}	—	V	
Output Load	CL	CMOS Output	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{CC}	V	
Low Level Input Voltage	V _{IL}		—	30% V _{CC}	V	
High Level Input Voltage	V _{IH}		70% V _{CC}	—	V	
Disable Time	t _{dis}		—	150	nS	
Enable Time	t _{ena}		—	5	mS	
Start-up Time	t _{str}	@ Minimum operation voltage to be 0 sec.	—	10	mS	
1 Sigma Jitter	J _{Sigma}	Measured with Wavecrest DTS-2079 VSI 6.3.1	1.8≤fo<40MHz	—	8	pS
			40≤fo≤100MHz	—	5	pS
			100<fo≤170MHz	—	4	pS
Peak to Peak Jitter	J _{PK-PK}	Measured with Wavecrest DTS-2079 VSI 6.3.1	1.8≤fo<40MHz	—	80	pS
			40≤fo≤100MHz	—	40	pS
			100<fo≤170MHz	—	30	pS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

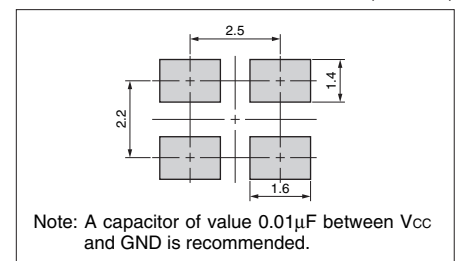
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)



Clock Oscillators Surface Mount Type KC5032C-C3 Series (K30-3C Series) Heavy Load Type



CMOS/ 3.3V/ 5.0×3.2mm



Ph Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output CL=50pF max. available
- Supply voltage V_{cc}=3.3V

Table 1

Freq. Tol. Code	Tol. × 10 ⁻⁶	Operating Temperature Range (°C)	Note
0	± 50	-10 to +70	Standard specifications
S	± 30		With only certain frequencies

How to Order

KC5032C 25.0000 C 3 0 E HL
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (5.0×3.2mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (3.3V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Heavy Load Type
HL: CL=50pF max.

Packaging (Tape & Reel 1000 pcs./ reel)

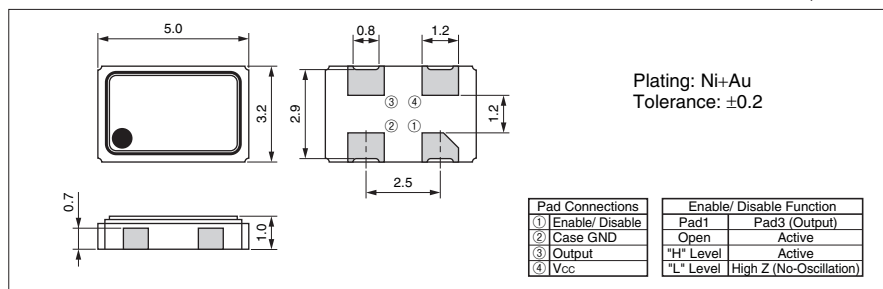
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	f _o		14	30	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	-50	+50	×10 ⁻⁶	
			-30	+30		
Storage Temperature Range	T _{stg}		-55	+125	°C	
Operating Temperature Range	T _{use}		-10	+70	°C	
Max. Supply Voltage	—		-0.5	+7	V	
Supply Voltage	V _{cc}	Freq. Tol.Code: 0, S	2.97	3.63	V	
Current Consumption (Maximum Loaded)	I _{cc}	CL=15pF	—	10	mA	
		CL=50pF	—	15		
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@50% V _{cc}	CL=15pF	45	55	%
			CL=50pF	40	60	
Rise/ Fall Time (10% V _{cc} to 90% V _{cc} Maximum Loaded)	tr/ tf	CL=15pF	—	5	nS	
		CL=50pF	—	8		
Low Level Output Voltage	V _{OL}	I _{OL} =8mA	—	10% V _{cc}	V	
High Level Output Voltage	V _{OH}	I _{OH} =-8mA	90% V _{cc}	—	V	
Output Load	CL	CMOS Output	—	50	pF	
Input Voltage Range	V _{IN}		0	V _{cc}	V	
Low Level Input Voltage	V _{IL}		—	30% V _{cc}	V	
High Level Input Voltage	V _{IH}		70% V _{cc}	—	V	
Disable Time	t _{dis}		—	150	nS	
Enable Time	t _{ena}		—	5	mS	
Start-up Time	t _{str}	@Minimum operation voltage to be 0 sec.	—	10	mS	
1 Sigma Jitter	J _{Sigma}	Measured with Wavecrest DTS-2079 VISI 6.3.1	—	8	pS	
Peak to Peak Jitter	J _{PK-PK}		—	80	pS	

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

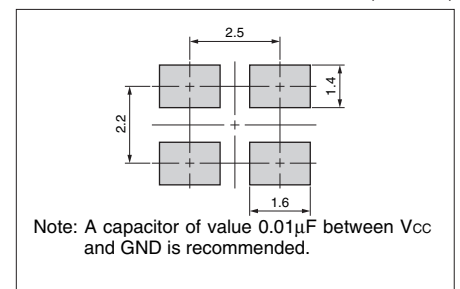
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)



Clock Oscillators Surface Mount Type KC5032C-C5 Series (K30-HC Series)



CMOS/ 5.0V/ 5.0×3.2mm



Ph Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=5.0V$
- $\pm 25 \times 10^{-6}$ available

Table 1

Freq. Tol. 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
F	± 100		
G	± 50		

How to Order

KC5032C 25.0000 C 5 0 D 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (5.0×3.2mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (5.0V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Disable)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)

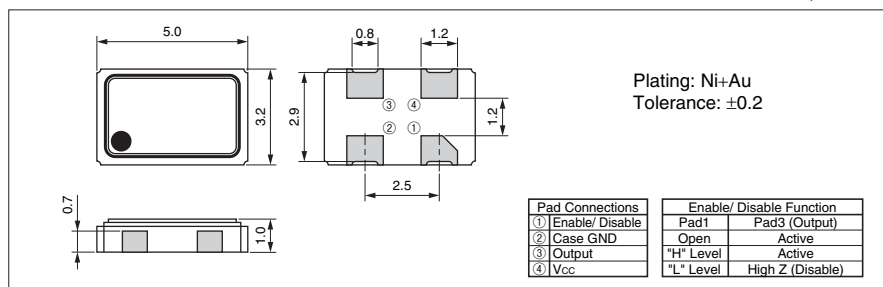
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	f_o		1.8	50	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.: -40 to +85°C	-100	+100	$\times 10^{-6}$
			Op. Temp.: -10 to +70°C/ -40 to +85°C	-50	+50	
			Op. Temp.: -10 to +70°C	-30	+30	
			Op. Temp.: -10 to +70°C	-25	+25	
Storage Temperature Range	T_{stg}		-55	+125	°C	
Operating Temperature Range	T_{use}	Standard Specifications	-10	+70	°C	
		Extend (Option)	-40	+85		
Max. Supply Voltage	—		-0.5	+7	V	
Supply Voltage	V_{CC}	Freq. Tol.Code: 0, S, F	4.5	5.5	V	
		Freq. Tol.Code: U, G	4.75	5.25		
Current Consumption (Maximum Loaded)	I_{CC}	$1.8 \leq f_o \leq 20MHz$	—	25	mA	
		$20 < f_o \leq 40MHz$	—	35		
		$40 < f_o \leq 50MHz$	—	50		
Disable Current	I_{dis}		—	30	mA	
Symmetry	SYM	@ 50% V_{CC}	45	55	%	
Rise/ Fall Time (10% V_{CC} to 90% V_{CC} Maximum Loaded)	t_r/ t_f	$1.8 \leq f_o \leq 26MHz$	—	10	nS	
		$26 < f_o \leq 50MHz$	—	8		
Low Level Output Voltage	V_{OL}	$I_{OL}=16mA$	—	10% V_{CC}	V	
High Level Output Voltage	V_{OH}	$I_{OH}=-16mA$	90% V_{CC}	—	V	
Output Load	CL	CMOS Output	—	50	pF	
Input Voltage Range	V_{IN}		0	V_{CC}	V	
Low Level Input Voltage	V_{IL}		—	0.8	V	
High Level Input Voltage	V_{IH}		2.2	—	V	
Disable Time	t_{dis}		—	100	nS	
Enable Time	t_{ena}		—	100	nS	
Start-up Time	t_{str}	@ Minimum operation voltage to be 0 sec.	—	10	mS	
1 Sigma Jitter	J_{Sigma}	Measured with Wavecrest DTS-2079 V/SI 6.3.1	$1.8 \leq f_o < 40MHz$	—	8	pS
			$40 \leq f_o \leq 50MHz$	—	5	pS
Peak to Peak Jitter	J_{PK-PK}		$1.8 \leq f_o < 40MHz$	—	80	pS
			$40 \leq f_o \leq 50MHz$	—	40	pS

Note: All electrical characteristics are defined at the maximum load and operating temperature range. Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

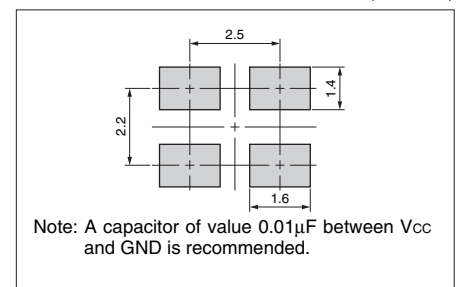
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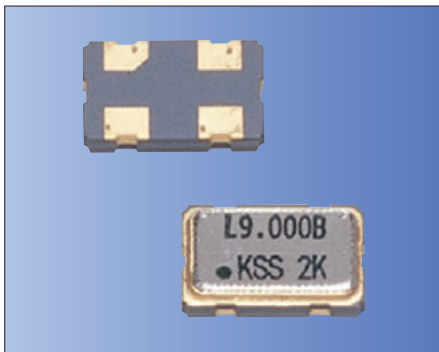
(Unit: mm)



Recommended Land Pattern

(Unit: mm)





Ph Free

RoHS Compliant

Features

- Compact and low profile (5×3.2×1.2mm)
- Surface mount type suitable for auto pick-and-place
- Reflow soldering compatible
- CMOS, TTL IC direct drive is possible
- With tri-state function
- Supply voltage V_{cc}=3.3/ 5.0V available

Frequency Tolerance (Overall)

Freq. Tol. Code	× 10 ⁻⁶	Operating Temperature Range (°C)	Note
1	± 100	-10 to +70 (standard)	1.8 to 50MHz
0	± 50		1.8 to 32MHz
S	± 30		1.8 to 32MHz

How to Order

KC5032D 25.0000 C 3 0 B 00
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage 5=5.0V, 3=3.3V
- ⑤ Frequency Tolerance (See table at left)
- ⑥ Symmetry/ Enable Function
A: 40/ 60%, Disable
B: 40/ 60%, Stand-by
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Symmetry/ Enable Function

Freq. (MHz)	Code	
	KC5032D-C5	KC5032D-C3
1.8 to 50	A	B

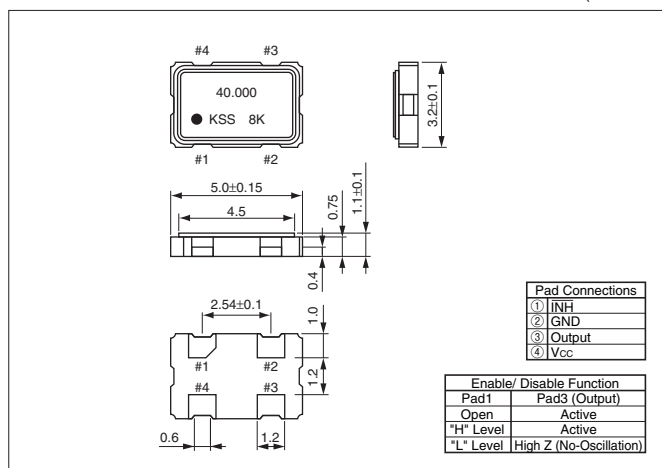
Specifications

Item	Symbol	Specifications		Units
		KC5032Dxx.xxxxC5xA00 (FXO-61F2)	KC5032Dxx.xxxxC3xB00 (FXO-61FL2)	
Output Frequency Range	f _o	1.8 to 50		MHz
Frequency Tolerance (Overall)	f _{tol}	±30 (to 32MHz)		×10 ⁻⁶
		±50 (to 32MHz)		
		±100 (to 50MHz)		
Storage Temperature Range	T _{stg}	-40 to +85		°C
Operating Temperature Range	T _{use}	-10 to +70		°C
Max. Supply Voltage	—	7 max.		V
Supply Voltage	V _{cc}	5±0.5	3.3±0.3	V
Current Consumption	I _{cc}	25 max.	18 max. (1.8 to 39.9MHz)	mA
			25 max. (40 to 50MHz)	
Stand-by Current	I _{std}	10 max.		μA
Symmetry	SYM	40 to 60@50%V _{cc}		%
Rise/ Fall Time	tr/ tf	10 max.		nS
Low Level Output Voltage	V _{OL}	10% V _{cc} max.		V
High Level Output Voltage	V _{OH}	90% V _{cc} min.		V
Output Load	CL	15 max.	20 max.	pF
Input Voltage Range	V _{IN}	0 to V _{cc}		V
Low Level Input Voltage	V _{IL}	0.8 max.		V
High Level Input Voltage	V _{IH}	2.2 min.		V
Disable Time	t _{dis}	150 max.		nS
Enable Time	t _{ena}	5 max.		mS
Start-up Time	t _{str}	10 max.		mS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
 Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

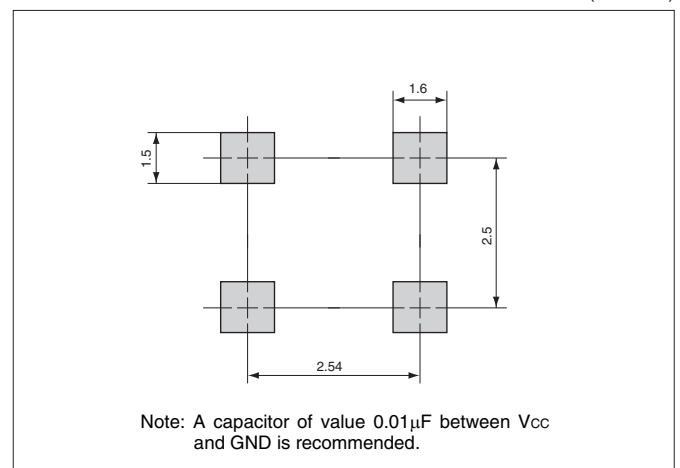
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)





Ph Free

RoHS Compliant

Features

- A built-in high-precision CMOS IC suitable for a wide range of temperature
- Ideal for base stations and DSC, DVC, car navigation and PHS systems etc.
- Lower noise and lower current for reduced power consumption
- Supply voltage V_{CC} =3.3/ 5.0V available

Frequency Tolerance (Overall)

Freq. Tol. Code	× 10 ⁻⁶	Operating Temperature Range (°C)	Note
P	± 100	-30 to +85 (Standard)	1.8 to 32MHz
Q	± 50		
R	± 30		

How to Order

KC5032D 15.3600 C 3 Q B 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage 5=5.0V, 3=3.3V
- ⑤ Frequency Tolerance
- ⑥ Symmetry/ Enable Function
A: 40/ 60%, Disable
B: 40/ 60%, Stand-by
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Symmetry/ Enable Function

Freq. (MHz)	Code	
	KC5032D-C5	KC5032D-C3
1.8 to 7.9	A	B
to 32	B	B

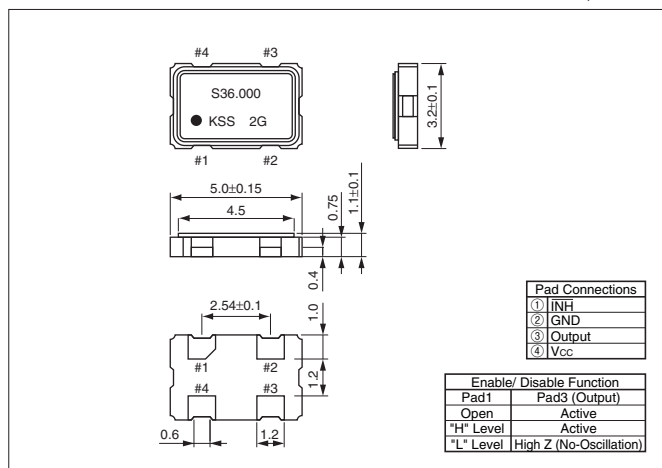
Specifications

Item	Symbol	Specifications		Units
		KC5032Dxx.xxxxC5xB00 (FXO-64F2)	KC5032Dxx.xxxxC3xB00 (FXO-64FL2)	
Output Frequency Range	f _o	1.8 to 32		MHz
Frequency Tolerance (Overall)	f _{tol}	±30		×10 ⁻⁶
		±50		
		±100		
Storage Temperature Range	T _{stg}	-40 to +85		°C
Operating Temperature Range	T _{use}	-30 to +85		°C
Max. Supply Voltage	—	7 max.		V
Supply Voltage	V _{CC}	5±5%	3.3±5%	V
Current Consumption	I _{CC}	12 max.	10 max.	mA
Stand-by Current	I _{std}	8 max.		µA
Symmetry	SYM	40 to 60@50%V _{CC}		%
Rise/ Fall Time	tr/ tf	12 max.	16 max.	nS
Low Level Output Voltage	V _{OL}	10% V _{CC} max.		V
High Level Output Voltage	V _{OH}	90% V _{CC} min.		V
Output Load	CL	15 max.		pF
Input Voltage Range	V _{IN}	0 to V _{CC}	0 to V _{CC}	V
Low Level Input Voltage	V _{IL}	0.8 max.	0.3 max.	V
High Level Input Voltage	V _{IH}	2.2 min.	2.2 min.	V
Disable Time	t _{dis}	150 max.		nS
Enable Time	t _{ena}	5 max.		mS
Start-up Time	t _{str}	10 max.		mS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

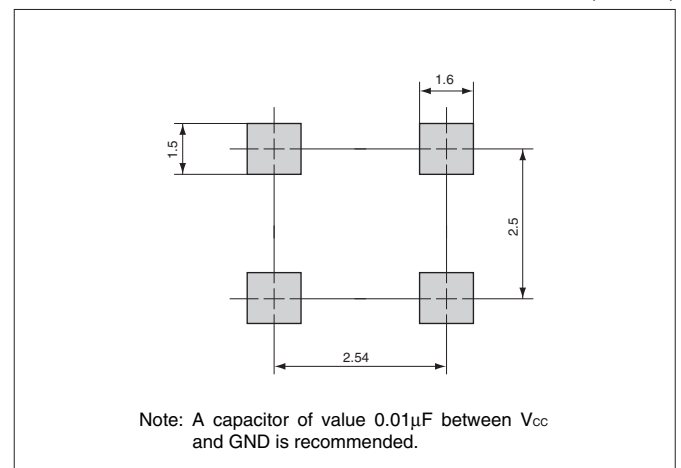
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)





Ph Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=1.8V$
Lower voltage available
- $\pm 25 \times 10^{-6}$, $\pm 20 \times 10^{-6}$ available

Table 1

Stability Code	Stability $\times 10^{-6}$	Operating Temperature Range (°C)	Note
O	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
W	± 20		
F	± 100		
G	± 50	-40 to +85	With only certain frequencies

How to Order

KC7050A 25.0000 C 1 0 E 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (7.0×5.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (1.8V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)

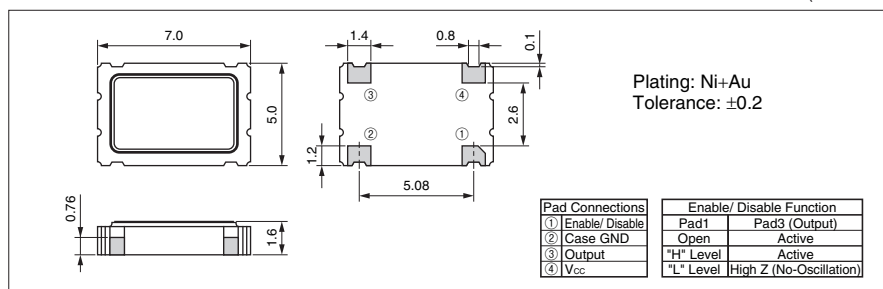
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	f_o		1.8	39.99	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.: -40 to +85°C	-100	+100	$\times 10^{-6}$
			Op. Temp.: -10 to +70°C/ -40 to +85°C	-50	+50	
			Op. Temp.: -10 to +70°C	-30	+30	
			Op. Temp.: -10 to +70°C	-25	+25	
			Op. Temp.: -10 to +70°C	-20	+20	
Storage Temperature Range	T_{stg}		-55	+125	°C	
Operating Temperature Range	T_{use}	Standard Specifications	-10	+70	°C	
		Extend (Option)	-40	+85		
Max. Supply Voltage	—		-0.5	+3.6	V	
Supply Voltage	V_{CC}	Freq. Tol.Code: O, S, F	1.71	1.89	V	
		Freq. Tol.Code: U, G, W	1.75	1.85		
Current Consumption (Maximum Loaded)	I_{CC}	1.8 < f_o < 25MHz	—	3	mA	
Stand-by Current	I_{std}	25 < f_o < 39.99MHz	—	4		
Symmetry	SYM	@50% V_{CC}	45	55	%	
Rise/ Fall Time (10% V_{CC} to 90% V_{CC} Maximum Loaded)	tr/ tf		—	9	nS	
Low Level Output Voltage	V_{OL}	$I_{OL}=-2.8mA$	—	10% V_{CC}	V	
High Level Output Voltage	V_{OH}	$I_{OH}=-2.8mA$	90% V_{CC}	—	V	
Output Load	CL	CMOS Output	—	15	pF	
Input Voltage Range	V_{IN}		0	V_{CC}	V	
Low Level Input Voltage	V_{IL}		—	30% V_{CC}	V	
High Level Input Voltage	V_{IH}		70% V_{CC}	—	V	
Disable Time	t_{dis}		—	150	nS	
Enable Time	t_{ena}		—	5	mS	
Start-up Time	t_{str}	@Minimum operation voltage to be 0 sec.	—	10	mS	
1 Sigma Jitter	JSigma	Measured with Wavecrest DTS-2079 VISI 6.3.1	—	8	pS	
Peak to Peak Jitter	JPK-PK		—	80	pS	

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

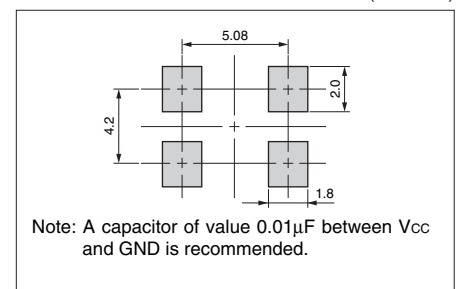
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)



Clock Oscillators Surface Mount Type KC7050A-C2 Series (K53-2C Series)



CMOS/ 2.5V/ 7.0×5.0mm



Ph Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=2.5V$
Lower voltage available
- $\pm 25 \times 10^{-6}$, $\pm 20 \times 10^{-6}$ available

Table 1

Stability Code	Stability $\times 10^{-6}$	Operating Temperature Range (°C)	Note
O	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
W	± 20	-40 to +85	With only certain frequencies
F	± 100		
G	± 50		

How to Order

KC7050A 25.0000 C 2 0 E 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (7.0×5.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (2.5V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)

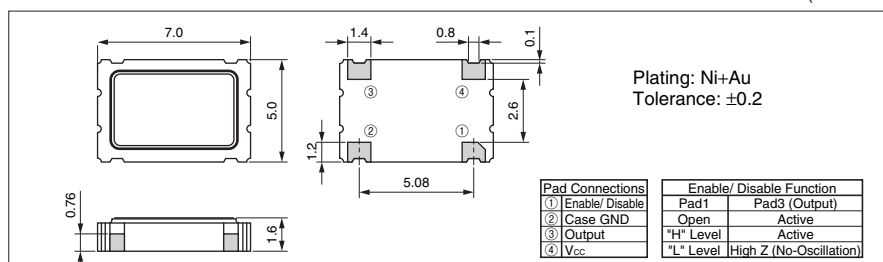
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	f_o		1.8	125	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.: -40 to +85°C	-100	+100	$\times 10^{-6}$
			Op. Temp.: -10 to +70°C/ -40 to +85°C	-50	+50	
			Op. Temp.: -10 to +70°C	-30	+30	
			Op. Temp.: -10 to +70°C	-25	+25	
Storage Temperature Range	T_{stg}		-20	+20	°C	
			-55	+125		
Operating Temperature Range	T_{use}	Standard Specifications	-10	+70	°C	
		Extend (Option)	-40	+85		
Max. Supply Voltage	—		-0.5	+7	V	
Supply Voltage	V_{CC}	Freq. Tol.Code: 0, S, F	2.25	2.75	V	
		Freq. Tol.Code: U, G	2.38	2.62		
		Freq. Tol.Code: W	2.43	2.57		
Current Consumption (Maximum Loaded)	I_{CC}	1.8≤ f_o ≤20MHz	—	5	mA	
		20< f_o ≤40MHz	—	10		
		40< f_o ≤60MHz	—	15		
		60< f_o ≤85MHz	—	20		
		85< f_o ≤100MHz	—	22		
		100< f_o ≤125MHz	—	27		
Stand-by Current	I_{std}		—	10	μA	
Symmetry	SYM	@50% V_{CC}	45	55	%	
Rise/ Fall Time (10% V_{CC} to 90% V_{CC} Maximum Loaded)	t_r/ t_f	1.8≤ f_o ≤40MHz	—	7	nS	
		40< f_o ≤85MHz	—	4		
		85< f_o ≤125MHz	—	3		
Low Level Output Voltage	V_{OL}	$I_{OL}=-4mA/ 8mA$ (40MHz< f_o)	—	10% V_{CC}	V	
High Level Output Voltage	V_{OH}	$I_{OH}=-4mA/ -8mA$ (40MHz< f_o)	90% V_{CC}	—	V	
Output Load	CL	CMOS Output	—	15	pF	
Input Voltage Range	V_{IN}		0	V_{CC}	V	
Low Level Input Voltage	V_{IL}		—	30% V_{CC}	V	
High Level Input Voltage	V_{IH}		70% V_{CC}	—	V	
Disable Time	t_{dis}		—	150	nS	
Enable Time	t_{ena}		—	5	mS	
Start-up Time	t_{str}	@ Minimum operation voltage to be 0 sec.	—	10	mS	
1 Sigma Jitter	J_{Sigma}	Measured with Wavecrest DTS-2079 V/SI 6.3.1	1.8≤ f_o <40MHz	—	8	pS
			40≤ f_o ≤100MHz	—	5	pS
			100< f_o ≤125MHz	—	4	pS
Peak to Peak Jitter	J_{PK-PK}		1.8≤ f_o <40MHz	—	80	pS
			40≤ f_o ≤100MHz	—	40	pS
			100< f_o ≤125MHz	—	30	pS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

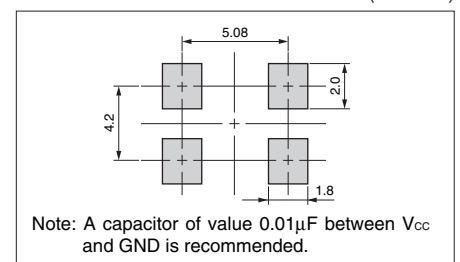
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)



Clock Oscillators Surface Mount Type KC7050A-C3 Series (K53-3C Series)



CMOS/ 3.3V/ 7.0×5.0mm



Pb Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=3.3V$
- $\pm 25 \times 10^{-6}$, $\pm 20 \times 10^{-6}$ available

Table 1

Stability Code	Stability $\times 10^{-6}$	Operating Temperature Range (°C)	Note
O	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
W	± 20	-40 to +85	With only certain frequencies
F	± 100		
G	± 50		

How to Order

KC7050A 25.0000 C 3 0 E 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (7.0×5.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (3.3V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)

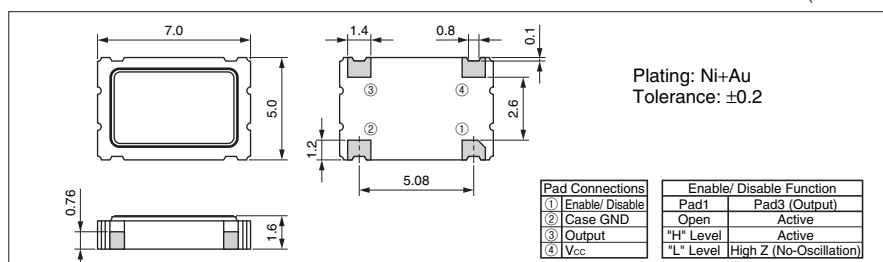
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	f_o		1.8	170	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.: -40 to +85°C	-100	+100	$\times 10^{-6}$
			Op. Temp.: -10 to +70°C/ -40 to +85°C	-50	+50	
			Op. Temp.: -10 to +70°C	-30	+30	
			Op. Temp.: -10 to +70°C	-25	+25	
Storage Temperature Range	T_{stg}		-55	+125	°C	
Operating Temperature Range	T_{use}	Standard Specifications	-10	+70	°C	
		Extend (Option)	-40	+85		
Max. Supply Voltage	—		-0.5	+7	V	
Supply Voltage	V_{CC}	Freq. Tol.Code: O, S, F	2.97	3.63	V	
		Freq. Tol.Code: U, G	3.14	3.46		
		Freq. Tol.Code: W	3.20	3.40		
Current Consumption (Maximum Loaded)	I_{CC}	$1.8 \leq f_o \leq 20\text{MHz}$	—	10	mA	
		$20 < f_o \leq 40\text{MHz}$	—	15		
		$40 < f_o \leq 60\text{MHz}$	—	30		
		$60 < f_o \leq 100\text{MHz}$	—	35		
		$100 < f_o \leq 135\text{MHz}$	—	45		
Stand-by Current	I_{std}		—	10	μA	
Symmetry (10% V_{CC} to 90% V_{CC} Maximum Loaded)	SYM	@ 50% V_{CC}	45	55	%	
		$1.8 \leq f_o \leq 26\text{MHz}$	—	10		
		$26 < f_o \leq 45\text{MHz}$	—	8		
		$45 < f_o \leq 100\text{MHz}$	—	5		
Low Level Output Voltage	V_{OL}	$I_{OL} = -8\text{mA}$	—	10% V_{CC}	V	
High Level Output Voltage	V_{OH}	$I_{OH} = -8\text{mA}$	90% V_{CC}	—	V	
Output Load	CL	CMOS Output	—	15	pF	
Input Voltage Range	V_{IN}		0	V_{CC}	V	
Low Level Input Voltage	V_{IL}		—	30% V_{CC}	V	
High Level Input Voltage	V_{IH}		70% V_{CC}	—	V	
Disable Time	t_{dis}		—	150	nS	
Enable Time	t_{ena}		—	5	mS	
Start-up Time	t_{str}	@ Minimum operation voltage to be 0 sec.	—	10	mS	
1 Sigma Jitter	J_{Sigma}	Measured with Wavecrest DTS-2079 V/SI 6.3.1	$1.8 \leq f_o < 40\text{MHz}$	—	8	pS
			$40 \leq f_o \leq 100\text{MHz}$	—	5	pS
			$100 < f_o \leq 170\text{MHz}$	—	4	pS
Peak to Peak Jitter	JPK-PK		$1.8 \leq f_o < 40\text{MHz}$	—	80	pS
			$40 \leq f_o \leq 100\text{MHz}$	—	40	pS
			$100 < f_o \leq 170\text{MHz}$	—	30	pS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

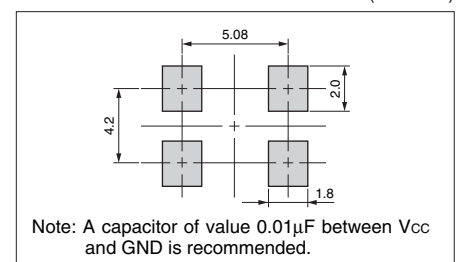
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)



Clock Oscillators Surface Mount Type KC7050A-C5 Series (K53-HC Series)



CMOS/ 5.0V/ 7.0×5.0mm



Ph Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=5.0V$

Table 1

Stability Code	Stability $\times 10^{-6}$	Operating Temperature Range (°C)	Note
0	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
F	± 100	-40 to +85	With only certain frequencies
G	± 50		

How to Order

KC7050A 25.0000 C 5 0 D 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (7.0×5.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (5.0V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Disable)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)

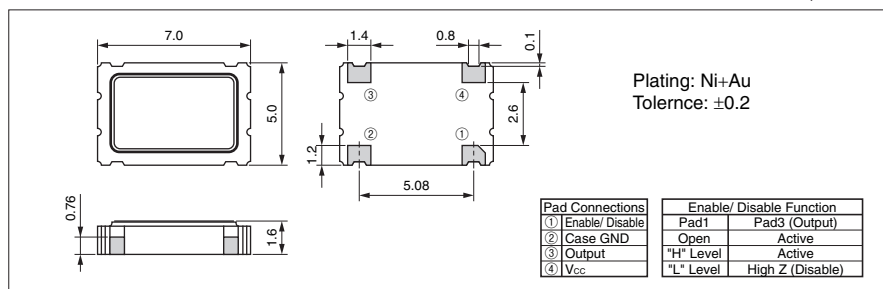
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	f_o		1.8	50	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.: -40 to +85°C	-100	+100	$\times 10^{-6}$
			Op. Temp.: -10 to +70°C/ -40 to +85°C	-50	+50	
			Op. Temp.: -10 to +70°C	-30	+30	
			Op. Temp.: -10 to +70°C	-25	+25	
Storage Temperature Range	T_{stg}		-55	+125	°C	
Operating Temperature Range	T_{use}	Standard Specifications	-10	+70	°C	
		Extend (Option)	-40	+85		
Max. Supply Voltage	—		-0.5	+7	V	
Supply Voltage	V_{CC}	Freq. Tol.Code: 0, S, F	4.5	5.5	V	
		Freq. Tol.Code: U, G	4.75	5.25		
Current Consumption (Maximum Loaded)	I_{CC}	$1.8 \leq f_o \leq 20MHz$	—	25	mA	
		$20 < f_o \leq 40MHz$	—	35		
		$40 < f_o \leq 50MHz$	—	50		
Disable Current	I_{dis}		—	30	mA	
Symmetry	SYM	@50% V_{CC}	45	55	%	
Rise/ Fall Time (10% V_{CC} to 90% V_{CC} Maximum Loaded)	t_r/ t_f	$1.8 \leq f_o \leq 26MHz$	—	10	nS	
		$26 < f_o \leq 50MHz$	—	8		
Low Level Output Voltage	V_{OL}	$I_{OL}=16mA$	—	10% V_{CC}	V	
High Level Output Voltage	V_{OH}	$I_{OH}=-16mA$	90% V_{CC}	—	V	
Output Load	CL	CMOS Output	—	50	pF	
Input Voltage Range	V_{IN}		0	V_{CC}	V	
Low Level Input Voltage	V_{IL}		—	0.8	V	
High Level Input Voltage	V_{IH}		2.2	—	V	
Disable Time	t_{dis}		—	100	nS	
Enable Time	t_{ena}		—	100	nS	
Start-up Time	t_{str}	@ Minimum operation voltage to be 0 sec.	—	10	mS	
1 Sigma Jitter	J_{Sigma}	Measured with Wavecrest DTS-2079 V/ISI 6.3.1	$1.8 \leq f_o < 40MHz$	—	8	pS
			$40 \leq f_o \leq 50MHz$	—	5	pS
Peak to Peak Jitter	J_{PK-PK}		$1.8 \leq f_o < 40MHz$	—	80	pS
			$40 \leq f_o \leq 50MHz$	—	40	pS

Note: All electrical characteristics are defined at the maximum load and operating temperature range. Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

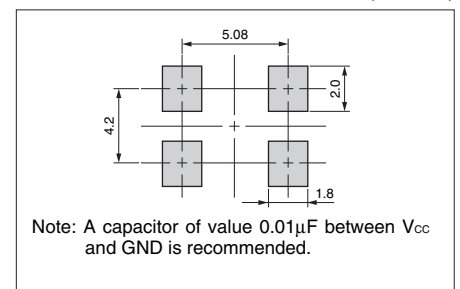
Dimensions

(Unit: mm)

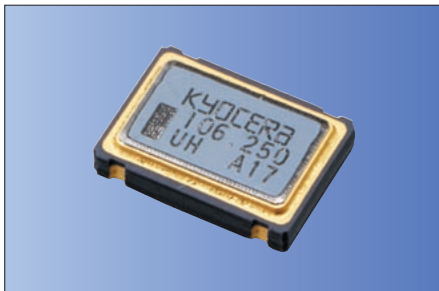


Recommended Land Pattern

(Unit: mm)



KC7050H-C3 Series (K50H-3C Series)



Pb Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=3.3V$
- With built-in by-pass capacitor

Table 1

Freq. Tol. Code	$\times 10^{-6}$	Operating Temperature Range (°C)	Note
0	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
F	± 100	-40 to +85	With only certain frequencies
G	± 50		

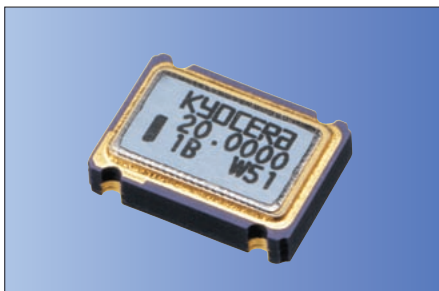
How to Order

KC7050H 125.0000 C 3 0 E 00
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (7.0×5.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (3.3V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)

KC7050C-C3 Series (K50-3C Series) KC7050C-C5 Series (K50-HC Series)



Pb Free

RoHS Compliant

KC7050C-C3 Series

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=3.3V$
- $\pm 25 \times 10^{-6}$ available

Table 1

Freq. Tol. Code	$\times 10^{-6}$	Operating Temperature Range (°C)	Note
0	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
F	± 100	-40 to +85	With only certain frequencies
G	± 50		

How to Order

KC7050C 25.0000 C 3 0 E 00
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (7.0×5.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (3.3V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (E: 45/ 55%, Stand-by) (D: 45/ 55%, Disable)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)



Pb Free

RoHS Compliant

KC7050C-C5 Series

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=5.0V$
- $\pm 25 \times 10^{-6}$ available

Table 1

Freq. Tol. Code	$\times 10^{-6}$	Operating Temperature Range (°C)	Note
0	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
F	± 100	-40 to +85	With only certain frequencies
G	± 50		

How to Order

KC7050C 25.0000 C 5 0 D 00
 ① ② ③ ④ ⑤ ⑥ ⑦

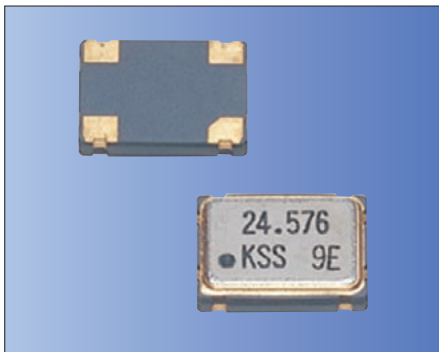
- ① Type (7.0×5.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (5.0V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (45/ 55%, Disable)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)

Specifications

Type	Output Frequency Range (MHz)	Supply Voltage (Vcc)	Frequency Tolerance (ppm)	Current Consumption (mA)	Output Load (pF)
KC7050H-C3	80 to 170	3.3±10%	± 25 ± 30	max. 60	15
KC7050C-C3	1.5 to 80				
KC7050C-C5	1.5 to 80	3.3± 5%	± 50 ±100	max. 50	

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



Ph Free

RoHS Compliant

Features

- Surface mount type suitable for auto pick-and-place
- Reflow soldering compatible
- CMOS, TTL IC direct drive is possible
- With tri-state function
- Broad frequency range from 1.8MHz to 50MHz
- Supply voltage V_{CC} =3.3/ 5.0V available

Frequency Tolerance (Overall)

Freq. Tol. Code	$\times 10^{-6}$	Operating Temperature Range (°C)	Note
1	± 100	-10 to +70 (Standard)	1.8 to 50MHz
0	± 50		1.8 to 33MHz
S	± 30		

How to Order

KC7050B 25.0000 C 3 0 B 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage 5=5.0V, 3=3.3V
- ⑤ Frequency Tolerance (See Table at Left)
- ⑥ Symmetry/ Enable Function
A: 40/ 60%, Disable
B: 40/ 60%, Stand-by
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Symmetry/ Enable Function

Freq. (MHz)	Code	
	KC7050B-C5	KC7050B-C3
1.8 to 39.9	A	A
to 50	A	B

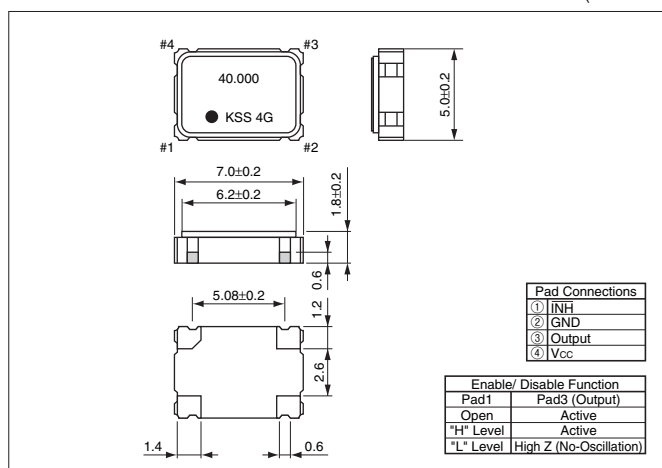
Specifications

Item	Symbol	Specifications		Units
		KC7050Bxx.xxxxC5xA00 (FXO-31FH)	KC7050Bxx.xxxxC3xB00 (FXO-31FL)	
Output Frequency Range	f_o	1.8 to 50		MHz
Frequency Tolerance (Overall)	f_{tol}	± 30 (to 33MHz)		$\times 10^{-6}$
		± 50 (to 33MHz)		
		± 100 (to 50MHz)		
Storage Temperature Range	T_{stg}	-40 to +85		°C
Operating Temperature Range	T_{use}	-10 to +70		°C
Max. Supply Voltage	—	7 max.		V
Supply Voltage	V_{CC}	5 \pm 0.5	3.3 \pm 0.3	V
Current Consumption	I_{CC}	25 max. (1.8 to 15MHz)	18 max. (1.8 to 39.9MHz)	mA
		30 max. (15.1 to 32MHz)		
		45 max. (32.1 to 50MHz)	25 max. (40 to 50MHz)	
Stand-by Current	I_{std}	10 max.		μ A
Symmetry	SYM	40 to 60@50% V_{CC}		%
Rise/ Fall Time	t_r/ t_f	10 max.		nS
Low Level Output Voltage	V_{OL}	10% V_{CC} max.		V
High Level Output Voltage	V_{OH}	90% V_{CC} min.		V
Output Load	CL	50 max.	20 max.	pF
Input Voltage Range	V_{IN}	0 to V_{CC}		V
Low Level Input Voltage	V_{IL}	0.8 max.		V
High Level Input Voltage	V_{IH}	2.2 min.		V
Disable Time	t_{dis}	150 max.		nS
Enable Time	t_{ena}	5 max.		mS
Start-up Time	t_{str}	10 max.		mS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

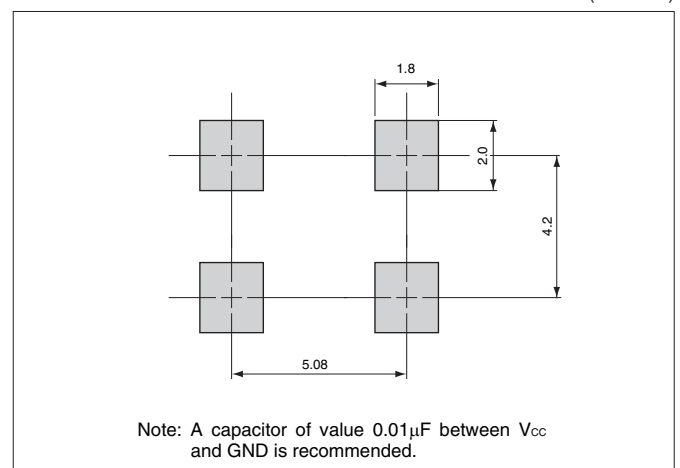
Dimensions

(Unit: mm)



Recommended Land Pattern

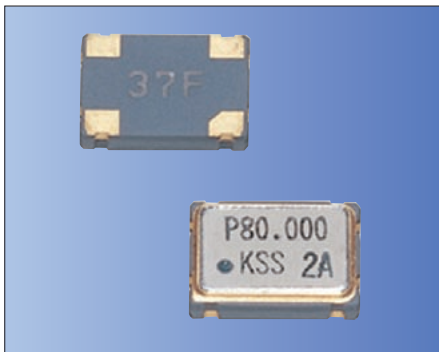
(Unit: mm)



Clock Oscillators Surface Mount Type KC7050B Series (FXO-37FN Series)



CMOS/ 3.3V/ 5.5V/ 7.0x5.0mm



Ph Free

RoHS Compliant

Features

- Surface mount type suitable for auto pick-and-place
- Reflow compatible
- CMOS, TTL IC direct drive is possible
- With tri-state function
- Broad frequency range from 80MHz to 125MHz, (PLL circuit is built in)
- Supply voltage V_{CC} =3.3/ 5.0V available

Frequency Tolerance (Overall)

Freq. Tol. Code	$\times 10^{-6}$	Operating Temperature Range (°C)	Note
1	± 100	-10 to +70	80 to 125MHz
0	± 50	(Standard)	

How to Order

KC7050B 80.0000 C 3 0 B 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage 5=5.0V, 3=3.3V
- ⑤ Frequency Tolerance (See Table at Left)
- ⑥ Symmetry/ Enable Function (40/ 60%, INH)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

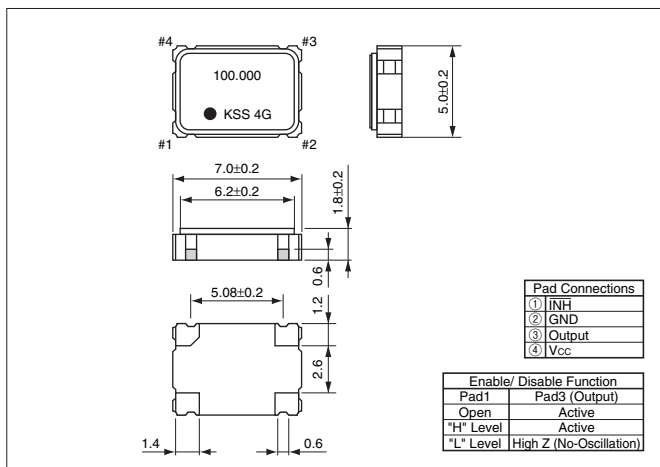
Specifications

Item	Symbol	Conditions	Specifications		Units
			Min.	Max.	
Output Frequency Range	f_o		80	125	MHz
Frequency Tolerance (Overall)	f_{tol}		-50 -100	+50 +100	$\times 10^{-6}$
Storage Temperature Range	T_{stg}		-20	+80	°C
Operating Temperature Range	T_{use}		-10	+70	°C
Max. Supply Voltage	—		—	6	V
Supply Voltage	V_{CC}	3.3V Typ. 5.0V Typ.	3.135 4.75	3.465 5.25	V
Current Consumption	I_{CC}		—	50	mA
Stand-by Current	I_{std}		—	60	μ A
Symmetry	SYM	@50% V_{CC}	40	60	%
Rise/ Fall Time	t_r / t_f		—	7	nS
Low Level Output Voltage	V_{OL}		—	10% V_{CC}	V
High Level Output Voltage	V_{OH}		90% V_{CC}	—	V
Output Load	CL		—	15	pF
Input Voltage Range	V_{IN}		V_{SS}	V_{CC}	V
Low Level Input Voltage	V_{IL}		—	30% V_{CC}	V
High Level Input Voltage	V_{IH}		70% V_{CC}	—	V
Disable Time	t_{dis}		—	1	mS
Enable Time	t_{ena}		—	3	mS
Start-up Time	t_{str}		—	10	mS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

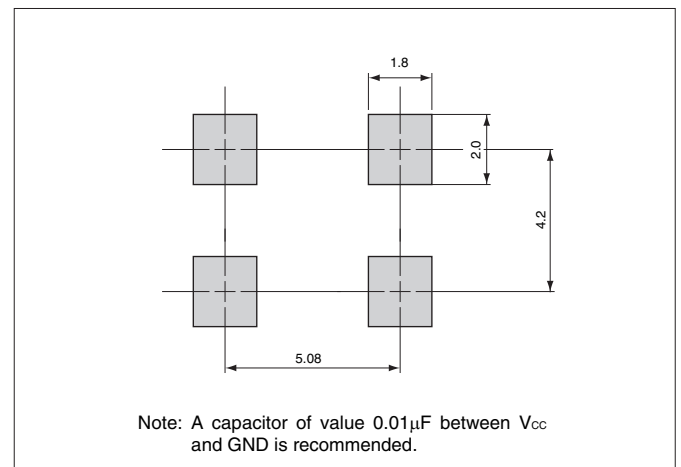
Dimensions

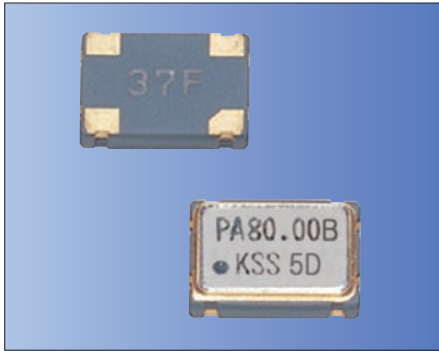
(Unit: mm)



Recommended Land Pattern

(Unit: mm)





Pb Free

RoHS Compliant

“Designated for MFP3N, Communication LSI for CC-Link Remote Device”

Features

- Surface mount type suitable for auto pick-and-place
- Reflow compatible
- CMOS, TTL IC direct drive is possible
- With tri-state function
- Broad frequency range 80MHz (PLL circuit is built in)
- Supply voltage $V_{CC}=5.0V$ available

Frequency Tolerance (Overall)

Freq. Tol. Code	$\times 10^{-6}$	Operating Temperature Range (°C)	Note
Z	± 50	-10 to +85	80MHz

How to Order

KC7050B 80.0000 C 5 Z B Q1
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage 5=5.0V
- ⑤ Frequency Tolerance (See Table at Left)
- ⑥ Symmetry/ Enable Function (40/ 60%, INH)
- ⑦ Customer Special Model Suffix (STD Specification is “Q1”)

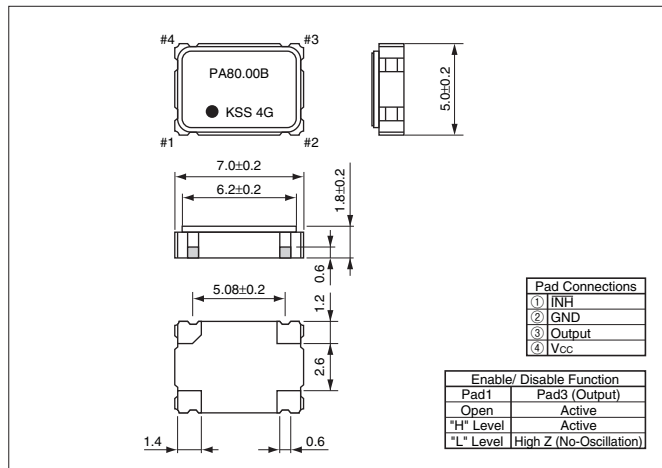
Specifications

Item	Symbol	Conditions	Specifications		Units
			Min.	Max.	
Output Frequency Range	f_o		80		MHz
Frequency Tolerance (Overall)	f_{tol}		-50	+50	$\times 10^{-6}$
Storage Temperature Range	T_{stg}		-20	+85	°C
Operating Temperature Range	T_{use}		-10	+85	°C
Max. Supply Voltage	—		—	6	V
Supply Voltage	V_{CC}	5.0V Typ.	4.75	5.25	V
Current Consumption	I_{CC}		—	50	mA
Stand-by Current	I_{std}		—	20	μA
Symmetry	SYM	@50% V_{CC}	40	60	%
Rise/ Fall Time	t_r/ t_f		—	5	nS
Low Level Output Voltage	V_{OL}		—	10% V_{CC}	V
High Level Output Voltage	V_{OH}	@5.0 V	90% V_{CC}	—	V
Output Load	CL		—	15	pF
Input Voltage Range	V_{IN}		V_{SS}	V_{CC}	V
Low Level Input Voltage	V_{IL}		—	0.8	V
High Level Input Voltage	V_{IH}		2.2	—	V
Disable Time	t_{dis}		—	100	nS
Enable Time	t_{ena}		—	100	μS
Start-up Time	t_{str}		—	10	mS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
 Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

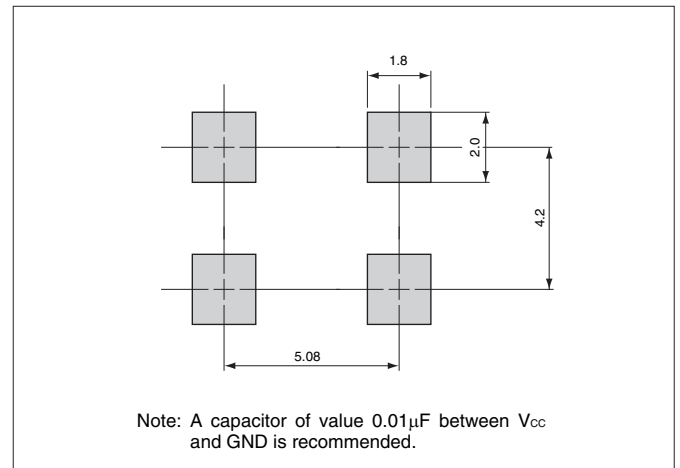
Dimensions

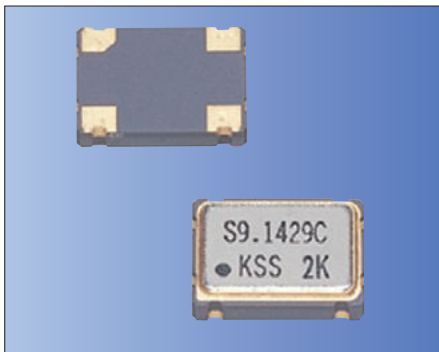
(Unit: mm)



Recommended Land Pattern

(Unit: mm)





Ph Free

RoHS Compliant

Features

- This crystal oscillator has a built-in high-precision CMOS IC suitable for a wide range of temperature
- Lower noise and lower current for reduced power consumption
- Supply voltage $V_{CC}=3.3/ 5.0V$ available

Frequency Tolerance (Overall)

Freq. Tol. Code	× 10 ⁻⁶	Operating Temperature Range (°C)	Note
P	± 100	-30 to +85 (Standard)	1.8 to 32MHz
Q	± 50		
R	± 30		

How to Order

KC7050B 25.0000 C 3 Q B 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage 5=5.0V, 3=3.3V
- ⑤ Frequency Tolerance (See Table at Left)
- ⑥ Symmetry/ Enable Function
A: 40/ 60%, Disable
B: 40/ 60%, Stand-by
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Symmetry/ Enable Function

Freq. (MHz)	Code	
	KC7050B-C5	KC7050B-C3
1.8 to 7.9	A	A
to 32	B	B

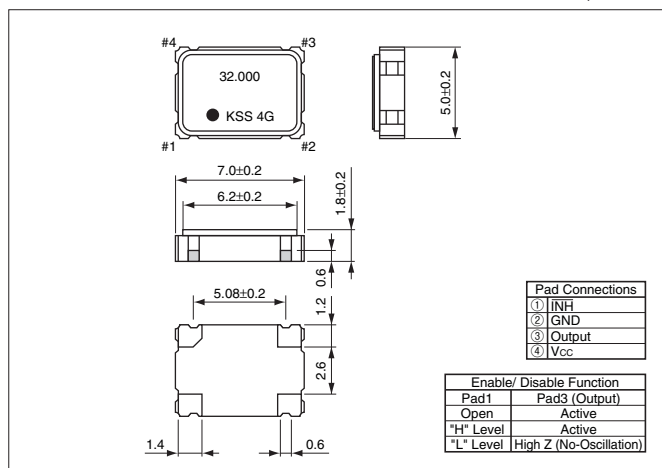
Specifications

Item	Symbol	Specifications		Units
		KC7050Bxx.xxxxC5xB00 (FXO-34F)	KC7050Bxx.xxxxC3xB00 (FXO-34FL)	
Output Frequency Range	f _o	1.8 to 32		MHz
Frequency Tolerance (Overall)	f _{tol}	±30		×10 ⁻⁶
		±50		
		±100		
Storage Temperature Range	T _{stg}	-40 to +85		°C
Operating Temperature Range	T _{use}	-30 to +85		°C
Max. Supply Voltage	—	7 max.		V
Supply Voltage	V _{CC}	5±5%	3.3±5%	V
Current Consumption	I _{CC}	12 max.	10 max.	mA
Stand-by Current	I _{std}	8 max.		µA
Symmetry	SYM	40 to 60@50%V _{CC}		%
Rise/ Fall Time	tr/ tf	12 max.	16 max.	nS
Low Level Output Voltage	V _{OL}	10% V _{CC} max.		V
High Level Output Voltage	V _{OH}	90% V _{CC} min.		V
Output Load	CL	15 max.		pF
Input Voltage Range	V _{IN}	0 to V _{CC}		V
Low Level Input Voltage	V _{IL}	0.8 max.	0.3 max.	V
High Level Input Voltage	V _{IH}	2.2 min.	2.2 min.	V
Disable Time	t _{dis}	150 max.		nS
Enable Time	t _{ena}	5 max.		mS
Start-up Time	t _{str}	10 max.		mS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

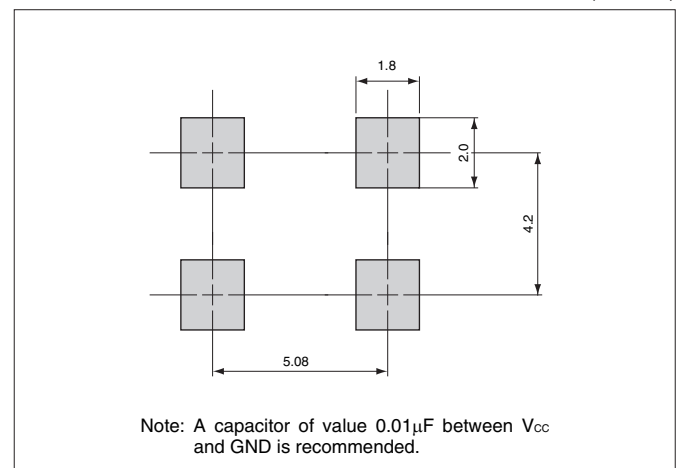
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)



SAW Clock Oscillators Surface Mount Type KC7050S-C1 Series (FSO-2B Series)



CMOS/ 1.8V/ 7.0×5.0mm



Ph Free

RoHS Compliant

Features

- Low voltage 1.8V
- Low jitter
- LV-CMOS output
- Operation at fundamental high frequency

Table 1

Freq. Tol. Code	Freq. Tol. $\times 10^{-6}$	Operating Temperature Range (°C)	Note
1	± 100	0 to +70	Standard specifications

How to Order

KC7050S 155.520 C 1 1 B 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (7.0×5.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (1.8V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (40/ 60%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)

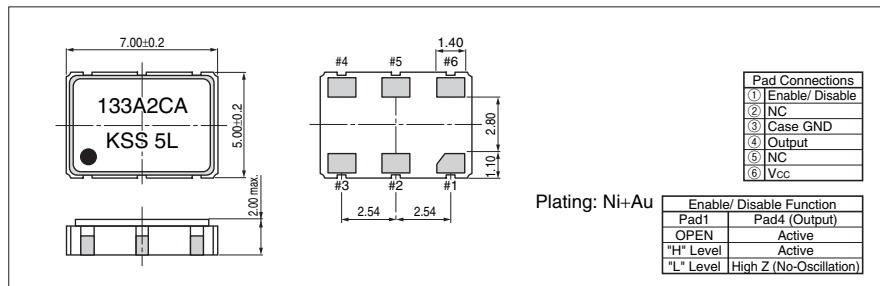
Specifications

Item	Symbol	Conditions	Min.	Max.	Units
Output Frequency Range	f_o		100	170	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.: 0 to +70°C	-100	+100	$\times 10^{-6}$
Storage Temperature Range	T_{stg}		-55	+125	°C
Operating Temperature Range	T_{use}	Standard Specifications	0	+70	°C
Max. Supply Voltage	—		-0.5	+5	V
Supply Voltage	V_{CC}	1.8V	1.62	1.98	V
Current Consumption (Standard Loaded)	I_{CC}		—	50	mA
Symmetry	SYM		40	60	%
Rise/ Fall Time (10% V_{CC} to 90% V_{CC} Standard Loaded)	t_r/ t_f		—	2	nS
Low Level Output Voltage	V_{OL}		—	10% V_{CC}	V
High Level Output Voltage	V_{OH}		90% V_{CC}	—	V
Output Load (CMOS)	CL		—	15	pF
Input Voltage Range	V_{IN}		0	V_{CC}	V
Low Level Input Voltage	V_{IL}		—	30% V_{CC}	V
High Level Input Voltage	V_{IH}		70% V_{CC}	—	V
Disable Time	t_{dis}		—	200	nS
Enable Time	t_{ena}		—	2	mS
Start-up Time	t_{str}	@ Minimum operation voltage to be 0 sec.	—	10	mS
Deterministic Jitter (DJ)	DJ	Measured with Wavcrest DTS-2079 VISI 6.3.1	0.2 typ.		pS
1 Sigma Jitter	J Σ		3 typ.		pS
Peak to Peak Jitter	JPK-PK		20 typ.		pS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

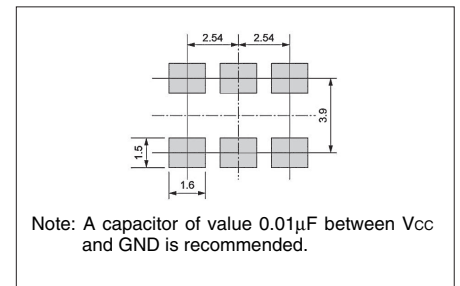
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)





Ph Free

RoHS Compliant

Features

- Low voltage 2.5V
- Low jitter
- LV-CMOS output
- Operation at fundamental high frequency

Table 1

Freq. Tol. Code	Freq. Tol. $\times 10^{-6}$	Operating Temperature Range (°C)	Note
1	± 100	0 to +70	Standard specifications

How to Order

KC7050S 155.520 C 2 1 B 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (7.0×5.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (2.5V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (40/ 60%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)

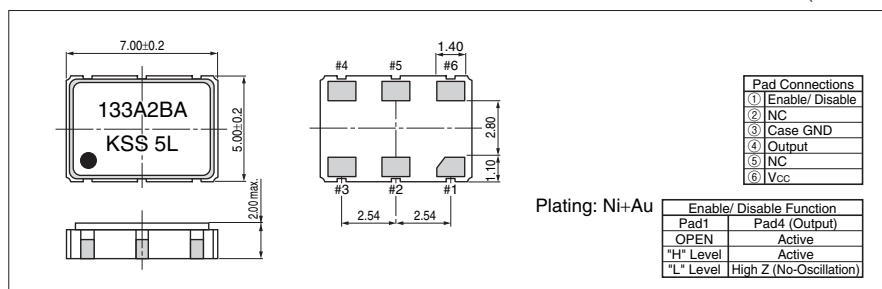
Specifications

Item	Symbol	Conditions	Min.	Max.	Units
Output Frequency Range	fo		100	200	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.: 0 to +70°C	-100	+100	$\times 10^{-6}$
Storage Temperature Range	T _{stg}		-55	+125	°C
Operating Temperature Range	T _{use}	Standard Specifications	0	+70	°C
Max. Supply Voltage	—		-0.5	+5	V
Supply Voltage	V _{cc}	2.5V	2.38	2.62	V
Current Consumption (Standard Loaded)	I _{cc}		—	50	mA
Symmetry	SYM		40	60	%
Rise/ Fall Time (10% V _{cc} to 90% V _{cc} Standard Loaded)	tr/ tf		—	2	nS
Low Level Output Voltage	V _{OL}		—	10% V _{cc}	V
High Level Output Voltage	V _{OH}		90% V _{cc}	—	V
Output Load (CMOS)	CL		—	15	pF
Input Voltage Range	V _{IN}		0	V _{cc}	V
Low Level Input Voltage	V _{IL}		—	30% V _{cc}	V
High Level Input Voltage	V _{IH}		70% V _{cc}	—	V
Disable Time	t _{dis}		—	200	nS
Enable Time	t _{ena}		—	2	mS
Start-up Time	t _{str}	@ Minimum operation voltage to be 0 sec.	—	10	mS
Deterministic Jitter (DJ)	DJ		0.2 typ.		pS
1 Sigma Jitter	J _{Sigma}	Measured with Wavecrest DTS-2079 VISI 6.3.1	3 typ.		pS
Peak to Peak Jitter	J _{PK-PK}		20 typ.		pS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

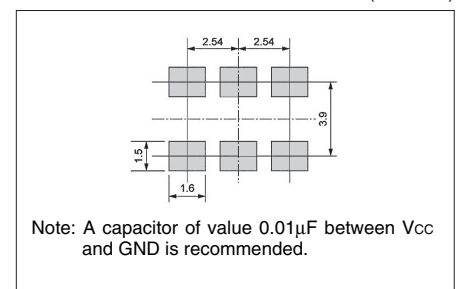
Dimensions

(Unit: mm)



Recommended Land Pattern

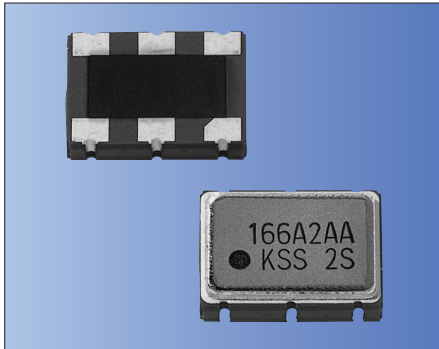
(Unit: mm)



SAW Clock Oscillators Surface Mount Type KC7050S-C3 Series (FSO-2D Series)



CMOS/ 3.3V/ 7.0×5.0mm



Ph Free

RoHS Compliant

Features

- CMOS output 3.3V
- Low jitter
- Operation at fundamental high frequency

Table 1

Freq. Tol. Code	Tol. $\times 10^{-6}$	Operating Temperature Range (°C)	Note
1	± 100	0 to +70	Standard specifications

How to Order

KC7050S 155.520 C 3 1 B 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (7.0×5.0mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (3.3V)
- ⑤ Frequency Tolerance (See Table 1)
- ⑥ Symmetry/ Enable Function (40/ 60%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

Packaging (Tape & Reel 1000 pcs./ reel)

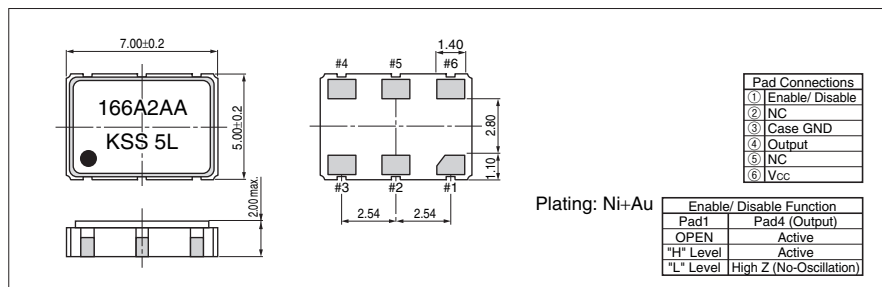
Specifications

Item	Symbol	Conditions	Min.	Max.	Units
Output Frequency Range	fo		100	200	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.: 0 to +70°C	-100	+100	$\times 10^{-6}$
Storage Temperature Range	T _{stg}		-55	+125	°C
Operating Temperature Range	T _{use}	Standard Specifications	0	+70	°C
Max. Supply Voltage	—		-0.5	+5	V
Supply Voltage	V _{cc}	3.3V	3.14	3.46	V
Current Consumption (Standard Loaded)	I _{cc}		—	60	mA
Symmetry	SYM		40	60	%
Rise/ Fall Time (10% V _{cc} to 90% V _{cc} Standard Loaded)	tr/ tf		—	2	nS
Low Level Output Voltage	V _{OL}		—	10% V _{cc}	V
High Level Output Voltage	V _{OH}		90% V _{cc}	—	V
Output Load (CMOS)	CL		—	15	pF
Input Voltage Range	V _{IN}		0	V _{cc}	V
Low Level Input Voltage	V _{IL}		—	30% V _{cc}	V
High Level Input Voltage	V _{IH}		70% V _{cc}	—	V
Disable Time	t _{dis}		—	200	nS
Enable Time	t _{ena}		—	2	mS
Start-up Time	t _{str}	@ Minimum operation voltage to be 0 sec.	—	10	mS
Deterministic Jitter (DJ)	DJ		0.2 typ.		pS
1 Sigma Jitter	J _{Sigma}	Measured with Wavcrest DTS-2079 VISI 6.3.1	3 typ.		pS
Peak to Peak Jitter	J _{PK-PK}		20 typ.		pS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

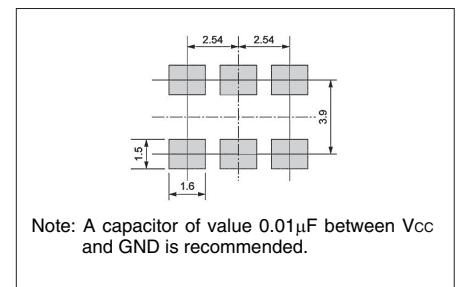
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)





Ph Free

RoHS Compliant

Features

- Compact oscillator with a CMOS IC built in that is the same shape (height 3.5mm) as a crystal device
- It is a hermetic sealed type with a metal case
- The case comes with a grounding terminal
- It is also possible to attach a stand-off (option)
- It is provided with multiple standard frequencies

Applications

- Amusement

How to Order

KCJXO- 20.0000 **C** 5 1 **C** 00
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (KCJXO5 or KCJXO7)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (5.0V)
- ⑤ Frequency Tolerance
- ⑥ Symmetry/ Enable Function (40/ 60%)
- ⑦ Customer Special Model Suffix
 "00" for Standard Specifications
 "S0" for Stand-off Type
 "F0" for SMD Type

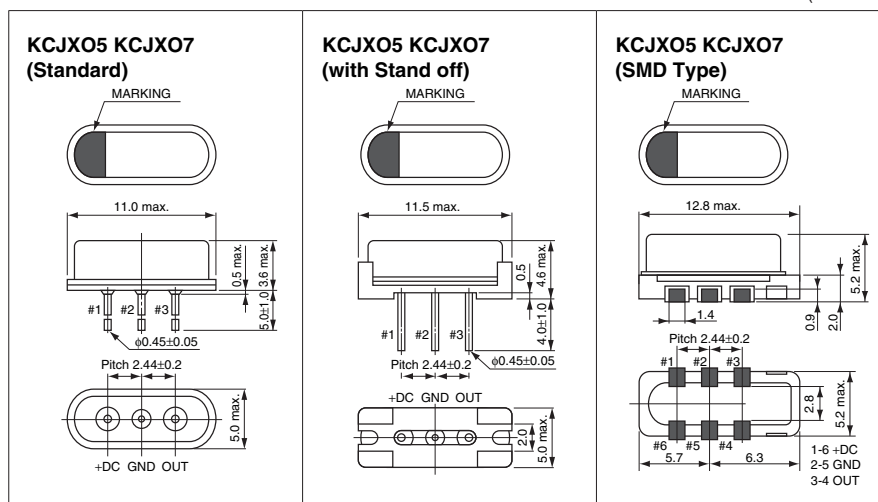
Specifications

Item	Symbol	Conditions	Specifications		Units
			Min.	Max.	
Output Frequency Range	f_o	KCJXO5 Type KCJXO7 Type	1 20.1	20 70	MHz
Frequency Tolerance (Overall)	f_{tol}		-100	+100	$\times 10^{-6}$
Storage Temperature Range	T_{stg}		-20	+80	$^{\circ}C$
Operating Temperature Range	T_{use}		-10	+70	$^{\circ}C$
Supply Voltage	V_{cc}		4.5	5.5	V
Current Consumption	I_{cc}	KCJXO5 Type (1 to 20MHz)	—	20	mA
		KCJXO7 Type (20.1 to 50MHz)	—	25	
		KCJXO7 Type (50.1 to 70MHz)	—	50	
Symmetry	SYM	@ 50% V_{cc}	40	60	%
Rise/ Fall Time	t_r / t_f	KCJXO5 Type (1 to 20MHz)	—	20	nS
		KCJXO7 Type (20.1 to 50MHz)	—	15	
		KCJXO7 Type (50.1 to 70MHz)	—	10	
Low Level Output Voltage	V_{OL}		—	10% V_{cc}	V
High Level Output Voltage	V_{OH}		90% V_{cc}	—	V
Output Load	CL	KCJXO5 Type (1 to 20MHz)	—	50	pF
		KCJXO7 Type (20.1 to 70MHz)	—	15	
Start-up Time	t_{str}	KCJXO5 Type (1 to 20MHz)	—	3	mS
		KCJXO7 Type (20.1 to 70MHz)	—	10	

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
 Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

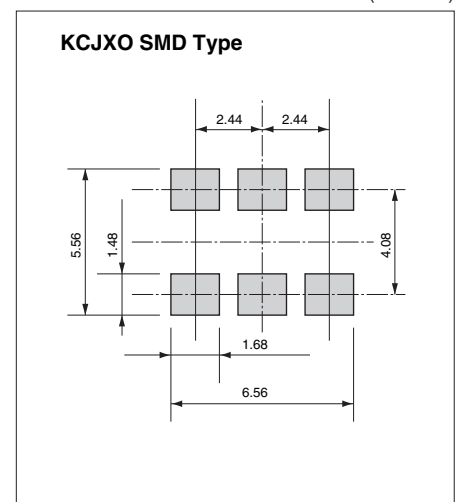
Dimensions

(Unit: mm)

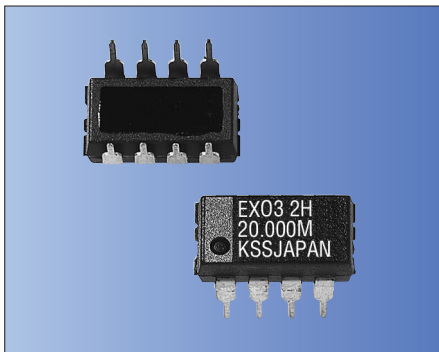


Recommended Land Pattern

(Unit: mm)



A capacitor of value 0.01 μ F between V_{cc} and GND is recommended.



Ph Free

RoHS Compliant

Features

- Since it has a frequency dividing function, it is able to obtain a frequency division of $\frac{1}{2}$ to $\frac{1}{256}$ ($\frac{1}{256}$)
- The symmetry of frequency divided output is within $50 \pm 2\%$
- The oscillation start time has the fast starting characteristic of being 1.5m sec. or less
- The pin arrangement is DIP 8PIN
- Supply voltage $V_{CC}=5.0V$

Applications

- Amusement

How to Order

KCEX03- 20.0000 C 5 1 B 00
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (5.0V)
- ⑤ Frequency Tolerance
- ⑥ Symmetry/ Enable Function (40/ 60%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

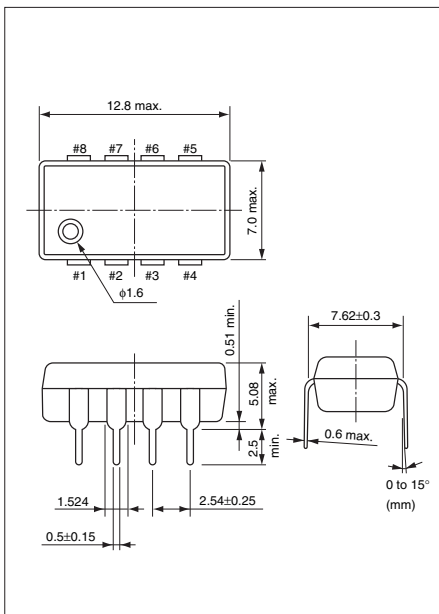
Specifications

Item	Symbol	Conditions	Specifications		Units
			Min.	Max.	
Output Frequency Range	f_o		11.0592	24.576	MHz
Frequency Tolerance (Overall)	f_{tol}		-100	+100	$\times 10^{-6}$
Storage Temperature Range	T_{stg}		-40	+85	$^{\circ}C$
Operating Temperature Range	T_{use}		-10	+70	$^{\circ}C$
Supply Voltage	V_{CC}		4.5	5.5	V
Current Consumption	I_{CC}		—	20	mA
Symmetry	SYM	@ 50% V_{CC}	40	60	%
Rise/ Fall Time	t_r / t_f		—	15	nS
Low Level Output Voltage	V_{OL}		—	10% V_{CC}	V
High Level Output Voltage	V_{OH}		90% V_{CC}	—	V
Output Load	CL		—	50	pF
Start-up Time	t_{str}		—	1.5	mS

Note: All electrical characteristics are defined at the maximum load and operating temperature range.
 Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

Dimensions

(Unit: mm)



Settings of the frequency division output

(Divider Select)

V_{CC}	C	B	A
8	7	6	5

EXO3 5E
16.000M
KSS JAPAN

1	2	3	4
F	D	ST	GND

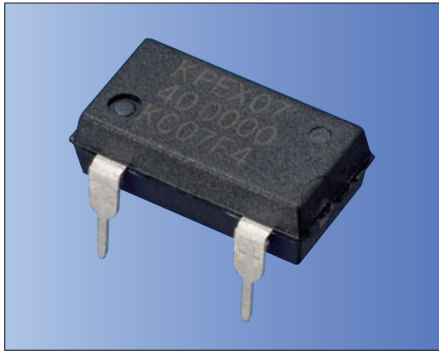
(OUTPUT)

1. F Outputs the original frequency (f_o) of the internal quartz crystal.
2. D Outputs the frequency of programmed dividing ratio ($f_o / 2^n$). Possible to be oscillated when set to HIGH level and stopped in oscillation when set to LOW level. when this function is not needed, be sure to set the STANDBY pin to the HIGH level.
3. ST
4. GND
5. A
6. B } Used to program the dividing ratio for the original frequency.
7. C } Supply voltage
8. V_{CC}

Pin connection

Input				Output	
Select			ST	F	D
C	B	A		Original Frequency	Divided Wave form
L	L	L	H	f_o clock	$f_o \cdot 1/2$ clock
L	L	H	H	f_o clock	$f_o \cdot 1/2^2$ clock
L	H	L	H	f_o clock	$f_o \cdot 1/2^3$ clock
L	H	H	H	f_o clock	$f_o \cdot 1/2^4$ clock
H	L	L	H	f_o clock	$f_o \cdot 1/2^5$ clock
H	L	H	H	f_o clock	$f_o \cdot 1/2^6$ clock
H	H	L	H	f_o clock	$f_o \cdot 1/2^7$ clock
H	H	H	H	f_o clock	$f_o \cdot 1/2^8$ clock
—	—	—	L	L	L

A capacitor of value $0.01\mu F$ between V_{CC} and GND is recommended.



Ph Free

RoHS Compliant

Features

- Wide frequency range
- Quick delivery is possible by PLL technology
- Realizing high reliability by using sealed crystal
- Stand-by function (ST) can be used for low current consumption applications
- Pin compatible with half size

Applications

- Digital Electronics
- Amusement

How to Order

KPEX07- 60.0000 C 5 1 B 00
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (5.0V)
- ⑤ Frequency Tolerance
- ⑥ Symmetry/ Enable Function (40/ 60%, Stand-by)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

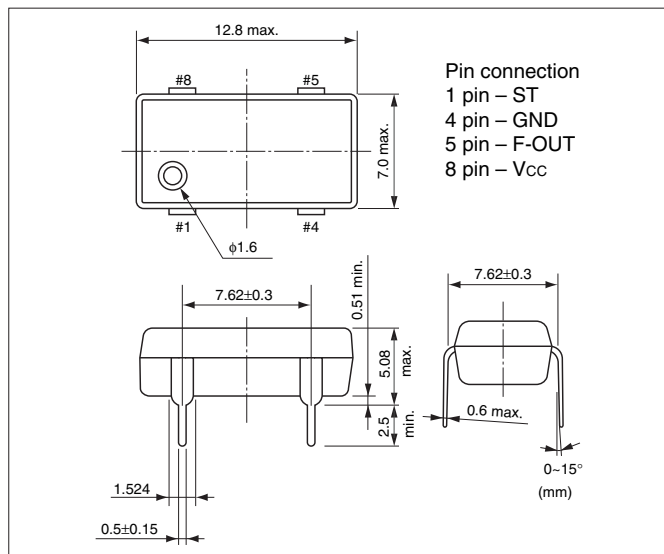
Specifications

Item	Symbol	Conditions	Specifications		Units
			Min.	Max.	
Output Frequency Range	f_o		1	125	MHz
Frequency Tolerance (Overall)	f_{tol}		-100	-100	$\times 10^{-6}$
Storage Temperature Range	T_{stg}		-55	+125	$^{\circ}C$
Operating Temperature Range	T_{use}		-10	+70	$^{\circ}C$
Supply Voltage	V_{CC}		4.5	5.5	V
Current Consumption	I_{CC}	$1 \leq f_o \leq 40$	—	25	mA
		$40 < f_o \leq 90$	—	35	mA
		$90 < f_o \leq 125$	—	40	mA
Symmetry	SYM	@50% V_{CC}	40	60	%
Rise/ Fall Time	t_r / t_f	$1 \leq f_o \leq 10$	—	10	nS
		$10 < f_o \leq 60$	—	5	nS
		$60 < f_o \leq 125$	—	5	nS
Low Level Output Voltage	V_{OL}		—	10% V_{CC}	V
High Level Output Voltage	V_{OH}		90% V_{CC}	—	V
Output Load	CL		—	15	pF
Start-up Time	t_{str}	@ Minimum operation voltage to be 0 sec.	—	5	mS

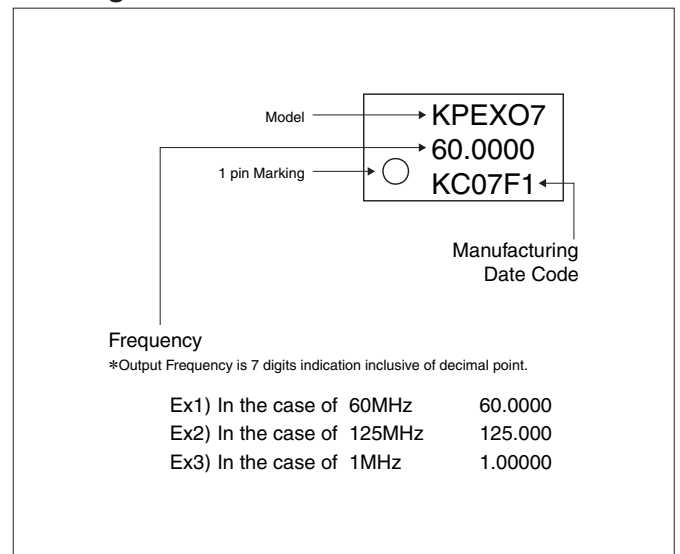
Note: All electrical characteristics are defined at the maximum load and operating temperature range.
 Because we use a PLL Technology, please be careful about the influence of the jitter enough.
 Please contact us for inquiry about supply Voltage 3.3V.

Dimensions

(Unit: mm)



Marking



Spread Spectrum Clock Oscillators Surface Mount Type KC5032E-C3 Series



CMOS/ 3.3V/ 5.0×3.2mm



Ph Free

RoHS Compliant

Features

- Built-in Spread Spectrum function
- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{CC}=3.3V$
- External control pad for Modulation Selectable (For initial testing purpose only)

Table 1

Spread Type			
Center Spread		Down Spread	
Code	Spread %	Code	Spread %
C2	±0.5%	D2	-1.0%
C4	±1.0%	D4	-2.0%
C6	±1.5%	D6	-3.0%
C0*	External Control*	D0*	External Control*

* For initial testing purpose only

How to Order

KC5032E 25.0000 C 3 F E C2
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (5.0×3.2mm SMD)
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (3.3V)
- ⑤ Frequency Tolerance (±100ppm)
- ⑥ Symmetry/ Enable Function (45/ 55%, Stand-by)
- ⑦ Spread Type and Spread Percent or Customer Special Model Suffix (See Table 1)

Packaging (Tape & Reel 1000 pcs./ reel)

Specifications

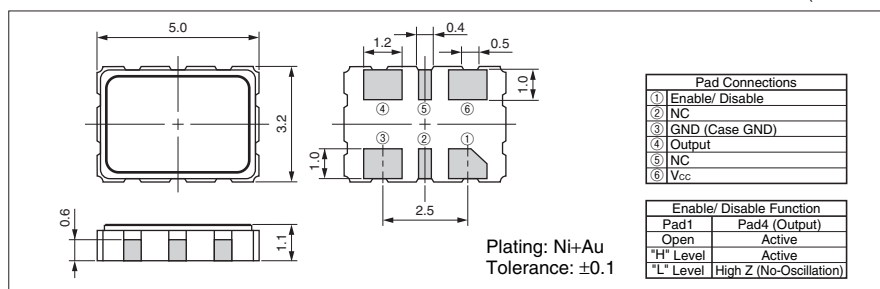
Item	Symbol	Conditions	Min.	Max.	Units
Output Frequency Range	f_o		14.31818	166	MHz
Frequency Tolerance	f_{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1 year @25°C), Shock and vibration Op. Temp.: -40 to +85°C	-100	+100	$\times 10^{-6}$
Storage Temperature Range	T_{stg}		-55	+125	°C
Operating Temperature Range	T_{use}		-40	+85	°C
Max. Supply Voltage	—		-0.5	+4.6	V
Supply Voltage	V_{CC}		2.97	3.63	V
Current Consumption (Maximum Loaded)	I_{CC}	$f_o \leq 40\text{MHz}$	—	20	mA
		$40 < f_o \leq 100\text{MHz}$	—	25	
		$100 < f_o \leq 166\text{MHz}$	—	35	
Stand-by Current	I_{std}		—	30	μA
Symmetry	SYM	@ 50% V_{CC}	45	55	%
Rise/ Fall Time (10% V_{CC} to 90% V_{CC} Maximum Loaded)	t_r / t_f	$14.31818 \leq f_o \leq 40\text{MHz}$	—	10	nS
		$40 < f_o \leq 100\text{MHz}$	—	5	
		$100 < f_o \leq 166\text{MHz}$	—	3	
Low Level Output Voltage	V_{OL}	$I_{OL}=13\text{mA}$ ($f_o < 40\text{MHz}$), $I_{OL}=19\text{mA}$ ($40 \leq f_o < 100\text{MHz}$) $I_{OL}=44\text{mA}$ ($100 \leq f_o \leq 166\text{MHz}$)	—	10% V_{CC}	V
High Level Output Voltage	V_{OH}	$I_{OH}=-13\text{mA}$ ($f_o < 40\text{MHz}$), $I_{OH}=-19\text{mA}$ ($40 \leq f_o < 100\text{MHz}$) $I_{OH}=-44\text{mA}$ ($100 \leq f_o \leq 166\text{MHz}$)	90% V_{CC}	—	V
Output Load	CL	CMOS Output	—	15	pF
Input Voltage Range	V_{IN}		0	V_{CC}	V
Low Level Input Voltage	V_{IL}		—	30% V_{CC}	V
High Level Input Voltage	V_{IH}		70% V_{CC}	—	V
Disable Time	t_{dis}		—	200	nS
Enable Time	t_{ena}		—	10	mS
Start-up Time	t_{str}	@ Minimum operation voltage to be 0 sec.	—	20	mS
1 Sigma Jitter	JSigma	Measured with Wavcrest DTS-2079 VISI 6.3.1	—	50	pS
Peak to Peak Jitter	JPK-PK		—	300	pS

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

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

Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)

