



Pb Free

RoHS Compliant

Features

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

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 2000pcs./reel)

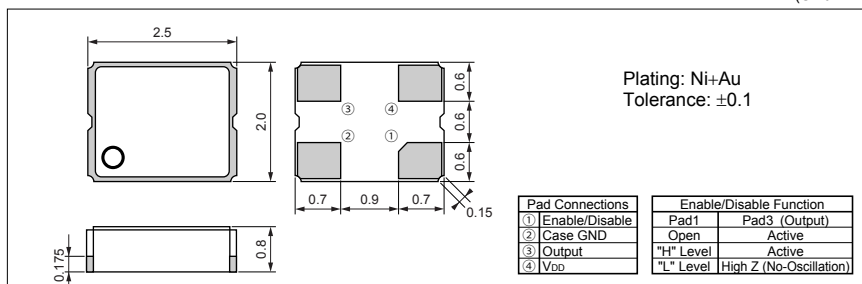
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		1.5	50	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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 / -40 to +85°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	+7.0	V	
Supply Voltage	V _{DD}	Freq. Tol.Code: 0, S, F	1.62	1.98	V	
		Freq. Tol.Code: U, G	1.71	1.89		
Current Consumption (Maximum Loaded)	I _{DD}	1.5 ≤ Fo ≤ 24MHz	—	3	mA	
		24 < Fo ≤ 40MHz	—	4		
		40 < Fo ≤ 50MHz	—	5		
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf	1.8 ≤ Fo ≤ 26MHz	—	9	nS	
		26 < Fo ≤ 50MHz	—	7		
Output Voltage-"L"	V _{OL}	I _{OL} = 2mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} = -2mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	100	nS	
Enable Time	—		—	3	mS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

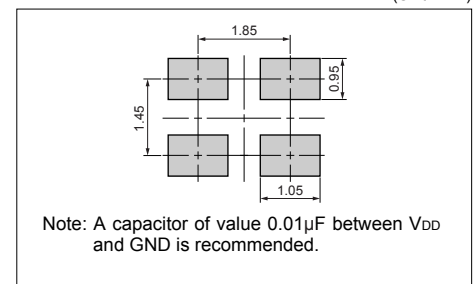
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb-free

RoHS Compliant

Features

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

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 2000pcs./reel)

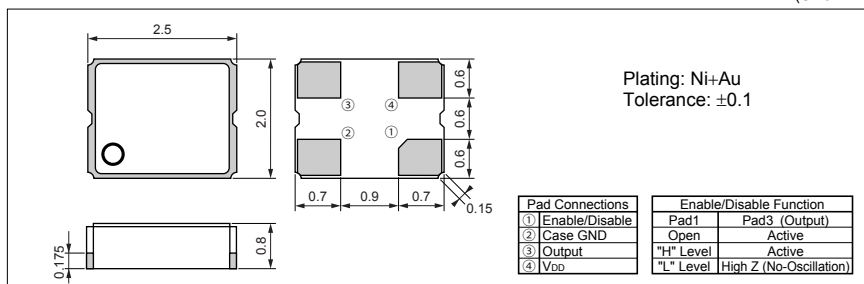
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		1.5	50	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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 / -40 to +85°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	+7.0	V	
Supply Voltage	V _{DD}	Freq. Tol.Code: 0, S, F	2.25	2.75	V	
		Freq. Tol.Code: U, G	2.38	2.63		
Current Consumption (Maximum Loaded)	I _{DD}	1.5 ≤ Fo ≤ 24MHz	—	4	mA	
		24 < Fo ≤ 40MHz	—	5		
		40 < Fo ≤ 50MHz	—	6		
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf	1.8 ≤ Fo ≤ 26MHz	—	8	nS	
		26 < Fo ≤ 50MHz	—	6		
Output Voltage-"L"	V _{OL}	I _{OL} =5mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-5mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	100	nS	
Enable Time	—		—	3	mS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

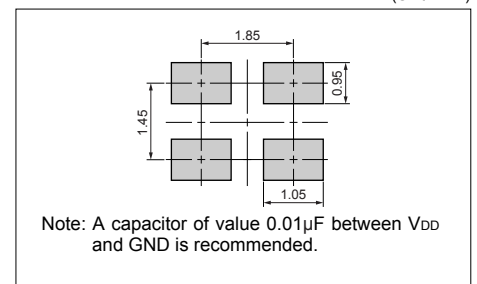
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





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RoHS Compliant

Features

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

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

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 2000pcs./reel)

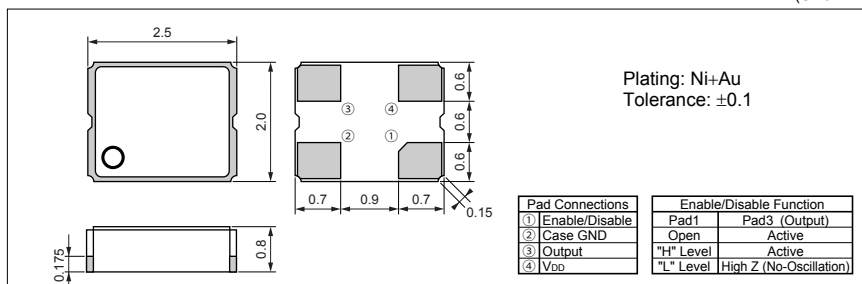
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		1.5	50	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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 / -40 to +85°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	+7.0	V	
Supply Voltage	V _{DD}	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 _{DD}	1.5 ≤ Fo ≤ 24MHz	—	5	mA	
		24 < Fo ≤ 40MHz	—	6		
		40 < Fo ≤ 50MHz	—	8		
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf	1.8 ≤ Fo ≤ 26MHz	—	8	nS	
		26 < Fo ≤ 50MHz	—	6		
Output Voltage-"L"	V _{OL}	I _{OL} =6mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-6mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	100	nS	
Enable Time	—		—	3	mS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

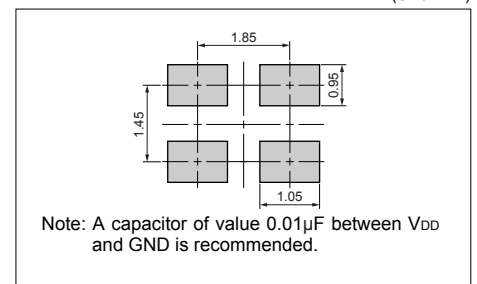
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





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RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{DD} = 2.5V$
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		
F	± 100	-40 to +85	With only certain frequencies
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 2000pcs./reel)

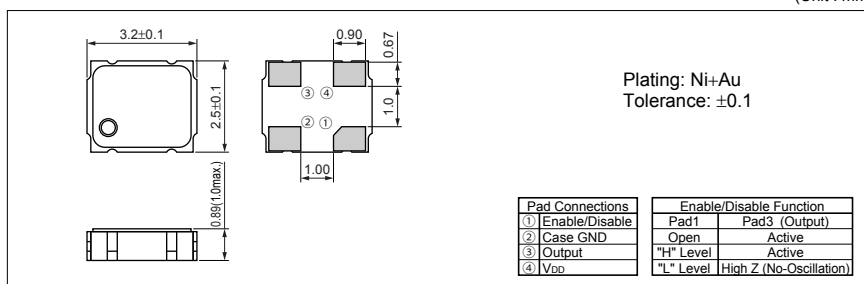
Specifications

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 (1year @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 / -40 to +85°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	+7.0	V	
Supply Voltage	V _{DD}	Freq. Tol.Code: 0, S, F	2.25	2.75	V	
		Freq. Tol.Code: U, G	2.38	2.63		
Current Consumption (Maximum Loaded)	I _{DD}	1.5 ≤ Fo ≤ 26MHz	—	4	mA	
		26 < Fo ≤ 50MHz	—	6		
		50 < Fo ≤ 68MHz	—	9		
		68 < Fo ≤ 90MHz	—	12		
		90 < Fo ≤ 125MHz	—	18		
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf	1.5 ≤ Fo ≤ 68MHz	—	6	nS	
		68 < Fo ≤ 90MHz	—	5		
		90 < Fo ≤ 125MHz	—	4		
Output Voltage-"L"	V _{OL}	I _{OL} =4mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-4mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	150	nS	
Enable Time	—		—	5	mS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

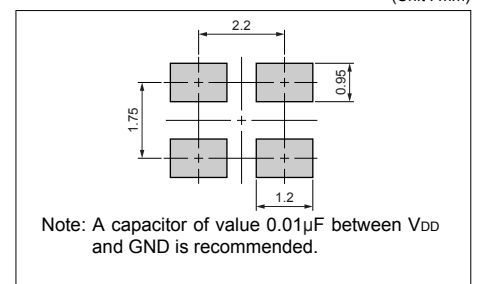
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





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RoHS Compliant

Features

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

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	-40 to +85	With only certain frequencies
F	± 100		
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 2000pcs./reel)

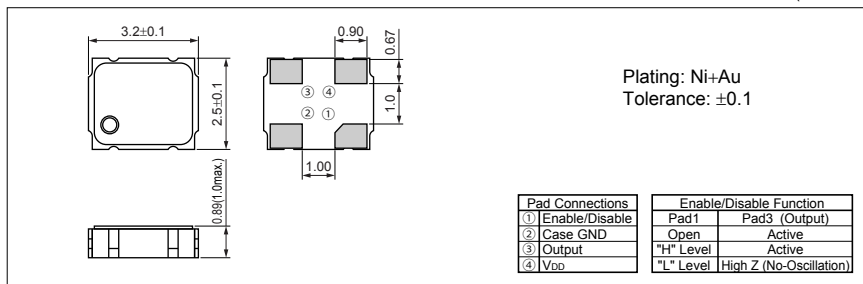
Specifications

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 (1year @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/ -40 to +85°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	+7.0	V	
Supply Voltage	V _{DD}	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 _{DD}	1.5 ≤ Fo ≤ 26MHz	—	6	mA	
		26 < Fo ≤ 50MHz	—	8		
		50 < Fo ≤ 68MHz	—	12		
		68 < Fo ≤ 90MHz	—	18		
		90 < Fo ≤ 125MHz	—	25		
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf	1.5 ≤ Fo ≤ 68MHz	—	5	nS	
		68 < Fo ≤ 90MHz	—	4		
		90 < Fo ≤ 125MHz	—	3		
Output Voltage-"L"	V _{OL}	I _{OL} =4mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-4mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	150	nS	
Enable Time	—		—	5	mS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

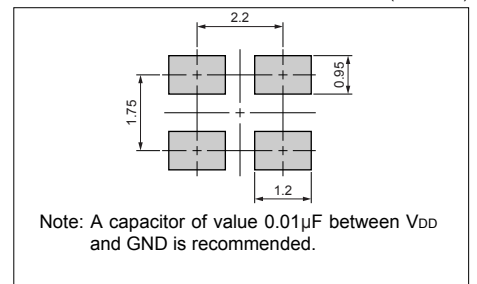
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{DD} = 1.8V$
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
0	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
W	± 20		
F	± 100	-40 to +85	With only certain frequencies
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 1000pcs./reel)

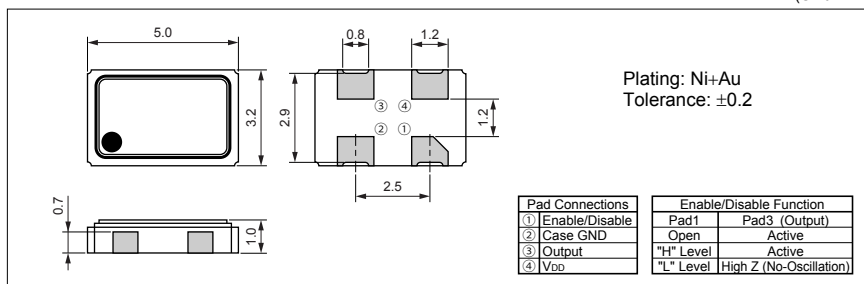
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		1.8	39.99	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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/ -40 to +85°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 _{DD}	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 _{DD}	1.8 ≤ Fo ≤ 25MHz	—	3	mA	
		25 < Fo ≤ 39.99MHz	—	4		
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/ Fall Time (10% V_{DD} to 90% V_{DD} Maximum Loaded)	Tr/Tf		—	9	nS	
Output Voltage-"L"	V _{OL}	I _{OL} =2.8mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-2.8mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	150	nS	
Enable Time	—		—	5	mS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

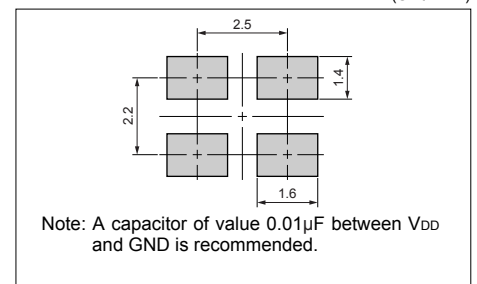
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

- Miniature ceramic package
- Highly reliable with seam welding
- CMOS output
- Supply voltage $V_{DD} = 2.5V$
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
0	± 50	-10 to +70	Standard specifications
S	± 30		
U	± 25		
W	± 20		
F	± 100	-40 to +85	With only certain frequencies
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 1000pcs./reel)

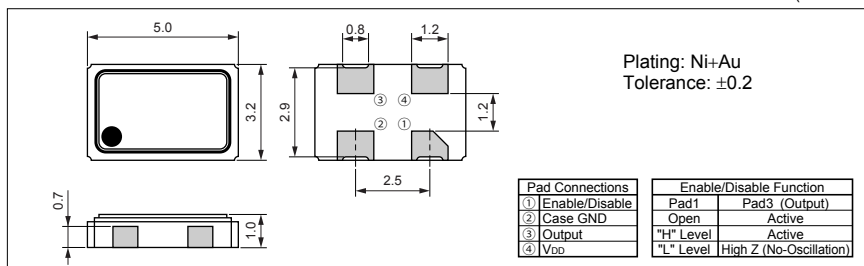
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		1.8	125	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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/ -40 to +85°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	+7.0	V	
Supply Voltage	V _{DD}	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 _{DD}	1.8<Fo≤20MHz	—	5	mA	
		20<Fo≤40MHz	—	10		
		40<Fo≤60MHz	—	15		
		60<Fo≤85MHz	—	20		
		85<Fo≤100MHz	—	22		
100<Fo≤125MHz	—	27				
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf	1.8<Fo≤40MHz	—	7	nS	
		40<Fo≤85MHz	—	4		
		85<Fo≤125MHz	—	3		
Output Voltage-"L"	V _{OL}	I _{OL} =4mA/8mA (40MHz<Fo)	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-4mA/-8mA (40MHz<Fo)	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	150	nS	
Enable Time	—		—	5	mS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

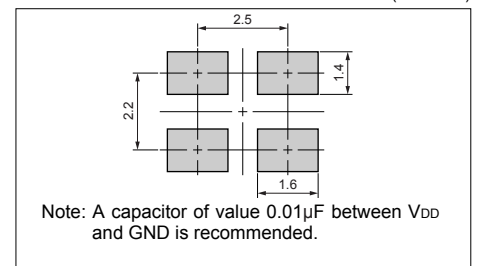
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

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

How to Order

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

- ① Type (5.0x3.2mm 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 1000pcs./reel)

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		
W	± 20		
F	± 100	-40 to +85	With only certain frequencies
G	± 50		

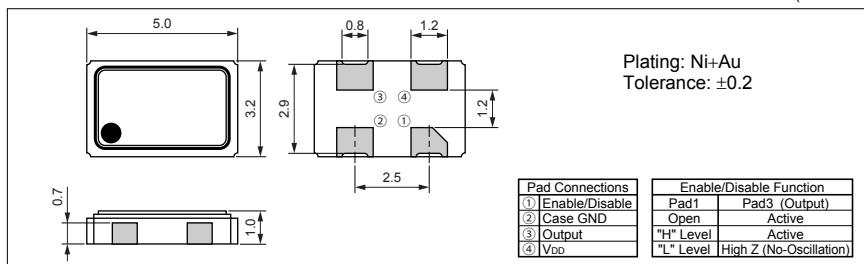
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		1.8	160	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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 / -40 to +85°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	+7.0	V	
Supply Voltage	V _{DD}	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 _{DD}	1.8 < Fo <= 20MHz	—	10	mA	
		20 < Fo <= 40MHz	—	15		
		40 < Fo <= 60MHz	—	30		
		60 < Fo <= 100MHz	—	35		
		100 < Fo <= 135MHz	—	45		
		135 < Fo <= 160MHz	—	60		
Stand-by Current	I _{std}		—	10	µA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf	1.8 < Fo <= 26MHz	—	10	nS	
		26 < Fo <= 45MHz	—	8		
		45 < Fo <= 100MHz	—	5		
		100 < Fo <= 160MHz	—	2.5		
Output Voltage-"L"	V _{OL}	I _{OL} =8mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-8mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	150	nS	
Enable Time	—		—	5	mS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

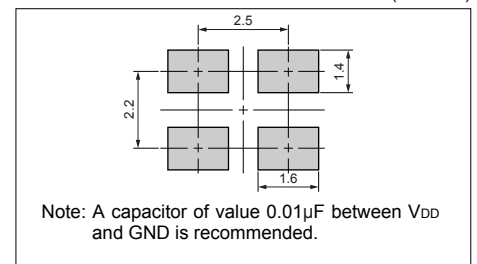
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

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

Table 1

Freq. Tol. Code	× 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 (5.0x3.2mm 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 1000pcs./reel)

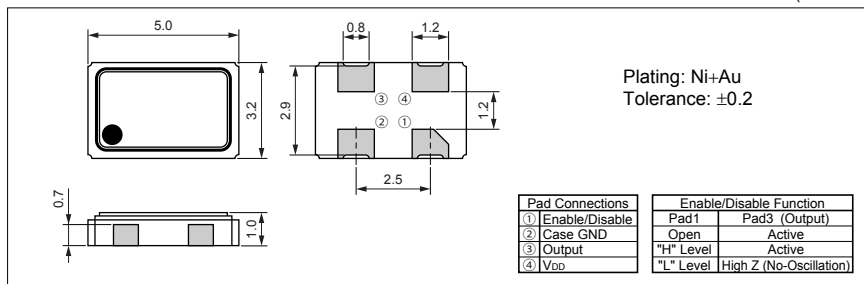
Specifications

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 (1year @25°C), Shock and vibration	-50 -30	+50 +30	×10 ⁻⁶	
Storage Temperature Range	T _{stg}		-55	+125	°C	
Operating Temperature Range	T _{use}		-10	+70	°C	
Max. Supply Voltage	—		-0.5	+7.0	V	
Supply Voltage	V _{DD}	Freq. Tol.Code: 0, S	2.97	3.63	V	
Current Consumption (Maximum Loaded)	I _{DD}	CL=15pF CL=50pF	— —	10 15	mA	
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@50% V _{DD}	CL=15pF	45	55	%
			CL=50pF	40	60	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	T _r /T _f	CL=15pF	—	5	nS	
		CL=50pF	—	8		
Output Voltage-"L"	V _{OL}	I _{OL} =8mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-8mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	50	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	150	nS	
Enable Time	—		—	5	mS	
Start-up Time	ST	@ 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 inquires about operating temperature range, available frequencies and other conditions.

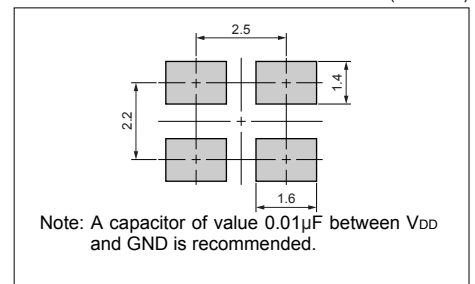
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

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

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 1000pcs./reel)

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	-40 to +85	With only certain frequencies
F	± 100		
G	± 50		

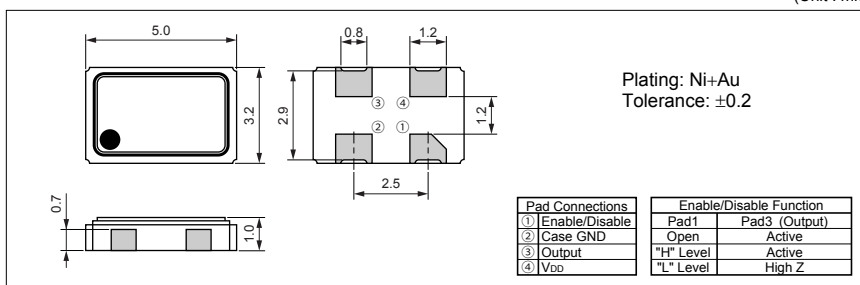
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		1.8	50	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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 / -40 to +85°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	+7.0	V	
Supply Voltage	V _{DD}	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 _{DD}	1.8 ≤ Fo ≤ 20MHz	—	25	mA	
		20 < Fo ≤ 40MHz	—	35		
		40 < Fo ≤ 50MHz	—	50		
Disable Current	I _{dis}		—	30	mA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	T _{Tr} /T _{Tf}	1.8 ≤ Fo ≤ 26MHz	—	10	nS	
		26 < Fo ≤ 50MHz	—	8		
Output Voltage-"L"	V _{OL}	I _{OL} = 16mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} = -16mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	50	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	0.8	V	
Input Voltage-"H"	V _{IH}		2.2	—	V	
Disable Time	—		—	100	nS	
Enable Time	—		—	100	nS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

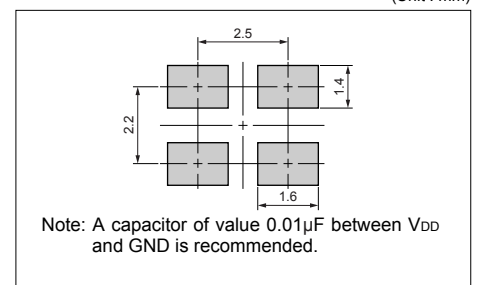
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

- Compact and low profile (5x3.2x1.2mm)
- 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 $V_{DD}=3.3 / 5.0V$ available

Frequency Tolerance (Overall)

Freq.Tol. Code	$\times 10^{-6}$	Operating Temperature Range(°C)	Notes
1	± 100	-10 to +70 (standard)	1.8 to 40MHz
0	± 50		
S	± 30		1.8 to 50MHz

How to Order

KC5032D 25.0000 C 3 0 A 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")

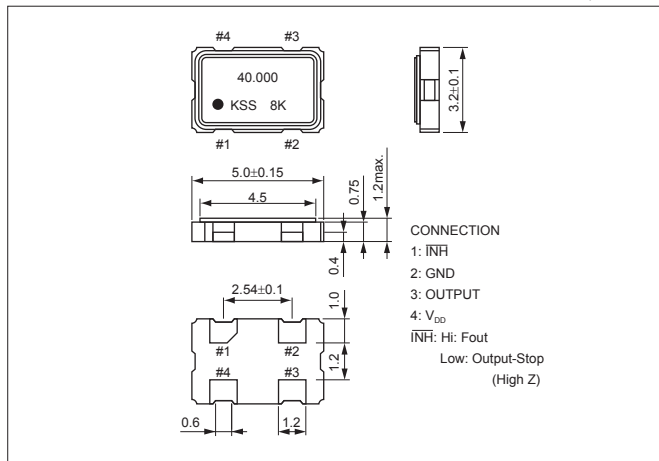
Specifications

Items	Symbol	Specifications		Units
		KC5032Dxx.xxxxC5xA00 (FXO-61F2)	KC5032Dxx.xxxxC3xA00 (FXO-61FL2)	
Output Frequency Range	F_0	1.8 to 50		MHz
Frequency Tolerance (Overall)	F_{tol}	± 30 (to 40MHz)		$\times 10^{-6}$
		± 50 (to 50MHz)		
		± 100		
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_{DD}	5 \pm 0.5	3.3 \pm 0.3	V
Current Consumption	I_{DD}	25 Max.	18 Max. (1.8 to 39.9MHz)	mA
			25 Max. (40 to 50MHz)	
Stand-by Current	I_{std}	10 Max.		μ A
Symmetry	SYM	40 to 60@50% V_{DD}		%
Rise / Fall Time	T_r/T_f	10 Max.		nS
Output Voltage-"L"	V_{OL}	10% V_{DD} Max.		V
Output Voltage-"H"	V_{OH}	90% V_{DD} Min.		V
Output Load	CL	15 Max.	20 Max.	pF
Input Voltage Range	V_{IN}	0 to V_{DD}	0 to V_{DD}	V
Input Voltage-"L"	V_{IL}	0.8 Max.	0.3 Max.	V
Input Voltage-"H"	V_{IH}	2.2 Min.	2.2 Min.	V
Disable Time	-	150 Max.		nS
Enable Time	-	5 Max.		mS
Start-up Time	ST	10 Max.		mS

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

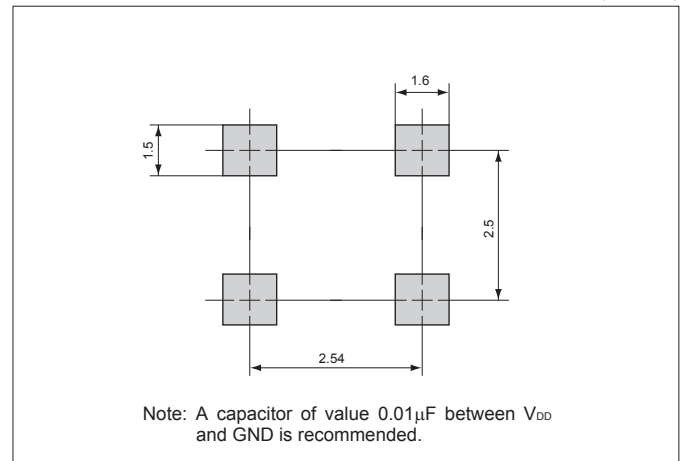
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb 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_{DD} =3.3/5.0V available

Frequency Tolerance (Overall)

Freq.Tol. Code	$\times 10^{-6}$	Operating Temperature Range(°C)	Notes
P	± 100	-30 to +85 (Standard)	1.8 to 40MHz
Q	± 50		
R	± 30		

How to Order

KC5032D 15.3600 C 3 Q A 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 (40/60%, INH)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

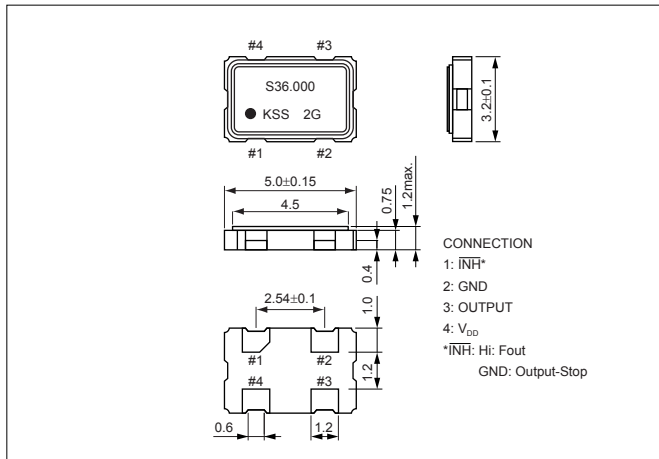
Specifications

Items	Symbol	Specifications		Units
		KC5032Dxx.xxxxC5xA00 (FXO-64F2)	KC5032Dxx.xxxxC3xA00 (FXO-64FL2)	
Output Frequency Range	F_0	1.8 to 40		MHz
Frequency Tolerance (Overall)	F_{tol}	± 30		$\times 10^{-6}$
		± 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_{DD}	5 \pm 5%	3.3 \pm 5%	V
Current Consumption	I_{DD}	12 Max.	10 Max.	mA
Stand-by Current	I_{std}	8 Max.		μ A
Symmetry	SYM	40 to 60@50% V_{DD}		%
Rise / Fall Time	T_r/T_f	12 Max.	16 Max.	nS
Output Voltage-"L"	V_{OL}	10% V_{DD} Max.		V
Output Voltage-"H"	V_{OH}	90% V_{DD} Min.		V
Output Load	CL	15 Max.		pF
Input Voltage Range	V_{IN}	0 to V_{DD}	0 to V_{DD}	V
Input Voltage-"L"	V_{IL}	0.8 Max.	0.3 Max.	V
Input Voltage-"H"	V_{IH}	2.2 Min.	2.2 Min.	V
Disable Time	-	150 Max.		nS
Enable Time	-	5 Max.		mS
Start-up Time	ST	10 Max.		mS

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

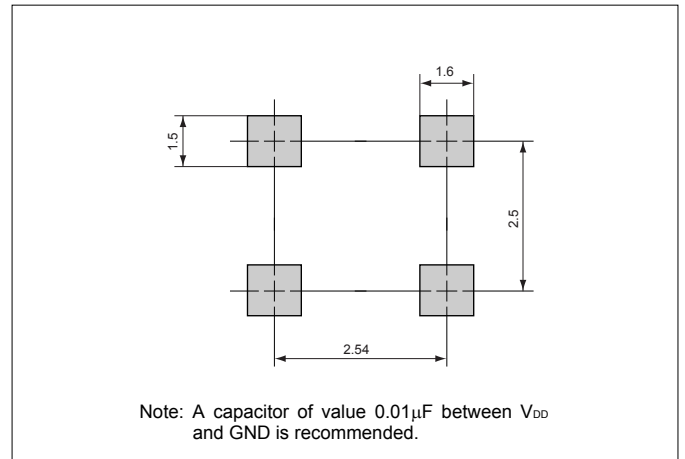
Dimensions

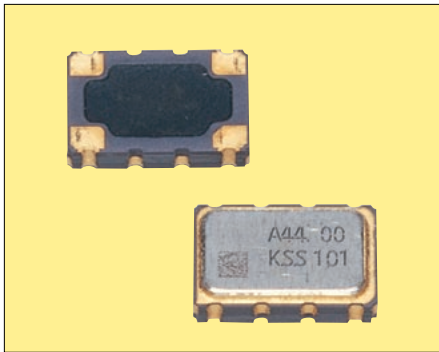
(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

- "H" type leadless ceramic package (Reflow soldering compatible)
- With tri-state function (High Z)
- $\pm 15 \times 10^{-6}$ / -40 to +85°C available

Applications

- High Stability Clock Oscillation Wireless LAN (Standard Frequency 44, 40, 22, 20MHz)

How to Order

KC5032H 40.0000 C 3 L D 00
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Type
- ② Output Frequency
- ③ Output Type (CMOS)
- ④ Supply Voltage (2.7 to 5.5V)
- ⑤ Frequency Tolerance ($TC = \pm 15 \times 10^{-6}$)
- ⑥ Symmetry/Enable Function (45/55%, INH)
- ⑦ Customer Special Model Suffix (STD Specification is "00")

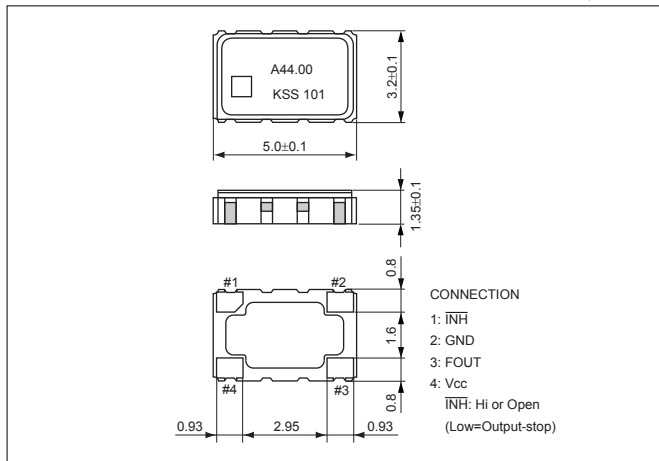
Specifications

Items	Symbol	Conditions	Specifications		Units
			Min.	Max.	
Output Frequency Range	F ₀		1.5	50	MHz
Frequency Tolerance (Overall)	F _{tol}		-15	+15	$\times 10^{-6}$
Storage Temperature Range	T _{stg}		-55	+125	°C
Operating Temperature Range	T _{use}		-40	+85	°C
Max. Supply Voltage	-		-0.6	6	V
Supply Voltage	V _{DD}		2.7	5.5	V
Current Consumption	I _{DD}	1.5 to 25MHz	-	7	mA
		25 to 55MHz	-	10	
Stand-by Current	I _{std}		-	50	µA
Symmetry	SYM	@50% V _{DD}	45	55	%
Rise / Fall Time	Tr/Tf		-	6	nS
Output Voltage-"L"	V _{OL}		-	10% V _{DD}	V
Output Voltage-"H"	V _{OH}		90% V _{DD}	-	V
Output Load	CL		-	15	pF
Input Voltage Range	V _{IN}		0	V _{DD}	V
Input Voltage-"L"	V _{IL}		70% V _{DD}	-	V
Input Voltage-"H"	V _{IH}		-	30% V _{DD}	V
Start-up Time	ST	1.5 to 25MHz	-	1.5	mS
		25 to 55MHz	-	1	

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

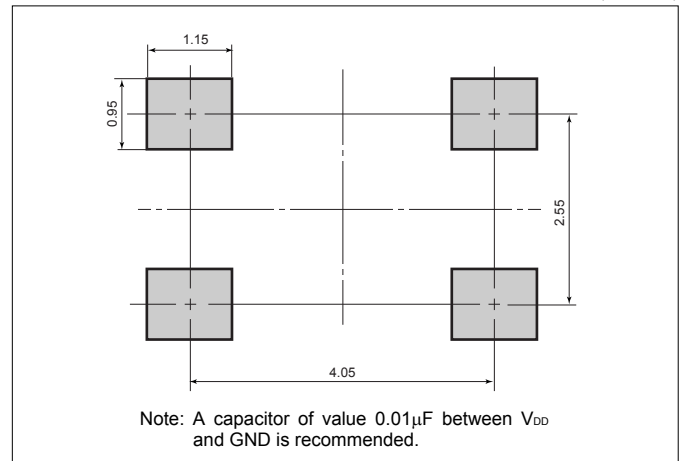
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

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

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 1000pcs./reel)

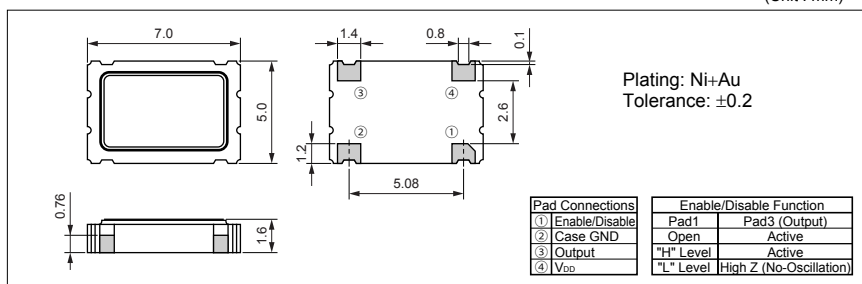
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		1.8	39.99	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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/ -40 to +85°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 _{DD}	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 _{DD}	1.8 ≤ Fo ≤ 25MHz	—	3	mA	
		25 < Fo ≤ 39.99MHz	—	4		
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf		—	9	nS	
Output Voltage-"L"	V _{OL}	I _{OL} =2.8mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-2.8mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	150	nS	
Enable Time	—		—	5	mS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

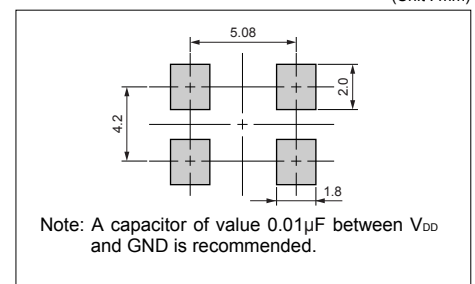
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

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

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 1000pcs./reel)

Table 1

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

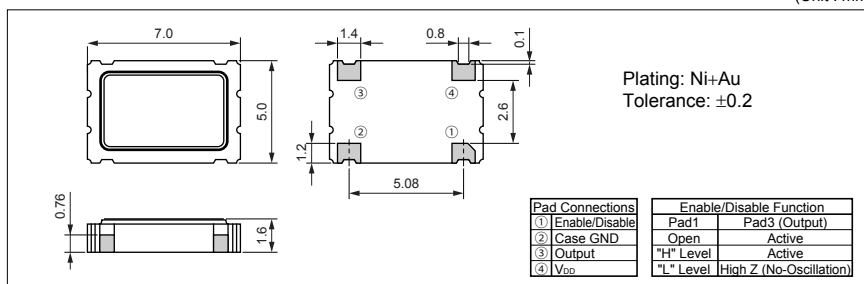
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		1.8	125	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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 / -40 to +85°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	+7	V	
Supply Voltage	V _{DD}	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 _{DD}	1.8 < Fo ≤ 20MHz	—	5	mA	
		20 < Fo ≤ 40MHz	—	10		
		40 < Fo ≤ 60MHz	—	15		
		60 < Fo ≤ 85MHz	—	20		
		85 < Fo ≤ 100MHz	—	22		
		100 < Fo ≤ 125MHz	—	27		
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf	1.8 < Fo ≤ 40MHz	—	7	nS	
		40 < Fo ≤ 85MHz	—	4		
		85 < Fo ≤ 125MHz	—	3		
Output Volatage-"L"	V _{OL}	I _{OL} =4mA/ 8mA (40 < Fo)	—	10% V _{DD}	V	
Output Volatage-"H"	V _{OH}	I _{OH} =-4mA/ -8mA (40 < Fo)	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS	—	15	pF	
Input Volatage Range	V _{IN}		0	V _{DD}	V	
Input Volatage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Volatage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	150	nS	
Enable Time	—		—	5	mS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

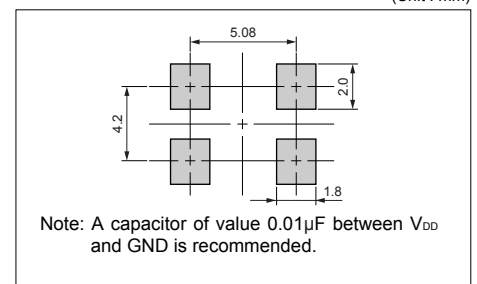
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

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

Table 1

Stability Code	Stability $\times 10^{-6}$	Operating Temperature Range (°C)	Note
0	± 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 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 1000pcs./reel)

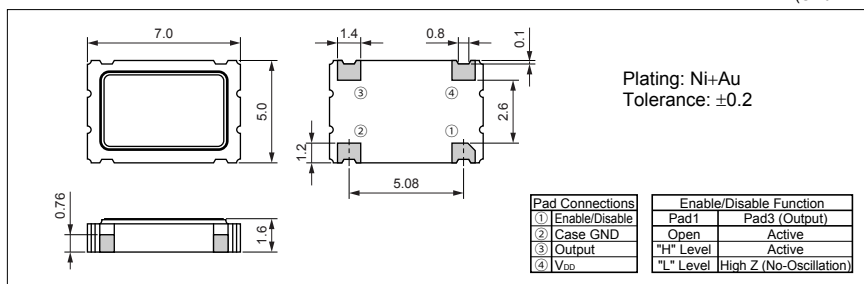
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		1.8	160	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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 / -40 to +85°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	+7	V	
Supply Voltage	V _{DD}	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 _{DD}	1.8≤Fo≤20MHz	—	10	mA	
		20<Fo≤40MHz	—	15		
		40<Fo≤60MHz	—	30		
		60<Fo≤100MHz	—	35		
		100<Fo≤135MHz	—	45		
		135<Fo≤160MHz	—	60		
Stand-by Current	I _{std}		—	10	μA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf	1.8≤Fo≤26MHz	—	10	nS	
		26<Fo≤45MHz	—	8		
		45<Fo≤100MHz	—	5		
		100<Fo≤160MHz	—	2.5		
Output Voltage-"L"	V _{OL}	I _{OL} =8mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-8mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	150	nS	
Enable Time	—		—	5	mS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

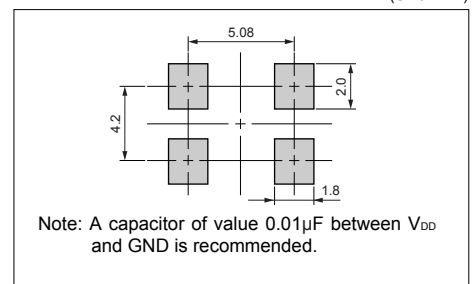
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

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

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 1000pcs./reel)

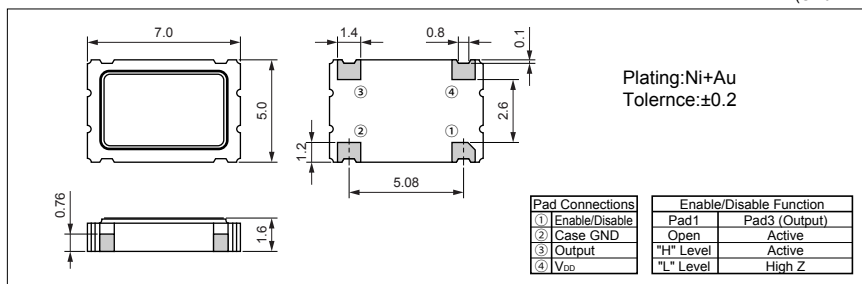
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		1.8	50	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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/ -40 to +85°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 _{DD}	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 _{DD}	1.8≤Fo≤20MHz	—	25	mA	
		20<Fo≤40MHz	—	35		
		40<Fo≤50MHz	—	50		
Disable Current	I _{dis}		—	30	mA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf	1.8≤Fo≤26MHz	—	10	nS	
		26<Fo≤50MHz	—	8		
Output Voltage-"L"	V _{OL}	I _{OL} =16mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-16mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	50	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	0.8	V	
Input Voltage-"H"	V _{IH}		2.2	—	V	
Disable Time	—		—	100	nS	
Enable Time	—		—	100	nS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

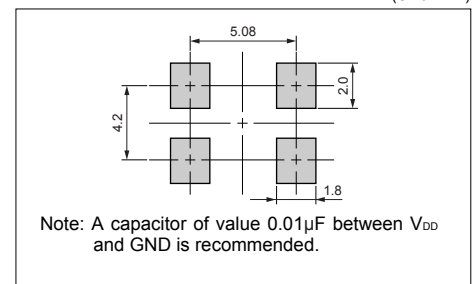
Dimensions

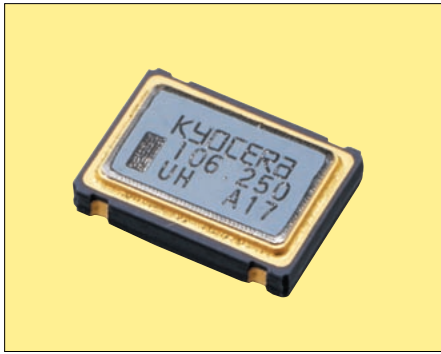
(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

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

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

KC7050H 125.000 C 3 0 E 00
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type (7.0x5.0mm 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 1000pcs./reel)

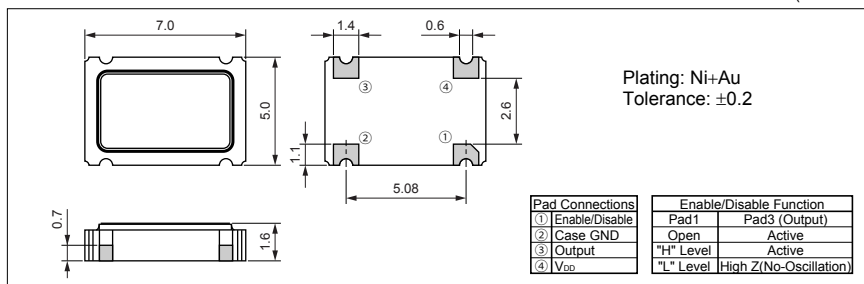
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		80	170	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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/ -40 to +85°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 _{DD}	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 _{DD}	80≤Fo≤100MHz	—	40	mA	
		100<Fo≤135MHz	—	50		
		135<Fo≤170MHz	—	60		
Stand-by Current	I _{std}	80≤Fo≤125MHz	—	10	μA	
		125<Fo≤170MHz	—	150		
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf	80≤Fo<100MHz	20% V _{DD} to 80% V _{DD} Maximum Loaded	—	3.5	nS
			10% V _{DD} to 90% V _{DD} Maximum Loaded	—	5	
		100≤Fo≤170MHz	20% V _{DD} to 80% V _{DD} Maximum Loaded	—	1.5	
			10% V _{DD} to 90% V _{DD} Maximum Loaded	—	2	
Output Voltage-"L"	V _{OL}	I _{OL} =8mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-8mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	150	nS	
Enable Time	—		—	5	mS	
Start-up Time	ST	@ Minimum Operation Voltage to be 0 sec.	—	10	mS	
Deterministic Jitter (DJ)	DJ	Measured with Wavecrest DTS-2079 VIS/6.3.1	—	2	pS	
1Sigma Jitter	1sigma		—	4	pS	

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

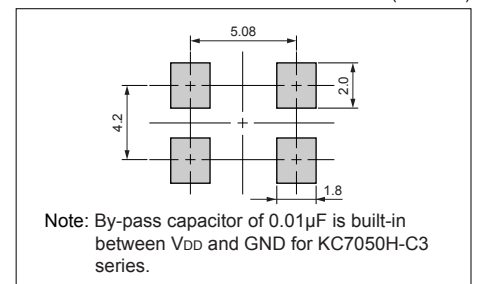
Dimensions

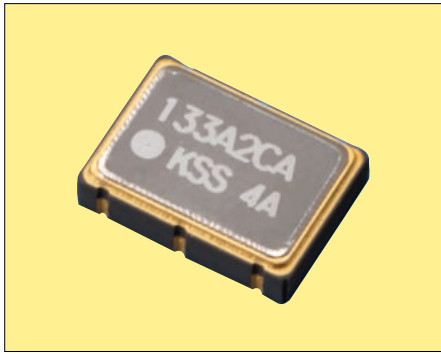
(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

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

Table 1

Freq. Code	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 1000pcs./reel)

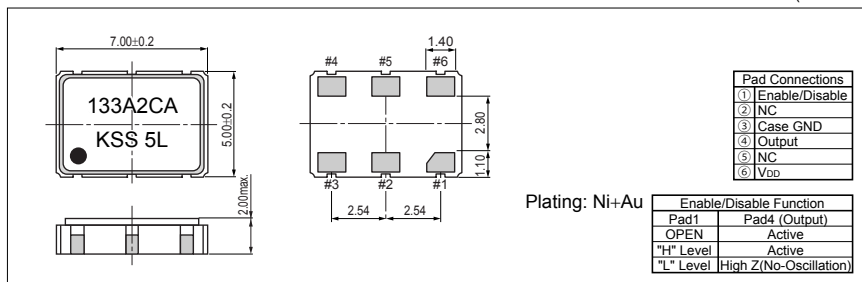
Specifications

Item	Symbol	Conditions	Min.	Max.	Units
Output Frequency Range	Fo		100	170	MHz
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @25°C), Shock and vibration	-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 _{DD}		1.62	1.98	V
Current Consumption (Standard Loaded)	I _{DD}		—	50	mA
Symmetry	SYM		40	60	%
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Standard Loaded)	Tr/Tf		—	2	nS
Output Voltage-"L"	V _{OL}		—	10% V _{DD}	V
Output Voltage-"H"	V _{OH}		90% V _{DD}	—	V
Output Load (CMOS)	L _{CMOS}		—	15	pF
Input Voltage Range	V _{IN}		0	V _{DD}	V
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V
Disable Time	—		—	200	nS
Enable Time	—		—	2	mS
Start-up Time	ST	@ Minimum Operation Voltage to be 0 sec.	—	10	mS
Deterministic Jitter (DJ)	DJ	Measured with Wavecrest DTS-2079 VIS / 6.3.1	0.2 typ.		ps
1 Sigma Jitter	1 Sigma		3 typ.		ps
Peak to Peak Jitter	Pk-Pk		20 typ.		ps

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

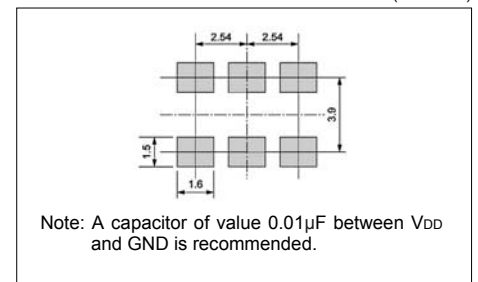
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

- Low voltage 2.5V
- Low jitter
- LV-CMOS output
- 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 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 1000pcs./reel)

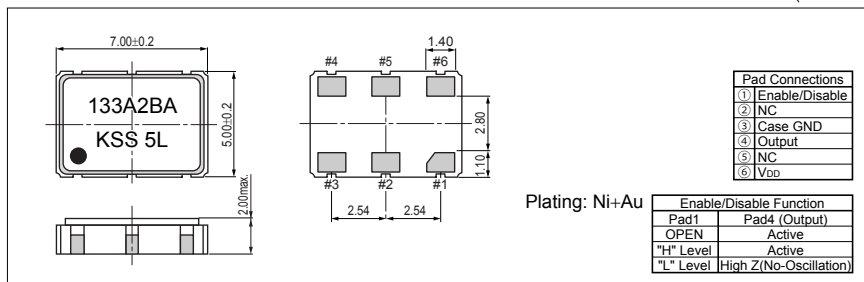
Specifications

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 (1year @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	-10	+70	°C	
Max. Supply Voltage	—		-0.5	+5	V	
Supply Voltage	V _{DD}		2.38	2.62	V	
Current Consumption (Standard Loaded)	I _{DD}		—	50	mA	
Symmetry	SYM		40	60	%	
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Standard Loaded)	Tr/Tf		—	2	nS	
Output Voltage-"L"	V _{OL}		—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}		90% V _{DD}	—	V	
Output Load (CMOS)	L _{CMOS}		—	15	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	200	nS	
Enable Time	—		—	2	mS	
Start-up Time	ST	@ Minimum Operation Voltage to be 0 sec.	—	10	mS	
Deterministic Jitter (DJ)	DJ	Measured with Wavecrest DTS-2079 VIS / 6.3.1	0.2 typ.		ps	
1 Sigma Jitter	1 Sigma		3 typ.		ps	
Peak to Peak Jitter	Pk-Pk		20 typ.		ps	

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

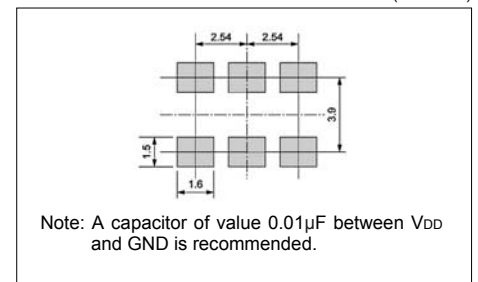
Dimensions

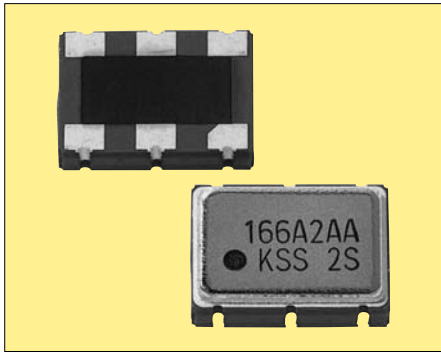
(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

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

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 1000pcs./reel)

Table 1

Freq. Code	Tol. ×10 ⁻⁶	Operating Temperature Range (°C)	Note
1	±100	0 to +70	Standard specifications

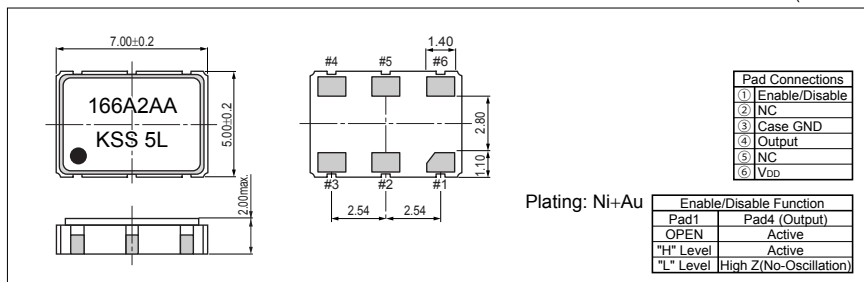
Specifications

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 (1year @25°C), Shock and vibration	-100	+100	×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 _{DD}		3.14	3.46	V
Current Consumption (Standard Loaded)	I _{DD}		—	60	mA
Symmetry	SYM		40	60	%
Rise/ Fall Time (10% V _{DD} to 90% V _{DD} Standard Loaded)	Tr/Tf		—	2	nS
Output Voltage-"L"	V _{OL}		—	10% V _{DD}	V
Output Voltage-"H"	V _{OH}		90% V _{DD}	—	V
Output Load (CMOS)	L _{CMOS}		—	15	pF
Input Voltage Range	V _{IN}		0	V _{DD}	V
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V
Disable Time	—		—	200	nS
Enable Time	—		—	2	mS
Start-up Time	ST	@ Minimum Operation Voltage to be 0 sec.	—	10	mS
Deterministic Jitter (DJ)	DJ	Measured with Wavecrest DTS-2079 VIS / 6.3.1	0.2 typ.		ps
1 Sigma Jitter	1 Sigma		3 typ.		ps
Peak to Peak Jitter	Pk-Pk		20 typ.		ps

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

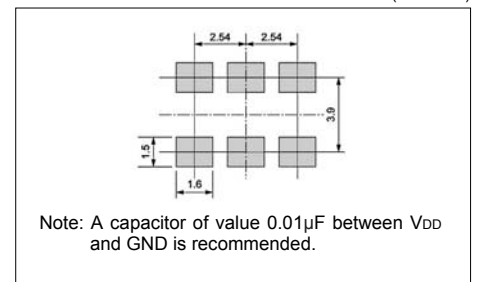
Dimensions

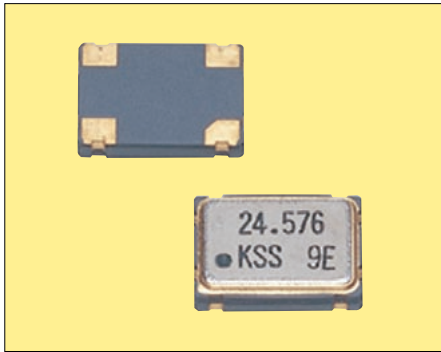
(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb 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 $V_{DD}=3.3/5.0V$ available

Frequency Tolerance (Overall)

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

How to Order

KC7050B 25.0000 C 3 0 A 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")

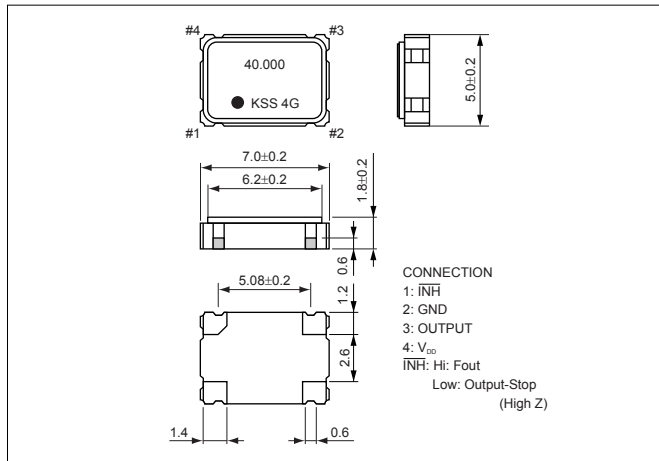
Specifications

Items	Symbol	Specifications		Units
		KC7050Bxx.xxxxC5xA00 (FXO-31FH)	KC7050Bxx.xxxxC3xA00 (FXO-31FL)	
Output Frequency Range	F_0	1.8 to 50		MHz
Frequency Tolerance (Overall)	F_{tol}	± 30		$\times 10^{-6}$
		± 50		
		± 100		
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_{DD}	5 \pm 0.5	3.3 \pm 0.3	V
Current Consumption	I_{DD}	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_{DD}		%
Rise / Fall Time	T_r/T_f	10 Max.		nS
Output Voltage-"L"	V_{OL}	10% V_{DD} Max.		V
Output Voltage-"H"	V_{OH}	90% V_{DD} Min.		V
Output Load	CL	50 Max.	20 Max.	pF
Input Voltage Range	V_{IN}	0 to V_{DD}	0 to V_{DD}	V
Input Voltage-"L"	V_{IL}	0.8 Max.	0.3 Max.	V
Input Voltage-"H"	V_{IH}	2.2 Min.	2.2 Min.	V
Disable Time	—	150 Max.		nS
Enable Time	—	5 Max.		mS
Start-up Time	ST	10 Max.		mS

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

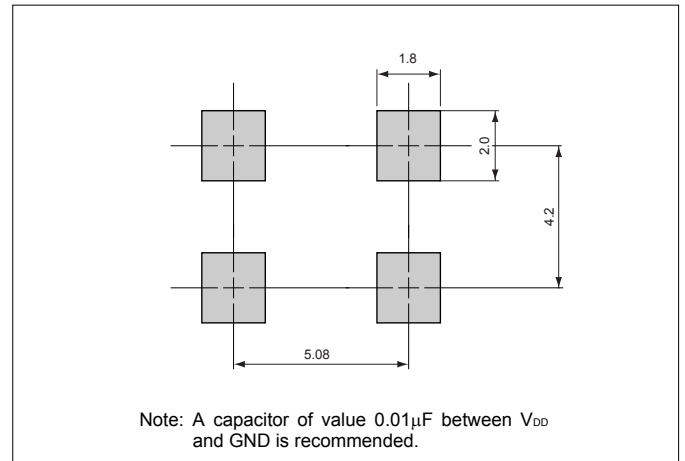
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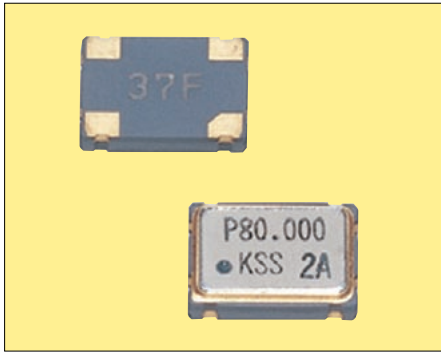
(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb 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_{DD} =3.3/5.0V available

Frequency Tolerance (Overall)

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

How to Order

KC7050B 80.0000 C 3 0 A 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")

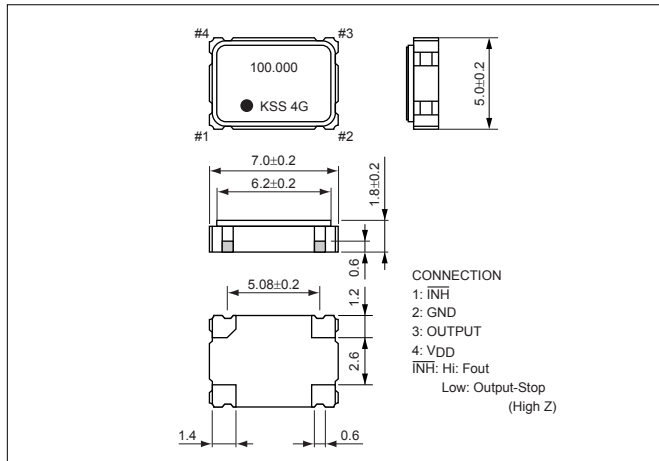
Specifications

Items	Symbol	Conditions	Specifications		Units
			Min.	Max.	
Output Frequency Range	F_0		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}		0	+70	°C
Max. Supply Voltage	—		—	6	V
Supply Voltage	V_{DD}	3.3V Type	3.135	3.465	V
		5.5V Type	4.75	5.25	
Current Consumption	I_{DD}		—	70	mA
Stand-by Current	I_{std}		—	60	μ A
Symmetry	SYM	@50% V_{DD}	40	60	%
Rise / Fall Time	T_r/T_f		—	7	nS
Output Voltage-"L"	V_{OL}		—	10% V_{DD}	V
Output Voltage-"H"	V_{OH}	@3.3V	2.8	—	V
		@5.0V	4	—	
Output Load	CL		—	15	pF
Input Voltage Range	V_{IN}		V_{SS}	V_{DD}	V
Input Voltage-"L"	V_{IL}		—	30% V_{DD}	V
Input Voltage-"H"	V_{IH}		70% V_{DD}	—	V
Disable Time	—		—	1	mS
Enable Time	—		—	3	mS
Start-up Time	ST		—	10	mS

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

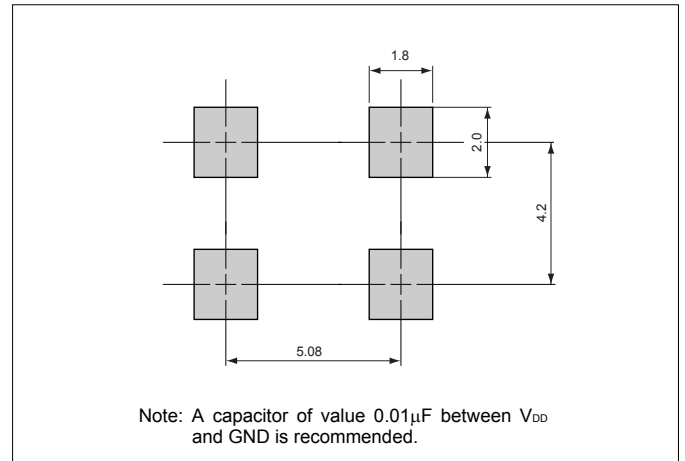
Dimensions

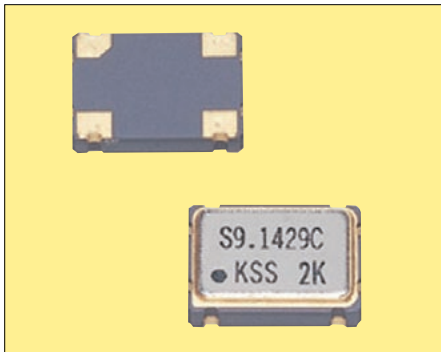
(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb 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_{DD} =3.3/5.0V available

Frequency Tolerance (Overall)

Freq.Tol. Code	Freq.Tol. $\times 10^{-6}$	Operating Temperature Range (°C)	Notes
P	± 100	-30 to +85	1.8 to 40MHz
Q	± 50	(Standard)	
R	± 30		

How to Order

KC7050B 25.0000 C 3 Q A 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")

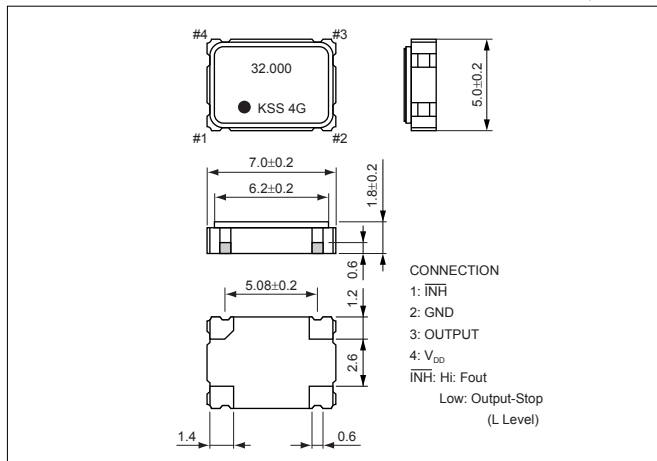
Specifications

Items	Symbol	Specifications		Units
		KC7050Bxx.xxxxC5xA00 (FXO-34F)	KC7050Bxx.xxxxC3xA00 (FXO-34FL)	
Output Frequency Range	F_0	1.8 to 40		MHz
Frequency Tolerance (Overall)	F_{tol}	± 30		$\times 10^{-6}$
		± 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_{DD}	5 \pm 5%	3.3 \pm 5%	V
Current Consumption	I_{DD}	12 Max.	10 Max.	mA
Stand-by Current	I_{std}	8 Max.		μ A
Symmetry	SYM	40 to 60@50% V_{DD}		%
Rise / Fall Time	T_r/T_f	12 Max.	16 Max.	nS
Output Voltage-"L"	V_{OL}	10% V_{DD} Max.		V
Output Voltage-"H"	V_{OH}	90% V_{DD} Min.		V
Output Load	CL	15 Max.		pF
Input Voltage Range	V_{IN}	0 to V_{DD}	0 to V_{DD}	V
Input Voltage-"L"	V_{IL}	0.8 Max.	0.3 Max.	V
Input Voltage-"H"	V_{IH}	2.2 Min.	2.2 Min.	V
Disable Time	-	150 Max.		nS
Enable Time	-	5 Max.		mS
Start-up Time	ST	10 Max.		mS

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

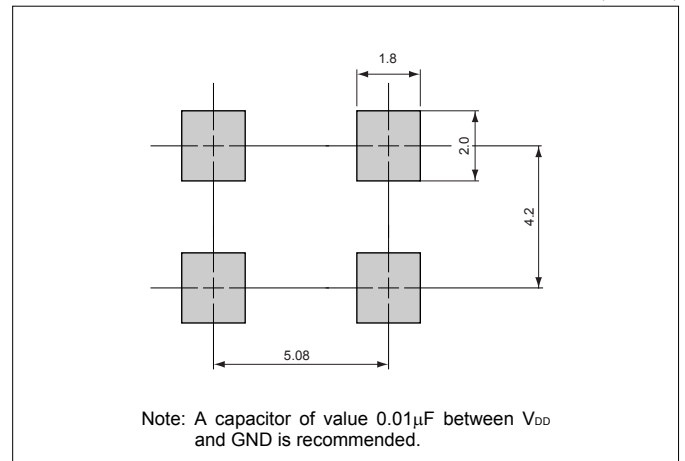
Dimensions

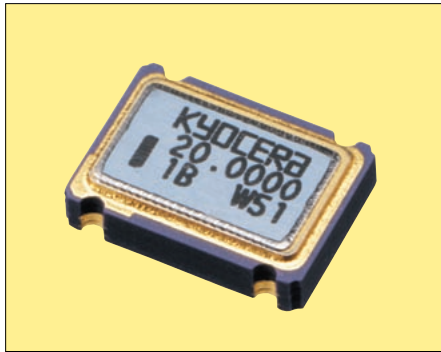
(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

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

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	-40 to +85	With only certain frequencies
F	± 100		
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 1000pcs./reel)

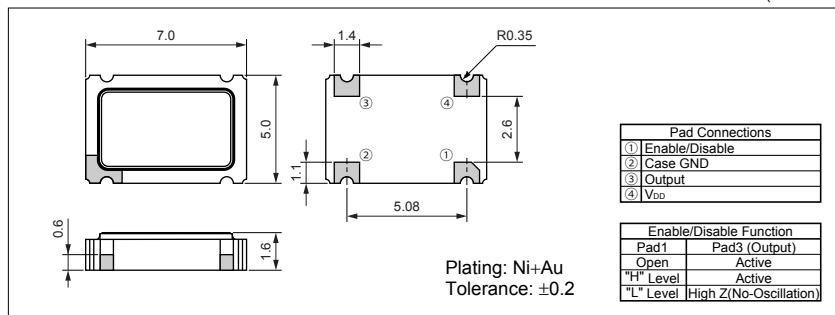
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		1.5	80	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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/ -40 to +85°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 _{DD}	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 _{DD}	1.5≤Fo≤20MHz	—	10	mA	
		20<Fo≤40MHz	—	15		
		40<Fo≤60MHz	—	20		
		60<Fo≤80MHz	—	30		
Stand-by/Disable Current	I _{std} /I _{dis}	1.5≤Fo≤32MHz (Stand-by Function)	—	10	μA	
		32<Fo≤50MHz (Disable Function)	—	15	mA	
		50<Fo≤80MHz (Stand-by Function)	—	10	μA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf	1.5≤Fo≤26MHz	—	10	nS	
		26<Fo≤45MHz	—	8		
		45<Fo≤80MHz	—	5		
Output Voltage-"L"	V _{OL}	I _{OL} =8mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-8mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	—	15	pF	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	30% V _{DD}	V	
Input Voltage-"H"	V _{IH}		70% V _{DD}	—	V	
Disable Time	—		—	150	nS	
Enable Time	—	1.5≤Fo≤32MHz (Stand-by Function)	—	5	mS	
		32<Fo≤50MHz (Disable Function)	—	150	nS	
		50<Fo≤80MHz (Stand-by Function)	—	5	mS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

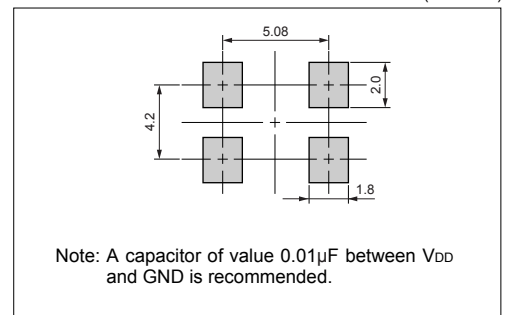
Dimensions

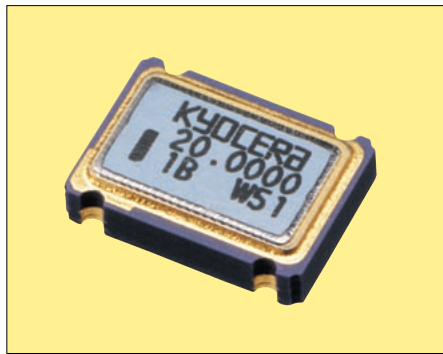
(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

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

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

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 1000pcs./reel)

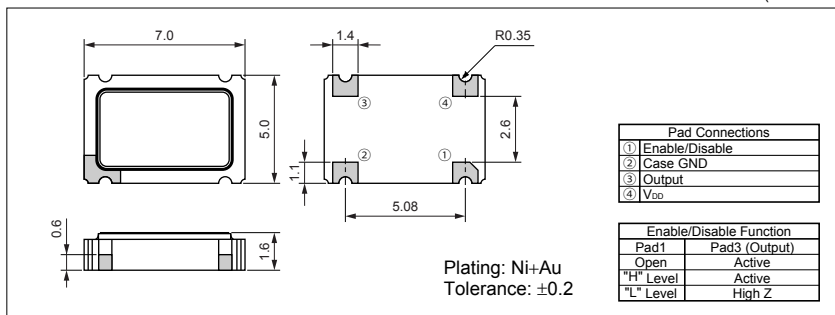
Specifications

Item	Symbol	Conditions	Min.	Max.	Units	
Output Frequency Range	Fo		1.5	68	MHz	
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @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/ -40 to +85°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 _{DD}	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 _{DD}	1.5<Fo≤20MHz	—	25	mA	
		20<Fo≤40MHz	—	35		
		40<Fo≤68MHz	—	50		
Disable Current	I _{dis}		—	30	mA	
Symmetry	SYM	@50% V _{DD}	45	55	%	
Rise/Fall Time (10% V _{DD} to 90% V _{DD} Maximum Loaded)	Tr/Tf	1.5<Fo≤26MHz	—	10	nS	
		26<Fo≤50MHz	—	8		
		50<Fo≤68MHz	—	5		
Output Voltage-"L"	V _{OL}	I _{OL} =16mA	—	10% V _{DD}	V	
Output Voltage-"H"	V _{OH}	I _{OH} =-16mA	90% V _{DD}	—	V	
Output Load	L _{CMOS}	CMOS Output	1.5<Fo≤50MHz	—	50	pF
			50<Fo≤68MHz	—	15	
Input Voltage Range	V _{IN}		0	V _{DD}	V	
Input Voltage-"L"	V _{IL}		—	0.8	V	
Input Voltage-"H"	V _{IH}		2.2	—	V	
Disable Time	—		—	100	nS	
Enable Time	—		—	100	mS	
Start-up Time	ST	@ 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 inquiries about operating temperature range, available frequencies and other conditions.

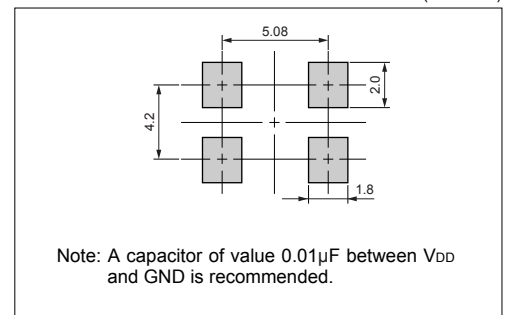
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

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

How to Order

KC7050S 155.520 P 2 1 E 00
 ① ② ③④⑤⑥ ⑦

- ① Type (7.0×5.0mm SMD)
- ② Output Frequency
- ③ Output Type (PECL)
- 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 1000pcs./reel)

Table 1

Freq. Tol. Code	×10 ⁻⁶	Operating Temperature Range (°C)	Note
1	±100	0 to +70	Standard specifications

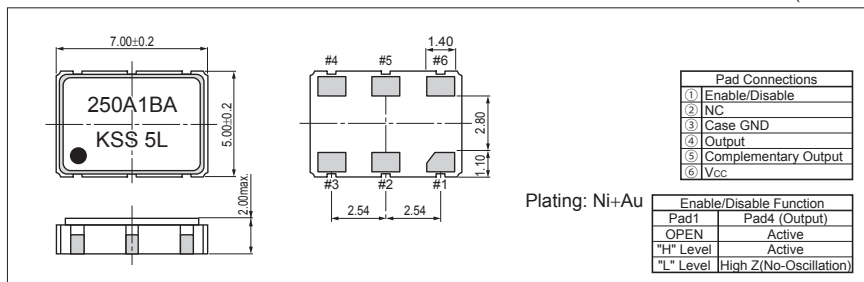
Specifications

Item	Symbol	Conditions	Min.	Max.	Units
Output Frequency Range	F _o		50	700	MHz
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @25°C), Shock and vibration	-100	+100	×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}		2.38	2.62	V
Current Consumption (Standard Loaded)	I _{cc}		—	60	mA
Symmetry	SYM	50MHz≤F _o ≤350MHz	45	55	%
		350MHz<F _o ≤700MHz	40	60	
Rise/ Fall Time (20% V _{cc} to 80% V _{cc} Standard Loaded)	Tr/Tf	50MHz≤F _o ≤400MHz	—	600	pS
		400MHz<F _o ≤700MHz	—	400	
Output Voltage-"L"	V _{OL}		—	1.195	V
Output Voltage-"H"	V _{OH}		1.415	—	V
Output Load (PECL)	L _{ECL}	PECL 50Ω @Terminated V _{cc} -2V	49.5	50.5	ohm
Input Voltage Range	V _{IN}		0	V _{cc}	V
Input Voltage-"L"	V _{IL}		—	30% V _{cc}	V
Input Voltage-"H"	V _{IH}		70% V _{cc}	—	V
Disable Time	—		—	200	nS
Enable Time	—		—	2	mS
Start-up Time	ST	@ Minimum Operation Voltage to be 0 sec.	—	10	mS
Deterministic Jitter (DJ)	DJ	Measured with Wavecrest DTS-2079 VIS / 6.3.1	0.2 typ.		ps
1 Sigma Jitter	1 Sigma		3 typ.		ps
Peak to Peak Jitter	Pk-Pk		20 typ.		ps

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

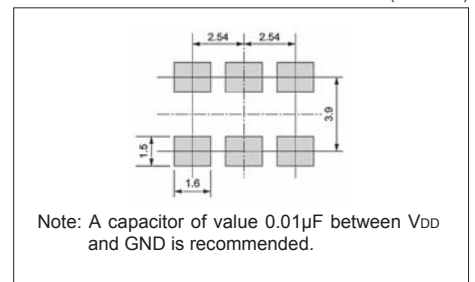
Dimensions

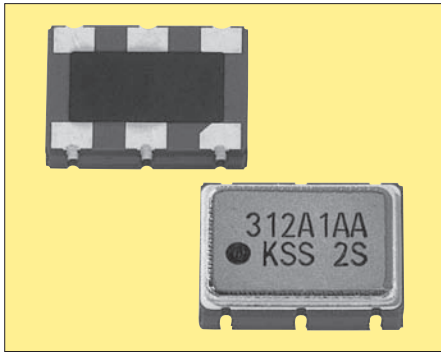
(Unit : mm)



Recommended Land Pattern

(Unit : mm)





Pb Free

RoHS Compliant

Features

- Low jitter
- Complementary LV-PECL outputs
- Operation at fundamental high frequency

Table 1

Freq. Tol. Code	×10 ⁻⁶	Operating Temperature Range (°C)	Note
1	±100	0 to +70	Standard specifications

How to Order

KC7050S 312.500 P 3 1 E 00
 ① ② ③④⑤⑥ ⑦

- ① Type (7.0×5.0mm SMD)
- ② Output Frequency
- ③ Output Type (PECL)
- 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 1000pcs./reel)

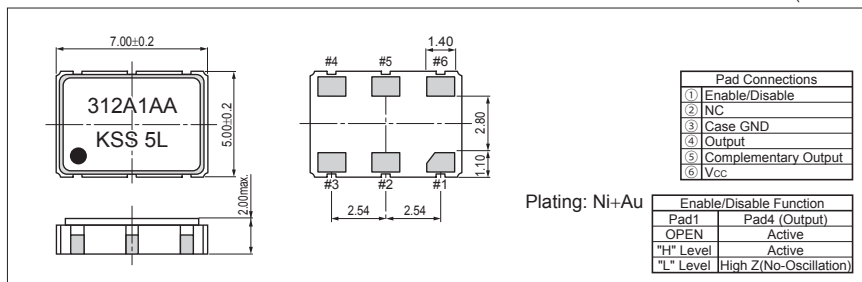
Specifications

Item	Symbol	Conditions	Min.	Max.	Units
Output Frequency Range	F _o		50	700	MHz
Frequency Tolerance	F _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1year @25°C), Shock and vibration	-100	+100	×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}		3.14	3.46	V
Current Consumption (Standard Loaded)	I _{cc}		—	60	mA
Symmetry	SYM	50MHz≤F _o ≤350MHz	45	55	%
		350MHz<F _o ≤700MHz	40	60	
Rise/ Fall Time (20% V _{cc} to 80% V _{cc} Standard Loaded)	Tr/Tf	50MHz≤F _o ≤400MHz	—	600	pS
		400MHz<F _o ≤700MHz	—	400	
Output Voltage-"L"	V _{OL}		—	1.68	V
Output Voltage-"H"	V _{OH}		2.275	—	V
Output Load (PECL)	L _{ECL}	PECL 50Ω @Terminated V _{cc} -2V	49.5	50.5	ohm
Input Voltage Range	V _{IN}		0	V _{cc}	V
Input Voltage-"L"	V _{IL}		—	30% V _{cc}	V
Input Voltage-"H"	V _{IH}		70% V _{cc}	—	V
Disable Time	—		—	200	nS
Enable Time	—		—	2	mS
Start-up Time	ST	@ Minimum Operation Voltage to be 0 sec.	—	10	mS
Deterministic Jitter (DJ)	DJ	Measured with Wavecrest DTS-2079 VIS / 6.3.1	0.2 typ.		ps
1 Sigma Jitter	1 Sigma		3 typ.		ps
Peak to Peak Jitter	Pk-Pk		20 typ.		ps

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

Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)

