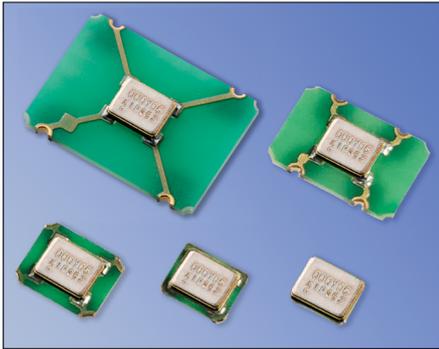




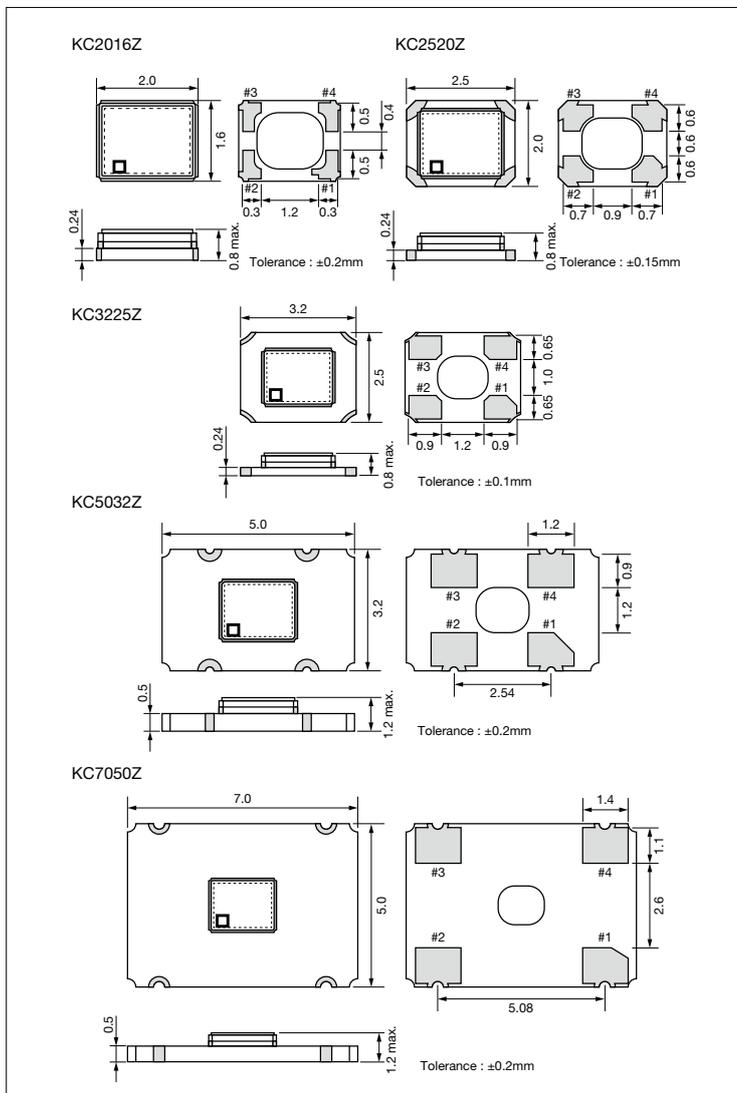
CMOS, 2.0 × 1.6 / 2.5 × 2.0 / 3.2 × 2.5 / 5.0 × 3.2 / 7.0 × 5.0mm



RoHS Compliant
PSL: R4Y MSL1

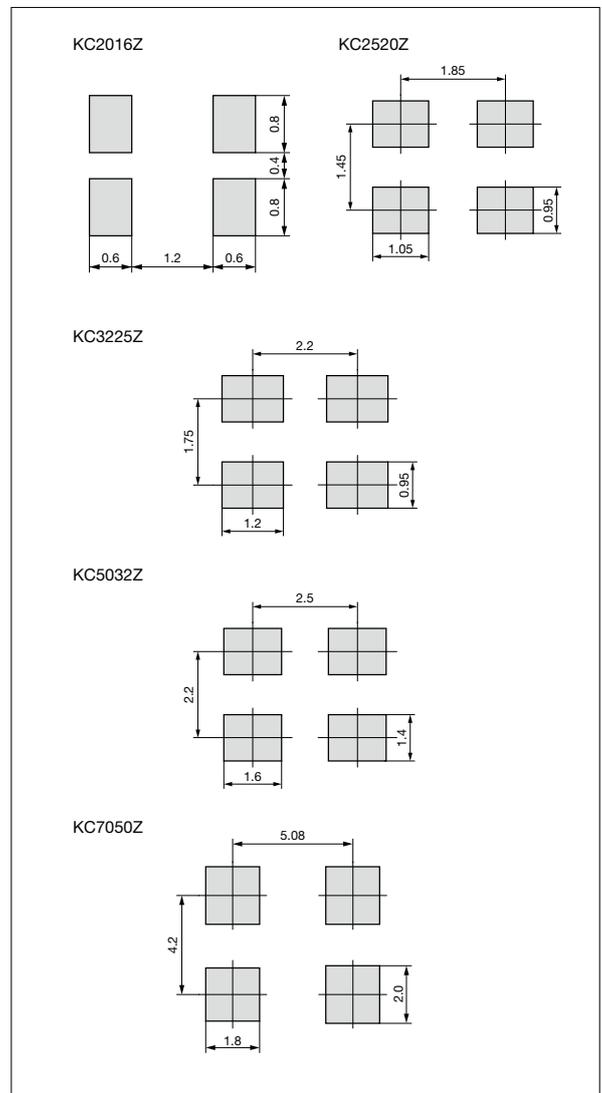
Dimensions

(Unit : mm)



Recommended Land Patterns

(Unit : mm)



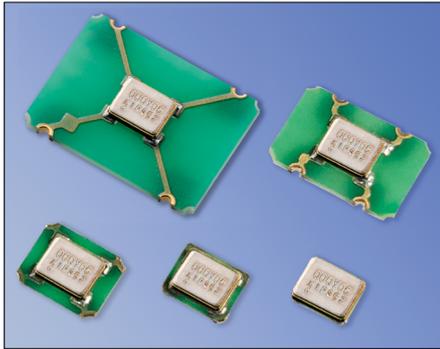
Clock Oscillators

Pad Connections	
#1	Stand-by Function
#2	Case GND
#3	Output
#4	Vcc

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



CMOS, 2.0 × 1.6 / 2.5 × 2.0 / 3.2 × 2.5 / 5.0 × 3.2 / 7.0 × 5.0mm



PSL: R4Y
RoHS Compliant
MSL1

Features

- Frequency Range 0.5 to 170 MHz
- CMOS Output
- Short Lead Time
- Heat resistant up to +125° C

Applications

- Consumer • Wireless Comm. • Industrial

Table 1

Freq. Tol. Code	× 10 ⁻⁶	Operating Temperature Range (° C)	Note
S	± 30	- 10 to +70	For additional stability, please contact us.
U	± 25		
W	± 20		
G	± 50		
H	± 30		
J	± 25	- 40 to +85	
K	± 20		
L	± 15		
6	± 50	- 40 to +105	
5	± 30		
X	± 100		
Z	± 50	- 40 to +125	
9	± 30		

How to Order

KC□□□□Z 25.0000 C 1 □ X 00
① ② ③ ④ ⑤ ⑥ ⑦

① Series

KC2016Z	2016 Size	KC2520Z	2520 Size
KC3225Z	3225 Size	KC5032Z	5032 Size
KC7050Z	7050 Size		

② Output Frequency (25.0000 : 25MHz)

③ Output Type (C : CMOS)

④ Supply Voltage

1	1.8V/ 2.5V/ 3.3V compatible
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⑤ Frequency Tolerance (See Table 1)

⑥ Symmetry/ INH Function

X	45/ 55%
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⑦ Individual Specification (STD Specification is "00" .)

Packaging Tape&Reel

KC7050Z/ KC5032Z	1000 pcs./ reel
KC3225Z/ KC2520Z/ KC2016Z	2000 pcs./ reel

Specifications

Item	Symbol	Conditions	Min.	Max.	Unit	
Output Frequency Range	f _o		0.5	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	See Table 1.			
Storage Temperature Range	T _{stg}		- 55	150	° C	
Operating Temperature Range	T _{use}		See Table 1.			
Max. Supply Voltage	—		- 0.3	4.5	V	
Supply Voltage	V _{cc}		1.71	3.63	V	
Current Consumption (Noload/ 1.71 ≤ V _{cc} ≤ 2.25)	I _{cc}	0.5 ≤ f _o < 5MHz	—	5.2	mA	
		5 ≤ f _o < 15MHz	—	5.8		
		15 ≤ f _o < 30MHz	—	6.2		
		30 ≤ f _o < 50MHz	—	6.8		
		50 ≤ f _o ≤ 60MHz	—	6.8		
		60 < f _o < 75MHz	—	9		
		75 ≤ f _o < 105MHz	—	10		
		105 ≤ f _o < 130MHz	—	10.5		
		130 ≤ f _o < 160MHz	—	11.5		
		160 ≤ f _o ≤ 170MHz	—	12.5		
Current Consumption (Noload/ 2.25 < V _{cc} ≤ 2.8)	I _{cc}	0.5 ≤ f _o < 5MHz	—	5.5	mA	
		5 ≤ f _o < 15MHz	—	6		
		15 ≤ f _o < 30MHz	—	6.5		
		30 ≤ f _o < 50MHz	—	7.2		
		50 ≤ f _o ≤ 60MHz	—	7.4		
		60 < f _o < 75MHz	—	10		
		75 ≤ f _o < 105MHz	—	11.5		
		105 ≤ f _o < 130MHz	—	12.5		
		130 ≤ f _o < 160MHz	—	14		
		160 ≤ f _o ≤ 170MHz	—	15		
Current Consumption (Noload/ 2.8 < V _{cc} ≤ 3.63)	I _{cc}	0.5 ≤ f _o < 5MHz	—	5.8	mA	
		5 ≤ f _o < 15MHz	—	6.5		
		15 ≤ f _o < 30MHz	—	7.3		
		30 ≤ f _o < 50MHz	—	8		
		50 ≤ f _o ≤ 60MHz	—	8.5		
		60 < f _o < 75MHz	—	12.5		
		75 ≤ f _o < 105MHz	—	14.5		
		105 ≤ f _o < 130MHz	—	15.5		
		130 ≤ f _o < 160MHz	—	18		
		160 ≤ f _o ≤ 170MHz	—	19.5		
Stand-by Current	I _{std}		—	5	μA	
Symmetry	SYM	@50% V _{cc}	45	55	%	
Rise/ Fall Time (20% to 80% Output Level)	Tr/ Tf	0.5 ≤ f _o ≤ 60MHz	Loaded/ 1.71 ≤ V _{cc} ≤ 2.25	—	4	ns
			Loaded/ 2.25 < V _{cc} ≤ 2.8	—	3	
			Loaded/ 2.8 < V _{cc} ≤ 3.63	—	2.5	
		60 < f _o ≤ 170MHz	Loaded/ 1.71 ≤ V _{cc} ≤ 2.25	—	1.5	
			Loaded/ 2.25 < V _{cc} ≤ 2.8	—	1.3	
			Loaded/ 2.8 < V _{cc} ≤ 3.63	—	1	
Low Level Output Voltage	V _{oL}	I _{oL} = 5mA	—	10% V _{cc}	V	
High Level Output Voltage	V _{oH}	I _{oH} = - 5mA	90% V _{cc}	—	V	
Output Load (CMOS)	L _{CMOS}		—	15	pF	
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}		—	5	ms	
Start-up Time	t _{str}	@Minimum operating voltage to be 0 sec.	—	5	ms	

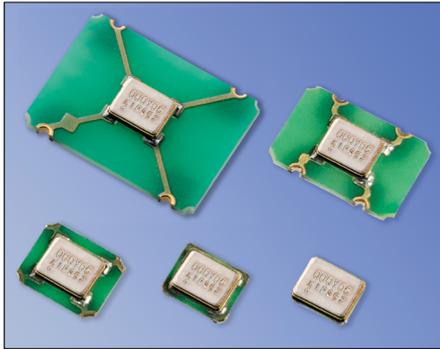
All electrical characteristics are defined at the maximum load and operating temperature range.

Clock Oscillators

Clock Z-Series “Y” type (Low Jitter type)



CMOS, 2.0×1.6/2.5×2.0/3.2×2.5 /5.0×3.2/7.0×5.0mm



PSL: R4Y



RoHS Compliant

MSL1

Features

- Frequency Range 24 to 72 MHz
- CMOS Output
- Low Jitter
- Heat resistant up to +125° C

Applications

- Consumer • Wireless Comm. • Industrial

Table 3

Freq. Code	Tol. $\times 10^{-6}$	Operating Temperature Range (° C)	Note
S	± 30	- 10 to +70	For additional stability, please contact us.
U	± 25		
W	± 20		
G	± 50	- 40 to +85	
H	± 30		
J	± 25		
K	± 20	- 40 to +105	
6	± 50		
5	± 30		
X	± 100	- 40 to +125	
Z	± 50		

How to Order

KC□□□□Z 25.0000 C 1 □ Y 00
 ① ② ③ ④ ⑤ ⑥ ⑦

① Series

KC2016Z	2016 Size	KC2520Z	2520 Size
KC3225Z	3225 Size	KC5032Z	5032 Size
KC7050Z	7050 Size		

② Output Frequency (25.0000 : 25MHz)

③ Output Type (C : CMOS)

④ Supply Voltage

1	1.8V/ 2.5V/ 3.3V compatible
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⑤ Frequency Tolerance (See Table 3)

⑥ Symmetry/ INH Function

Y	45/ 55%
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⑦ Individual Specification (STD Specification is “00” .)

Packaging Tape&Reel

KC7050Z/ KC5032Z	1000 pcs./ reel
KC3225Z/ KC2520Z/ KC2016Z	2000 pcs./ reel

Specifications

Item	Symbol	Conditions	Min.	Max.	Unit	
Output Frequency Range	fo		For output frequency range, please contact us.		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	See Table 3			
Storage Temperature Range	T _{stg}		- 55	150	° C	
Operating Temperature Range	T _{use}		See Table 3			
Max. Supply Voltage	—		- 0.3	4.5	V	
Supply Voltage	V _{cc}		1.71	3.63	V	
Current Consumption (Noload/ 1.71≤V _{cc} ≤2.25)	I _{cc}	24 ≤ fo<30MHz	—	2.7	mA	
		30 ≤ fo<50MHz	—	3.3		
		50 ≤ fo ≤ 60MHz	—	3.7		
		60<fo<72MHz	—	4		
Current Consumption (Noload/ 2.25<V _{cc} ≤2.8)	I _{cc}	24 ≤ fo<30MHz	—	3.5		
		30 ≤ fo<50MHz	—	4		
		50 ≤ fo ≤ 60MHz	—	4.3		
		60<fo<72MHz	—	4.8		
Current Consumption (Noload/ 2.8<V _{cc} ≤3.63)	I _{cc}	24 ≤ fo<30MHz	—	4		
		30 ≤ fo<50MHz	—	5		
		50 ≤ fo ≤ 60MHz	—	5.5		
		60<fo<72MHz	—	6		
Stand-by Current	I _{std}		—	5	μA	
Symmetry	SYM	@50% V _{cc}	45	55	%	
Rise/ Fall Time (20% to 80% Output Level)	Tr/ Tf	Loaded/ 1.71 ≤ V _{cc} ≤ 2.25	—	4	ns	
		Loaded/ 2.25<V _{cc} ≤ 2.8	—	3.2		
		Loaded/ 2.8<V _{cc} ≤ 3.63	—	2.7		
Low Level Output Voltage	VoL	I _{oL} = 5mA	—	10% V _{cc}	V	
High Level Output Voltage	VoH	I _{oH} = - 5mA	90% V _{cc}	—	V	
Output Load (CMOS)	L _{CMOS}		—	15	pF	
Low Level Input Voltage	ViL		—	30% V _{cc}	V	
High Level Input Voltage	ViH		70% V _{cc}	—	V	
Disable Time	t _{dis}		—	200	ns	
Enable Time	t _{ena}		—	10	ms	
Start-up Time	t _{str}	@Minimum operating voltage to be 0 sec.	—	10	ms	
1 Sigma Jitter	J _{sigma}	Measured with Wavecrest SIA-3000	—	5	ps	
Peak to Peak Jitter	J _{PK_PK}		—	50		
Phase Jitter	—	@50MHz V _{cc} = 3.3V	BW : 12kHz to 20MHz		1	ps

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