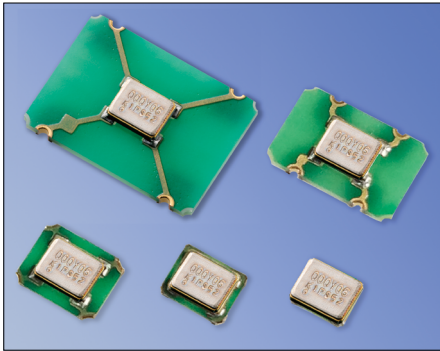




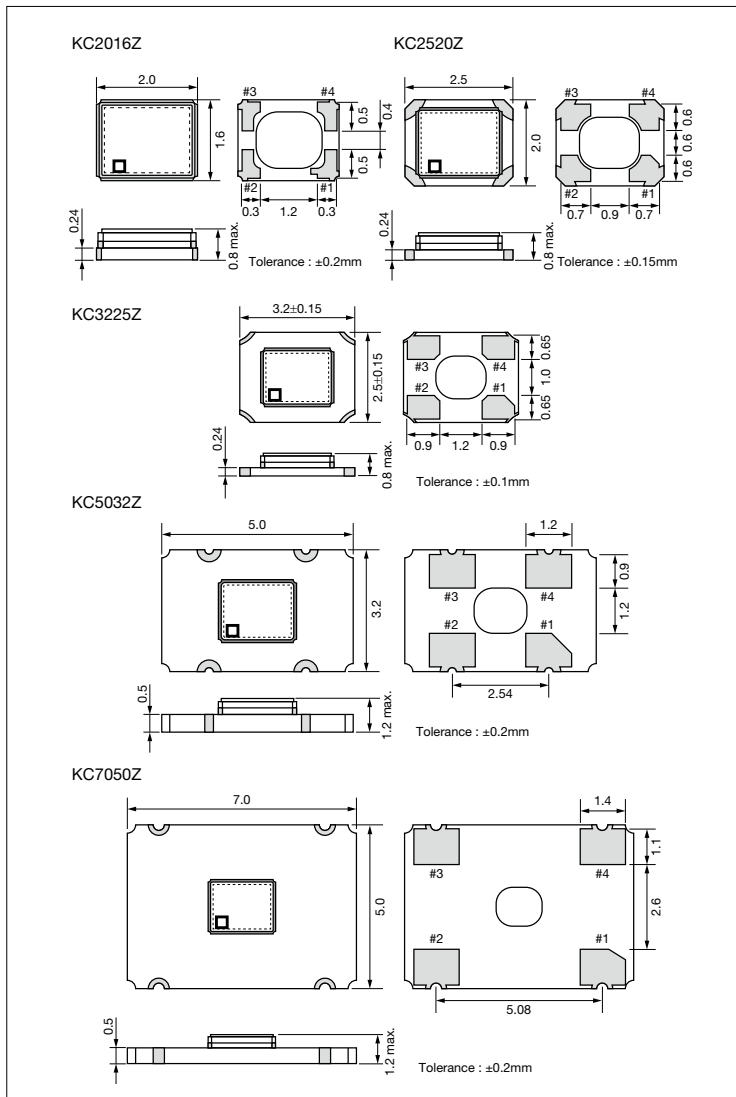
CMOS/ 1.8V, 2.5V, 3.3V/ 2.0×1.6, 2.5×2.0, 3.2×2.5, 5.0×3.2, 7.0×5.0mm



RoHS Compliant

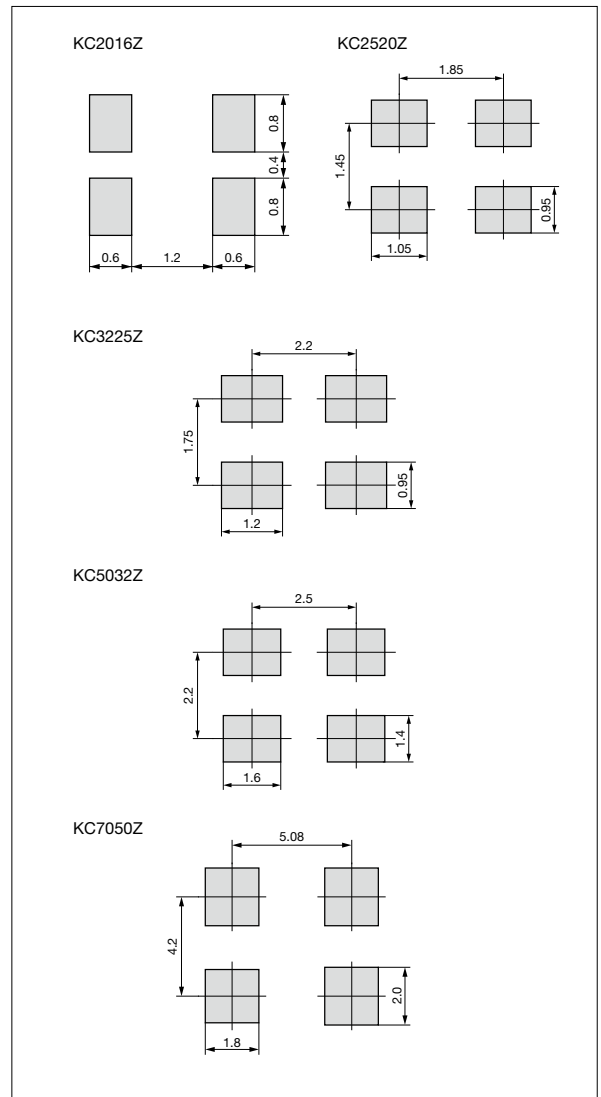
Dimensions

(Unit : mm)



Recommended Land Patterns

(Unit : mm)



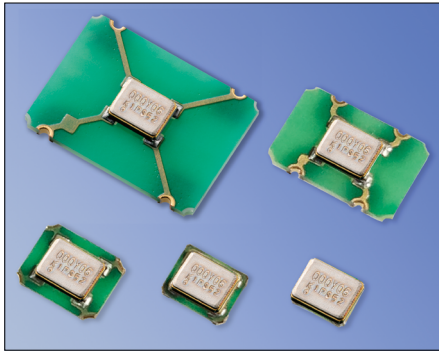
Clock Oscillators

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/ 1.8V, 2.5V, 3.3V / 2.0×1.6, 2.5×2.0, 3.2×2.5, 5.0×3.2, 7.0×5.0mm



RoHS Compliant

**Features**

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

**Applications**

- Consumer/ Networking/ Industrial/ Amuse

**Table 1**

Freq. Tol. Code	× 10 <sup>-6</sup>	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	
L	± 15		
6	± 50		
5	± 30	-40 to +125	
X	± 100		
Z	± 50		
9	± 30		

**How to Order**

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

①Series

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

②Output Frequency (25.0000 : 25MHz)

③Output Type (C : CMOS)

④Supply Voltage

(1 : 1.8V/ 2.5V/ 3.3V Compatible)

⑤Frequency Tolerance (See Table 1)

⑥Symmetry/ INH Function

X	STD 45/ 55%
---	-------------

⑦Individual 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 <sub>o</sub>		0.5	170	MHz	
Frequency Tolerance	f <sub>tol</sub>	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1 year @25°C), Shock and vibration	See Table 1.			
Storage Temperature Range	T <sub>stg</sub>		-55	150	°C	
Operating Temperature Range	T <sub>use</sub>		See Table 1.			
Max. Supply Voltage	—		-0.3	4.5	V	
Supply Voltage	V <sub>cc</sub>		1.71	3.63	V	
Current Consumption (Noload/ 1.71≤V <sub>cc</sub> ≤2.25)	I <sub>cc</sub>	0.5≤f <sub>o</sub> <5MHz	—	5.2	mA	
		5≤f <sub>o</sub> <15MHz	—	5.8		
		15≤f <sub>o</sub> <30MHz	—	6.2		
		30≤f <sub>o</sub> <50MHz	—	6.8		
		50≤f <sub>o</sub> ≤60MHz	—	6.8		
		60<f <sub>o</sub> <75MHz	—	9		
		75≤f <sub>o</sub> <105MHz	—	10		
		105≤f <sub>o</sub> <130MHz	—	10.5		
		130≤f <sub>o</sub> <160MHz	—	11.5		
160≤f <sub>o</sub> ≤170MHz	—	12.5				
Current Consumption (Noload/ 2.25<V <sub>cc</sub> ≤2.8)	I <sub>cc</sub>	0.5≤f <sub>o</sub> <5MHz	—	5.5	mA	
		5≤f <sub>o</sub> <15MHz	—	6		
		15≤f <sub>o</sub> <30MHz	—	6.5		
		30≤f <sub>o</sub> <50MHz	—	7.2		
		50≤f <sub>o</sub> ≤60MHz	—	7.4		
		60<f <sub>o</sub> <75MHz	—	10		
		75≤f <sub>o</sub> <105MHz	—	11.5		
		105≤f <sub>o</sub> <130MHz	—	12.5		
		130≤f <sub>o</sub> <160MHz	—	14		
160≤f <sub>o</sub> ≤170MHz	—	15				
Current Consumption (Noload/ 2.8<V <sub>cc</sub> ≤3.63)	I <sub>cc</sub>	0.5≤f <sub>o</sub> <5MHz	—	5.8	mA	
		5≤f <sub>o</sub> <15MHz	—	6.5		
		15≤f <sub>o</sub> <30MHz	—	7.3		
		30≤f <sub>o</sub> <50MHz	—	8		
		50≤f <sub>o</sub> ≤60MHz	—	8.5		
		60<f <sub>o</sub> <75MHz	—	12.5		
		75≤f <sub>o</sub> <105MHz	—	14.5		
		105≤f <sub>o</sub> <130MHz	—	15.5		
		130≤f <sub>o</sub> <160MHz	—	18		
160≤f <sub>o</sub> ≤170MHz	—	19.5				
Stand-by Current	I <sub>std</sub>		—	5	μA	
Symmetry	SYM	@50% V <sub>cc</sub>	45	55	%	
Rise/ Fall Time (20% to 80% Output Level)	Tr/ Tf	0.5≤f <sub>o</sub> ≤60MHz	Loaded/ 1.71≤V <sub>cc</sub> ≤2.25	—	4	ns
			Loaded/ 2.25<V <sub>cc</sub> ≤2.8	—	3	
			Loaded/ 2.8<V <sub>cc</sub> ≤3.63	—	2.5	
		60<f <sub>o</sub> ≤170MHz	Loaded/ 1.71≤V <sub>cc</sub> ≤2.25	—	1.5	
			Loaded/ 2.25<V <sub>cc</sub> ≤2.8	—	1.3	
			Loaded/ 2.8<V <sub>cc</sub> ≤3.63	—	1	
Low Level Output Voltage	V <sub>OL</sub>	I <sub>OL</sub> = 4mA	—	10% V <sub>cc</sub>	V	
High Level Output Voltage	V <sub>OH</sub>	I <sub>OH</sub> = -4mA	90% V <sub>cc</sub>	—	V	
Output Load (CMOS)	L <sub>CMOS</sub>		—	15	pF	
Low Level Input Voltage	V <sub>IL</sub>		—	30% V <sub>cc</sub>	V	
High Level Input Voltage	V <sub>IH</sub>		70% V <sub>cc</sub>	—	V	
Disable Time	t <sub>dis</sub>		—	200	ns	
Enable Time	t <sub>ena</sub>		—	5	ms	
Start-up Time	t <sub>str</sub>	@Minimum operating voltage to be 0 sec.	—	5	ms	

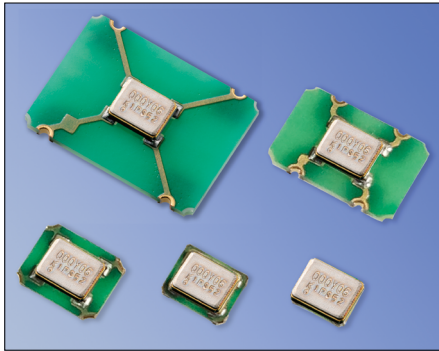
All electrical characteristics are defined at the maximum load and operating temperature range.

# Clock Oscillators Surface Mount Type

## Clock Z-Series "Y" type (CMOS, Low Jitter type)



CMOS/ 1.8V, 2.5V, 3.3V / 2.0×1.6, 2.5×2.0, 3.2×2.5, 5.0×3.2, 7.0×5.0mm



RoHS Compliant

### Features

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

### Applications

- Consumer/ Networking/ Industrial/ Amuse

Table 3

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

### How to Order

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

#### ①Series

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

②Output Frequency (25.0000 : 25MHz)

③Output Type (C : CMOS)

④Supply Voltage

(1 : 1.8V/ 2.5V/ 3.3V Compatible)

⑤Frequency Tolerance (See Table 3)

⑥Symmetry/ INH Function

Y	STD/ Low Jitter 45/ 55%

⑦Individual Specification

(STD Specification is "00")

#### Packaging Tape&Reel

Part Number	Quantity
KC7050Z/ KC5032Z	1000 pcs./ reel
KC3225Z/ KC2520Z/ KC2016Z	2000 pcs./ reel

## Specifications

Item	Symbol	Conditions	Min.	Max.	Unit	
Output Frequency Range	fo		24	72	MHz	
Frequency Tolerance	f <sub>tol</sub>	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1 year @25°C), Shock and vibration	See Table 3			
Storage Temperature Range	T <sub>stg</sub>		-55	150	°C	
Operating Temperature Range	T <sub>use</sub>		See Table 3			
Max. Supply Voltage	—		-0.3	4.5	V	
Supply Voltage	V <sub>cc</sub>		1.71	3.63	V	
Current Consumption (Noload/ 1.71≤V <sub>cc</sub> ≤2.25)	I <sub>cc</sub>	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 <sub>cc</sub> ≤2.8)	I <sub>cc</sub>	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 <sub>cc</sub> ≤3.63)	I <sub>cc</sub>	24≤fo<30MHz	—	4		
		30≤fo<50MHz	—	5		
		50≤fo≤60MHz	—	5.5		
		60<fo<72MHz	—	6		
Stand-by Current	I <sub>std</sub>		—	5	μA	
Symmetry	SYM	@50% V <sub>cc</sub>	24≤fo≤40MHz	40	55	%
			40<fo≤72MHz	45	55	
Rise/ Fall Time (20% to 80% Output Level)	Tr/ Tf	Loaded/ 1.71≤V <sub>cc</sub> ≤2.25	—	4	ns	
		Loaded/ 2.25<V <sub>cc</sub> ≤2.8	—	3.2		
		Loaded/ 2.8<V <sub>cc</sub> ≤3.63	—	2.7		
Low Level Output Voltage	V <sub>OL</sub>	I <sub>OL</sub> = 4mA	—	10% V <sub>cc</sub>	V	
High Level Output Voltage	V <sub>OH</sub>	I <sub>OH</sub> = -4mA	90% V <sub>cc</sub>	—	V	
Output Load (CMOS)	L <sub>CMOS</sub>		—	15	pF	
Low Level Input Voltage	V <sub>IL</sub>		—	30% V <sub>cc</sub>	V	
High Level Input Voltage	V <sub>IH</sub>		70% V <sub>cc</sub>	—	V	
Disable Time	t <sub>dis</sub>		—	200	ns	
Enable Time	t <sub>ena</sub>		—	10	ms	
Start-up Time	t <sub>str</sub>	@Minimum operating voltage to be 0 sec.	—	10	ms	
1 Sigma Jitter	J <sub>Sigma</sub>	Measured with Wavecrest SIA-3000	—	5	ps	
Peak to Peak Jitter	J <sub>PK_PK</sub>		—	50		
Phase Jitter	—	@50MHz V <sub>cc</sub> = 3.3V	BW : 12kHz to 20MHz	1	ps	

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