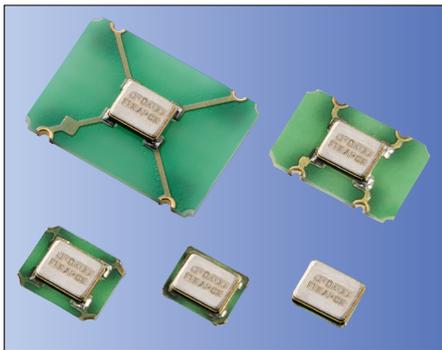




CMOS, 2.0×1.6/2.5×2.0/3.2×2.5 /5.0×3.2/7.0×5.0mm



AEC-Q100/200 RoHS Compliant
PSL: R4Y MSL1

Features

- Frequency Range 1.5 to 160MHz
- CMOS output
- Wide Supply Voltage
 - 1.6 to 3.63V
- Low current consumption
- Low Phase Noise

Applications

- Automotive Radar/ Camera/ Navigation/ Sensor/ Mirror/ Head light

Table 1

Freq. Code	Tol. $\times 10^{-6}$	Operating Temperature Range (°C)	Note
G	± 50	-40 to +85	Standard specifications
6	± 50	-40 to +105	
X	± 100	-40 to +125	

How to Order

MC□□□□K 25.0000 C 1 □ E SH
① ② ③ ④ ⑤ ⑥ ⑦

① Series

MC2016K	2016 Size	MC2520K	2520 Size
MC3225K	3225 Size	MC5032K	5032 Size
MC7050K	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

E	45/ 55%
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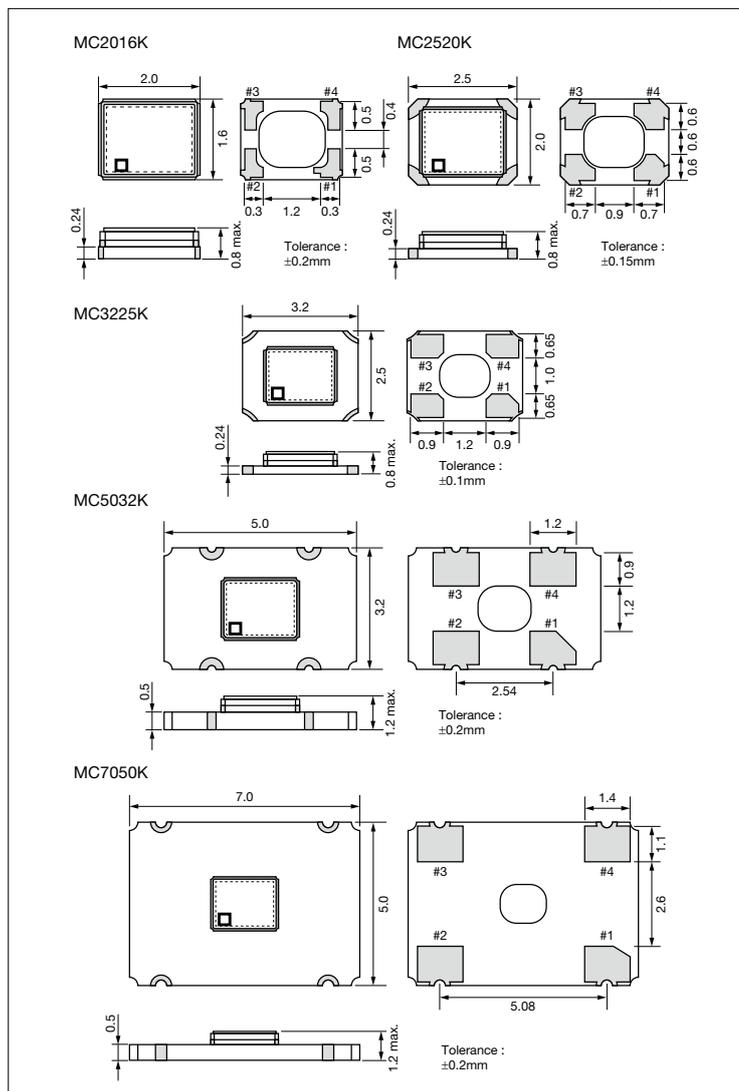
⑦ Individual Specification (STD Specification is "SH" .)

Packaging Tape & Reel

MC7050K/ MC5032K	1000 pcs./ reel
MC3225K/ MC2520K/ MC2016K	2000 pcs./ reel

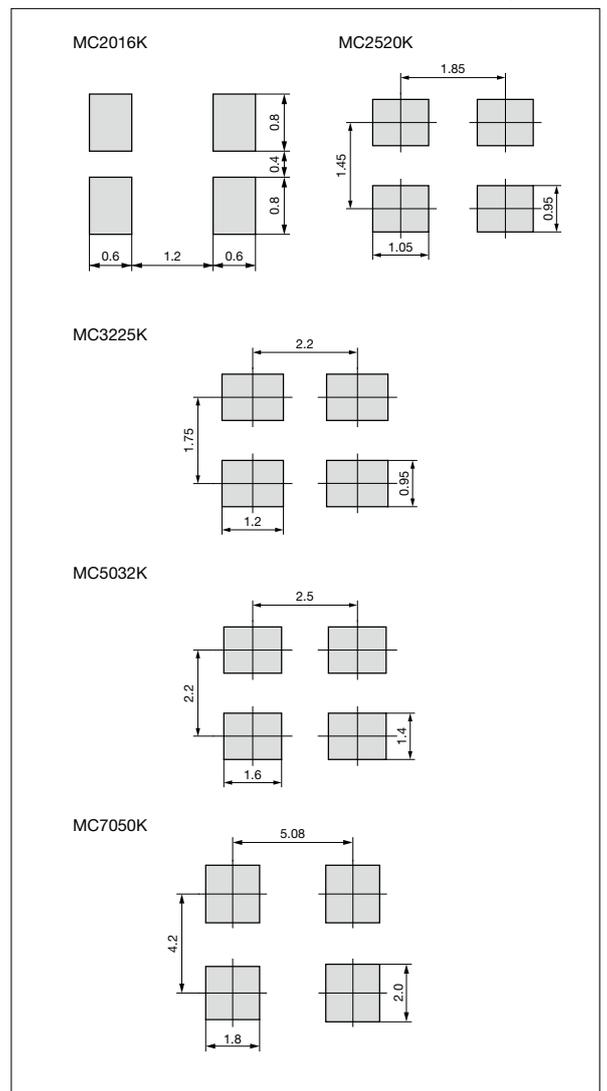
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)





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

Specifications

Item	Symbol	Conditions	Min.	Max.	Unit	
Output Frequency Range ^{Note1}	f _o		1.5	160	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	Temp.: - 40 to +85° C / - 40 to +105° C	- 50	+50	× 10 ⁻⁶
			Temp.: - 40 to +125° C	- 100	+100	
Storage Temperature Range	T _{stg}		- 55	+125	° C	
Operating Temperature Range	T _{use}		- 40	+85	° C	
			- 40	+105		
Max. Supply Voltage	—		- 0.3	+4.0	V	
Supply Voltage	V _{cc}	Code ④ : 1 : 1.5 ≤ F ₀ ≤ 125MHz	+1.60	+3.63	V	
		Code ④ : 2 : 125<F ₀ ≤ 160MHz	+2.25	+3.63		
Current Consumption (Maximum Loaded)	I _{cc}	1.5 ≤ F ₀ ≤ 24MHz	1.6 ≤ V _{cc} ≤ 2.25V	—	2.5	mA
			2.25<V _{cc} ≤ 2.8V	—	3.0	
			2.8<V _{cc} ≤ 3.63V	—	3.5	
		24<F ₀ ≤ 40MHz	1.6 ≤ V _{cc} ≤ 2.25V	—	3.5	
			2.25<V _{cc} ≤ 2.8V	—	4.5	
			2.8<V _{cc} ≤ 3.63V	—	5.0	
		40<F ₀ ≤ 62.5MHz	1.6 ≤ V _{cc} ≤ 2.25V	—	5.0	
			2.25<V _{cc} ≤ 2.8V	—	5.5	
			2.8<V _{cc} ≤ 3.63V	—	6.0	
		62.5<F ₀ ≤ 80MHz	1.6 ≤ V _{cc} ≤ 2.25V	—	6.0	
			2.25<V _{cc} ≤ 2.8V	—	6.5	
			2.8<V _{cc} ≤ 3.63V	—	8.0	
		80<F ₀ ≤ 125MHz	1.6 ≤ V _{cc} ≤ 2.25V	—	11.0	
			2.25<V _{cc} ≤ 2.8V	—	14.0	
2.8<V _{cc} ≤ 3.63V	—		17.0			
125<F ₀ ≤ 160MHz	2.25<V _{cc} ≤ 2.8V	—	25.0			
	2.8<V _{cc} ≤ 3.63V	—	27.0			
Stand-by Current	I _{std}	1.5 ≤ F ₀ ≤ 80MHz	—	5.0	μA	
		80<F ₀ ≤ 160MHz	—	10.0		
Symmetry	SYM	@50% V _{cc}	45	55	%	
Rise/ Fall Time (10% to 90% Output Level)	Tr/ Tf	1.5 ≤ F ₀ ≤ 80MHz	1.6 ≤ V _{cc} ≤ 2.25V	—	6.0	ns
			2.25<V _{cc} ≤ 2.8V	—	5.0	
			2.8<V _{cc} ≤ 3.63V	—	4.5	
		80<F ₀ ≤ 125MHz	1.6<V _{cc} ≤ 3.63V	—	4.0	
125<F ₀ ≤ 160MHz	2.25<V _{cc} ≤ 3.63V	—	2.5			
Low Level Output Voltage	V _{OL}	I _{OL} = 4mA (F ₀ ≤80MHz), I _{OL} = 8mA (F ₀ >80MHz)	—	10% V _{cc}	V	
High Level Output Voltage	V _{OH}	I _{OH} = -4mA (F ₀ ≤80MHz), I _{OH} = -8mA (F ₀ >80MHz)	90% V _{cc}	—	V	
Output Load	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}	1.5 ≤ F ₀ ≤ 80MHz	—	200	ns	
		80<F ₀ ≤ 125MHz	—	100		
		125<F ₀ ≤ 160MHz	—	100		
Enable Time	t _{ena}		—	5	ms	
Start-up Time	t _{str}	1.5 ≤ F ₀ ≤ 80MHz	@Minimum operating voltage to be 0 sec.	—	5	ms
		80<F ₀ ≤ 125MHz		—	10	
		125<F ₀ ≤ 160MHz		—	10	
1Sigma Jitter	J _{Sigma}	1.5 ≤ F ₀ ≤ 80MHz	Measured with Wavecrest SIA-3000	—	5	ps
		80<F ₀ ≤ 125MHz		—	4	
		125<F ₀ ≤ 160MHz		—	3	
Peak to Peak Jitter	J _{PK-PK}	1.5 ≤ F ₀ ≤ 80MHz		—	50	ps
		80<F ₀ ≤ 125MHz		—	40	
		125<F ₀ ≤ 160MHz		—	25	
Phase Jitter	J _{Phase}	@25MHz	BW : 12kHz to 20MHz	—	1.0	ps



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

Item	Symbol	Conditions	Min.	Max.	Unit
Phase Noise	—	@25MHz	@10Hz offset	Typ. - 89	dBc/ Hz
			@100Hz offset	Typ. - 119	
			@1kHz offset	Typ. - 143	
			@10kHz offset	Typ. - 157	
			@100kHz offset	Typ. - 160	
			@1MHz offset	Typ. - 162	
			@10MHz offset	Typ. - 162	

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

Note1: Please contact us for inquiry about operating temperature range, available frequencies and other conditions.

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)