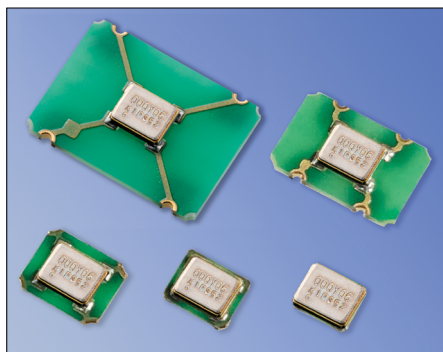


Clock Oscillators for Automotive Clock MC-Z-Series

Find Clock Oscillators Here



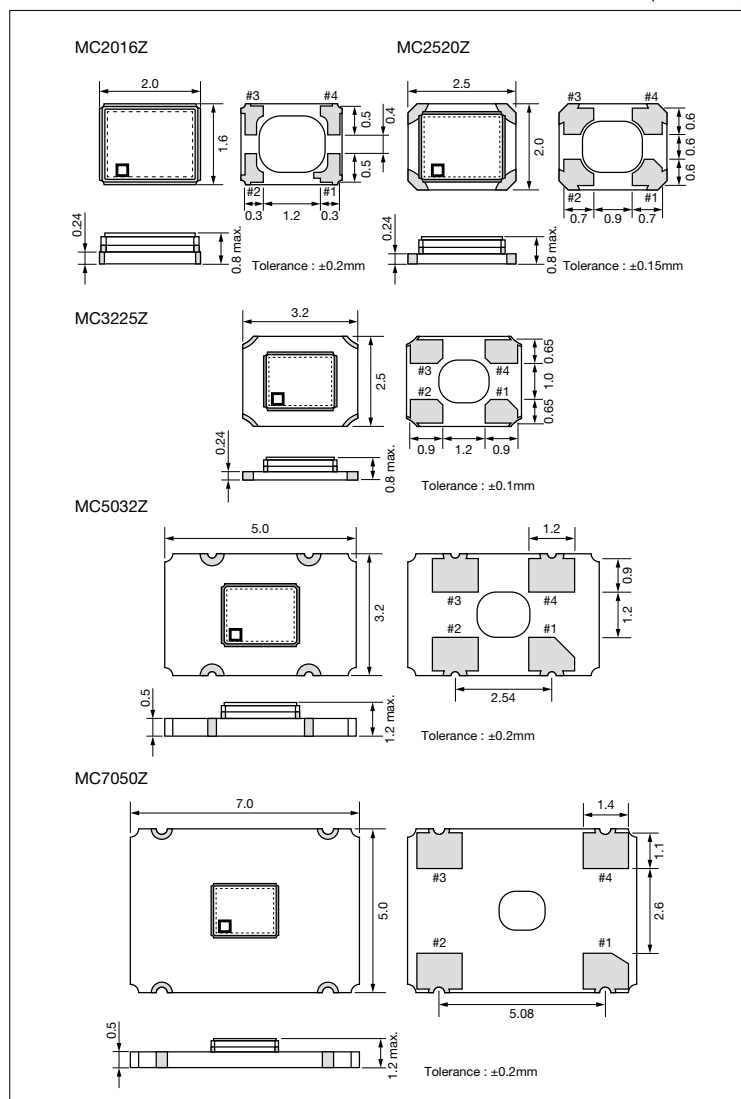
CMOS, 2.0 × 1.6 / 2.5 × 2.0 / 3.2 × 2.5 / 5.0 × 3.2 / 7.0 × 5.0mm



AEC-Q100/200 RoHS Compliant
PSL: R4Y MSL1

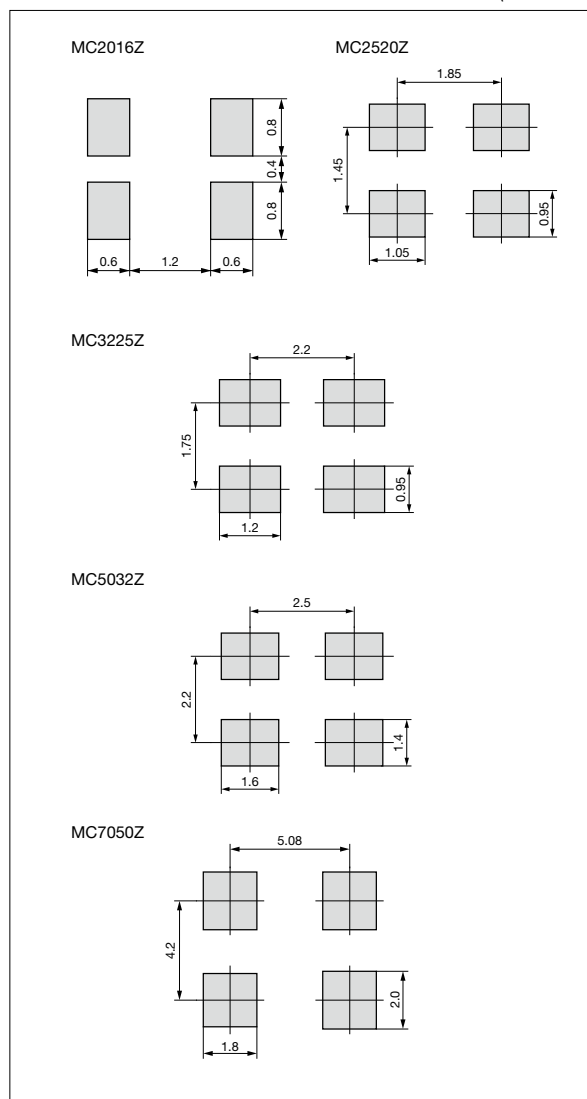
Dimensions

(Unit : mm)



Recommended Land Pattern

(Unit : mm)



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)

Clock Oscillators

As of October 2024

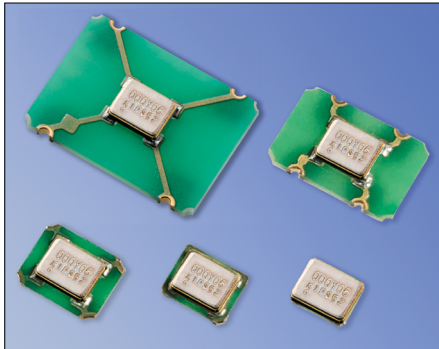
Clock Oscillators for Automotive

Clock MC-Z-Series "X" type (Short LT type)

Find Clock Oscillators Here



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

Applications

- Automotive

Table 5

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

How to Order

MC □□□□ Z 25.0000 C 1 □ X SH
① ② ③ ④ ⑤ ⑥ ⑦

① Series

MC2016Z	2016 Size	MC2520Z	2520 Size
MC3225Z	3225 Size	MC5032Z	5032 Size
MC7050Z	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 5)

⑥ Symmetry/ INH Function

X	45/ 55%
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⑦ Individual Specification

(STD Specification is "SH" .)

Packaging Tape&Reel

MC7050Z/ MC5032Z	1000 pcs./ reel
MC3225Z/ MC2520Z/ MC2016Z	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 5		
Storage Temperature Range	T _{stg}			- 55	150	° C
Operating Temperature Range	T _{use}			See Table 5		
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	
Current Consumption (Noload/ 2.25<V _{cc} ≤2.8)	I _{cc}	160 ≤ f _o ≤ 170MHz		—	12.5	
		0.5 ≤ f _o <5MHz		—	5.5	
		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	
Current Consumption (Noload/ 2.8<V _{cc} ≤3.63)	I _{cc}	130 ≤ f _o <160MHz		—	14	
		160 ≤ f _o ≤ 170MHz		—	15	
		0.5 ≤ f _o <5MHz		—	5.8	
		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	
Stand-by Current	I _{std}	105 ≤ f _o <130MHz		—	15.5	
		130 ≤ f _o <160MHz		—	18	
		160 ≤ f _o ≤ 170MHz		—	19.5	
Symmetry	SYM	@50% V _{cc}	45	55	μA %	
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.

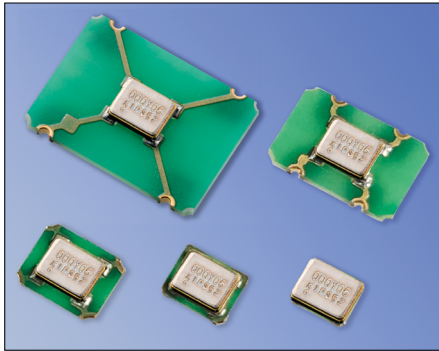
As of October 2024

Clock Oscillators for Automotive Clock MC-Z Series “Y” type (Low Jitter type)

Find Clock Oscillators Here



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

Applications

- Automotive (Radar, Camera, Network)

Table 7

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

How to Order

MC □□□□ Z 25.0000 C 1 □ Y SH
① ② ③ ④ ⑤ ⑥ ⑦

① Series

MC2016Z	2016 Size	MC2520Z	2520 Size
MC3225Z	3225 Size	MC5032Z	5032 Size
MC7050Z	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 7)

⑥ Symmetry/ INH Function

Y	45/ 55%
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⑦ Individual Specification

(STD Specification is “SH” .)

Packaging Tape&Reel

MC7050Z/ MC5032Z	1000 pcs./ reel
MC3225Z/ MC2520Z/ MC2016Z	2000 pcs./ reel

Specifications

Item	Symbol	Conditions	Min.	Max.	Unit
Output Frequency Range	f _o		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 7		
Storage Temperature Range	T _{stg}		- 55	150	°C
Operating Temperature Range	T _{use}		See Table 7		
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 ≤ f _o <30MHz 30 ≤ f _o <50MHz 50 ≤ f _o ≤ 60MHz 60<f _o <72MHz	—	2.7 3.3 3.7 4	mA
Current Consumption (Noload/ 2.25<V _{cc} ≤2.8)	I _{cc}	24 ≤ f _o <30MHz 30 ≤ f _o <50MHz 50 ≤ f _o ≤ 60MHz 60<f _o <72MHz	—	3.5 4 4.3 4.8	
Current Consumption (Noload/ 2.8<V _{cc} ≤3.63)	I _{cc}	24 ≤ f _o <30MHz 30 ≤ f _o <50MHz 50 ≤ f _o ≤ 60MHz 60<f _o <72MHz	—	4 5 5.5 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 Loaded/ 2.25<V _{cc} ≤ 2.8 Loaded/ 2.8<V _{cc} ≤ 3.63	— — —	4 3.2 2.7	ns
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}		—	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		ps

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