



Clock Oscillators for Automotive

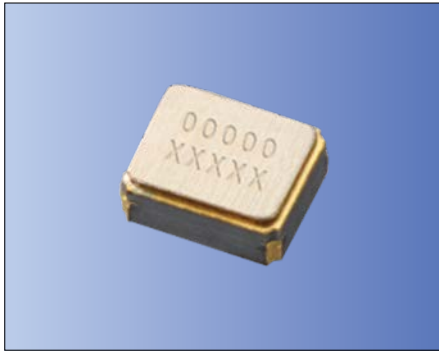
MC1210A Series

Surface Mount Low Voltage Clock Oscillators

Find Clock Oscillators Here



CMOS / 1.0V, 1.2V, 1.5V, 1.8V / 1.2×1.0mm



Features

- Ultra-miniature Low-Profile Ceramic Package
1.25(L)×1.05(W)×0.5(H)mm (MAX.)
- CMOS output
- Supply Voltage 0.8 to 1.8V
0.9V low-voltage operation

Applications

- Automotive electronics

How to Order

MC1210A 38.4000 C □ □ E SH
① ② ③ ④ ⑤ ⑥ ⑦

- ① Series
- ② Output Frequency
- ③ Output Type (C: CMOS)
- ④ Supply Voltage

A	1.8V	B	1.5V
C	1.2V	D	1.0V

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 3000 pcs./ reel)

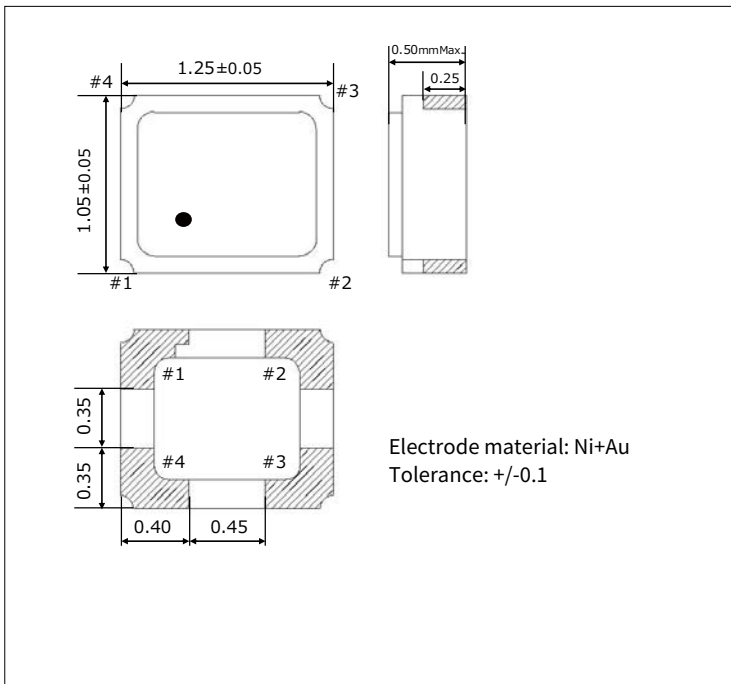
Table 1

Freq. Code	Tol. $\times 10^{-6}$	Operating Temperature Range (°C)	Note
0	± 50	-10 to +70	For additional stability, please contact us
F	± 100	-40 to +85	
G	± 50	-40 to +85	
6	± 50	-40 to +105	
7	± 100	-40 to +105	
X	± 100	-40 to +125	

AEC-Q100/ 200 **RoHS Compliant**
*AEC-Q100 qualified (Option)
PSL: R4Y **MSL1**

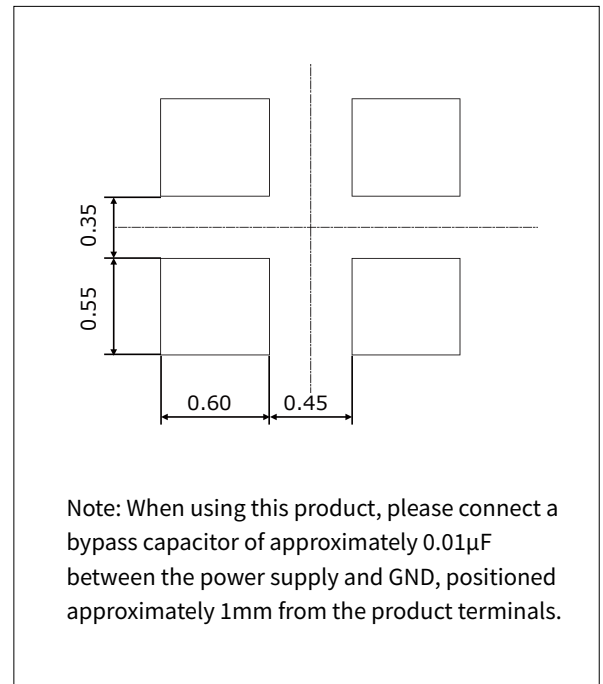
Dimensions

(Unit: mm)



Recommended Land Pattern

(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 / 1.0V, 1.2V, 1.5V, 1.8V / 1.2×1.0mm

Specifications

Item	Symbol	Conditions	Min.	Max.	Unit
Output Frequency Range ^{Note1}	f _o		4.8	100	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		×10 ⁻⁶
Storage Temperature Range	T _{stg}		-55	+125	°C
Operating Temperature Range	T _{use}		See Table 1		°C
Max. Supply Voltage	—		-0.5	+3.5	V
Supply Voltage	V _{cc}		+0.84	+1.89	V
Current Consumption (Maximum Loaded, 0.84 to 1.26V)	I _{cc}	4.8 < F ₀ ≤ 6.75MHz	—	2.0	mA
		6.75 < F ₀ ≤ 13.5MHz	—	2.5	
		13.5 < F ₀ ≤ 27MHz	—	3.0	
		27 < F ₀ ≤ 54MHz	—	4.5	
		54 < F ₀ ≤ 100MHz	—	7.0	
Current Consumption (Maximum Loaded, 1.26 to 1.89V)	I _{cc}	4.8 < F ₀ ≤ 6.75MHz	—	3.5	
		6.75 < F ₀ ≤ 13.5MHz	—	4.0	
		13.5 < F ₀ ≤ 27MHz	—	5.0	
		27 < F ₀ ≤ 54MHz	—	6.5	
		54 < F ₀ ≤ 100MHz	—	9.5	
Stand-by Current	I _{st}	-40 to +105°C	—	20	μA
		-40 to +125°C	—	50	
Symmetry	SYM	@50% V _{cc}	45	55	%
Rise/ Fall Time (10% to 90% Output Level)	Tr/ Tf		—	5	ns
Low Level Output Voltage	V _{OL}	I _{OL} = 1mA	—	10% V _{cc}	V
High Level Output Voltage	V _{OH}	I _{OH} = -1mA	90% V _{cc}	—	V
Output Load	L _{CMOS}	CMOS Output	—	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}		—	100	ns
Enable Time	t _{ena}		—	5	ms
Start-up Time	t _{sta}	@Minimum operating voltage to be 0 sec.	—	5	ms
1 Sigma Jitter ^{Note2}	J _{Sigma}		—	5	ps
Peak to Peak Jitter ^{Note2}	J _{PK-PK}		—	50	ps
Phase Jitter	J _{Phase}	@25MHz BW : 12kHz to 20MHz	—	1	ps

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

Note1: For frequencies outside the specified range, please contact us.

Note2: Jitter is measured with the Time Interval Analyzer "Wavecrest SIA-3600C".