



Clock Oscillators for Automotive

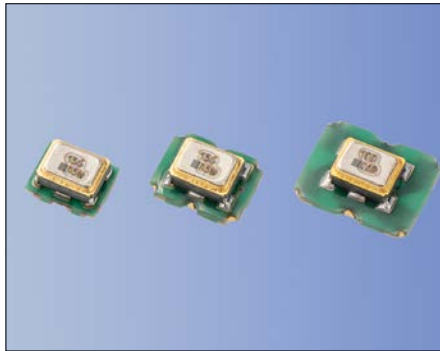
MC-X Series (LVDS)

Low Phase Noise Differential Crystal Oscillators

Find Clock Oscillators Here



LVDS / 1.8V, 2.5V, 3.3V / 2.0×1.6, 2.5×2.0, 3.2×2.5mm



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

Features

- Output Frequency: 100/125/156.25/312.5MHz
- LVDS output
- Supply voltage $V_{CC} = 1.8V, 2.5V, 3.3V$
- Low current consumption
- Low phase noise

Applications

- Automotive electronics
- ADAS

Table 1

Freq. Code	Tol. $\times 10^{-6}$	Operating Temperature Range (°C)	Note
G	± 50	-40 to +85	For additional stability, please contact us.
H	± 30	-40 to +85	
J	± 25	-40 to +85	
K	± 20	-40 to +85	
4	± 20	-40 to +105	
6	± 50	-40 to +105	
7	± 100	-40 to +105	

How to Order

MC X 100.000 L K SH
① ② ③ ④ ⑤ ⑥ ⑦

① Series

MC2016X	2016 Size	MC2520X	2520 Size
MC3225X	3225 Size		

② Output Frequency (100.000 : 100MHz)

③ Output Type (L : LVDS)

④ Supply Voltage

1	1.8V	2	2.5V	3	3.3V
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⑤ Frequency Tolerance (See Table 1)

⑥ Symmetry/ INH Function

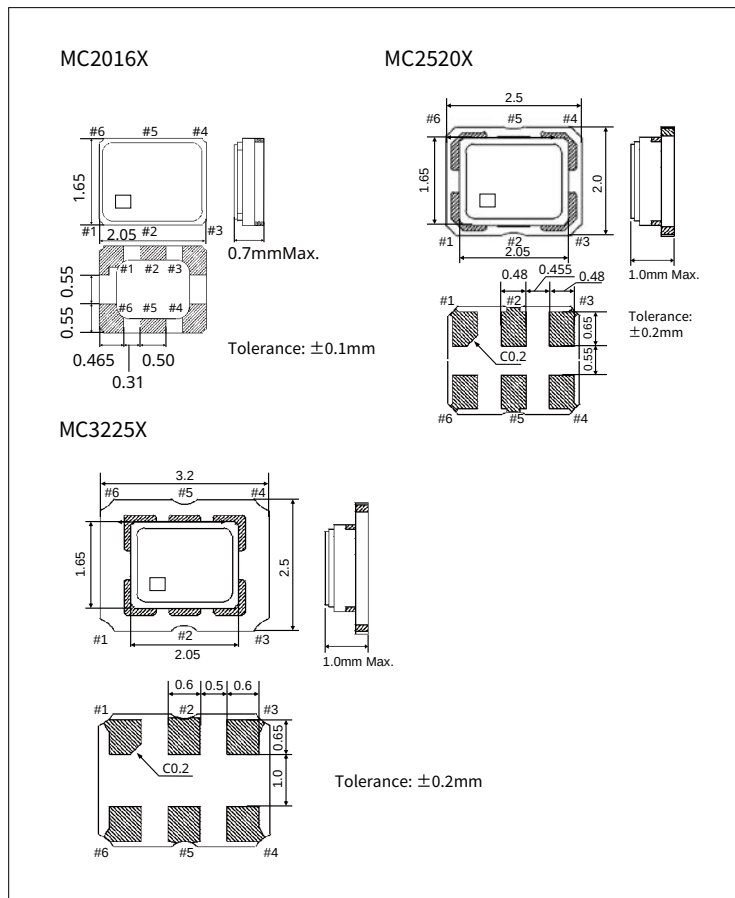
⑦ Individual Specification (STD Specification is "SH".)

Packaging Tape & Reel

MC3225X/ MC2520X/ MC2016X	2000 pcs./ reel
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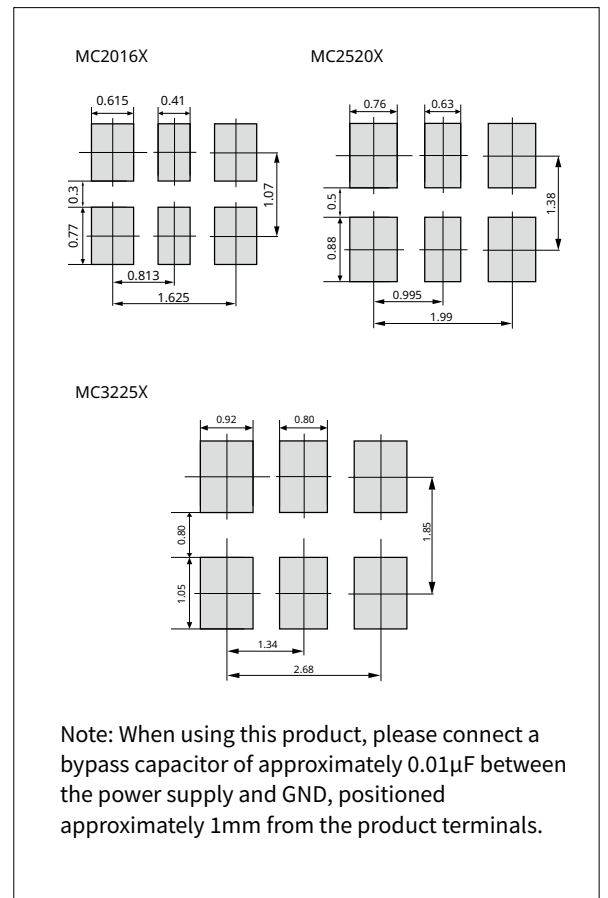
Dimensions

(Unit: mm)



Recommended Land Pattern

(Unit: mm)



Pad Connections	
#1	Stand-by Function
#2	NC
#3	Case GND
#4	Output
#5	Complementary Output
#6	Vcc

Stand-by Function	
Pad1	Pad4 / Pad5
Open	Active
"H" Level	Active
"L" Level	No-Oscillation



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Specifications

Item	Symbol	Conditions		Specifications	Units
Output Frequency Range	f _o			100/125/156.25/312.5	MHz
Frequency Tolerance	f _{tol}	Initial tolerance, Operating temperature range, Rated power supply voltage change, Load change, Aging (1 year @25°C)		See Table 1	
Storage Temperature Range	T _{stg}			-55 to +150	°C
Operating Temperature Range	T _{use}			See Table 1	
Max. Supply Voltage	—			-0.3 to +4.5	V
Supply Voltage	V _{CC}	@+1.8V		+1.71 to +1.89	V
		@+2.5V		+2.375 to +2.625	
		@+3.3V		+3.135 to +3.465	
Current Consumption	I _{CC}			38 max.	mA
Stand-by Current	I _{ST}			60 max.	μA
Symmetry	SYM	100ohm @50% V _{opp}		50±5	%
Rise/ Fall Time (20% to 80% Output Swing)	Tr/ Tf	100ohm		0.35 max.	ns
Diffrential Output Voltage	V _{OD}			250 to 450 300 to 600 400 to 800	mV
Diffrential Output Voltage Error	dV _{OD}	dV _{OD} = V _{OD1} - V _{OD2}		50 max.	mV
Offset Voltage	V _{OS}	V _{CC} =1.8V±5%		0.65 min. to 0.85 max.	V
		V _{CC} =2.5V±5%, V _{CC} =3.3V±5%		1.15 min. to 1.35 max.	
Differential Output Voltage Amplitude	V _{SW}			500 to 900 600 to 1200 800 to 1600	mV
Offset Voltage Error	dV _{OS}	dV _{OD} = V _{OD1} - V _{OD2}		50 max.	mV
Output Load	R _L	LVDS Output		100	ohm
Low Level Input Voltage	V _{IL}			30% V _{CC} max.	V
High Level Input Voltage	V _{IH}			70% V _{CC} min.	V
Disable Time	t _{dis}			200 max.	ns
Enable Time	t _{ena}			10 max.	ms
Start-up Time	t _{sta}	@Minimum operating voltage to be 0 sec.		10 max.	ms
Deterministic Jitter ^{Note1}	DJ	DJ pk-pk		2 max.	ps
1Sigma Jitter ^{Note1}	J _{Sigma}			4 max.	ps
Peak to Peak Jitter ^{Note1}	J _{PK-PK}			35 max.	ps
Phase Jitter ^{Note1}	J _{Phase}	BW: 12kHz to 20MHz @+3.3V , 25degC	@100MHz	0.05 typ./ 0.1 max.	ps
			@125MHz	0.04 typ./ 0.1 max.	
			@156.25MHz	0.03 typ./ 0.07 max.	
			@312.5MHz	0.026 typ./ 0.06 max.	

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

Note1: Jitter is measured with the Time Interval Analyzer "Wavecrest SIA-3600C".