CRYSTAL OSCILLATOR (SPXO)

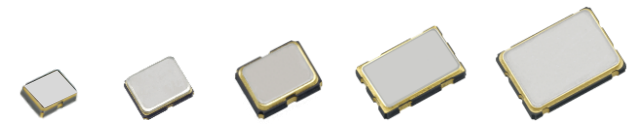
OUTPUT : CMOS

Pb Free RoHS Compliant

Product Number (please contact us)
SG2016CAN: X1G004801xxxx00
SG-210STF: X1G004171xxxx00
SG3225CAN: X1G005961xxxx15
SG5032CAN: X1G004451xxxx00
SG7050CAN: X1G004481xxxx00

SG2016 / 3225 / 5032 / 7050CAN
SG-210STF

- Frequency : 20 standard frequencies
- Supply voltage : 1.8 V to 3.3 V Typ.
- Function : Standby($\overline{ST}$)
- Operating temperature : -40 °C to +105 °C



SG2016CAN (2.0 x 1.6 mm) SG-210STF (2.5 x 2.0 mm) SG3225CAN (3.2 x 2.5 mm) SG5032CAN (5.0 x 3.2 mm) SG7050CAN (7.0 x 5.0 mm)

Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks
Output frequency	fo	4 MHz, 8 MHz, 10 MHz, 12 MHz, 12.288 MHz 14.7456 MHz, 16 MHz, 20 MHz, 24 MHz, 24.576 MHz 25 MHz, 26 MHz, 27 MHz, 32 MHz, 33.33 MHz 33.3333 MHz, 40 MHz, 48 MHz, 50 MHz, 72 MHz			
Supply voltage	V_{CC}	1.60 V to 3.63 V			4 MHz ≤ fo ≤ 50 MHz, T_use = +105 °C Max. — Refer to Figure 1
		1.71 V to 3.63 V			fo = 72 MHz, T_use = +85 °C Max.
		2.25 V to 3.63 V			fo = 72 MHz, T_use = +105 °C Max.
Storage temperature	T_stg	-55 °C to +125 °C			SG2016CAN
		-40 °C to +125 °C			All others
Operating temperature	T_use	-20 °C to +70 °C, -40 °C to +85 °C, -40 °C to +105 °C			See of figure *1
Frequency tolerance	f_tol	±25 × 10^{-6}			-20 °C to +70 °C
		±50 × 10^{-6}			-40 °C to +85 °C, -40 °C to +105 °C
Current consumption	I_{CC}	V_{CC} = 1.8 V ± 10 %	V_{CC} = 2.5 V ± 10 %	V_{CC} = 3.3 V ± 10 %	
		1.5 mA Max.	1.6 mA Max.	1.8 mA Max.	No load condition, 4 MHz ≤ fo ≤ 20 MHz
		1.8 mA Max.	2.0 mA Max.	2.2 mA Max.	No load condition, 20 MHz < fo ≤ 40 MHz
		2.1 mA Max.	2.4 mA Max.	2.6 mA Max.	No load condition, 40 MHz < fo ≤ 50 MHz
		2.4 mA Max.	2.8 mA Max.	3.0 mA Max.	No load condition, fo = 72 MHz
Stand-by current	I_std	2.1 µA Max.	2.5 µA Max.	2.7 µA Max.	$\overline{ST}$ =GND
Symmetry	SYM	45 % to 55 %			50 % V_{CC} level, L_CMOS ≤ 15 pF
Output voltage	V_{OH}	90 % V_{CC} Min.			1.8 V ± 10 %: I_{OH} -1.5 mA, I_{OL} 1.5 mA; 2.5 V ± 10 %: I_{OH} -3 mA, I_{OL} 3 mA; 3.3 V ± 10 %: I_{OH} -4 mA, I_{OL} 4 mA
	V_{OL}	10 % V_{CC} Max.			
	V_{OH-2}	V_{CC} - 0.4 V Min.			1.8 V±10 %: I_{OH} -3 mA, I_{OL} 3 mA; 2.5 V±10 %: I_{OH} -4 mA, I_{OL} 4 mA; 3.3 V±10 %: I_{OH} -6 mA, I_{OL} 6 mA
	V_{OL-2}	0.4 V Max.			
Output load condition (CMOS)	L_CMOS	15 pF Max.			
Input voltage	V_{IH}	80 % V_{CC} Min.			$\overline{ST}$ terminal
	V_{IL}	20 % V_{CC} Max.			
Rise time and Fall time	tr / tf	3 ns Max. 3.5 ns Max. (@1.8 V±10 %)			20 % V_{CC} to 80 % V_{CC} level, L_CMOS = 15 pF
Start-up time	t_str	3 ms Max.			T = 0 at 90 % V_{CC}
Frequency aging	f_age	±3 × 10^{-6} / year Max.			+25 °C, First year

[Model : SG2016 / 3225 / 5032 / 7050CAN]

Product name SG2016 C AN 25.000000MHz T J H A
(Standard form) ① ② ③ ④⑤⑥⑦

①Model ②Output(C: CMOS) ③Frequency ④Supply voltage
⑤Frequency tolerance ⑥Operating temperature range
⑦Internal identification code("A" is default)

④Supply voltage *See Figure 1	
T	1.8 V to 3.3 V Typ.
K	2.5 V to 3.3 V Typ.

⑤Frequency tolerance / ⑥Operating temperature range	
DB*	±25 × 10^{-6} / -20 °C to +70 °C
JG	±50 × 10^{-6} / -40 °C to +85 °C
JH	±50 × 10^{-6} / -40 °C to +105 °C

* Please refer to Product number list on Full Data Sheet for available frequencies

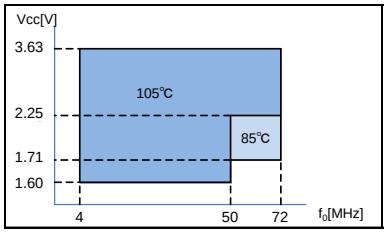


Figure 1 : The upper limit of Operating temperature and the related conditions

Please note that Supply voltage range (V_{CC}) depends on Output frequency (fo) and upper limit of Operationg temperature (T_use Max.).

[Model : SG-210STF]

Product name SG-210 S T F 25.000000MHz Y
(Standard form) ① ②③ ④ ⑤

①Model ②Function(S:Standby) ③Supply voltage
④Frequency ⑤Frequency tolerance

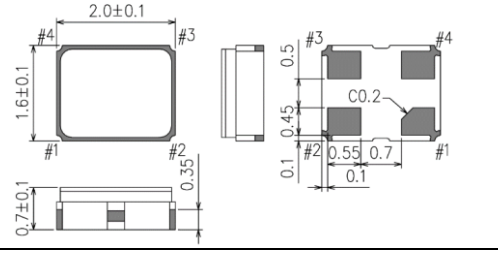
③Supply voltage *See Figure 1	
T	1.8 V to 3.3 V Typ.

⑤Frequency tolerance	
S*	±25 × 10^{-6} / -20 °C to +70 °C
L	±50 × 10^{-6} / -40 °C to +85 °C
Y	±50 × 10^{-6} / -40 °C to +105 °C

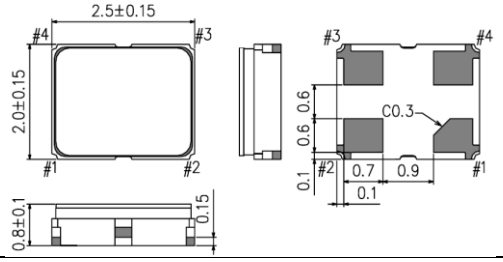
* Please refer to Product number list on Full Data Sheet for available frequencies

External dimensions (Unit:mm)

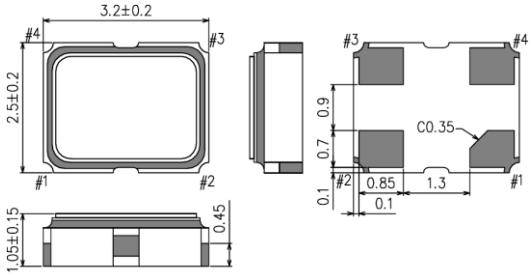
SG2016CAN



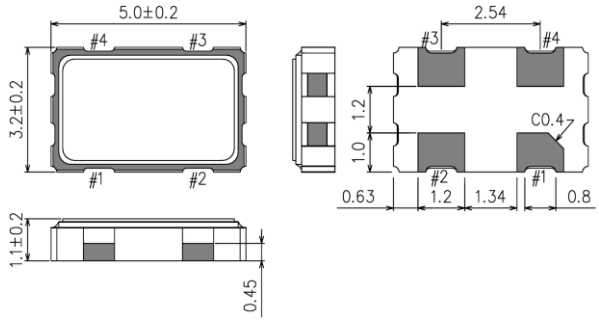
SG-210STF



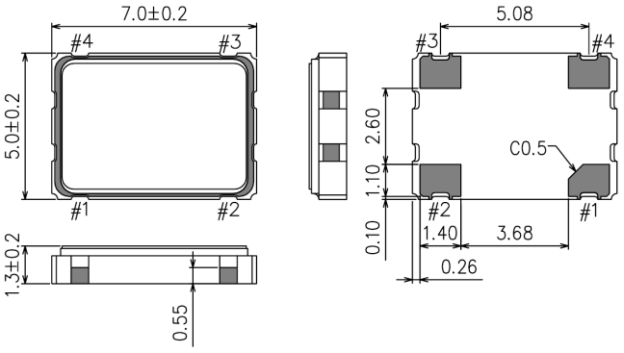
SG3225CAN



SG5032CAN

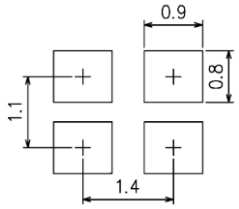


SG7050CAN

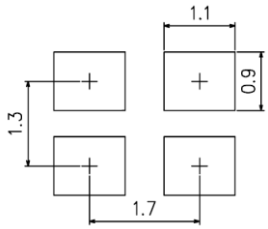


Footprint (Recommended) (Unit:mm)

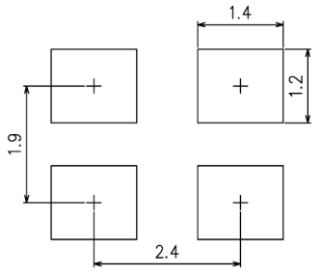
SG2016CAN



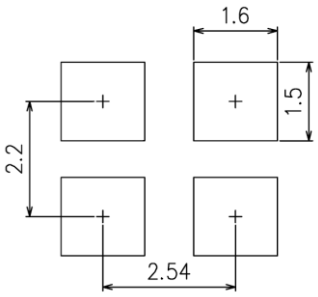
SG-210STF



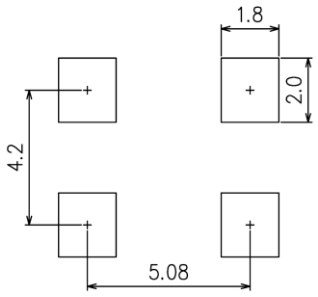
SG3225CAN



SG5032CAN



SG7050CAN



Pin Map

Pin	Connection	Function
1	ST	ST terminal ST function / Oscillator circuit / Output HIGH or "open" / Oscillation / Specified frequency: Enable LOW / Oscillation stop / High impedance: Disable
2	GND	Ground
3	OUT	Clock output
4	V_{CC}	Power supply

■**Notes:** To maintain stable operation, provide a 0.01uF to 0.1uF by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between Vcc - GND).

PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

WORKING FOR HIGH QUALITY

In order provide high quality and reliable products and services than meet customer needs, Seiko Epson made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired IATF 16949 certification that is requested strongly by major automotive manufacturers as standard.

IATF 16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

►Explanation of the mark that are using it for the catalog

	►Pb free.
	►Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)
	►Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
	►Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Epson:

SG-210STF 6.1440ML3 SG-210STF 3.5795ML3 SG-210STF 13.5600ML3 SG-210STF 7.5000ML3 SG-210STF 25.0000ML3 SG-210STF 62.5000ML3 SG-210STF 8.2500ML3 SG-210STF 27.0000ML3 SG-210STF 48.0000MS3 SG-210STF 12.2880MS3 SG-210STF 30.0000ML3 SG-210STF 1.2288ML3 SG-210STF 15.6250ML3 SG-210STF 9.8304ML3 SG-210STF 6.7800ML3 SG-210STF 5.6448ML3 SG-210STF 6.2500ML3 SG-210STF 19.4400ML3 SG-210STF 31.2500ML3 SG-210STF 19.6608ML3 SG-210STF 13.5000ML3 SG-210STF 13.0000ML3 SG-210STF 10.0000ML3 SG-210STF 50.0000MS3 SG-210STF 33.3000ML3 SG-210STF 74.1760ML3 SG-210STF 50.0000ML3 SG-210STF 24.0000MW3 SG-210STF 75.0000ML3 SG-210STF 5.0000ML3 SG-210STF 1.8432ML3 SG-210STF 12.0000ML3 SG-210STF 24.5760ML3 SG-210STF 36.0000ML3 SG-210STF 72.0000ML3 SG-210STF 12.5000ML3 SG-210STF 33.3300ML3 SG-210STF 4.0960ML3 SG-210STF 66.6670ML3 SG-210STF 18.0000ML3 SG-210STF 3.0720ML3 SG-210STF 4.9152ML3 SG-210STF 1.0000ML3 SG-210STF 8.0000MY3 SG-210STF 25.0000MY3 SG-210STF 26.0000ML3 SG-210STF 20.0000ML3 SG-210STF 4.8000ML3 SG-210STF 54.0000ML3 SG-210STF 1.5000ML3 SG-210STF 2.0000ML3 SG-210STF 1.5360ML3 SG-210STF 4.5000ML3 SG-210STF 2.4576ML3 SG-210STF 2.0480ML3 SG-210STF 22.5792ML3 SG-210STF 38.4000ML3 SG-210STF 15.0000ML3 SG-210STF 2.5000ML3 SG-210STF 1.2000ML3 SG-210STF 3.0000ML3 SG-210STF 12.2880ML3 SG-210STF 14.7456ML3 SG-210STF 32.7680ML3 SG-210STF 19.2000ML3 SG-210STF 4.0000ML3 SG-210STF 16.5000ML3 SG-210STF 27.1200ML3 SG-210STF 6.0000ML3 SG-210STF 33.3330MW3 SG-210STF 6.7500ML3 SG-210STF 8.1920ML3 SG-210STF 32.0000ML3 SG-210STF 3.6864ML3 SG-210STF 9.6000ML3 SG-210STF 28.63636ML3 SG-210STF 16.0000ML3 SG-210STF 7.3728ML3 SG-210STF 8.0000ML3 SG-210STF 6.5000ML3 SG-210STF 16.6665ML3 SG-210STF 33.3330ML3 SG-210STF 16.3480ML3 SG-210STF 11.2896MS3 SG-210STF 33.0000ML3 SG-210STF 37.4000ML3 SG-210STF 24.0000ML3 SG-210STF 48.0000ML3 SG-210STF 16.6500ML3 SG-210STF 25.0000MS3 SG-210STF 66.6667ML3 SG-210STF 52.0000ML3 SG-210STF 9.0000ML3 SG-210STF 40.0000ML3 SG-210STF 14.31818ML3 SG-210STF 3.1250ML3 SG-210STF 29.4912ML3 SG-210STF 7.1591ML3 SG-210STF 11.2896ML3 SG-210STF 26.0000MY3