

CRYSTAL OSCILLATOR (SPXO)
OUTPUT : CMOS


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

SG2016CAN / SG3225CAN / SG5032CAN / SG7050CAN / SG-210STF

- Frequency : 1.2 MHz to 75 MHz
- Supply voltage : 1.8 V to 3.3 V Typ.
- Function : Standby($\overline{ST}$)
- Operating temperature : -40 °C to +105 °C


Specifications (characteristics)

Item	Symbol	Specifications	Conditions / Remarks
Output frequency	f_o	1.2 MHz to 75 MHz	Please contact us for frequencies other than the standard ones.
		4 MHz 8 MHz 10 MHz 12 MHz 12.288 MHz	Standard frequency
		14.7456 MHz 16 MHz 20 MHz 24 MHz 24.576 MHz	
		25 MHz 26 MHz 27 MHz 32 MHz 33.33 MHz	
Supply voltage range	V_{CC}	1.60 V to 3.63 V	1.2 MHz $\leq f_o \leq 60$ MHz, $T_{use} = +105$ °C Max.
		1.71 V to 3.63 V	60 MHz $\leq f_o \leq 75$ MHz, $T_{use} = +85$ °C Max.
		2.25 V to 3.63 V	60 MHz $\leq f_o \leq 75$ MHz, $T_{use} = +105$ °C Max.
Storage temperature range	T_{stg}	-55 °C to +125 °C	SG2016CAN, SG3225CAN
		-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}	$\pm 25 \times 10^{-6}$	-20 °C to +70 °C, -40 °C to +85 °C
		$\pm 50 \times 10^{-6}$	-40 °C to +85 °C, -40 °C to +105 °C
Current consumption	I_{CC}	$V_{CC} = 1.8 V \pm 10 \%$	$V_{CC} = 2.5 V \pm 10 \%$
		1.5 mA Max.	1.6 mA Max.
		1.8 mA Max.	2.0 mA Max.
		2.1 mA Max.	2.4 mA Max.
		2.4 mA Max.	3.0 mA Max.
Stand-by current	I_{std}	2.1 μ A Max.	2.5 μ A Max.
Symmetry	SYM	45 % to 55 %	50 % V_{CC} level, $L_{CMOS} \leq 15$ pF
Output voltage	V_{OH}	90 % V_{CC} Min.	$V_{CC} = 1.8 V \pm 10 \%$
	V_{OL}	10 % V_{CC} Max.	$V_{CC} = 2.5 V \pm 10 \%$
	V_{OH-2}	$V_{CC} - 0.4 V$ Min.	$V_{CC} = 3.3 V \pm 10 \%$
	V_{OL-2}	0.4 V Max.	$V_{CC} = 1.8 V \pm 10 \%$
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	t_r / t_f	3 ns Max. 3.5 ns Max. (@1.8 V $\pm 10 \%$)	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}	$\pm 3 \times 10^{-6}$ / year Max.	+25 °C, First year

[Model : SG2016CAN / SG3225CAN / SG5032CAN / SG7050CAN]

Product name **SG2016CAN** **25.000000MHz** **I J H A**
(Standard form) a b c d e f g

a: Model b: Output(C: CMOS) c: Frequency d: Supply voltage e: Frequency tolerance
f: Operating temperature range g: Internal identification code ("A" is default)

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

e: Frequency tolerance / f: Operating temperature range	
DB*	$\pm 25 \times 10^{-6}$ / -20 °C to +70 °C
DG*	$\pm 25 \times 10^{-6}$ / -40 °C to +85 °C
JG	$\pm 50 \times 10^{-6}$ / -40 °C to +85 °C
JH	$\pm 50 \times 10^{-6}$ / -40 °C to +105 °C

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

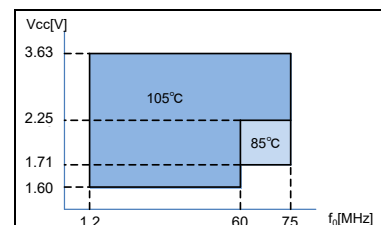


Figure 1 : The upper limit of Operating temperature and the related conditions

Please note that Supply voltage range (V_{CC}) depends on Output frequency (f_o) and upper limit of Operating temperature (T_{use} Max.).

[Model : SG-210STF]

Product name **SG210STF** **25.000000MHz** **L**
(Standard form) a b c d e

a: Model b: Function (S: Standby) c: Supply voltage d: Frequency e: Frequency tolerance

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

e: Frequency tolerance	
S*	$\pm 25 \times 10^{-6}$ / -20 °C to +70 °C
J*	$\pm 25 \times 10^{-6}$ / -40 °C to +85 °C
L	$\pm 50 \times 10^{-6}$ / -40 °C to +85 °C
Y	$\pm 50 \times 10^{-6}$ / -40 °C to +105 °C

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



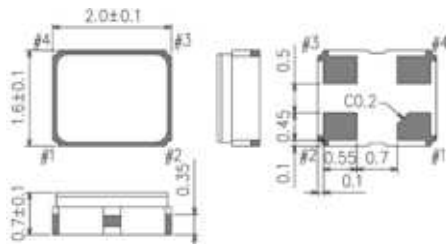
External dimensions

(Unit:mm)

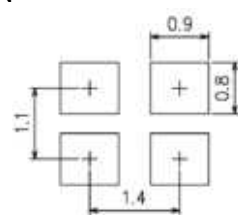
Footprint (Recommended)

(Unit:mm)

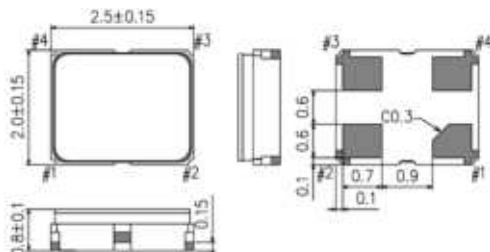
SG2016CAN



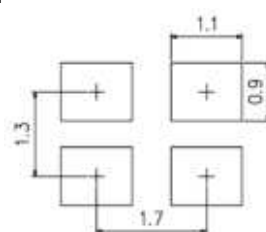
SG2016CAN



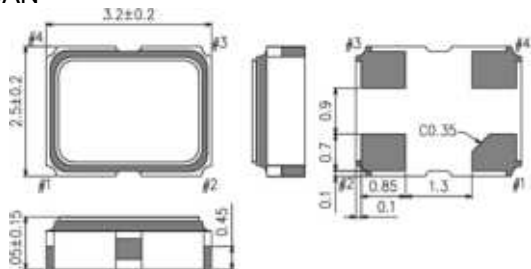
SG-210STF



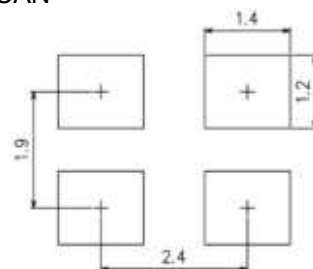
SG-210STF



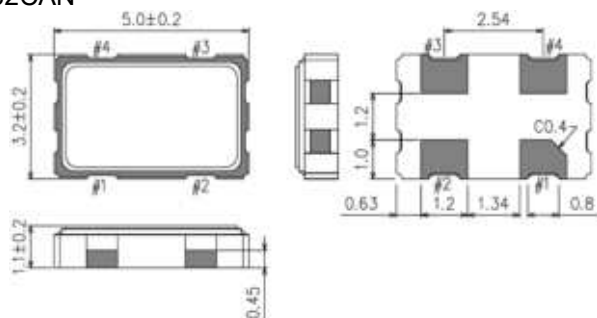
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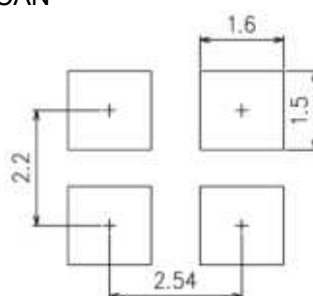
SG3225CAN



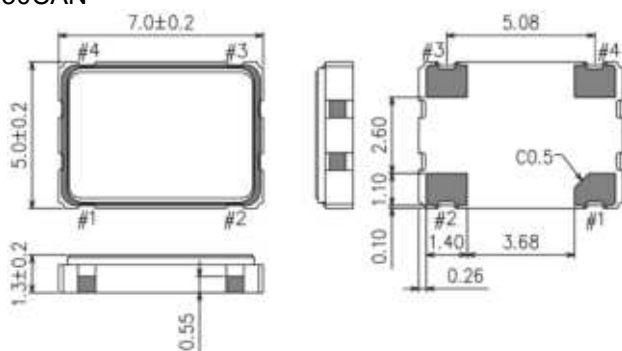
SG5032CAN



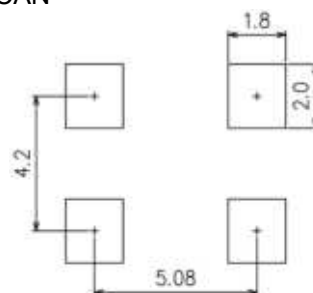
SG5032CAN



SG7050CAN



SG7050CAN



Pin Map

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

► 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 general equipment.
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