

CRYSTAL OSCILLATOR (SPXO)

OUTPUT : CMOS



Product Number
SG2016CAA: X1G005341xxx00
SG2520CAA: X1G005951xxx16

SG2016CAA
SG2520CAA

- Frequency : 1.2 MHz to 54 MHz
- Supply voltage : 1.8 V to 3.3 V Typ.
- Function : Standby (\overline{ST})
- Operation temperature : -40 °C to +125 °C
- AEC-Q100/200 compliant



Specifications (characteristics)

Item	Symbol	Specifications	Conditions / Remarks												
Output frequency	fo	1.2 MHz to 54 MHz	Please contact us for details.												
		8 MHz 10 MHz 11.2896 MHz 12 MHz 12.288 MHz 14.7456 MHz 16 MHz 16.6666 MHz 19.2 MHz 20 MHz 22.5792 MHz 24 MHz 24.576 MHz 25 MHz 27 MHz 33 MHz 33.3333 MHz 40 MHz 48 MHz 50 MHz 54 MHz	Standard frequency												
Supply voltage	V _{CC}	T: 1.60 V to 3.63 V													
Storage temperature	T _{stg}	-55 °C to +125 °C	Storage as single product.												
Operating temperature	T _{use}	H: -40 °C to +105 °C													
		J: -40 °C to +125 °C													
Frequency tolerance	f _{tol}	J: $\pm 50 \times 10^{-6}$													
		L: $\pm 100 \times 10^{-6}$													
Current consumption	I _{cc}	V _{CC} = 1.8 V $\pm 10 \%$ V _{CC} = 2.5 V $\pm 10 \%$ V _{CC} = 3.3 V $\pm 10 \%$													
		2.0 mA Max. 2.1 mA Max. 2.3 mA Max.	No load condition, 1.2 MHz \leq fo \leq 20 MHz												
		2.3 mA Max. 2.5 mA Max. 2.7 mA Max.	No load condition, 20 MHz < fo \leq 40 MHz												
		2.6 mA Max. 2.9 mA Max. 3.1 mA Max.	No load condition, 40 MHz < fo \leq 54 MHz												
Stand-by current	I _{std}	2.7 μ A Max. 3.1 μ A Max. 3.3 μ A Max.	\overline{ST} = GND												
Symmetry	SYM	45 % to 55 %	50 % V _{CC} level, L _{CMOS} \leq 15 pF												
Output voltage	V _{OH} V _{OL} V _{OH} V _{OL}	90 % V _{CC} Min. 10 % V _{CC} Max. V _{CC} - 0.4 V Min. 0.4 V Max.													
			<table border="1"> <tr> <td></td> <td>1.8 V$\pm 10 \%$</td> <td>2.5 V$\pm 10 \%$</td> <td>3.3 V$\pm 10 \%$</td> </tr> <tr> <td>I_{OH}</td> <td>-1.5 mA</td> <td>-3 mA</td> <td>-4 mA</td> </tr> <tr> <td>I_{OL}</td> <td>1.5 mA</td> <td>3 mA</td> <td>4 mA</td> </tr> </table>		1.8 V $\pm 10 \%$	2.5 V $\pm 10 \%$	3.3 V $\pm 10 \%$	I _{OH}	-1.5 mA	-3 mA	-4 mA	I _{OL}	1.5 mA	3 mA	4 mA
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I _{OH}	-3 mA	-4 mA	-6 mA												
I _{OL}	3 mA	4 mA	6 mA												
Output load condition	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 $\pm 10 \%$)	20 % V _{CC} to 80 % V _{CC} level, L _{CMOS} = 15 pF												
Start-up time	t _{str}	5 ms Max.	t = 0 at 90 % V _{CC}												
Frequency aging	f _{age}	$\pm 3 \times 10^{-6}$ / year Max.	+25 °C, First year												

Product Name **SG2016CAA** **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 (T: 1.8 V to 3.3 V Typ.) e: Frequency tolerance
 f: Operating temperature g: Internal identification code ("A" is default)

e: Frequency tolerance / f: Operating temperature	
JH	$\pm 50 \times 10^{-6}$ / -40 °C to +105 °C
LJ	$\pm 100 \times 10^{-6}$ / -40 °C to +125 °C

External dimensions

(Unit:mm)

Footprint (Recommended)

(Unit:mm)

SG2016CAA

SG2520CAA

Note.
 ST pin = "H" or "open" : Specified frequency output.
 ST pin = "L" : Output is high impedance, oscillation stops.

Pin	Connection
1	\overline{ST}
2	GND
3	OUT
4	V _{CC}

	SG2016CAA	SG2520CAA
A	0.8	0.9
B	0.9	1.1
C	1.1	1.3
D	1.4	1.7

To maintain stable operation, provide a 0.01 μ F to 0.1 μ F 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

	<p>► Pb free.</p>
	<p>► 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.)</p>
	<p>► Designed for automotive general equipment.</p>
	<p>► Designed for automotive applications related to driving and safety.</p>

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