



CRYSTAL OSCILLATOR

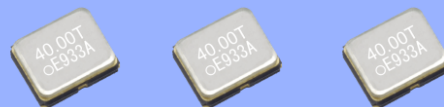
Low Profile / High stability SPXO

SG-211 S*E

- Frequency range : 2.375 MHz to 60.000 MHz
- Supply voltage : 1.8 V / 2.5 V / 3.3 V
- Current consumption : 1.2 mA Typ.
(SEE: 1.8 V No load condition 40 MHz)
- Function : Standby($\overline{ST}$)
- External dimensions : $2.5 \times 2.0 \times 0.7$ mm



Product Number (please contact us)
X1G0036x1xxxx00



Actual size



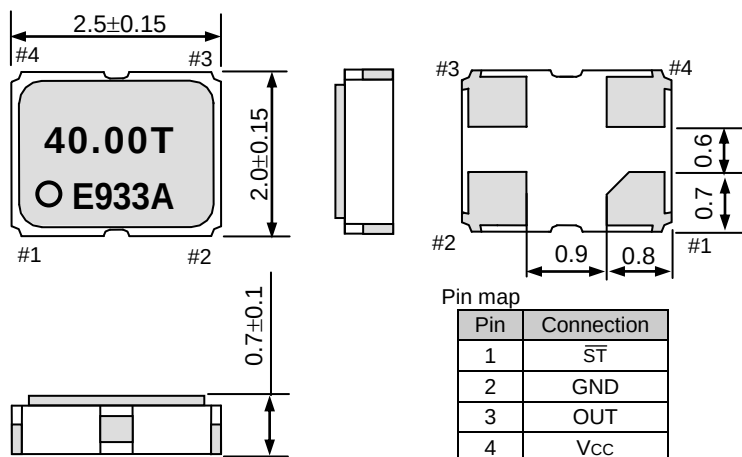
Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks
		SG-211SEE	SG-211SDE	SG-211SCE	
Output frequency range	f_0	2.375 MHz to 60.000 MHz			Please contact us about available frequencies.
Supply voltage	V_{CC}	1.8 V Typ. 1.6 V to 2.2 V	2.5 V Typ. 2.2 V to 2.7 V	3.3 V Typ. 2.7 V to 3.6 V	
Storage temperature	T_{stg}	-40 °C to +125 °C			Storage as single product.
Operating temperature	T_{use}	-40 °C to +90 °C			
Frequency tolerance *	f_{tol}	D: $\pm 20 \times 10^{-6}$, E: $\pm 15 \times 10^{-6}$			-20 °C to +70 °C
		H: $\pm 20 \times 10^{-6}$, T: $\pm 15 \times 10^{-6}$			-40 °C to +85 °C
		a: $\pm 15 \times 10^{-6}$, b: $\pm 20 \times 10^{-6}$, d: $\pm 25 \times 10^{-6}$			-40 °C to +90 °C
Current consumption	I_{CC}	2.3 mA Max.	2.5 mA Max.	3.5 mA Max.	No load condition, 2.375 MHz $\leq f_0 \leq 32$ MHz
		2.8 mA Max.	3.0 mA Max.	4.0 mA Max.	No load condition, 32 MHz $< f_0 \leq 40$ MHz
		3.3 mA Max.	3.5 mA Max.	4.5 mA Max.	No load condition, 40 MHz $< f_0 \leq 48$ MHz
		4.5 mA Max.	5.0 mA Max.	6.0 mA Max.	No load condition, 48 MHz $< f_0 \leq 60$ MHz
Stand-by current	I_{std}	5.0 μ A Max.			$\overline{ST} = GND$
Symmetry	SYM	45 % to 55 %			50 % V_{CC} level, $L_{CMOS} \leq 15$ pF
Output voltage	V_{OH}	90 % V_{CC} Min.			$I_{OH} = -4$ mA
	V_{OL}	10 % V_{CC} Max.			$I_{OL} = 4$ mA
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 / Fall time	t_r / t_f	4.5 ns Max.			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_{aging}	This is included in frequency tolerance specification.			+25 °C, First year, $V_{CC} = 1.8$ V, 2.5 V, 3.3 V

* Please contact us for inquiries regarding available frequency tolerance.

External dimensions

(Unit:mm)



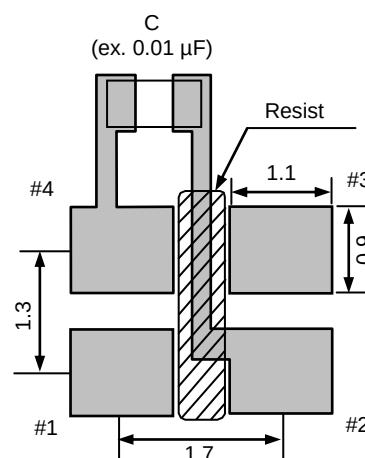
Note.

$\overline{ST}$ pin = HIGH : Specified frequency output.

$\overline{ST}$ pin = LOW : Output is high impedance, oscillation stops.

Footprint (Recommended)

(Unit:mm)



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).