

For HUAWEI
VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR (VCXO)

VG7050CAN 30.72M CSHHJA

- Frequency : 30.720 MHz
- Supply voltage : 3.3 V
- Absolute pull range : $\pm 50 \times 10^{-6}$ Min.
- External dimensions : 7.0 × 5.0 × 1.4 mm



Actual size



Important note: This datasheet is preliminary and subject to change. To get a final specification containing an Epson ordering code please contact your local Seiko Epson representative.

Maximum ratings

Item	Symbol	Specifications	Remarks
Maximum supply voltage	Vcc	-0.3 V to 5.0 V	
Maximum control voltage	Vc	-0.3V to Vcc+0.3 V	

Specifications (characteristics)

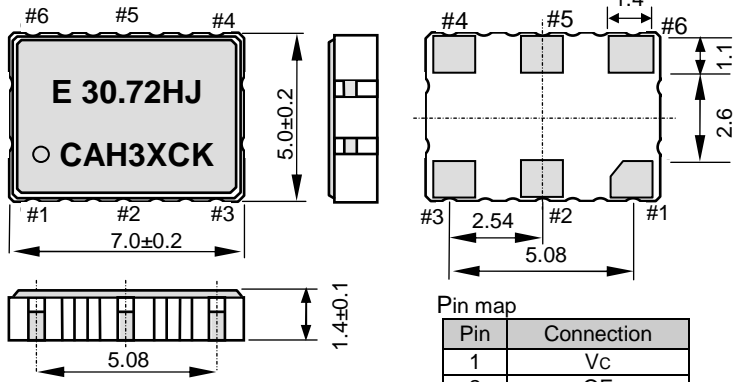
Item	Symbol	specification	Conditions / Remarks
Output frequency	f _o	30.720 MHz	
Supply voltage	Vcc	3.3 V ± 0.165 V	
Control voltage	Vc	1.65 V ± 1.65 V	
Current consumption	I _{cc}	40 mA Max.	CL=15 pF
Storage temperature	T _{stg}	-55 °C to +125 °C	Storage as single product.
Operating temperature	T _{use}	-40 °C to +105 °C	
Initial tolerance	f _{tol}	±10 × 10 ⁻⁶ Max.	Frequency shift at +25 °C, Vcc=3.3V, Vcont=1.65V, CL=15pF. Reference to f ₀
Vs temperature range	-	±25 × 10 ⁻⁶ Max.	-40 °C to +105 °C. F frequency shift from the frequency at +25 °C, Vcc=3.3V, Vcont=1.65V, CL=15pF.
Vs load	-	±1 × 10 ⁻⁶ Max.	CL=15pF±10%. Frequency shift from the frequency at +25 °C, Vcc=3.3V, Vcont=1.65V, CL=15pF.
Vs supply voltage	-	±3 × 10 ⁻⁶ Max.	Vcc=3.3V±5%. Frequency shift from the frequency at +25 °C, Vcc=3.3V, Vcont=1.65V, CL=15pF.
Aging 1year	-	±3 × 10 ⁻⁶ Max.	Frequency shift from the initial frequency at +25 °C, Vcc=3.3V, Vcont=1.65V, CL=15pF.
Aging 10years	-	±10 × 10 ⁻⁶ Max.	
Output frequency range	-	±240 × 10 ⁻⁶ Max.	Reference to f ₀
Frequency control range	F _{cont}	±100 × 10 ⁻⁶ to ±200 × 10 ⁻⁶	Vc=1.65 V ± 1.65 V, reference to frequency at Vc=1.65V
Absolute pull range *1	APR	±50 × 10 ⁻⁶ Min.	Vc=1.65 V ± 1.65 V
Positive gain transfer	Kv	±70 × 10 ⁻⁶ /V to ±130 × 10 ⁻⁶ /V	Vc=1.65 V ± 0.8 V
Linearity	-	±10 % Max.	Vc=1.65 V ± 0.5 V
Input resistance	R _{in}	5 MΩ Min.	DC Level
Frequency change polarity	—	Positive polarity	
Modulation characteristics	BW	10 kHz Min.	±3 dB (at 1 kHz)
Output voltage	V _{OH}	90%Vcc V Min.	CL=15 pF
	V _{OL}	10%Vcc V Max.	CL=15 pF
Symmetry	SYM	45 % to 55 %	CMOS load: 50 % Vcc level
Rise time and Fall time	t _r / t _f	5 ns Max.	CMOS load: 20 % Vcc to 80 % Vcc level
Output load condition	L_CMOS	10kΩ/15 pF Max.	CMOS load
Spurious suppression	-	-85 dBc Max.	-
Input voltage	V _{IH}	70 % Vcc Min.	OE terminal
	V _{IL}	30 % Vcc Max.	
Output disable time	tpxz	200 ns Max.	-
Output enable time	tpzx	10 ms Max.	-
Start-up time	t _{str}	10 ms Max.	Time at 90 % Vcc to be 0s
SSB PHASE NOISE	-	-75dBc/Hz Typ.	at 10Hz offset
		-105dBc/Hz Typ.	at 100Hz offset
		-130dBc/Hz Typ.	at 1kHz offset
		-145dBc/Hz Typ.	at 10kHz offset
		-155dBc/Hz Typ.	at 100kHz offset
		-155dBc/Hz Typ.	at 1MHz offset
		-155dBc/Hz Typ.	at 10MHz offset
Phase jitter	-	0.5 ps Max.	12kHz – 20MHz
		0.45 ps Max.	50kHz – 20MHz
G sensitivity	-	4ppb/g Max.	3 axis, Vibration frequency from 50Hz to 1000Hz

*1 Absolute pull range = Frequency control range- Frequency tolerance

* Please keep Vc pin open or ground while powering up Vcc.

External dimensions

(Unit: mm)



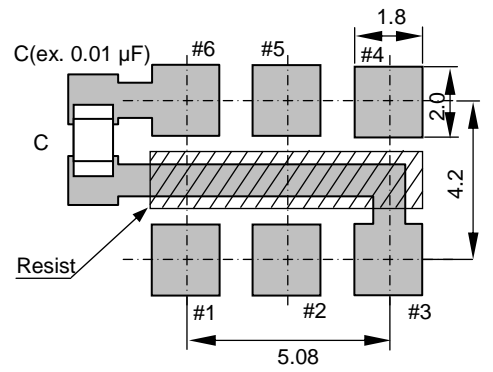
Pin map

Pin	Connection
1	Vc
2	OE
3	GND
4	OUT
5	N.C.
6	Vcc

OE pin = "H" or "open": Specified frequency output.
 OE pin = "L": Output is high impedance.

Footprint (Recommended)

(Unit: mm)



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

Preliminary