

Temperature Compensated Crystal Oscillators

TCXO or VC-TCXO

±0.1 or ±0.28 ppm

10 to 40 MHz

5.0x3.2 & 7.0x5.0 mm

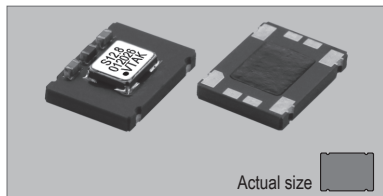
+2.7 to +5.5 V

CMOS or CLIPPED SINE

SXO-9000 SERIES (+2.7V to +5.0V FIXED MODELS) 5.0x3.2 mm 7.0x5.0 mm

STANDARD SMD TCXO

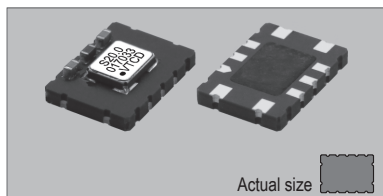
SXO-9000C



Actual size

0.125 gm (wt.)

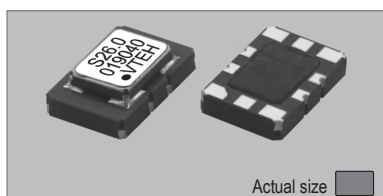
SXO-9000D



Actual size

0.125 gm (wt.)

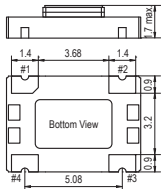
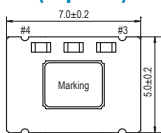
SXO-9000E



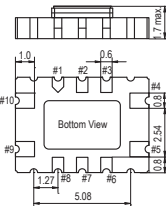
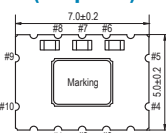
Actual size

0.07 gm (wt.)

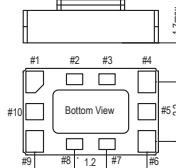
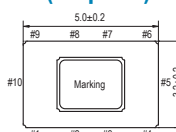
SXO-9000C (4-pads)



SXO-9000D (10-pads)



SXO-9000E (10-pads)



PIN CONNECTION SXO-9000C

PIN	CONNECTION
1	TCXO
2	NC or GND
3	OUTPUT
4	+V DC

PIN CONNECTION SXO-9000D

PIN	CONNECTION
1	TCXO
2	NC or GND
3	NC or GND
4	GND
5	OUTPUT
6	NC or GND
7	NC or GND
8	E/D
9	+V DC
10	NC or GND

PIN CONNECTION SXO-9000E

PIN	CONNECTION
1	NC or GND
2	NC or GND
3	E/D
4	GND
5	NC or GND
6	OUTPUT
7	NC or GND
8	NC or GND
9	+V DC
10	NC or GND

STANDARD SPECIFICATIONS

- FEMTOCELL APPLICATION
- CMOS or CLIPPED SINE WAVEFORM
- PACKAGE SIZE 5.0x3.2 mm or 7.0x5.0 mm

Item	Specifications							
General part number	SXO-9000C-CS*1 SXO-9000D-CS SXO-9000E-CS	SXO-9000C-CSV*1 SXO-9000D-CSV SXO-9000E-CSV	SXO-9000C-CM*1 SXO-9000D-CM SXO-9000E-CM	SXO-9000C-CMV*1 SXO-9000D-CMV SXO-9000E-CMV				
Frequency range	10.000 MHz to 40.000 MHz							
Initial frequency tolerance at +25°C ±2°C	±1.5 ppm max. (after 2 times of reflow soldering)							
Output waveform	Clipped Sine OUTPUT		CMOS OUTPUT					
TCXO or VC-TCXO	TCXO	VC-TCXO	TCXO	VC-TCXO				
Frequency Stability	Temperature range	KK2 : ±0.1 ppm max. over -10°C to +70°C (referred to +25°C) ² QQ2 : ±0.28 ppm max. over -40°C to +85°C (referred to +25°C) ²						
	Input voltage change	±0.2 ppm max. at V _{DD} ±5% DC						
	Output load change	±0.1 ppm max. at load ±10%						
	Aging (Stratum 3)	±4.6 ppm max. at +40°C for 20 years including overall freq. stability						
Operating Conditions	Operating temperature	-10°C to +70°C (S1 = Standard 1) -40°C to +85°C (S2 = Standard 2)						
	Supply voltage (V _{DD})	+2.7V to +5.5V DC ±5%						
	Control voltage (V _{CON})	n.a.	+1.65V ± 1.65V	n.a.	+1.65V ± 1.65V			
	Supply voltage	-0.6V to +6.0V DC						
Absolute Max. Ratings	V _{control} voltage (V _{CON})	n.a.	-0.6V to V _{DD} +0.6V DC	n.a.	-0.6V to V _{DD} +0.6V DC			
	Storage temperature	-40°C to +85°C						
Input current	3 mA max.		5 mA max.					
Output (-40°C to +85°C)	Symmetry	n.a.		45% to 55% at 1/2 V _{DD} level				
	Rise and fall times	n.a.		5 ns max. (10% to 90% V _{DD} level)				
	Level	0.8 V _{p-p} min.		V _{OL} = 10% V _{DD} max. V _{OH} = 90% V _{DD} min.				
	Load	10 kΩ // 10 pF		15 pF max.				
	Waveform	Clipped sine wave ³		CMOS				
Frequency adjustment voltage control (1/2 V _{DD} ±1/2 V _{DD})	n.a.	±5 ppm to ±20 ppm	n.a.	±5 ppm to ±15 ppm				
Holdover	±5 ppb / day, ±20 ppb / 168 hours (7 days)							
Frequency slope	n.a.	Positive	n.a.	Positive				
Harmonic distortion	-5 dBc max.							
Start-up time	3.5 ms max.							
SSB phase noise (20.000 MHz)	-140 dBc / Hz, Typical at 1 kHz offset							
V _{con} input impedance	n.a.	100 kΩ min.	n.a.	100 kΩ min.				
Short-term frequency stability	±1 ppb max. (Allan variance Tau = 0.1 sec.)							
IR reflow resistance	±1 ppm max. (referred to frequency before reflow)							
Reflow condition	+250°C ±10°C for 10 seconds +170°C ±10°C for 1 to 2 minutes (preheating)							
Standard frequencies (MHz)	10.000, 12.800, 19.200, 19.440, 20.000, 20.480, 24.576, 26.000, 30.720							
Optional Operating Temperature ⁴	Low limit / Symbol	-10°C / g	-15°C / h	-20°C / i	-25°C / j	-30°C / k	-35°C / l	-40°C / m
	High limit / Symbol	+55°C / ff	+60°C / gg	+65°C / hh	+70°C / ii	+75°C / jj	+80°C / kk	+85°C / ll

(*1) Final part number to be assigned with package type, TCXO or VC-TCXO, frequency stability, input voltage and frequency.

e.g. SXO-9000CMV-QQ2-3.3V-26MHz

(*2) V_{con} = 1/2V_{DD} DC for SXO-9000C/D/E-CSV & CMV.

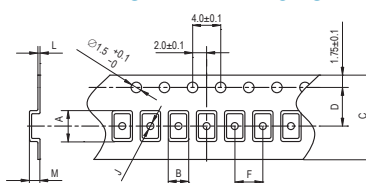
(*3) DC-cut for SXO-9000C & SXO-9000D. DC coupling for SXO-9000E.

(*4) Select "low limit" and "high limit" for new operating temperature combination from the lists.

PACKAGE DATA

Item	Package	SXO-9000
Lid		Metal
Base		Ceramic
Sealing		Seam
Terminal		Tungsten (metalized)
Terminal plating		Gold / Nickel (surface) / (under)
RoHS		Compliant (Pb-free)

TAPE SPECIFICATIONS



SXO-9000C & SXO-9000D

A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
8.2	5.8	16.0	7.5	8.0	1.6	0.3	2.16	254	1000pcs (100pcs)

SXO-9000E

A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
5.9	3.7	12.0	5.5	8.0	1.6	0.3	2.00	254	1000pcs (100pcs)

OUTPUT WAVEFORM

