



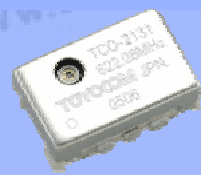
查询"TCO-2100"供应商
VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR (VCXO)

TCO-2000 / 2100 series

- Frequency range : 1 MHz to 800 MHz
- Supply voltage : 3.3 V or 5.0 V
- Frequency control range : $\pm 100 \times 10^{-6}$ Min.
- Features : High reliability(20 years aging)
: Wide frequency control range
: Low phase noise, low jitter
: With HFF-XTAL technology
: Fundamental oscillation (60 MHz to 230 MHz)
: Multiplier oscillation ($f_o \geq 230$ MHz)



Product Number (please contact us)
X1G00XXXXXXX00



Actual size

TCO-2000 Series

TCO-2100 Series

Specifications (characteristics)

Item	Symbol	Specifications				Remarks
		TCO-2001	TCO-2003	TCO-2002	TCO-2004	4 pin
		TCO-2101	TCO-2103	TCO-2102	TCO-2104	6 pin
Output frequency range	f _o	8.000 MHz to 78.000 MHz		8.000 MHz to 125.000 MHz		
Supply voltage	V _{cc}	5.0 V ±0.25 V		3.3 V ±0.165 V		
Storage temperature range	T _{stg}	-45 °C to +90 °C				Store as bare product after unpacking
Operating temperature range	T _{use}	-40 °C to +85 °C				
Frequency tolerance	f _{tol}	As per table 1				-40 °C to +85 °C
Current consumption	I _{cc}	50 mA Max.				
Frequency control range	f _{cont}	As per table 1. (V _C =2.5 V ±2 V)		As per table 1. (V _C =1.65 V ±1.65 V)		
Absolute pull range	APR	As per table 1				
Input resistance	R _{in}	100 kΩ Min.				DC level
Frequency change polarity	—	Positive slope				V _C = 0 V to 3.3 V or V _C =0.5 V to 4.5 V
Output load condition (TTL)	L _{TTL}	2 TTL Max.	—	2 TTL Max.	—	
Output load condition (CMOS)	L _{CMOS}	—	15 pF Max.	—	15 pF Max.	
Start-up time	t _{str}	10 ms Max. *1				
Frequency aging	f _{aging}	As per table 1				+25 °C

Specifications (characteristics)

Item	Symbol	Specifications		Remarks
		TCO-2106	TCO-2107	6pin, OE function
Output frequency range	f _o	1.000 MHz to 80.000 MHz		
Supply voltage	V _{cc}	3.3 V ±0.165 V		
Storage temperature range	T _{stg}	-45 °C to +90 °C		Store as bare product after unpacking
Operating temperature range	T _{use}	-40 °C to +85 °C		
Frequency tolerance	f _{tol}	As per table 1		-40 °C to +85 °C
Current consumption	I _{cc}	30 mA Max.		
Frequency control range	f _{cont}	As per table 1		V _C = 1.65 V ±1.65 V
Absolute pull range	APR	As per table 1		
Input resistance	R _{in}	100 kΩ Min.		DC level
Frequency change polarity	—	Positive slope		V _C = 0 V to 3.3 V
Output load condition (TTL)	L _{TTL}	2 TTL Max.	—	
Output load condition (CMOS)	L _{CMOS}	—	15 pF Max.	
Start-up time	t _{str}	10 ms Max. *1		
Frequency aging	f _{aging}	As per table 1		+25 °C

Specifications (characteristics)

Item	Symbol	Specifications			Remarks
		TCO-2111	TCO-2112	TCO-2114	
Output frequency range	f _o	60.000 MHz to 800.000 MHz		60.000 MHz to 230.000 MHz	6 pin
Supply voltage	V _{cc}	3.3 V ±0.165 V	5.0 V ±0.25 V	3.3 V ±0.165 V	
Storage temperature range	T _{stg}	-45 °C to +90 °C			Store as bare product after unpacking
Operating temperature range	T _{use}	-40 °C to +85 °C			
Frequency tolerance	f _{tol}	As per table 1			-40 °C to +85 °C
Current consumption	I _{cc}	65 mA Max.		40 mA Max.	
Frequency control range	f _{cont}	As per table 1 (V _c = 1.65 V ±1.65 V)	As per table 1 (V _c = 2.5 V ±2 V)	As per table 1 (V _c = 1.65 V ±1.65 V)	
Absolute pull range	APR	As per table 1			
Input resistance	R _{in}	100 kΩ Min.			DC level
Frequency change polarity	—	Positive slope			V _c = 0 V to 3.3 V or V _c =0.5 V to 4.5 V
Output level	—	LV-PECL	PECL	LVDS	
Start-up time	t _{str}	10 ms Max. *1			
Frequency aging	f _{aging}	As per table 1			+25 °C



Specifications (characteristics)

Item	Symbol	Specifications	Remarks
Output frequency range	f_o	60.000 MHz to 700.000 MHz	6pin, OE function
Supply voltage	V_{CC}	3.3 V \pm 0.165 V	
Storage temperature range	T_{stg}	-45 °C to +90 °C	Store as bare product after unpacking
Operating temperature range	T_{use}	-40 °C to +85 °C	
Frequency tolerance	f_{tol}	As per table 1	-40 °C to +85 °C
Current consumption	I_{CC}	75 mA Max.	
Frequency control range	f_{cont}	As per table 1	$V_C = 1.65 \text{ V} \pm 1.65 \text{ V}$
Absolute pull range	APR	As per table 1	
Input resistance	R_{in}	100 k Ω Min.	DC level
Frequency change polarity	—	Positive slope	$V_C = 0 \text{ V}$ to 3.3 V
Output load condition	—	LV-PECL	
Start-up time	t_{str}	10 ms Max. *1.	
Frequency aging	f_{aging}	As per table 1	+25 °C

Table 1. Frequency tolerance, Absolute pull range and aging (TCO-2100-xx)

xx	Frequency tolerance	Absolute pull range *4	(Frequency control range)	Aging
AA	$\pm 50 \times 10^{-6}$ Max. *2	$\pm 50 \times 10^{-6}$ Min.	$\pm 100 \times 10^{-6}$ Min.	1 year (First year)
AB		$\pm 100 \times 10^{-6}$ Min.	$\pm 150 \times 10^{-6}$ Min.	
BA	$\pm 60 \times 10^{-6}$ Max. *3	$\pm 50 \times 10^{-6}$ Min.	$\pm 110 \times 10^{-6}$ Min.	20 years
BB		$\pm 100 \times 10^{-6}$ Min.	$\pm 160 \times 10^{-6}$ Min.	

*1 Time at minimum supply voltage to be 0 s.

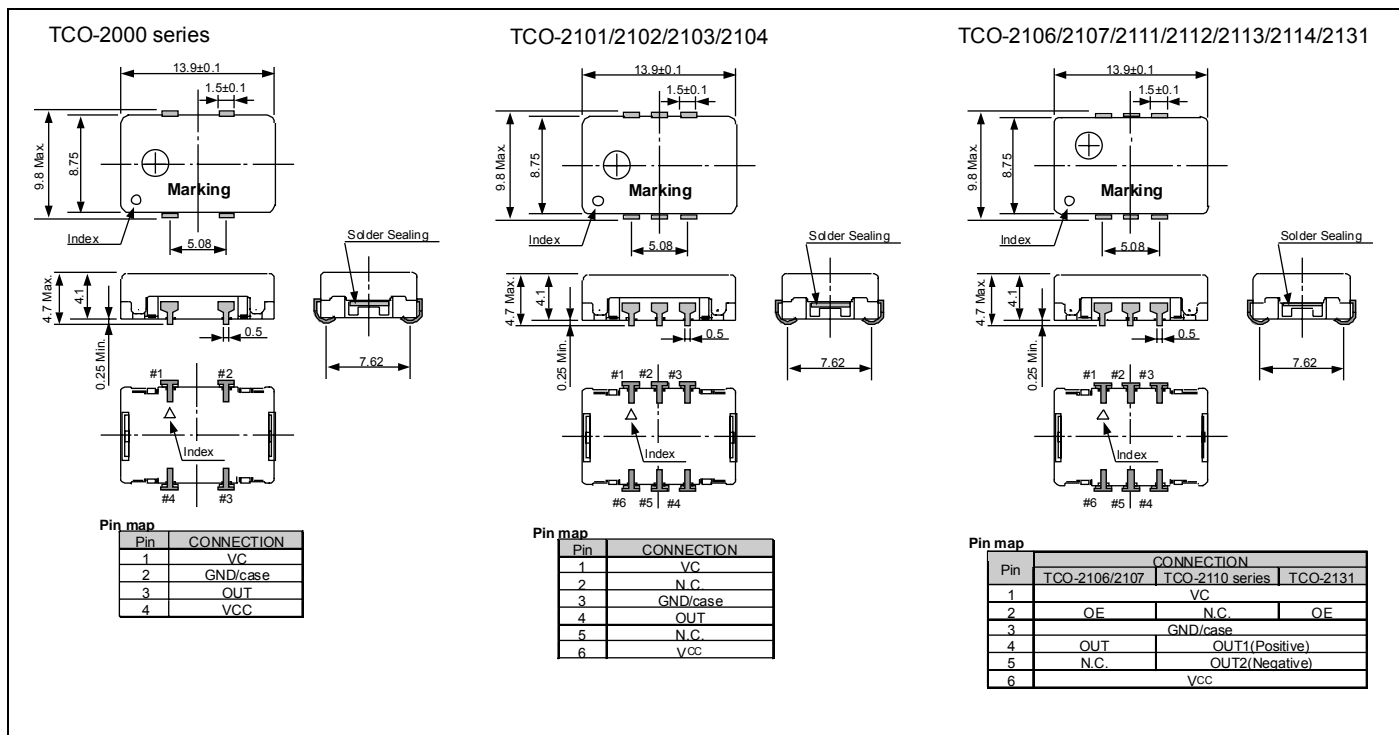
*2 This includes initial frequency tolerance, temperature variation, supply voltage variation and aging (+25 °C, 1 year).

*3 This includes initial frequency tolerance, temperature variation, supply voltage variation and aging (+25 °C, 20 years).

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

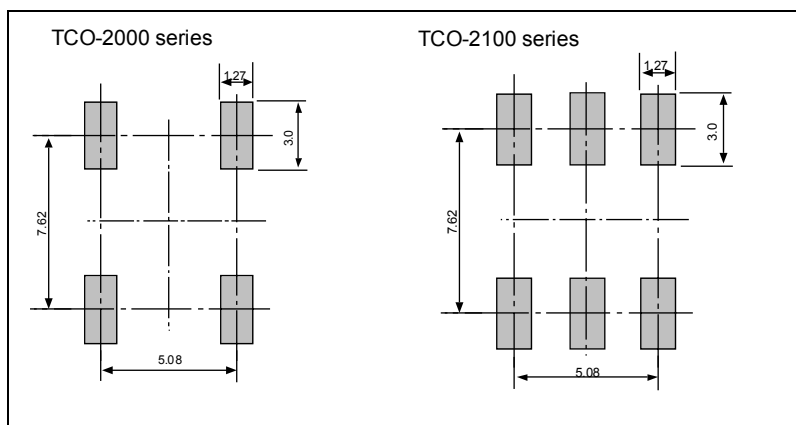
External dimensions

(Unit:mm)



External dimensions

(Unit:mm)



OE terminal

TCO-2106 / 2107

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

TCO-2131

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

“QMEMS” EPSON TOYOCOM

查询"TCO-2400"供应商

In order to meet customer needs in a rapidly advancing digital, broadband and ubiquitous society, we are committed to offering products that are one step ahead of the market and a rank above the rest in quality. To achieve our goals, we follow a "3D (three device) strategy" designed to drive both horizontal and vertical growth. We will to grow our three device categories of "Timing Devices", "Sensing Devices" and "Optical Devices", and expand vertical growth through a combination of products from these categories.

A Quartz MEMS is any high added value quartz device that exploits the characteristics of quartz crystal material but that is produced using MEMS (micro-electro-mechanical system) processing technology.

Market needs are advancing faster than previously imagined toward smaller, more stable crystal products, but we will stay ahead of the curve by rolling out products that exceed market speed and quality requirements. We want to further accelerate the 3D strategy by QMEMS.

Quartz devices have become crucial in the network environment where products are increasingly intended for broadband, ubiquitous applications and where various types of terminals can transfer information almost immediately via LAN and WAN on a global scale. Epson Toyocom Corporation addresses every single aspect within a network environment. The new corporation offers "Digital Convergence" solutions to problems arising with products for consumer use, such as, core network systems and automotive systems.



PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Epson Toyocom, all environmental initiatives operate under the Plan-Do-Check-Action(PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification. In the future, new group companies will be expected to acquire the certification around the third year of operations.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer and global deforestation.

WORKING FOR HIGH QUALITY

In order to provide high quality and reliable products and services than meet customer needs,

Epson Toyocom made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired ISO/TS 16949 certification that is requested strongly by major automotive manufacturers as standard.

QS-9000 is an enhanced standard for quality assurance systems formulated by leading U.S. automobile manufacturers based on the international ISO 9000 series.

ISO/TS 16949 is a global standard based on QS-9000, a severe standard corresponding to the requirements from the automobile industry.

► Explanation of the mark that are using it for the catalog

	<ul style="list-style-type: none"> ► Pb free. ► Complies with EU RoHS directive.
	<ul style="list-style-type: none"> ► Pb free terminal designed. Contains Pb in products exempted by RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.) ► Complies with EU RoHS directive.
	<ul style="list-style-type: none"> ► The products have been designed for high reliability applications such as Automotive.

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 - / Medical instruments to sustain life / Submarine transmitters / Power stations and related / Fire work equipment and security equipment
 - / traffic control equipment / and others requiring equivalent reliability.
- In this new crystal master for Epson Toyocom, product codes and markings will remain as previously identified prior to the merger. Due to the on-going strategy of gradual unification of part numbers, please review product codes and markings, as they will change during the course of the coming months.

We apologize for the inconvenience, but we will eventually have a unified part numbering system for Epson Toyocom that will be user friendly.

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