CRYSTAL OSCILLATOR
PROGRAMMABLE

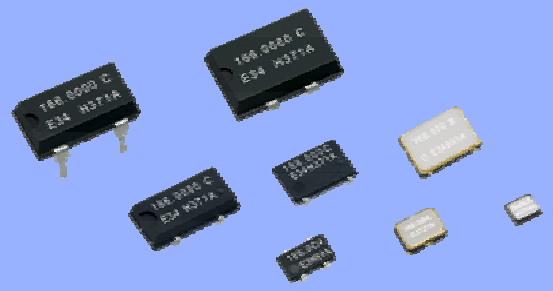
SG - 8003 series

- Frequency range : 1 MHz to 166 MHz
- Supply voltage : 1.8 V Typ. or 2.5 V Typ. or 3.3 V Typ.
- Function : Output enable(OE) or Standby($\overline{ST}$)

- Short mass production lead time by PLL technology.
- SG-Writer available to purchase.
  Please contact Epson Toyocom or local sales representative.

Pb Free
RoHS Compliant

Product Number (please contact us)



NEW

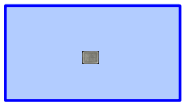
Specifications (characteristics)

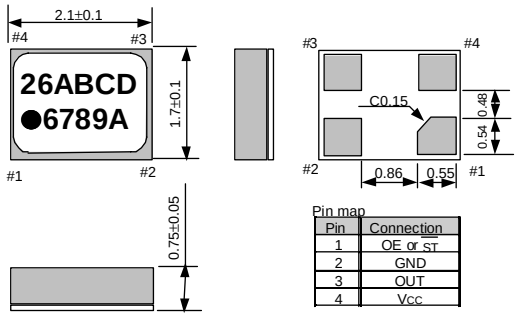
Item		Symbol	Specifications			Remarks
			PE / SE	PD / SD	PC / SC	
Output frequency range		f_0	1 MHz to 166 MHz			
Supply voltage		Vcc	1.8 V Typ. 1.6 V to 2.2 V	2.5 V Typ. 2.2 V to 2.7 V	3.3 V Typ. 2.7 V to 3.6 V	
Temperature range	Storage temperature	T_stg	-40 °C to +85 °C			Store as bare product after unpacking
	Operating temperature	T_use	-20 °C to +70 °C / -40 °C to +85 °C			
Frequency tolerance		f_tol	B: $\pm50 \times 10^{-6}$, C: $\pm100 \times 10^{-6}$			-20 °C to +70 °C
			L:$\pm50 \times 10^{-6}$, M: $\pm100 \times 10^{-6}$			-40 °C to +85 °C
Current consumption		Icc	10 mA Max.	15 mA Max.		No load condition, f_0=166 MHz
Output disable current		I_dis	8 mA Max.			OE=GND (PE,PD,PC)
Stand-by current		I_std	50 µA Max.			$\overline{ST}$ =GND (SE,SD,SC)
Symmetry		SYM	45 % to 55 %			50 % Vcc level, L_CMOS ≤ 15 pF
High output voltage		VOH	90 % Vcc Min.		Vcc -0.4 V Min.	IOH=-4 mA(PD,SD,PE,SE), -8.0 mA(PC,SC)
Low output voltage		VOL	10 % Vcc Max.		0.4 V Max.	IOL= 4 mA(PD,SD,PE,SE), 8.0 mA(PC,SC)
Output load condition (CMOS)		L_CMOS	15 pF Max.			
Output enable / disable input voltage		VIH	80 % Vcc Min.			OE terminal or $\overline{ST}$ terminal
		VIL	20 % Vcc Max.			
Rise and Fall time		t_r/ t_f	5.0 ns Max.			1 MHz≦f_0<80 MHz, 20 % Vcc to 80 % Vcc level, L_CMOS=15 pF
			2.5 ns Max.			80 MHz≦f_0≦166 MHz
Start-up time		t_str	5 ms Max.			t=0 at 90 % Vcc
Frequency aging		f_aging	±3 × 10^{-6} / year Max.			+25 °C, First year, Vcc=1.8 V, 2.5 V, 3.3 V

External dimensions (Unit:mm)

SG-8003BA

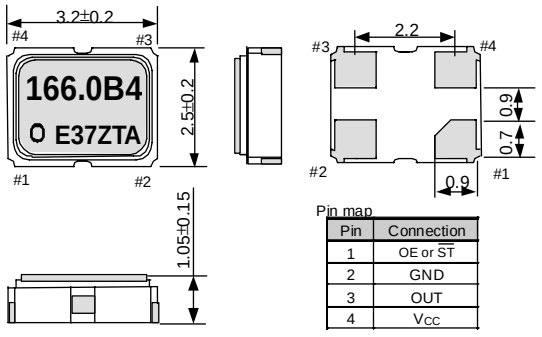
Actual size





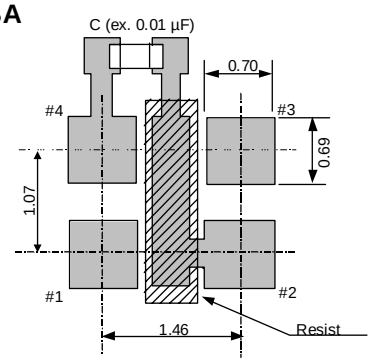
SG-8003CE

Actual size

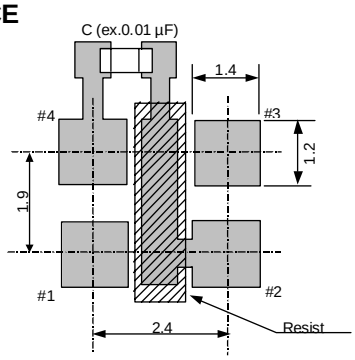


Footprint (Recommended) (Unit:mm)

SG-8003BA

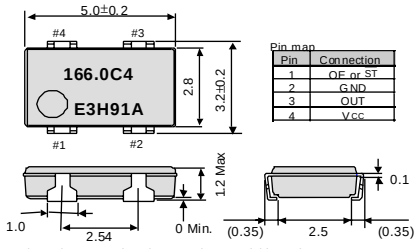


SG-8003CE



SG-8003LB

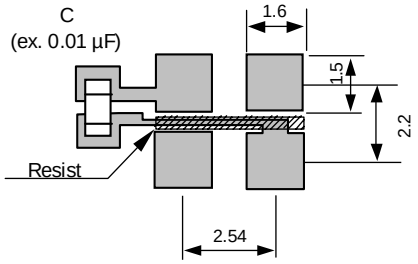
Actual size



Pin map	
Pin	Connection
1	OE or ST
2	GND
3	OUT
4	Vcc

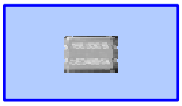
Metal may be exposed on the top or bottom of this product.
This will not affect any quality, reliability or electrical spec.

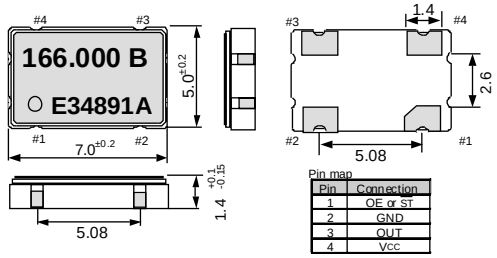
SG-8003LB



SG-8003CA

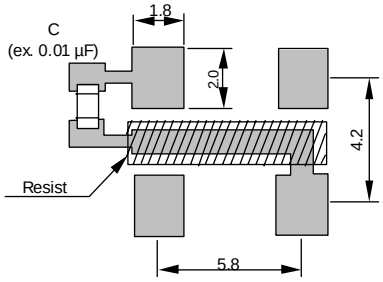
Actual size





Pin map	
Pin	Connection
1	OE or ST
2	GND
3	OUT
4	Vcc

SG-8003CA



SG-8003JF

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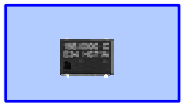
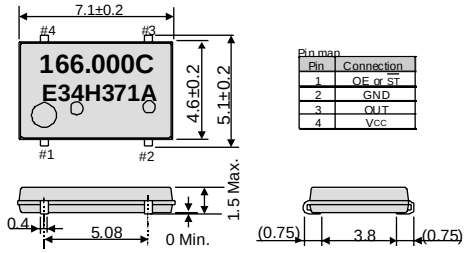
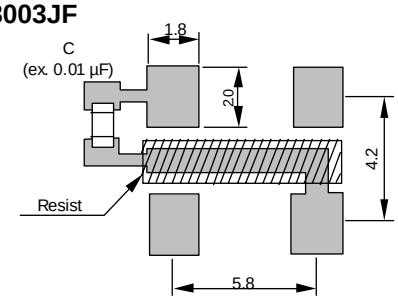




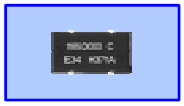
Pin map	
Pin	Connection
1	OE or ST
2	GND
3	OUT
4	Vcc

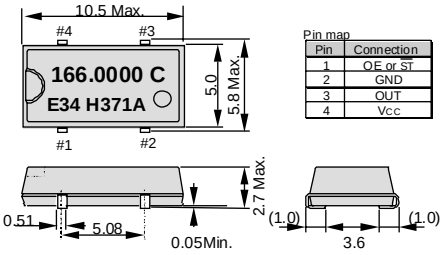
SG-8003JF



SG-8003JC

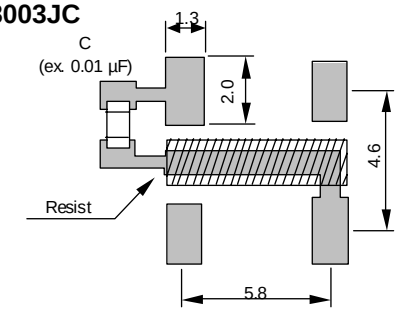
Actual size





Pin map	
Pin	Connection
1	OE or ST
2	GND
3	OUT
4	Vcc

SG-8003JC



SG-8003JA

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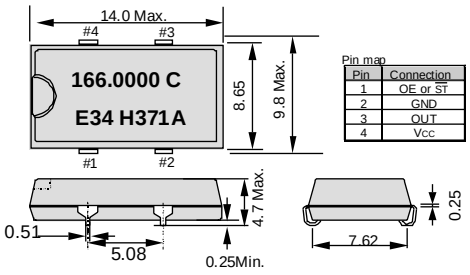
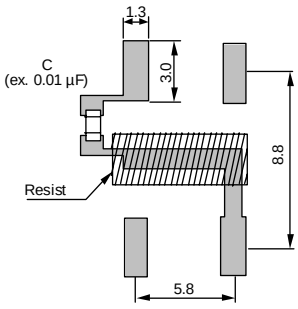


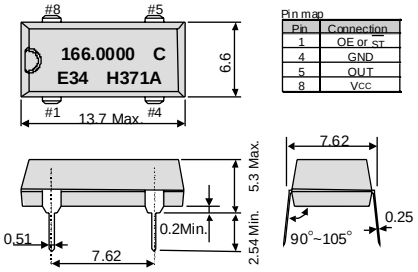
Pin map	
Pin	Connection
1	OE or ST
2	GND
3	OUT
4	Vcc

SG-8003JA



SG-8003DC

Actual size



Pin map	
Pin	Connection
1	OE or ST
4	GND
5	OUT
8	Vcc

Note.
OE Pin (PE, PD, PC)
OE Pin = "H" or "open" : Specified frequency output.
OE Pin = "L" : Output is low level (weak pull - down), oscillation stops.

$\overline{ST}$ Pin (SE, SD, SC)
$\overline{ST}$ Pin = "H" or "open" : Specified frequency output.
$\overline{ST}$ Pin = "L" : Output is low level (weak pull - down), oscillation stops.

“QMEMS” EPSON TOYOCOM

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.

QMEMS

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.

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.

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.

WORKING FOR HIGH QUALITY

In order 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

Pb Free	**►Pb free.** **►Complies with EU RoHS directive.**
RoHS Compliant	**►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.**
For Automotive	**►The products have been designed for high reliability applications such as Automotive.**

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- You are requested not to use the products (and any technical information furnished, if any) for the development and/or manufacture of weapon of mass destruction or for other military purposes. You are also requested that you would not make the products available to any third party who may use the products for such prohibited purposes.
- These products are intended for general use in electronic equipment. When using them in specific applications that require extremely high reliability, such as the applications stated below, you must obtain permission from Epson Toyocom in advance.
  / Space equipment (artificial satellites, rockets, etc.) / Transportation vehicles and related (automobiles, aircraft, trains, vessels, etc.)
  / 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.