CRYSTAL OSCILLATOR (SPXO)

OUTPUT : CMOS, TTL

SG - 636 series

- Frequency range : 2.21675 MHz to 41 MHz
- Supply voltage : 2.5 V Typ. / 3.3 V Typ. / 5.0 V Typ.
- Function : Output enable(OE) or Standby($\overline{ST}$)
- External dimensions : 10.5 × 5.8 × 2.7 mm (t: Max.)

RoHS Compliant

Product Number (please contact us)
SG-636 : Q33636xx2xxxx00

Actual size

SG-636 series

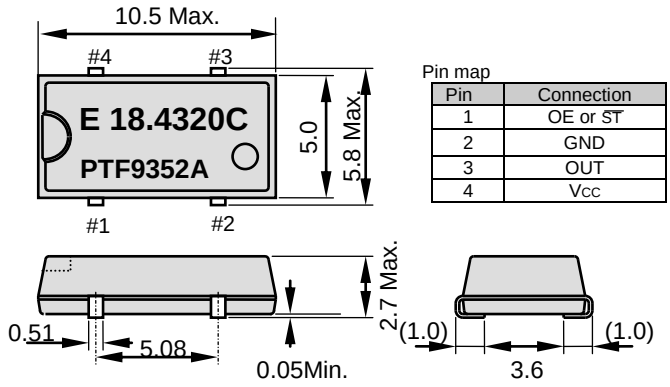
Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks
		SG-636 PTF	SG-636 PCE SG-636 SCE	SG-636 PDE	
Output frequency range	f_0	2.21675 MHz to 41.000 MHz	2.21675 MHz to 40.000 MHz	2.21675 MHz to 40.000 MHz	Please contact us about available frequencies.
Supply voltage	V_{CC}	5.0 V ±0.5 V	3.3 V ±0.3 V	2.5 V ±0.25 V	
Storage temperature	T_stg	-55 °C to +100 °C			Storage as single product.
Operating temperature	T_use	-20 °C to +70 °C			
Frequency tolerance	f_tol	C: $\pm 100 \times 10^{-6}$			-20 °C to +70 °C
Current consumption	I_{CC}	17 mA Max.	9 mA Max.	5 mA Max.	No load condition
Disable current	I_dis	10 mA Max.	5 mA Max.	3 mA Max.	OE=GND
Stand-by current	I_std	—	2 µA Max.	—	$\overline{ST}$ =GND(SCE)
Symmetry	SYM	40 % to 60 %	45 % to 55 %		CMOS load:50 % V_{CC} level
		45 % to 55 %	—		TTL load: 1.4 V level
Output voltage	V_{OH}	V_{CC}-0.4 V Min.			I_{OH}=-8 mA(PTF) / -4 mA(SCE,PCE) / -3.2 mA(PDE)
	V_{OL}	0.4 V Max.			I_{OL}=16 mA(PTF) / 4 mA(SCE,PCE) / 3.2 mA(PDE)
Output load condition (TTL)	L_TTL	10 TTL Max.	—		L_CMOS ≤ 15 pF
Output load condition (CMOS)	L_CMOS	50 pF Max.	30 pF Max.	15 pF Max.	
Input voltage	V_{IH}	2.0 V Min.	80 % V_{CC} Min.		OE Terminal or $\overline{ST}$ Terminal (SCE)
	V_{IL}	0.8 V Max.	20 % V_{CC} Max.		
Rise time / Fall time	t_r / t_f	7 ns Max.	5 ns Max.		CMOS load:20 % V_{CC} to 80 % V_{CC} level
		5 ns Max.	—		TTL load:0.4 V to 2.4 V level
Start-up time	t_str	4 ms Max.	4 ms Max.		Time at minimum supply voltage to be 0 s
Frequency aging	f_aging	±5 × 10^{-6} / year Max.			+25 °C, V_{CC}=5.0 V/3.3 V/2.5 V, First year

Product Name (Standard form): SG-636 P T F 18.432000MHz C
① ②③ ④ ⑤

①Model ②Function (P: Output enable, S:Standby) ③Supply voltage(T : 5.0V Typ. C : 3.3V Typ. D : 2.5V Typ.)
④Frequency ⑤Frequency tolerance(C : ±100 × 10^{-6} / -20 °C ~ +70 °C)

External dimensions (Unit:mm)



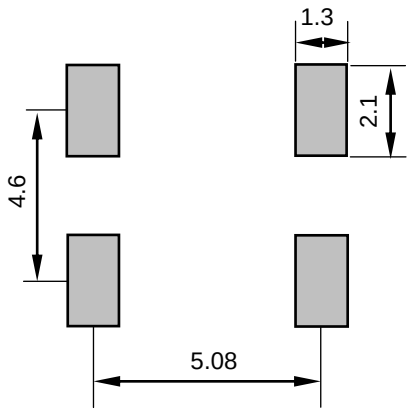
Pin map

Pin	Connection
1	OE or $\overline{ST}$
2	GND
3	OUT
4	Vcc

The metal case inside of the molding compound may be exposed on the top or bottom of this product.
This purely cosmetic and does not have any effect on quality, reliability or electrical specs.

Note.
OE pin (PTF,PCE,PDE)
OE pin = "H" or "open" : Specified frequency output.
OE pin = "L" : Output is high impedance.
$\overline{ST}$ pin (SCE)
$\overline{ST}$ pin = "H" or "open" : Specified frequency output.
ST pin = "L" : Output is low level ,oscillation stops.

Footprint (Recommended) (Unit:mm)



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

PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, 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.

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

Seiko Epson 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.

ISO/TS16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

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

Pb Free	►Pb free.
RoHS Compliant	►Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)
For Automotive	►Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
Automotive Safety	►Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).

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