

CRYSTAL OSCILLATOR (SPXO)
OUTPUT : CMOS, TTL

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

SG-636 series

- Frequency range : 2.21675 MHz to 135 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.)



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_o	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 \pm 0.5 V	3.3 V \pm 0.3 V	2.5 V \pm 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 μ A 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.	—	—	$L_{CMOS} \leq 15$ 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}	$\pm 5 \times 10^{-6}$ / year Max.			+25 °C, V_{cc} =5.0 V/3.3 V/2.5 V, First year

Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks
		SG-636 PTG	SG-636 PHG	SG-636 PCG SG-636 SCG	
Output frequency range	f_o	2.21675 MHz to 33.000 MHz *1			Please contact us about available frequencies.
Supply voltage	V_{cc}	4.5 V to 5.5 V		2.7 V to 3.6 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}	B: $\pm 50 \times 10^{-6}$ C: $\pm 100 \times 10^{-6}$			-20 °C to +70 °C
Current consumption	I_{cc}	25 mA Max.	—	12 mA Max.	No load condition
Disable current	I_{dis}	20 mA Max.	—	10 mA Max.	OE=GND (PTG,PHG,PCG)
Stand-by current	I_{std}	—	—	50 μ A Max.	\overline{ST} =GND (SCG)
Symmetry	SYM	40 % to 60 %	45 % to 55 %		50 % V_{cc} level, L_{CMOS} =25 pF
		2.4 V Min.	—	V_{cc} -0.4 V Min.	1.4 V level, L_{CMOS} =25 pF
Output voltage	V_{OH}	—	V_{cc} -0.4 V Min.	—	I_{OH} =-8 mA
	V_{OL}	—	—	0.4 V Max.	I_{OH} =-16 mA
Output load condition	L_{CMOS}	25 pF Max.			I_{OL} =8 mA
Input voltage	V_{IH}	2.0 V Min.	70 % V_{cc} Min.		OE Terminal or \overline{ST} Terminal
	V_{IL}	0.8 V Max.	20 % V_{cc} Max.		
Rise time / Fall time	t_r / t_f	—	3.4 ns Max.	4 ns Max.	20 % V_{cc} to 80 % V_{cc} level, $L_{CMOS} \leq 25$ pF
		2.4 ns Max.	—	—	TTL load:0.4 V to 2.4 V level, $L_{CMOS} \leq 25$ pF
Start-up time	t_{str}	12 ms Max.			$t=0$ at 90 % V_{cc}
Frequency aging	f_{aging}	$\pm 5 \times 10^{-6}$ / year Max.			+25 °C, V_{cc} =5.0 V/3.3 V, First year

 *1 4.1250 MHz < f_o < 4.4336 MHz, 8.2500 MHz < f_o < 8.8672 MHz, 16.500 MHz < f_o < 17.7344 MHz : Unavailable

Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks
		SG-636 PTW / STW	SG-636 PHW / SHW	SG-636 PCW / SCW	
Output frequency range	f _o	32.001 MHz to 135.000 MHz			Please contact us about available frequencies.
Supply voltage	V _{cc}	5.0 V ±0.5 V		3.3 V ±0.3 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}	B: ±50 × 10 ⁻⁶ C: ±100 × 10 ⁻⁶ (40 MHz < f _o ≤ 135 MHz)			-20 °C to +70 °C
Current consumption	I _{cc}	45 mA Max.		28 mA Max.	No load condition(Max. frequency range)
Disable current	I _{dis}	30 mA Max.		16 mA Max.	OE=GND (PTW,PHW,PCW)
Stand-by current	I _{std}	50 μA Max.			ST=GND (STW,SHW,SCW)
Symmetry	SYM	—		40 % to 60 %	50 % V _{cc} level, L _{CMOS} =Max.
		40 % to 60 %		—	1.4 V level, L _{CMOS} =Max.
Output voltage	V _{OH}	V _{cc} -0.4 V Min.			I _{OH} =-16 mA(PTW , STW , PHW , SHW) / -8 mA(PCW , SCW)
	V _{OL}	0.4 V Max.			I _{OL} = 16 mA(PTW , STW , PHW , SHW) / 8 mA(PCW , SCW)
Output load condition (TTL)	L _{TTL}	5 TTL Max.	—	—	f _o ≤ 90 MHz, Max. Supply voltage.
Output load condition (CMOS)	L _{CMOS}	15 pF Max.			Max. frequency, Max. Supply voltage.
Input voltage	V _{IH}	2.0 V Min.		70 % V _{cc} Min.	OE Terminal or ST Terminal
	V _{IL}	0.8 V Max.		20 % V _{cc} Max.	
Rise time / Fall time	t _r / t _f	—		4 ns Max.	20 % V _{cc} to 80 % V _{cc} level, L _{CMOS} ≤ Max. 0.4 V to 2.4 V level
		4 ns Max.		—	
Start-up time	t _{str}	10 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, First year

*2 SG-636 series "C" tolerance : 40 MHz < f_o ≤ 135 MHz

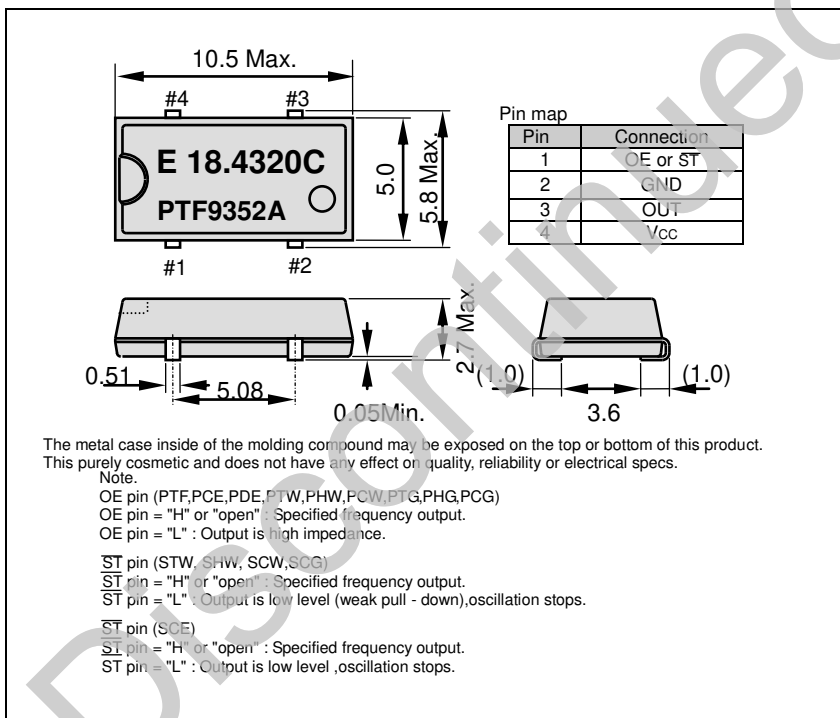
Product Name SG-636 P T W 135.000000MHz B
 (Standard form) ① ②③ ④ ⑤
 ① Model ② Function (P: Output enable, S: Standby)
 ③ Supply voltage ④ Frequency
 ⑤ Frequency tolerance

③ Supply voltage	
D	2.5 V Typ.
C	3.3 V Typ.
T,H	5.0 V Typ.

⑤ Frequency tolerance	
B	±50 × 10 ⁻⁶ / -20 to +70°C
C	±100 × 10 ⁻⁶ / -20 to +70°C

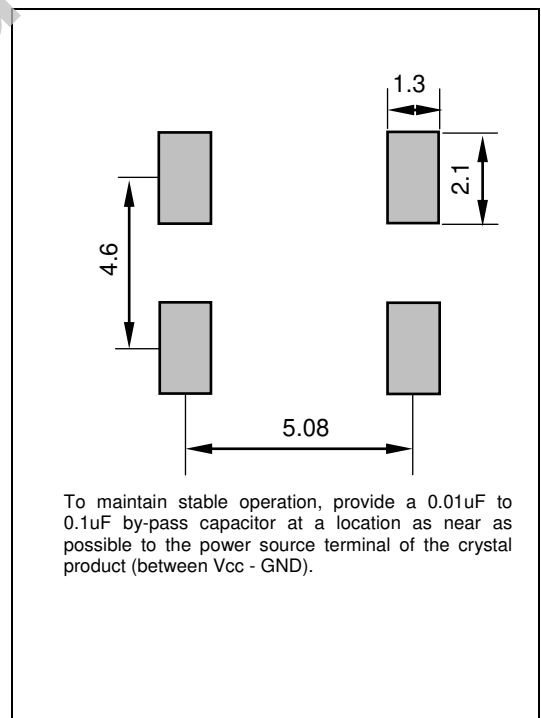
External dimensions

(Unit:mm)



Footprint (Recommended)

(Unit:mm)



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.





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	► 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.)
	► Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
	► Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).

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