

PROGRAMMABLE HIGH-FREQUENCY CRYSTAL OSCILLATOR

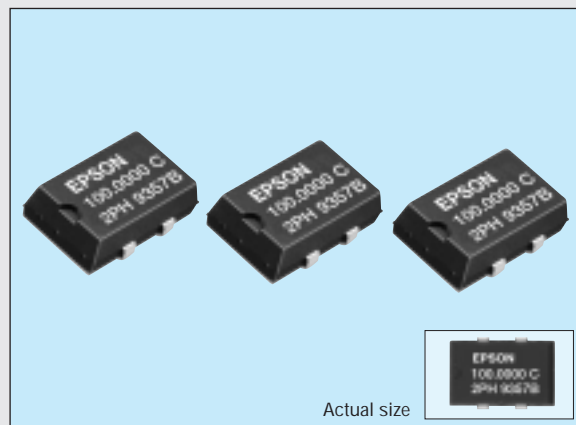
SG-8002JA series

Products number

Q3306JAXxxxxx00

- Wide frequency output by PLL technology.
- Quick delivery of samples and short lead mass production time.
- Excellent environmental capability.
- Output enable function (OE) and stand-by function (ST) can be used for low current consumption applications.
- Package and pin compatible with SG-615.

8002 PROM Writer available to purchase. (Type:PRW-8000A3-M01)
Please contact EPSON or local sales representative.



Specifications (characteristics)

Item	Symbol	PT/ST	Specifications *		Remarks
			PH/SH	PC/SC	
Output frequency range	f ₀		1.0000 MHz to 125.0000 MHz		Refer to page 12. "Frequency range"
Power source voltage	Max. supply voltage	V _{DD} -GND	-0.5 V to +7.0 V		
	Operating voltage	V _{DD}	5.0 V±0.5 V	3.3 ± 0.3 V	3.0 V ±0.3 V: f ₀ ≤ 66.7 MHz(PC/SC)
Temperature range	Storage temperature	T _{STG}	-55 °C to +125 °C		Stored as bare product after unpacking
	Operating temperature	T _{OPR}	-20 °C to +70 °C (-40 °C to +85 °C)	-40 °C to +85 °C	Refer to page 12. "Frequency range"
Frequency stability	Δf/f ₀		B: ±50 x 10 ⁻⁶ C: ± 100 x 10 ⁻⁶ M: ±100 x 10 ⁻⁶		B,C: -20 °C to +70 °C, M: -40 °C to +85 °C
Current consumption	I _{OP}		45 mA Max.		No load condition, Max. frequency range
Output disable current	I _{OE}		30 mA Max.		OE=GND(PT, PH, PC)
Standby current	I _{ST}		50 μA Max.		ST=GND(ST, SH, SC)
Duty	tw/ t	—	40 % to 60 %		C-MOS load: 1/2 V _{DD} level
		40 % to 60 %	—		TTL load: 1.4 V level
High output voltage	V _{OH}		V _{DD} -0.4 V Min.		I _{OH} =-16 mA(PT/ST, PH/SH), -8 mA(PC/SC)
Low output voltage	V _{OL}		0.4 V Max.		I _{OL} = 16 mA(PT/ST, PH/SH), 8 mA(PC/SC)
Output load condition (fan out)	TTL	N	5 TTL Max.		Max. frequency and Max. operating voltage range
	C-MOS	C _L	15 pF Max.		
Output enable/disable input voltage	V _{IH}		2.0 V Min.		ST, OE terminal
	V _{IL}		0.8 V Max.		
Output rise time	C-MOS level	t _{TLH}	4 ns Max.		C-MOS load: 20 %→80 % V _{DD}
	TTL level		4 ns Max.		TTL load: 0.4 V→2.4 V
Output fall time	C-MOS level	t _{THL}	4 ns Max.		C-MOS load: 80 %→20 % V _{DD}
	TTL level		4 ns Max.		TTL load: 2.4 V→0.4 V
Oscillation start up time	t _{OSC}		10 ms Max.		Time at minimum operating voltage to be 0 s
Aging	f _a		±5 x 10 ⁻⁶ /year Max.		T _a = +25 °C, V _{DD} = 5.0 V/3.3 V(PC/SC)
Shock resistance	S.R.		±20 x 10 ⁻⁶ Max.		Three drops on a hard board from 750 mm or excitation test with 29400 m/s ² x 0.3 ms x 1/2sine wave in 3 directions

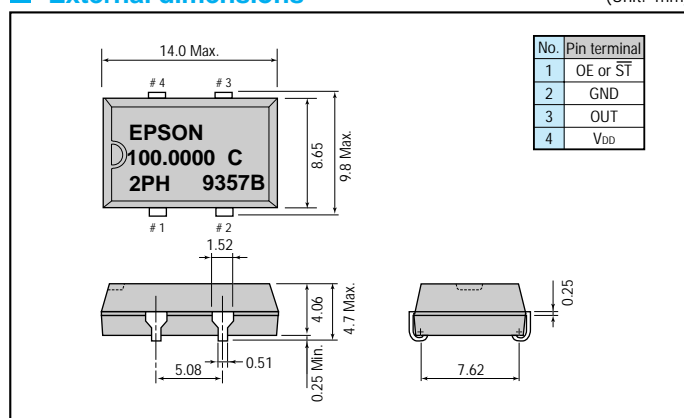
Note: • Please contact us for inquiries about operating temperature(-40 °C to +85 °C), the available frequency, duty and output load conditions.
Checking possible by the Frequency Checking Program.

<http://www.epson.co.jp/device/>

*PLL - PLL connection & Jitter specification, please refer to page 46.

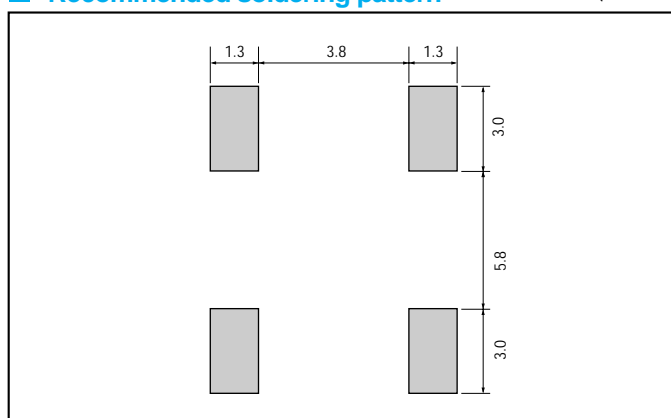
External dimensions

(Unit: mm)



Recommended soldering pattern

(Unit: mm)



PLL oscillator (SG-8002 series and HG-8002 series)

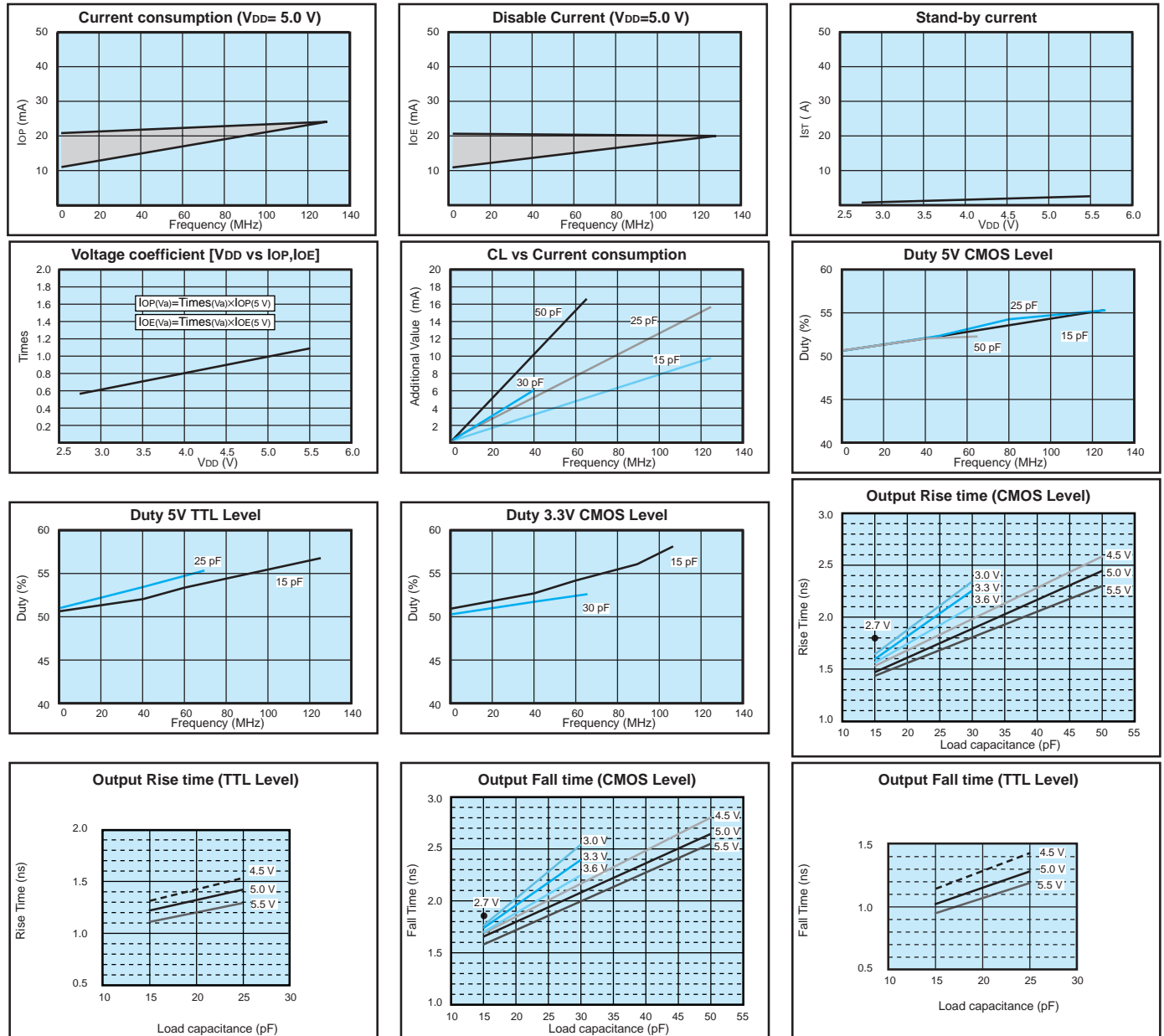
■ PLL-PLL connection

The 8002 series uses PLL technology. There are some cases where jitter will increase when connected to other PLL type devices. For application assistance, please contact Epson.

■ Jitter Specifications

Model	Operating Voltage	Jitter Item	Specifications	Remarks
PT/PH ST/SH	5 V±0.5 V	Cycle to cycle	150 ps Max.	33 MHz≤f _o ≤125 MHz, C _L =15 pF
			200 ps Max.	1.0 MHz≤f _o <33 MHz, C _L =15 pF
		Peak to peak	200 ps Max.	33 MHz≤f _o ≤125 MHz, C _L =15 pF
			250 ps Max.	1.0 MHz≤f _o <33 MHz, C _L =15 pF
SC/PC	3.3 V±0.3 V	Cycle to cycle	200 ps Max.	1.0 MHz≤f _o ≤125 MHz, C _L =15 pF
		Peak to peak	250 ps Max.	1.0 MHz≤f _o ≤125 MHz, C _L =15 pF

■ SG-8002 series Characteristics chart



■ SG-8002Series

Function	P : Output enable			S : Standby			
	Operating voltage	5.0 V ±0.5 V	3.3 V ±0.3 V	5.0 V ±0.5 V	3.3 V ±0.3 V	3.3 V ±0.3 V	
Output load condition	T : TTL	H : C-MOS	C : C-MOS	T : TTL	H : C-MOS	C : C-MOS	
Frequency Stability	B : ±50x10 ⁻⁶ (-20 °C to +70 °C)	PTB	PHB	PCB	STB	SHB	SCB
	C : ±100x10 ⁻⁶ (-20 °C to +70 °C)	PTC	PHC	PCC	STC	SHC	SCC
	M : ±100x10 ⁻⁶ (-40 °C to +85 °C)	PTM	PHM	PCM	STM	SHM	SCM

■ HG-8002Series

Function	P : Output enable			S : Standby			
	Operating voltage	5.0 V ±0.5 V	3.3 V ±0.3 V	5.0 V ±0.5 V	3.3 V ±0.3 V	3.3 V ±0.3 V	
Output load condition	T : TTL	H : C-MOS	C : C-MOS	T : TTL	H : C-MOS	C : C-MOS	
Frequency Stability	AV : ±20x10 ⁻⁶ (-20 °C to +70 °C)	PTAV	PHAV	PCAV	STAV	SHAV	SCAV
	BV : ±25x10 ⁻⁶ (-20 °C to +70 °C)	PTBV	PHBV	PCBV	STBV	SHBV	SCBV
	CX : ±30x10 ⁻⁶ (-40 °C to +85 °C)	PTCX	PHCX	PCCX	STCX	SHCX	SCCX