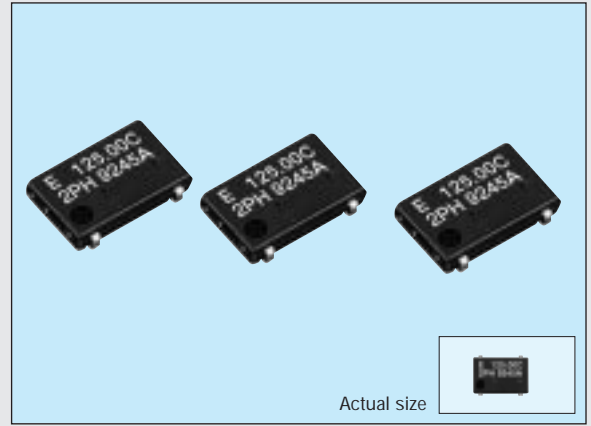


PROGRAMMABLE HIGH-FREQUENCY CRYSTAL OSCILLATOR

SG-8002JF series

Products number
Q3308JFxxxxxx00

- 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.
- Pin compatible with ceramic package crystal oscillator (7 x 5)
 8002 PROM Writer available to purchase.(Type:PRW-8000A3-M01)
 Please contact EPSON or local sales representative.



Specifications (characteristics)

Item	Symbol	PT/ST	PH/SH	PC/SC	Remarks
		Specifications *			
Output frequency range	f _o	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		Stored as bare product after unpacking
	Operating voltage	V _{DD}	5.0 V ± 0.5 V		
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)		
Frequency stability	Δf/f _o	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.		28 mA Max.	No load condition, Max. frequency range
Output disable current	I _{OE}	30 mA Max.		16 mA Max.	OE=GND(PT,PH,PC)
Standby current	I _{ST}	50 μA Max.			ST=GND(ST,SH,SC)
Duty	t _w /t	—		40 % to 60 %	C-MOS load: 1/2V _{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	CL	15 pF Max.		
Output enable/disable input voltage	V _{IH}	2.0 V Min.		0.7 x V _{DD} Min.	ST, OE terminal
	V _{IL}	0.8 V Max.		0.2 x V _{DD} Max.	
Output rise time	C-MOS level	t _{TLH}	—	4 ns Max.	C-MOS load: 20 % → 80 % V _{DD}
	TTL level	t _{TLH}	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	t _{THL}	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.

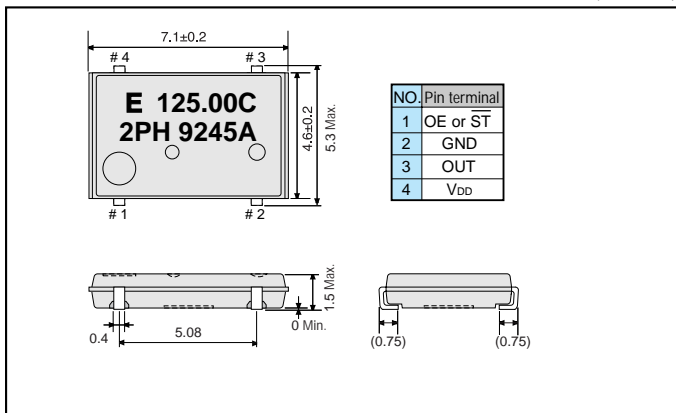
Checking possible by the Frequency Checking Program. <http://www.epson.co.jp/device/>

Metal may be exposed on the top or bottom this product. This won't affect any quality, reliability or electrical spec.

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

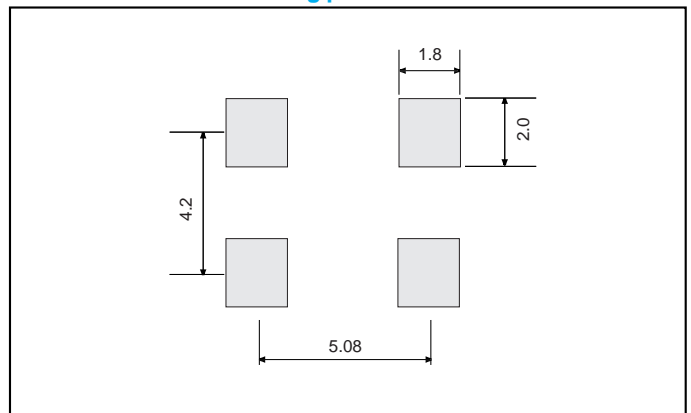
External dimensions

(Unit: mm)



Recommended soldering pattern

(Unit: mm)



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

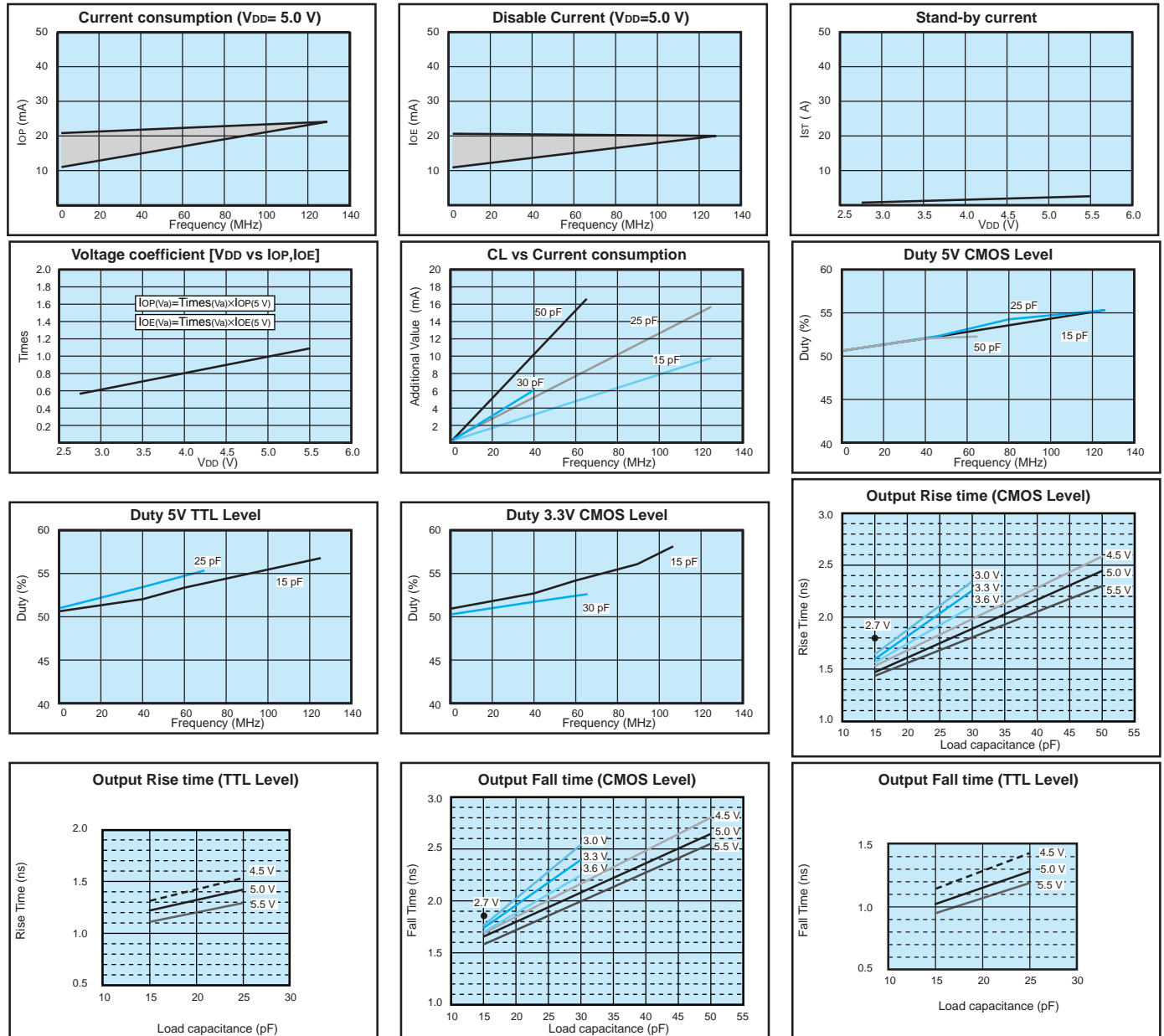
■ PLL-PLL connection

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 : ±50x 10 ⁻⁶ (-20 °C to +70 °C)	PTB	PHB	PCB	STB	SHB	SCB
	C : ±100x 10 ⁻⁶ (-20 °C to +70 °C)	PTC	PHC	PCC	STC	SHC	SCC
	M : ±100x 10 ⁻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 : ±20x 10 ⁻⁶ (-20 °C to +70 °C)	PTAV	PHAV	PCAV	STAV	SHAV	SCAV
	BV : ±25x 10 ⁻⁶ (-20 °C to +70 °C)	PTBV	PHBV	PCBV	STBV	SHBV	SCBV
	CX : ±30x 10 ⁻⁶ (-40 °C to +85 °C)	PTCX	PHCX	PCCX	STCX	SHCX	SCCX