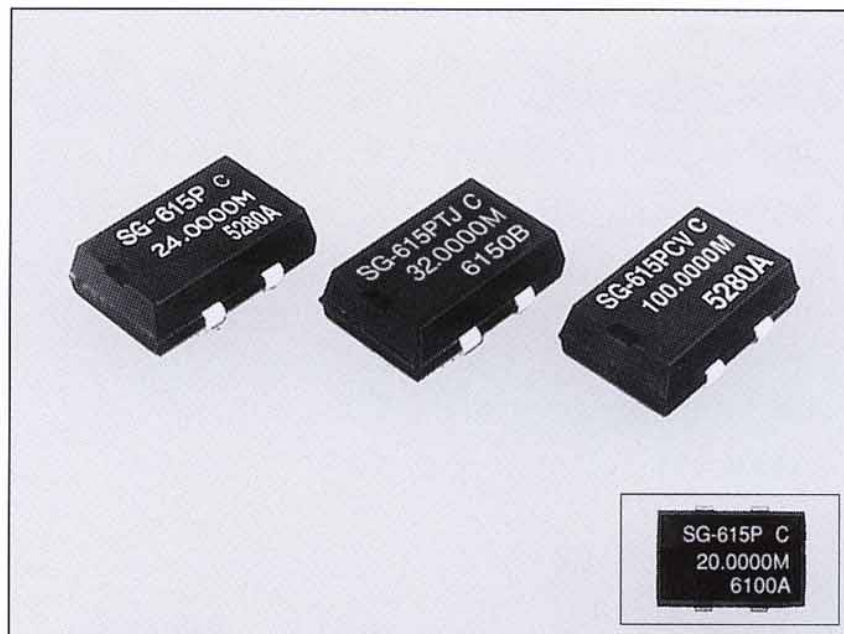


SMD TYPE HIGH FREQUENCY CRYSTAL OSCILLATOR

# SG-615 series



Actual size

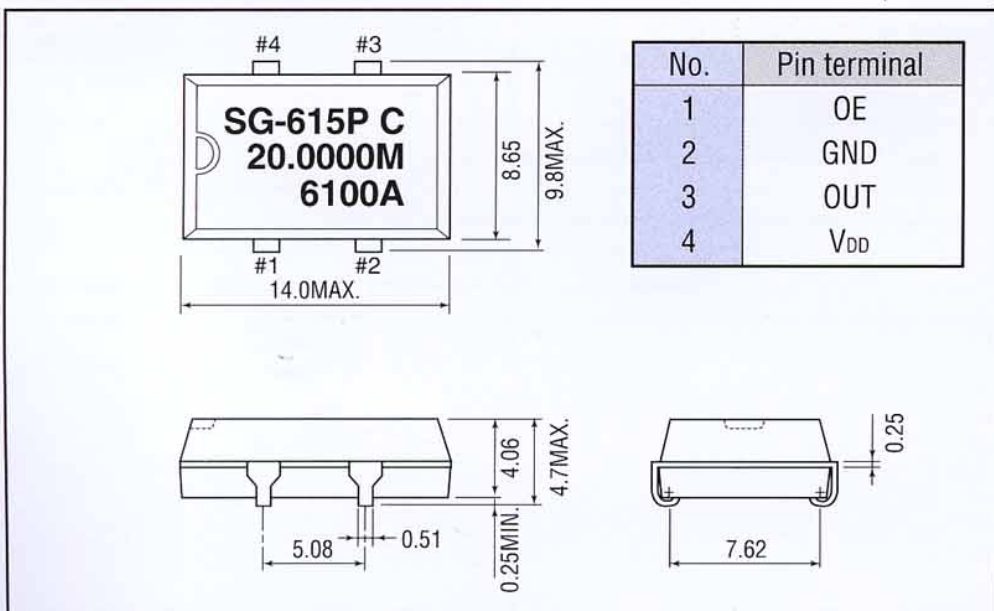
## Specifications (Characteristics)

Item	Symbol	SG-615P	SG-615PTJ	SG-615PH	Remarks
		Specifications			
Output frequency range	$f_0$	1.0250MHz to 26.0000MHz	26.0001MHz to 66.6667MHz		
Power source voltage	MAX. supply voltage	$V_{DD-GND}$			
	Operating voltage	$V_{DD}$			
Temperature range	Storage temperature	$T_{STG}$			Stored as bare product after unpacking
	Operating temperature	$T_{OPR}$			
Soldering condition	$T_{SOL}$	Twice at under 260°C within 10sec. or under 230°C within 3min.			
Frequency stability	$\Delta f/f_0$	B : $\pm 50$ ppm C : $\pm 100$ ppm			B type is possible up to 55MHz
Current consumption	$I_{OP}$	23mA MAX.	35mA MAX.		No load condition
Duty	C-MOS level	40% to 60%	—	40% to 60%	C-MOS load : $1/2V_{DD}$ TTL load : 1.4V
	TTL level	45% to 55%		—	
Output voltage	$V_{OH}$	$V_{DD} - 0.4V$ MIN.	2.4V MIN.	$V_{DD} - 0.4V$ MIN.	
	( $I_{OH}$ )	-400 $\mu$ A		-4mA	
	$V_{OL}$	0.4V MAX.			
	( $I_{OL}$ )	16mA	8mA	4mA	
Output load condition (fan out)	C-MOS	CL	50pF MAX.	50pF MAX.	
	TTL	N	10TTL MAX.	5TTL MAX.	
Output enable/disable input voltage	$V_{IH}$	2.0V MIN.	3.5V MIN.	2.0V MIN.	$I_{IH} = 1\mu A$ MAX. (OE= $V_{DD}$ ) $I_{IL} = -100\mu A$ MIN. (OE=GND) $I_{IL} = -500\mu A$ MIN. (OE=GND) PTJ
	$V_{IL}$	0.8V MAX.	1.5V MAX.	0.8V MAX.	
Output disable current	$I_{OE}$	12mA MAX.	28mA MAX.	20mA MAX.	OE=GND
Output rise time	C-MOS level	8nsec. MAX.	—	7nsec. MAX.	C-MOS load : 20% $\rightarrow$ 80% $V_{DD}$ TTL load : 0.4V $\rightarrow$ 2.4V
	TTL level		5nsec. MAX.	—	
Output fall time	C-MOS level	5nsec. MAX.	—	7nsec. MAX.	C-MOS load : 80% $\rightarrow$ 20% $V_{DD}$ TTL load : 2.4V $\rightarrow$ 0.4V
	TTL level		5nsec. MAX.	—	
Oscillation start up time	$t_{OSC}$	4msec. MAX.	10msec. MAX.		Time at 4.5V to be 0sec.
Aging	$f_a$	$\pm 5$ ppm/year MAX.			$T_a = 25^\circ C$ , $V_{DD} = 5V$ , first year
Shock resistance	S.R.	$\pm 20$ ppm MAX.			Drop test of 3 times on a hard board from 75cm height or excitation test with 3000G $\times$ 0.3ms $\times$ 1/2sine wave in 3 directions

Note: • Unless otherwise stated, characteristics (specifications) shown in the above table are based on the rated operating temperature and voltage condition.  
• External by-pass capacitor is recommended.

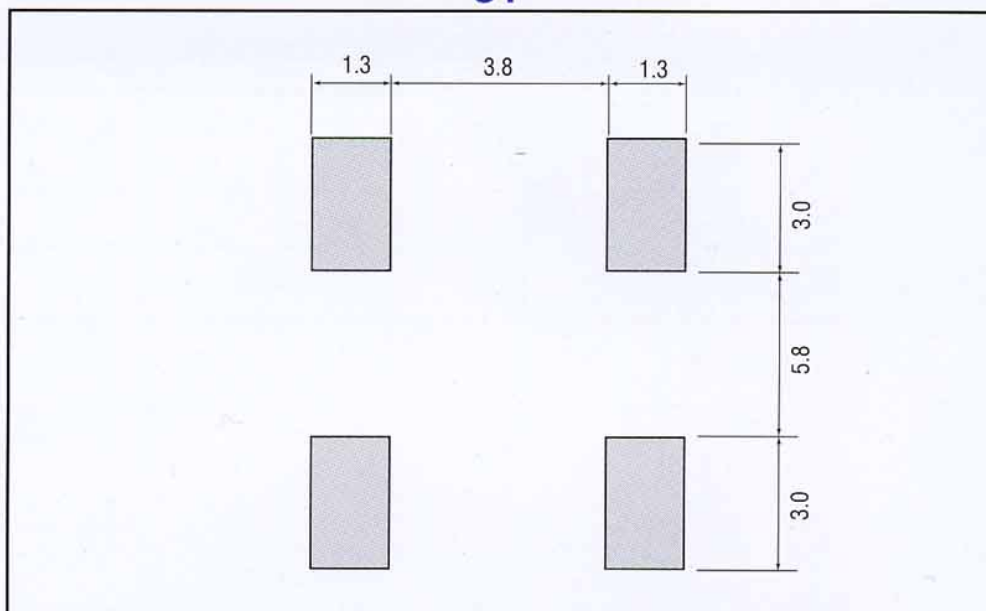
## External Dimensions

(Unit : mm)



## Recommended soldering pattern

(Unit : mm)





## ■ Features

- High density mounting type SMD.
- Designed for universal purpose with heat-resisting cylindrical type AT cut quartz crystal and allowing almost the same soldering temperature as SMD IC.
- Cylindrical type AT quartz crystal built-in, thus assuring high reliability.
- Provided with output enable function.
- Low current consumption.

## ■ Specifications (Characteristics)

Item	Symbol	SG-615 PCV		Remarks
		Specifications		
Output frequency range	f <sub>0</sub>	40.0000MHz to 80.0000MHz		V <sub>DD</sub> =2.7V to 5.5V
		40.0000MHz to 125.0000MHz		V <sub>DD</sub> =4.5V to 5.5V
Power source voltage	MAX. supply voltage	V <sub>DD</sub> -GND	-0.5V to +7.0V	
	Operating voltage	V <sub>DD</sub>	2.7V to 5.5V	
Temperature range	Storage temperature	T <sub>STG</sub>	-55°C to +125°C	Stored as bare product after unpacking
	Operating temperature	T <sub>OPR</sub>	-10°C to +70°C	
Soldering condition	T <sub>SOL</sub>	Twice at under 260°C within 10sec. or under 230°C within 3min.		
Frequency stability	Δf/f <sub>0</sub>	C : ±100ppm		-10°C to +70°C, V <sub>DD</sub> :2.7V to 5.5V
Current consumption	I <sub>OP</sub>	50mA MAX.		No load condition
Duty	T <sub>W</sub> /T	35% to 60%		1/2 V <sub>DD</sub>
Output voltage	V <sub>OH</sub>	V <sub>DD</sub> -0.5V		
	(I <sub>OH</sub> )	-16mA		
	V <sub>OL</sub>	0.4V MAX.		
	(I <sub>OL</sub> )	16mA		
Output load condition (fan out)	CL	25pF MAX.		V <sub>DD</sub> =4.5V to 5.5V
		15pF MAX.		V <sub>DD</sub> =2.7V to 4.5V
Output enable/disable input voltage	V <sub>IH</sub>	0.7V <sub>DD</sub> MIN.		
	V <sub>IL</sub>	0.2V <sub>DD</sub> MAX.		
Output disable current	I <sub>OE</sub>	27mA MAX.		OE=GND
Output rise time	T <sub>TLH</sub>	4nsec.		20% → 80% V <sub>DD</sub>
Output fall time	T <sub>THL</sub>			80% → 20% V <sub>DD</sub>
Oscillation start up time	t <sub>OSC</sub>	10msec. MAX.		Time at 2.7V to be 0sec.
Aging	fa	±5ppm/year MAX.		T <sub>a</sub> =25°C, first year
Shock resistance	S.R.	±20ppm MAX.		Drop test of 3 times on a hard board from 75cm height or excitation test with 3000G × 0.3ms × 1/2sine wave in 3 directions

Note: • Unless otherwise stated, characteristics (specifications) shown in the above table are based on the rated operating temperature and voltage condition.  
 • External by-pass capacitor is recommended.

## ■ Frequency table

Model	Frequency	1MHz	26MHz	40MHz	67MHz	125MHz
SG-615P		—————				
SG-615PTJ			—————			
SG-615PH			—————			
SG-615PCV				—————		