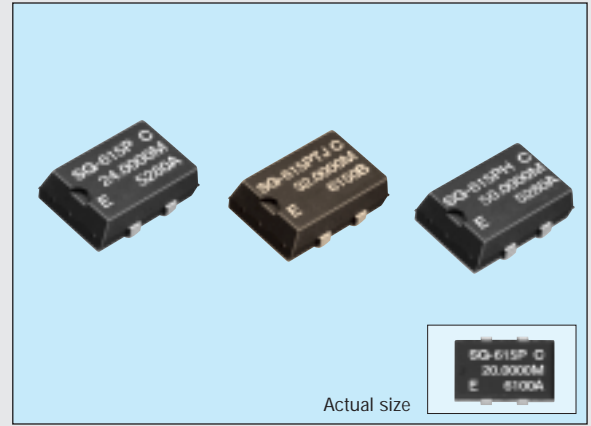


SOJ HIGH-FREQUENCY CRYSTAL OSCILLATOR

# SG-615 series

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



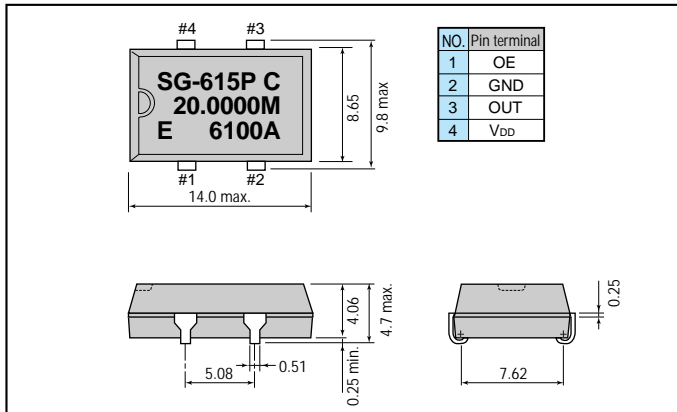
## Specifications (characteristics)

Item	Symbol	SG-615P	SG-615PTJ	SG-615PH	Remarks	
		Specifications				
Output frequency range	$f_0$	1.0250 MHz to 26.0000 MHz	26.0001 MHz to 66.6667 MHz			
Power source voltage	Max. supply voltage	$V_{DD-GND}$	-0.3V to +7.0V			
	Operating voltage	$V_{DD}$	5.0V±0.5V			
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)			
Soldering condition	$T_{SOL}$	Twice at under 260°C within 10 sec. or under 230°C within 3 min.			55MHz max. (-40°C to +85°C)	
Frequency stability	$\Delta f/f_0$	B: ±50ppm C: ±100ppm			B type is possible up to 55 MHz	
Current consumption	$I_{OP}$	23mA max.	35mA max.		No load condition	
Duty	C-MOS level	$t_w/t_l$	40% to 60%	—	40% to 60%	C-MOS load: 1/2V <sub>DD</sub> 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.		
	( $I_{OH}$ )	-400µA		-4mA		
	$V_{OL}$	0.4V max.				
	( $I_{OL}$ )	16mA	8mA	4mA		
Output load condition (fan out)	C-MOS	$C_L$	50pF max.	—	50pF max.	$C_L \leq 15pF$ $I_{IH} = 1\mu A$ max. (OE= $V_{DD}$ ) $I_{IL} = -100\mu A$ min. (OE=GND) $I_{IL} = -500\mu A$ min. (OE=GND) PTJ
	TTL	N	10TTL max.	5TTL max.	—	
Output enable/disable input voltage	$V_{IH}$	2.0V min.	3.5V min.	2.0V min.	OE=GND	
$V_{IL}$	0.8V max.	1.5V max.	0.8V max.			
Output disable current	$I_{OE}$	12mA max.	28mA max.	20mA max.		
Output rise time	C-MOS level	$t_{TLH}$	8ns max.	—	7ns max.	C-MOS load: 20%→80% $V_{DD}$ TTL load: 0.4V→2.4V
	TTL level			5ns max.	—	
Output fall time	C-MOS level	$t_{THL}$	8ns max.	—	7ns max.	C-MOS load: 80%→20% $V_{DD}$ TTL load: 2.4V→0.4V
	TTL level			5ns max.	—	
Oscillation start up time	$t_{OSC}$	4ms max.	10ms max.		Time at 4.5V to be 0 sec.	
Aging	$f_a$	±5ppm/year max.			$T_a = 25^\circ C, V_{DD} = 5V$ , first year	
Shock resistance	S.R.	±20ppm max.			Three drops on a hard board from 75 cm or excitation test with 3000G x 0.3ms x 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)

