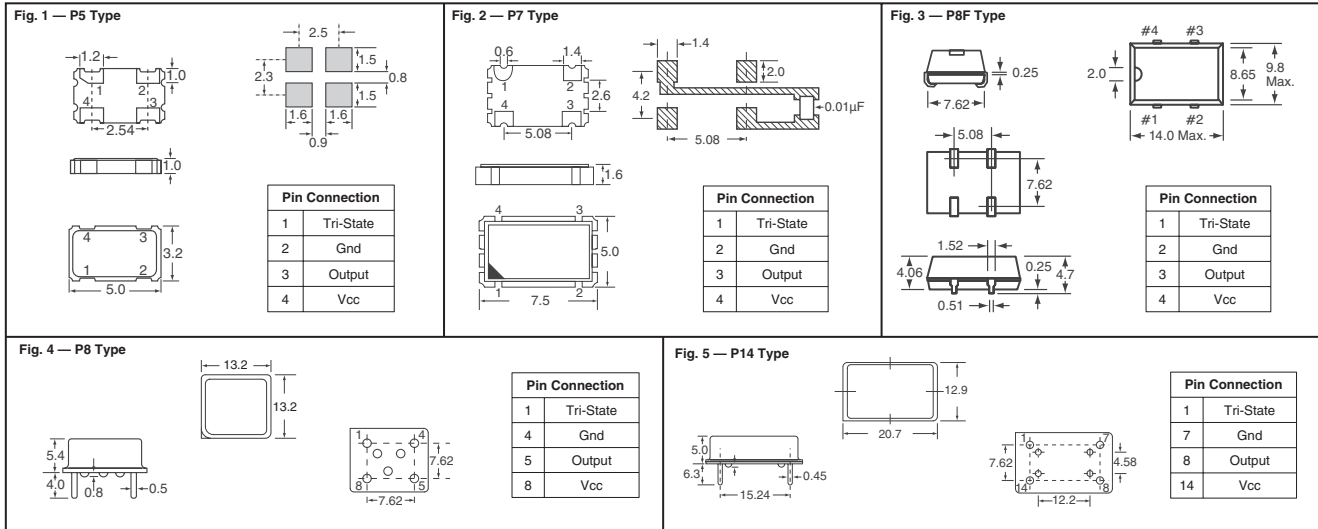


# ECS INC. Programmable Oscillators

The ability to create a custom oscillator to certain specifications provides engineers with a great deal of flexibility. They allow for last minute changes in circuitry or design. ECS Blanks are "Twice Programmable". This is a cost saving feature which allows you to reprogram the same part to different specifications. ECS Programmable Oscillators are available in five different package styles: 3.2 x 5.0 SMD, 5.0 x 7.5 SMD, 9.0 x 14.0 SMD, Half

Size Dip and Full Size Dip Package. Frequency ranges are available from 1MHz - 125MHz in 3.3V and 1MHz - 150MHz in 5V\* and in  $\pm 50\text{ppm}^{**}$  and  $\pm 100\text{ppm}$  Frequency Stability Options.  
 \*3.2 x 5.0 SMD package: Frequency range 1MHz - 125MHz in 5V.  
 \*\* $\pm 50\text{ppm}$  not available in Extended Temperature Range Option.



**How to Select a Base Part Number:**

#1	Select Part Type
#2	Select Output Voltage
#3	Select Frequency Tolerance / Operating Temperature

† Call Digi-Key with your Selected Base Part Number, and a Sales Representative will enter your desired frequency.  
**Programmable parts are non-cancelable and non-returnable!**

**Example Part Number:**  
 ECS □□□ - □□ - ND

#1	Part Type	#2	Output Voltage	#3	Frequency Tolerance (Operating Temperature)
P5	3.2 x 5.0 mm	3	3.3V	A	$\pm 100\text{ppm}$ (0°C ~ 70°C)
P7	5.0 x 7.0 mm	5	5V	AN	$\pm 100\text{ppm}$ (40°C ~ 85°C)
P8F	9.0 x 14.0 mm			B	$\pm 50\text{ppm}$ (0°C ~ 70°C)
P8	8 Pin Dip				
P14	14 Pin Dip				

Fig.	Digi-Key† Part No.	Price Each				ECS Part No.
<b>Surface Mount — RoHS Compliant</b>						
1	ECS-P5□□□-ND	8.01	6.87	5.04	4.58	ECS-UPO-3X5
2	ECS-P7□□□-ND	4.92	4.22	3.10	2.81	ECS-UPO-5X7
3	ECS-P8F□□□-ND	5.52	4.74	3.48	3.16	ECS-UPO-8FX
<b>Through Hole</b>						
4	ECS-P8□□□-ND	4.92	4.22	3.10	2.81	ECS-UPO-8PIN
	ECS-P8□□□X-ND◆	4.92	4.22	3.10	2.81	ECS-UPO-8PINX
5	ECS-P14□□□-ND	4.92	4.22	3.10	2.81	ECS-UPO-14PIN
	ECS-P14□□□X-ND◆	4.92	4.22	3.10	2.81	ECS-UPO-14PINX

◆ RoHS Compliant

## CrystalPro Oscillator Programming System

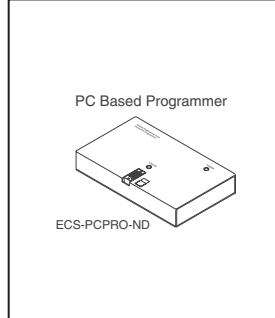
### Programmer

Designed specifically to program oscillator devices, the CrystalPro is a fast, accurate, low cost solution for your low to mid volume programming needs. Software and firmware upgrades can be downloaded off the web to support future parts from manufacturers and new technologies such as programmable TCXO and VCXO devices.

The user-friendly CrystalWindow graphical interface insures complete and valid part specification and fast part type switching. Attaches to any Windows PC via standard serial port.

#### Features:

- Fast - average programming is less than two seconds.
- Accurate frequency at time of programming cycle is within 5ppm.
- Simple - just select part number, type in desired frequency and click PROGRAM.
- Flexible - handling devices up to 250MHz and LVTTTL/CMOS/ECL/PECL I/O technologies, the CrystalPro is designed to handle tomorrow's technologies as they become available.



Description	Digi-Key Part No.	Price Each
PC Based Programmer	ECS-PCPRO-ND	641.60

### Blank Oscillator

Description	Digi-Key Part No.	Price Each
Blank Oscillator, 3 x 5 SMD	ECS-UPO-3X5-ND◆	5.34
Blank Oscillator, 5 x 7 SMD	ECS-UPO-5X7-ND◆	3.28
Blank Oscillator, Full Size	ECS-UPO-14PINX-ND◆	3.28
Blank Oscillator, Full Size	ECS-UPO-14PIN-ND	3.28
Blank Oscillator, Half Size	ECS-UPO-8PINX-ND◆	4.70
Blank Oscillator, Half Size	ECS-UPO-8PIN-ND	4.70
Blank Oscillator	ECS-UPO-8FX-ND◆	3.69

◆ RoHS Compliant

### Adapter

Description	Digi-Key Part No.	Price Each
Adapter, 3 x 5 SMD	ECS-UPO-3X5-FXT-ND	63.71
Adapter, 5 x 7 SMD	ECS-UPO-5X7-FXT-ND	49.01
Adapter for Plastic Oscillator	ECS-UPO-8F-FXT-ND◆	19.60

◆ RoHS Compliant

**Free shipping on orders over £50! All prices are in British pound sterling and include duties.**

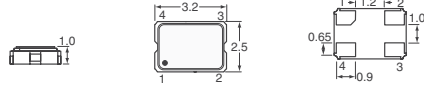
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# CSX-325P and CSX-750P Series Programmable Oscillator

Dim. in mm

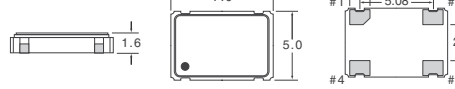


Fig. 1 — CSX325P



Pin Connection	
1	OE or ST
2	Gnd
3	Out
4	Vdd

Fig. 2 — CSX750P



Pin Connection	
1	OE, ST
2	Gnd
3	Out
4	Vdd

**How to Select Base Number:**

- #1 Select Supply Voltage, Output and Function
- #2 Select Frequency Stability / Operating Temperature
- #3 Select Packaging (leave last two boxes blank for Tube packaging).

Call Digi-Key with your selected Base Part Number, and a Sales Representative will enter your desired frequency. Parts come marked with Manufacture Date Lot Code only.

**Example Part Number:**

CSX325 □□□□ - ND  
CSX750 □□□□ - ND

#1	Supply Voltage	Output	Function	#2	Frequency Stability/Operating Temperature	#3	Packaging
PD	5.0	CMOS	Standby	C	±100ppm @ -20°C ~ 70°C	TR	Tape and Reel
PC	5.0	CMOS	Output Enable	B	±50ppm @ -20°C ~ 70°C		
PJ	3.3	CMOS	Standby	F	±100ppm @ -40°C ~ 85°C		
PB	3.3	CMOS	Output Enable				
PK	5.0	TTL	Standby				
PT	5.0	TTL	Output Enable				

For Tube packaging, leave last two boxes blank.

Frequency:  
3.3V = 1.000 ~ 100.000 MHz  
5.0V = 1.000 ~ 125.000 MHz

Fig.	Digi-Key Part No.	Tube Price Each	Tape and Reel Pricing		
		1	100	500	1,000
1	CSX325□□□□-ND†	5.15	4.41	3.24	—
2	CSX750□□□□-ND	3.43	2.94	2.16	196.02 735.08 1306.80

**Blank Oscillator — SMD**

Fig.	Digi-Key Part No.	Tube Price Each	Tape and Reel Pricing		
		1	10	50	
1	CSX325P1P-UB-ND†	3.92	3.63	3.23	—
2	CSX-750P1P-ND	2.61	2.42	2.16	—

† Bulk

Programmable parts are non-cancelable and non-returnable!

# CTS CP5/CP7 Programmable Clock Oscillators

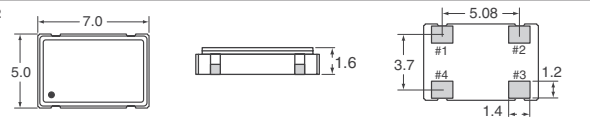
Dim. in mm



Fig. 1



Fig. 2



Pin	Symbol	Description
1	EOH	Enable Input (Standby)
2	GND	Circuit and Package Ground
3	Output	RF Output
4	Vcc	Supply Voltage

Fig.	Supply Voltage (V)	Frequency Stability	Operating Temperature Range	Case Style (mm)	Digi-Key† Part No.	Price Each		
						1	10	50
1	2.5	±50ppm	-20°C ~ 70°C	3.2 x 5	CP5NA-ND	7.25	6.21	4.56
			-40°C ~ 85°C		CP5NB-ND	7.25	6.21	4.56
	3.3	±50ppm	-20°C ~ 70°C	3.2 x 5	CP5LA-ND	7.25	6.21	4.56
			-40°C ~ 85°C		CP5LB-ND	7.25	6.21	4.56
2	2.5	±50ppm	-20°C ~ 70°C	5 x 7	CP7NA-ND	3.62	3.11	2.28
			-40°C ~ 85°C		CP7NB-ND	3.62	3.11	2.28
	3.3	±50ppm	-20°C ~ 70°C	5 x 7	CP7LA-ND	3.62	3.11	2.28
			-40°C ~ 85°C		CP7LB-ND	3.62	3.11	2.28

† Call Digi-Key with your selected base part number and a sales representative will enter your desired frequency. Frequency Range: 2.000MHz ~ 200.000MHz. Parts come marked with Manufacture Date Lot Code only.

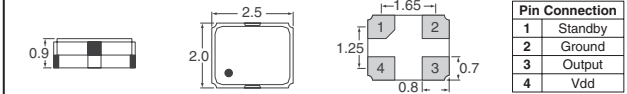
Programmable parts are non-cancelable and non-returnable!

# AP2S and AP3S Series Low Jitter Programmable Oscillators

Dim. in mm

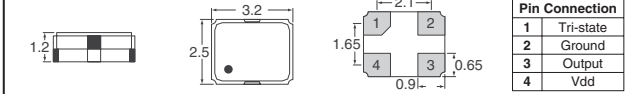


Fig. 1 — AP2S



Pin Connection	
1	Standby
2	Ground
3	Output
4	Vdd

Fig. 2 — AP3S



Pin Connection	
1	Tri-state
2	Ground
3	Output
4	Vdd

**How to Select a Base Part Number:**

- #1 Select Package
  - #2 Select Supply Voltage
  - #3 Select Frequency over Temperature Range
- Call Digi-Key with your selected Base Part Number and a Sales Representative will enter your desired frequency.

**Example Part Number:**

AP □□□□ - ND

#1 Package	#2 Supply Voltage	#3 Frequency Stability over Temperature Range
2S	1	2.5V
3S	2	1.8V
	3	3.3V

AP2S Series Frequency:  
2.5V = 3.0MHz ~ 90.0MHz  
1.8V = 3.0MHz ~ 75.0MHz  
3.3V = 3.0MHz ~ 110.0MHz

AP3S Series Frequency:  
2.5V = 1.0MHz ~ 166.0MHz  
1.8V = 1.0MHz ~ 133.0MHz  
3.3V = 1.0MHz ~ 200.0MHz

	±20ppm (-20°C ~ 70°C)
EJ	±25ppm (-20°C ~ 70°C)
EC	±50ppm (-20°C ~ 70°C)
LJ	±20ppm (-40°C ~ 85°C)
LR	±25ppm (-40°C ~ 85°C)
LC	±50ppm (-40°C ~ 85°C)

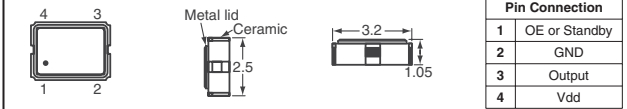
Fig.	Digi-Key Part No.	Price Each		
		10	50	
1	AP2S□□□□-ND	6.10	5.23	3.84
2	AP3S□□□□-ND	4.96	4.25	3.12

Note: For fixed frequency oscillators please reference ASD and ASE Series Oscillators.

Programmable parts are non-cancelable and non-returnable!

# ASEP Series 3.2mm x 2.5mm Programmable Oscillators

Dim. in mm



Pin Connection	
1	OE or Standby
2	GND
3	Output
4	Vdd

**How to Select a Base Part Number:**

- #1 Select Output Voltage
- #2 Select Frequency Tolerance
- #3 Select Temperature Range
- #4 Select Function

Call Digi-Key with your selected Base Part Number and a Sales Representative will enter your desired frequency.

**Example Part Number:**

ASEP □□□□ - ND

#1 Output Voltage	#2 Frequency Tolerance	#3 Temperature Range	#4 Select Function
3	J	D	Blank
5	R	F	B
	K	N	
	H	L	
	Z		

Frequency Range: 1.0MHz ~ 125.0MHz

Digi-Key Part No.	Price Each		
	1	10	50
ASEP□□□□-ND	4.57	3.92	2.88

Programmable parts are non-cancelable and non-returnable!

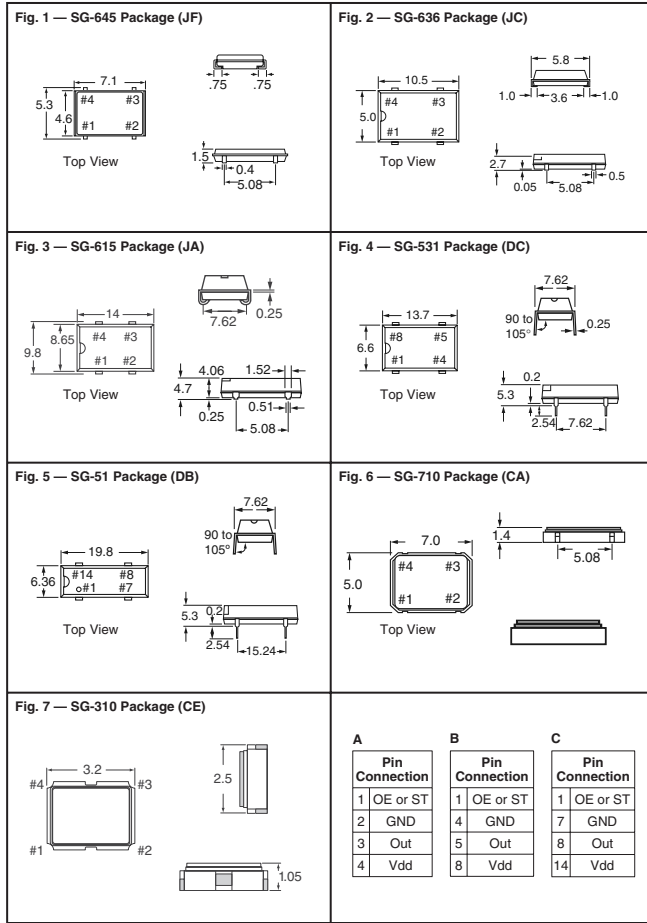
Free shipping on orders over £50! All prices are in British pound sterling and include duties.



# EPSON TOYOCOM SG8002 Programmable Oscillators

The SG-8002 Series gives you the flexibility to solve many different application problems with a one time programmable device. Programmable Oscillators provide the ability to pick a custom frequency in one of seven

different packages available in SMD and Thru-Hole styles. All packages are pin compatible with the Epson SG-645, SG-636, SG-615, SG-531, SG-51, SG-710 and SG-310 Oscillators.



**Example Part Number:**  
**SG-8002**   -     -ND

#1	Package	#2	Function	#3	Power Supply Duty Level	#4	Frequency Stability	Operating Temperature
JA	SG-615	P	Output Enable	H	5.0V, CMOS	B	±50ppm	-20°C - 70°C
JC	SG-636	S	Standby	T	5.0V, TTL	C	±100ppm	-20°C - 70°C
DB	SG-51			C	3.3V, CMOS	M0	±100ppm	-40°C - 85°C
DC	SG-531					B	±50ppm	-20°C - 70°C
CA	SG-710					C	±100ppm	-20°C - 70°C
JF	SG-645					M0	±100ppm	-40°C - 85°C
CE	SG-310					B	±50ppm	-20°C - 70°C
						C	±100ppm	-20°C - 70°C
						M0	±100ppm	-40°C - 85°C

∅ Not available in JC Package

**How to order:**  
 #1 — Select Package  
 #2 — Select Function  
 #3 — Select Power Supply Duty Level  
 #4 — Select Frequency Stability and Operating Temperature

Call Digi-Key with your Base Part Number and an Operator will enter your desired frequency.

**Available Frequency Range: 1.000MHz - 125.000MHz (except for those listed below)**  
**SG-8002CA/DB/DC/JA: PHM/PTM/SHM/STM: 1.000MHz - 55.000MHz**  
**SG-8002JF: PHM/PTM/SHM/STM: 1.000MHz - 40.000MHz**  
**SG-8002CE: PHM/PTM/SHM/STM: 1.000MHz - 27.000MHz**

Parts coming from Digi-Key are marked with Manufacture Date Lot Code only.  
 Fully marked parts are available as a non-catalog order.

**One Time Programmable parts are non-cancelable, non-returnable!**

Fig.	Digi-Key Base Part No.†	1	Price Each	50
1A	SG-8002JF-□□□-ND	3.81	3.27	2.40
2A	SG-8002JC-□□□-ND	4.27	3.66	2.69
3A	SG-8002JA-□□□-ND	4.20	3.60	2.64
4B	SG-8002DC-□□□-ND	3.74	3.21	2.35
5C	SG-8002DB-□□□-ND	3.74	3.21	2.35

**Lead Free/RoHS Compliant**

Fig.	Digi-Key Base Part No.†	1	Price Each	50
1A	SGR-8002JF-□□□-ND	3.81	3.27	2.40
2A	SGR-8002JC-□□□-ND	4.27	3.66	2.69
3A	SGR-8002JA-□□□-ND	4.20	3.60	2.64
4B	SGR-8002DC-□□□-ND	3.74	3.21	2.35
5C	SGR-8002DB-□□□-ND	3.74	3.21	2.35
6A	SG-8002CA-□□□-ND	4.54	3.89	2.86
7A	SG-8002CE-□□□-ND	4.54	3.89	2.86

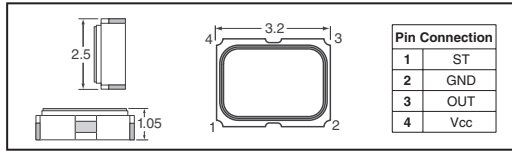
† For Complete Base Part Number, substitute the corresponding letter for □.

## Real Time Clock Modules

Frequency Tolerance	Package	Digi-Key Part No.	Cut Tape Price Each			Digi-Key Part No.	Tape and Reel		Epson Part No.
			1	10	50		Qty.	Pricing	
5 ±23ppm	14-SOP	SE3245CT-ND	3.66	3.14	2.62	SE3245TR-ND	1,000	1742.40	RTC-4543SA:A0
	18-Dip	SE3247-ND†	6.23	5.20	3.68	—	—	—	RTC-62421A
±10ppm	18-Dip	SE3248-ND†	5.62	4.69	3.32	—	—	—	RTC-62421B
	24-SOP	SE3249CT-ND	8.89	7.63	6.36	SE3249TR-ND	250	1058.15	RTC-62423A:3
±50ppm	18-Dip	SE3231-ND†	5.53	4.61	3.28	—	—	—	RTC-72421A
	18-Dip	SE3232-ND†	5.12	4.27	3.04	—	—	—	RTC-72421B
±20ppm	24-SOP	SE3241-ND†	6.21	5.18	3.69	—	—	—	RTC-72423A
	24-SOP	—	—	—	—	SE3241TR-ND	250	862.13	RTC-72423A:3
±20ppm	24-SOP	SE3242-ND†	5.45	4.54	3.23	—	—	—	RTC-72423B
	24-SOP	—	—	—	—	SE3242TR-ND	250	756.25	RTC-72423B:3
5 ±23ppm	20-VSOJ	SE3252CT-ND	4.27	3.66	3.05	SE3252TR-ND	250	506.39	RTC-8564JE:3
	14-SOP	SE3253-ND†	2.54	2.18	1.82	—	—	—	RX-8581SA:B
<b>RoHS Compliant</b>									
5 ±23ppm	14-SOP	SER3245CT-ND	3.66	3.14	2.62	SER3245TR-ND	1,000	1463.62	RTC-4543SA:A0:ROHS
	18-Dip	SER3247-ND†	7.27	6.23	4.78	—	—	—	RTC-62421A:ROHS
±10ppm	18-Dip	SER3248-ND†	6.56	5.62	4.31	—	—	—	RTC-62421B:ROHS
	24-SOP	SER3249CT-ND	8.89	7.63	6.36	SER3249TR-ND	250	905.32	RTC-62423A:3:ROHS
±50ppm	18-Dip	SER3231-ND†	6.45	5.54	4.25	—	—	—	RTC-72421A:ROHS
	24-SOP	SER3241-ND†	7.25	6.21	4.76	—	—	—	RTC-72423A:ROHS
±20ppm	24-SOP	—	—	—	—	SER3241TR-ND	250	737.07	RTC-72423A:3:ROHS
	24-SOP	SER3242-ND†	6.35	5.45	4.18	—	—	—	RTC-72423B:ROHS
±50ppm	24-SOP	SER3242CT-ND	6.35	5.45	4.54	SER3242TR-ND	250	657.94	RTC-72423B:3:ROHS
	24-SOP	—	—	—	—	SER3648TR-ND	250	355.29	RTC-4574SA:B3:ROHS
5 ±23ppm	14-SOP	SER3648CT-ND	3.43	2.94	2.46	—	—	—	RTC-8564NB:B3:ROHS
	22-SON	SER3649CT-ND	4.60	3.95	3.29	SER3649TR-ND	250	476.35	RX-8025SA:AA3:ROHS
5 ±5ppm	14-SOP	SER3650CT-ND	2.95	2.53	2.11	SER3650TR-ND	250	305.28	RX-4581NB:B3:ROHS
	22-SON	SER3651CT-ND	3.79	3.25	2.71	SER3651TR-ND	250	392.13	RTC-8564JE:3:ROHS
5 ±23ppm	20-VSOJ	SER3252CT-ND	4.27	3.66	3.05	SER3252TR-ND	250	457.38	RTC-8564JE:3:ROHS
	14-SOP	SER3253CT-ND	2.18	1.82	1.64	SER3253TR-ND	250	277.70	RX-8581SA:B3:ROHS

† Bulk

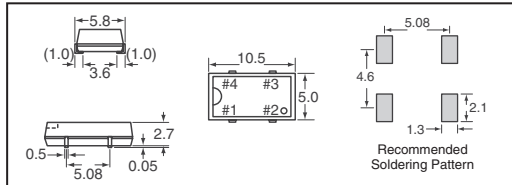
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**Specifications:** • Supply Voltage: 3.3V typ. • Storage Temperature: -40°C ~ 125°C • Operating Temperature: -40°C ~ 85°C • Stand-by Current: 2.0µA Maximum • Duty Cycle: 45% ~ 55% • Start-up Time: 10ms Maximum • Output Voltage: VOH: 90% Vcc Minimum; VOL: 10% Vcc Maximum • Output Load Condition: 15pF Maximum • Rise and Fall Time: 4ns Maximum

Frequency (MHz)	Frequency Stability	Digi-Key Part No.	Cut Tape Price Each			Digi-Key Part No.	Tape and Reel Pricing 250	Epson Part No.
			1	10	50			
25.0000	±50ppm	SER3652CT-ND	3.23	2.77	2.31	SER3652TR-ND	384.95	SG-310SCF 25.0000MB3
48.0000	±100ppm	SER3653CT-ND	2.87	2.47	2.06	SER3653TR-ND	342.51	SG-310SCF 48.0000MC3

SG-3030JC 32.768kHz Crystal Oscillators



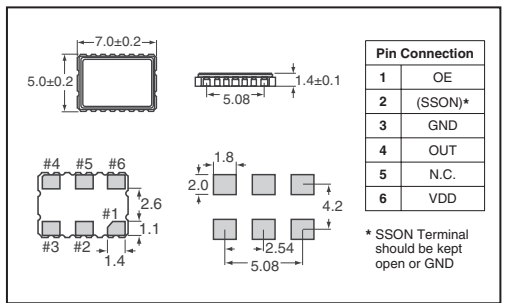
**Specifications:** • Voltage: 1.5V ~ 5.5V • Interface Power Supply Voltage: 1.5V ~ 5.5V • Storage Temperature: -55°C ~ 125°C • Operating Temperature: -40°C ~ 85°C • Frequency Tolerance: +5/-23ppm • Supply Current: 2µA Maximum • Duty Cycle: 45% ~ 55% • Start-up Time: 1s • Output Load CMOS: 15pF Maximum • Rise Time CMOS: 200ns Maximum • Fall Time CMOS: 200ns Maximum

Frequency (kHz)	Digi-Key Part No.	Cut Tape Price Each			Digi-Key Part No.	Tape and Reel Pricing 250	Epson Part No.
		1	10	50			
32.768	SE3618CT-ND	2.27	1.94	1.62	SE3618TR-ND	269.77	SG-3030JC 32.7680KB3
32.768	SER3618CT-ND	2.27	1.94	1.62	SER3618TR-ND	250.47	SG-3030JC 32.7680KB3:ROHS

◆ RoHS Compliant

SG-9001CA Series Oscillators with Spread Spectrum

Spread Spectrum Specifications				
Center Spread	Code	C10P	C15P	C20P
	%	±1.0%	±1.5%	±2.0%
Down Spread	Code	D15P	—	—
	%	-1.5%	—	—

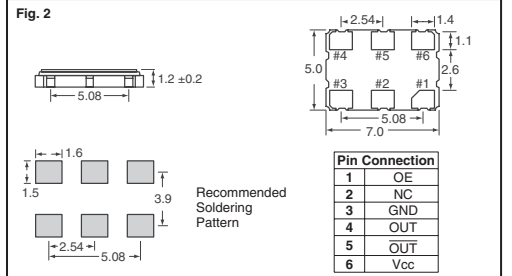
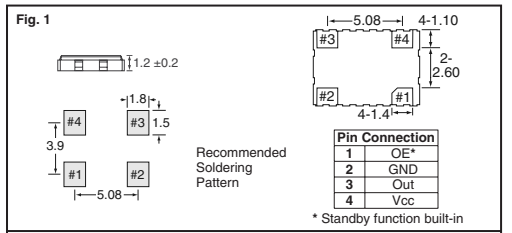


**Specifications:** • Supply Voltage: 3.3V ±0.3V • Operating Temperature: -20°C ~ 70°C • Storage Temperature: -40°C ~ 125°C • Supply Current: 30mA • Duty Cycle: 45% ~ 55% • Start-up Time: 10ms • Output Voltage: -0.4V (VOH); 4V (VOL) • Load Capacitance: 15.0pF • Rise Time CMOS: 2.7ns • Fall Time CMOS: 2.7ns

Frequency (MHz)	Digi-Key Part No.	Price Each			Epson Part No.
		1	10	50	
16.6667	SE1915-ND	4.86	4.16	3.19	SG-9001CA C10P 16.6667MC
25.0000	SE1916-ND	4.86	4.16	3.19	SG-9001CA C10P 25.0000MC
25.0000	SE1917-ND	4.86	4.16	3.19	SG-9001CA C20P 25.0000MC
33.3333	SE1918-ND	4.86	4.16	3.19	SG-9001CA C15P 33.3333MC
33.3333	SE1919-ND	4.86	4.16	3.19	SG-9001CA D15P 33.3333MC
40.0000	SE1920-ND	4.86	4.16	3.19	SG-9001CA C20P 40.0000MC
50.0000	SE1921-ND	4.86	4.16	3.19	SG-9001CA D15P 50.0000MC
50.0000	SE1922-ND	4.86	4.16	3.19	SG-9001CA C20P 50.0000MC
66.6667	SE1923-ND	4.86	4.16	3.19	SG-9001CA C20P 66.6667MC
66.6667	SE1924-ND	4.86	4.16	3.19	SG-9001CA D15P 66.6667MC

EG Series Low Jitter High Frequency SAW Oscillators

Specifications	Series			
	EG-2001CA	EG-2021CA	EG-2101CA	EG-2121CA
Supply Voltage:	3.3V ±0.3V	2.5V ±0.125V	3.3V ±0.15	3.3V ±0.3V
Oper. Temp.:	0°C ~ 70°C			
Storage Temp.:	-40°C ~ 100°C			
Supply Current (Max.):	50mA	25mA	60mA	100mA
Duty Cycle:	45% ~ 55%	—	—	45% ~ 55%
Start-up Time:	10ms Max.			
Output Voltage:	Vcc: 0.4V Min.	Vcc: 0.35V Min.	2.35V Typ.	LVPECL: 1.55V Typ.
Output Load Conditions:	15pF Max.		50Ω	LVPECL: 50Ω
Rise/Fall Time:	2ns Max.		600ps Max.	400ps Max.



Frequency (MHz)	Frequency Stability	Digi-Key Part No.	Cut Tape Price Each			Digi-Key Part No.	Tape and Reel Qty.	Pricing	Epson Part No.
			1	10	50				
<b>Fig. 1 — EG-2001CA Series</b>									
106.2500	±100ppm	SE1008CT-ND	8.17	7.36	6.54	SE1008TR-ND	1,000	5442.82	EG-2001CA 106.2500M-PCHL0
125.0000	±100ppm	SE1009CT-ND	8.17	7.36	6.54	SE1009TR-ND	1,000	5447.18	EG-2001CA 125.0000M-PCHL0
133.0000	±100ppm	SE1007CT-ND	11.43	9.81	8.17	SE1007TR-ND	250	1361.74	EG-2001CA 133.0000M-PCHL3
<b>Fig. 1 — EG-2021CA Series</b>									
125.0000	±50ppm	SER3654-ND†	16.90	14.49	11.11	—	—	—	EG-2021CA 125.0000M-CGPNB
<b>Fig. 2 — EG-2101CA LVPECL Series</b>									
125.0000	±100ppm	SE3610CT-ND	27.70	23.74	19.79	SE3610TR-ND	250	3297.85	EG-2101CA 125.0000M-PCHL3
156.5200	±100ppm	SE3611CT-ND	27.70	23.74	19.79	SE3611TR-ND	250	3297.85	EG-2101CA 156.5200M-PCHL3
156.2500	±100ppm	SE3612CT-ND	30.75	26.36	21.97	SE3612TR-ND	250	3660.85	EG-2101CA 156.2500M-PCHL3
159.3750	±100ppm	SE3613CT-ND	30.75	26.36	21.97	SE3613TR-ND	250	3660.85	EG-2101CA 159.3750M-PCHL3
161.1328	±100ppm	SE3614CT-ND	30.75	26.36	21.97	SE3614TR-ND	250	3660.85	EG-2101CA 161.1328M-PCHL3
250.0000	±100ppm	SE3615CT-ND	30.75	26.36	21.97	SE3615TR-ND	250	3660.85	EG-2101CA 250.0000M-PCHL3
<b>Fig. 2 — EG-2102CA LVPECL Series</b>									
106.2500	±50ppm	SER3637CT-ND	25.54	21.89	18.25	SER3637TR-ND	250	3046.21	EG-2102CA 106.2500M-PGPNL3
125.0000	±100ppm	SER3638CT-ND	30.49	26.14	21.78	SER3638TR-ND	250	3637.26	EG-2102CA 125.0000M-PHPAL3
156.2500	±100ppm	SER3639CT-ND	30.49	26.14	21.78	SER3639TR-ND	250	3637.26	EG-2102CA 156.2500M-PHPAL3
200.0000	±100ppm	SER3655-ND†	33.54	28.75	22.05	—	—	—	EG-2102CA 200.0000M-PHPAB
212.5000	±100ppm	SER3656-ND†	33.54	28.75	22.05	—	—	—	EG-2102CA 212.5000M-PHPAB
312.5000	±100ppm	SER3657-ND†	33.54	28.75	22.05	—	—	—	EG-2102CA 312.5000M-PHPAB
<b>Fig. 2 — EG-2121CA LVPECL Series</b>									
125.0000	±100ppm	SE3616CT-ND	33.54	28.75	23.96	SE3616TR-ND	250	3993.01	EG-2121CA 125.0000M-PHPAL3
156.2500	±100ppm	SE3617CT-ND	35.83	30.71	25.60	SE3617TR-ND	250	4265.26	EG-2121CA 156.2500M-PHPAL3
100.0000	±100ppm	SER3660-ND†	26.43	22.66	17.37	—	—	—	EG-2121CA 100.0000M-LHPAB
125.0000	±50ppm	SER3640CT-ND	38.62	33.11	27.59	SER3640TR-ND	250	4607.20	EG-2121CA 125.0000M-PGPNL3
125.0000	±50ppm	SER3662-ND†	35.07	30.06	23.05	—	—	—	EG-2121CA 125.0000M-PGPNB
156.2500	±50ppm	SER3641CT-ND	41.29	35.40	29.50	SER3641TR-ND	250	4925.46	EG-2121CA 156.2500M-PGPNL3
200.0000	±100ppm	SER3667-ND†	35.83	30.71	23.55	—	—	—	EG-2121CA 200.0000M-PHPAB
212.5000	±100ppm	SER3668-ND†	35.83	30.71	23.55	—	—	—	EG-2121CA 212.5000M-PHPAB
312.5000	±100ppm	SER3671-ND†	35.83	30.71	23.55	—	—	—	EG-2121CA 312.5000M-PHPAB
<b>Fig. 2 — EG-2121CA LVDS Series</b>									
100.0000	±50ppm	SER3658-ND†	37.35	32.02	24.55	—	—	—	EG-2121CA 100.0000M-LGPAB
100.0000	±100ppm	SER3659-ND†	26.43	22.66	17.37	—	—	—	EG-2121CA 100.0000M-LHPAB
125.0000	±100ppm	SER3661-ND†	30.49	26.14	20.04	—	—	—	EG-2121CA 125.0000M-LHPAB
156.2500	±100ppm	SER3663-ND†	35.83	30.71	23.55	—	—	—	EG-2121CA 156.2500M-LHPAB
200.0000	±50ppm	SER3664-ND†	41.29	35.40	27.14	—	—	—	EG-2121CA 200.0000M-LGPAB
200.0000	±50ppm	SER3665-ND†	38.88	33.33	25.55	—	—	—	EG-2121CA 200.0000M-LGPNB
200.0000	±100ppm	SER3666-ND†	35.83	30.71	23.55	—	—	—	EG-2121CA 200.0000M-LHPAB
250.0000	±50ppm	SER3669-ND†	41.29	35.40	27.14	—	—	—	EG-2121CA 250.0000M-LGPAB
312.5000	±50ppm	SER3670-ND†	41.29	35.40	27.14	—	—	—	EG-2121CA 312.5000M-LGPAB

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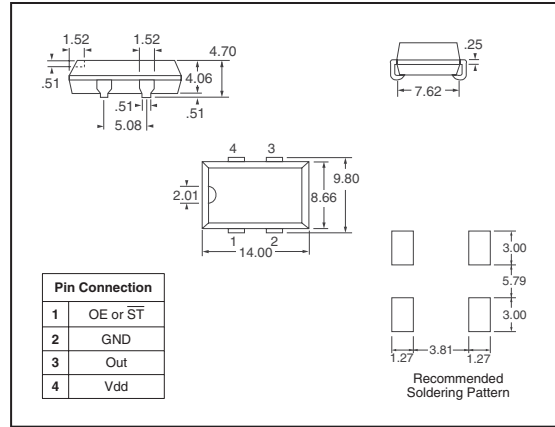
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(UK091) 1331

# EPSON TOYOCOM SG615 Series Surface Mount Quartz Crystal Oscillators

<b>Specifications:</b>	<b>SG-615P</b>	<b>SG-615PTJ</b>	<b>SG-615PH</b>	<b>SG-615PCV</b>	<b>SG-615PCG</b>
<b>Supply Voltage</b>	5V±.5V		2.7V - 5.5V		2.7V - 3.6V
<b>Storage Temperature</b>	-55°C ~ 125°C				
<b>Operating Temperature</b>	-20°C ~ 70°C		-10°C ~ 70°C		-40°C ~ 85°C
<b>Frequency Stability</b>	Parts ending in MB ±50ppm, MC ±100ppm				
<b>Current Consumption</b>	23mA Max.	35mA Max.	50mA Max.	12mA Max.	
<b>Output Disable Current</b>	12mA Max.	28mA Max.	20mA Max.	27mA Max.	10mA Max.
<b>Oscillation Start-up Time</b>	4ms Max.	10ms Max.		12ms Max.	
<b>Duty</b>					
<b>CMOS</b>	40% ~ 60%	—	40% ~ 60%	35% ~ 60%	45% ~ 55%
<b>TTL</b>	40% ~ 60%	45% ~ 55%	—		
<b>Output Voltage</b>					
<b>VOH</b>	Vcc - .4V Min.	2.4V Min.	Vcc - .4V Min.	Vcc - .5V	Vcc - .4V Min.
<b>VOL</b>	.4V Max.				
<b>Output Enable / Disable Input Volt.</b>					
<b>VIH</b>	2V Min.	3.5V Min.	2V Min.	.7V Min.	70% Vcc Min.
<b>VIL</b>	.8V Max.	1.5V Max.	.8V Max.	.2V Max.	20% Vcc Max.
<b>Output Fall Time</b>					
<b>CMOS</b>	8ns Max.	—	7ns Max.	4ns Max.	
<b>TTL</b>	8ns Max.	5ns Max.	—		



**D**

Frequency (MHz)	Digi-Key Part No.	Cut Tape Price Each			Tape and Reel†		Epson Part No.
		1	10	50	Qty.	Pricing	
<b>SG-615P (CMOS, TTL compatible type)</b>							
1.54400	SE2217CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 1.5440MCO
1.84320	SE2201CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 1.8432MCO
2.00000	SE2202CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 2.0000MCO
2.04800	SE2218CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 2.0480MCO
2.45760	SE2203CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 2.4576MCO
3.07200	SE2219CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 3.0720MCO
3.57900	SE2222CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 3.579545MCO
3.68640	SE2204CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 3.6864MCO
4.00000	SE2205CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 4.0000MCO
5.00000	SE2224CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 5.0000MCO
6.00000	SE2207CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 6.0000MCO
6.14400	SE2226CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 6.1440MCO
7.37200	SE2227CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 7.3728MCO
8.19200	SE2228CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 8.1920MCO
9.83000	SE2229CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 9.8300MCO
10.00000	SE2209CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 10.0000MCO
11.05900	SE2232CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 11.0592MCO
12.00000	SE2210CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 12.0000MCO
12.28800	SE2233CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 12.2880MCO
14.31818	SE2211CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 14.31818MCO
14.74560	SE3619CT-ND	2.54	2.18	1.82	250	303.11	SG-615P 14.7456MCO
16.00000	SE2212CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 16.0000MCO
18.43200	SE2213CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 18.4320MCO
18.86900	SE2238CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 18.8696MCO
19.66000	SE2239CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 19.6608MCO
20.00000	SE2214CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 20.0000MCO
20.48000	SE2240CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 20.4800MCO
22.11800	SE2241CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 22.1184MCO
24.00000	SE2215CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 24.0000MCO
25.00000	SE3620CT-ND	2.82	2.42	2.02	250	335.78	SG-615P 25.0000MCO
25.00000	SE2242CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615P 25.0000MCO
<b>SG-615P (CMOS, TTL compatible type) — RoHS Compliant</b>							
1.54400	SER2217CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 1.5440MCO:ROHS
1.84320	SER2201CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 1.8432MCO:ROHS
2.00000	SER2202CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 2.0000MCO:ROHS
2.04800	SER2218CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 2.0480MCO:ROHS
2.45760	SER2203CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 2.4576MCO:ROHS
3.07200	SER2219CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 3.0720MCO:ROHS
3.68640	SER2204CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 3.6864MCO:ROHS
4.00000	SER2205CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 4.0000MCO:ROHS
5.00000	SER2224CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 5.0000MCO:ROHS
6.00000	SER2207CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 6.0000MCO:ROHS
6.14400	SER2226CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 6.1440MCO:ROHS
7.37200	SER2227CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 7.3728MCO:ROHS
8.19200	SER2228CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 8.1920MCO:ROHS
9.83000	SER2229CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 9.8300MCO:ROHS
10.00000	SER2209CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 10.0000MCO:ROHS

Frequency (MHz)	Digi-Key Part No.	Cut Tape Price Each			Tape and Reel†		Epson Part No.
		1	10	50	Qty.	Pricing	
11.05920	SER2232CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 11.0592MCO:ROHS
12.00000	SER2210CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 12.0000MCO:ROHS
12.28800	SER2233CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 12.2880MCO:ROHS
14.31818	SER2211CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 14.31818MCO:ROHS
14.74560	SER3619CT-ND	2.54	2.18	1.82	250	302.50	SG-615P 14.7456MCO:ROHS
16.00000	SER2212CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 16.0000MCO:ROHS
18.43200	SER2213CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 18.4320MCO:ROHS
19.66080	SER2239CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 19.6608MCO:ROHS
20.00000	SER2214CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 20.0000MCO:ROHS
22.11840	SER2241CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 22.1184MCO:ROHS
24.00000	SER2215CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 24.0000MCO:ROHS
25.00000	SER2242CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615P 25.0000MCO:ROHS
<b>SG-615PCG (CMOS compatible type)</b>							
25.00000	SE3621CT-ND	2.54	2.18	1.82	250	336.45	SG-615PCG 25.0000MB3
<b>SG-615PCG (CMOS compatible type) — RoHS Compliant</b>							
25.00000	SER3621CT-ND	2.82	2.42	2.02	250	308.19	SG-615PCG 25.0000MB3:ROHS
<b>SG-615PCV (CMOS compatible type)</b>							
75.00000	SE3511CT-ND	4.25	3.54	2.47	1,000	1851.30	SG-615PCV 75.0000MCO
106.25000	SE3515CT-ND	4.68	3.91	2.80	1,000	2105.40	SG-615PCV 106.2500MCO
<b>SG-615PH (CMOS compatible type)</b>							
32.00000	SE2337CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615PH 32.0000MCO
33.00000	SE2339CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615PH 33.0000MCO
33.33300	SE2340CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615PH 33.3333MCO
36.00000	SE2341CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615PH 36.0000MCO
40.00000	SE2343CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615PH 40.0000MCO
44.90000	SE2344CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615PH 44.9000MCO
48.00000	SE2345CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615PH 48.0000MCO
50.00000	SE2346CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615PH 50.0000MCO
55.00000	SE2347CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615PH 55.0000MCO
66.66600	SE2352CT-ND	2.64	2.27	1.89	1,000	1343.10	SG-615PH 66.6660MCO
<b>SG-615PH (CMOS compatible type) — RoHS Compliant</b>							
32.00000	SER2337CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615PH 32.0000MCO:ROHS
33.00000	SER2339CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615PH 33.0000MCO:ROHS
40.00000	SER2343CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615PH 40.0000MCO:ROHS
48.00000	SER2345CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615PH 48.0000MCO:ROHS
50.00000	SER2346CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615PH 50.0000MCO:ROHS
55.00000	SER2347CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615PH 55.0000MCO:ROHS
<b>SG-615PTJ (TTL compatible type)</b>							
27.00000	SE2326CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615PTJ 27.0000MCO
30.00000	SE2330CT-ND	2.54	2.18	1.82	1,000	1212.42	SG-615PTJ 30.0000MCO
40.00000	SE3622CT-ND	2.54	2.18	1.82	250	303.11	SG-615PTJ 40.0000MCO
50.00000	SE3608CT-ND	2.54	2.18	1.82	250	303.11	SG-615PTJ 50.0000MCO
<b>SG-615PTJ (TTL compatible type) — RoHS Compliant</b>							
27.00000	SER2326CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615PTJ 27.0000MCO:ROHS
30.00000	SER2330CT-ND	2.54	2.18	1.82	1,000	1016.40	SG-615PTJ 30.0000MCO:ROHS
50.00000	SER3608CT-ND	2.54	2.18	1.82	250	277.70	SG-615PTJ 50.0000MCO:ROHS

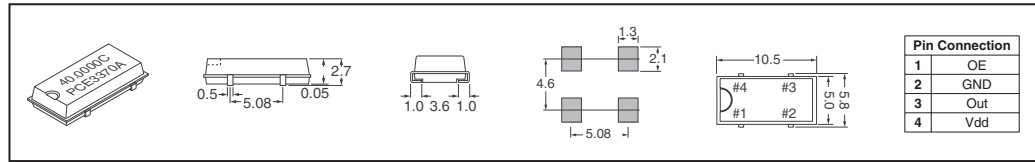
† For Tape and Reel part number, change CT-ND to TR-ND ♦ RoHS Compliant

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**SG636PCE Series Surface Mount Quartz Crystal Oscillators**

**Specifications:**

- Supply Voltage: 3.3V ±3V
- Operating Temperature: -20°C - 70°C
- Storage Temperature: -55°C - 100°C
- Frequency Tolerance: ±100ppm
- Supply Current: 9mA
- Disable Current: 5mA
- Duty @ CMOS Level (VDD/2): 45% - 55%
- Fall Time CMOS: 5ns Maximum
- Rise Time CMOS: 5ns Maximum
- Start-up Time: 4ms Maximum



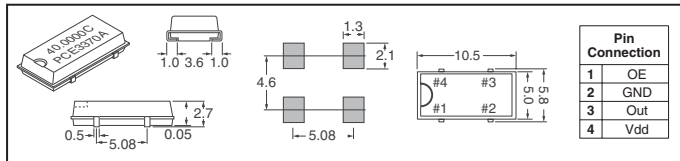
Frequency (MHz)	Digi-Key Part No.	Cut Tape Price Each			Tape and Reel Pricing† 1,000	Epson Part No.
		1	10	50		
2.4576	SE2801CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 2.4576MC0
3.6864	SE2806CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 3.6864MC0
4.0000	SE2807CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 4.0000MC0
5.0000	SE2810CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 5.0000MC0
6.0000	SE2812CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 6.0000MC0
8.0000	SE2815CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 8.0000MC0
8.1920	SE2816CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 8.1920MC0
10.0000	SE2818CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 10.0000MC0
10.2400	SE2819CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 10.2400MC0
12.0000	SE2822CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 12.0000MC0
14.7456	SE2825CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 14.7456MC0
15.0000	SE2826CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 15.0000MC0
16.0000	SE2827CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 16.0000MC0
18.4320	SE2830CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 18.4320MC0
20.0000	SE2833CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 20.0000MC0
24.0000	SE2836CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 24.0000MC0
25.0000	SE2837CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 25.0000MC0
25.1750	SE2838CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 25.1750MC0
27.0000	SE2839CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 27.0000MC0
29.4912	SE2842CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 29.4912MC0
30.0000	SE2843CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 30.0000MC0
32.0000	SE2844CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 32.0000MC0
33.0000	SE2847CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 33.0000MC0
33.3333	SE2848CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 33.3333MC0
36.0000	SE2849CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 36.0000MC0

Frequency (MHz)	Digi-Key Part No.	Cut Tape Price Each			Tape and Reel Pricing† 1,000	Epson Part No.
		1	10	50		
38.0000	SE2850CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 38.0000MC0
40.0000	SE2851CT-ND	3.18	2.73	2.27	1510.08	SG-636PCE 40.0000MC0
<b>RoHS Compliant</b>						
2.4576	SER2801CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 2.4576MC0:ROHS
3.6864	SER2806CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 3.6864MC0:ROHS
4.0000	SER2807CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 4.0000MC0:ROHS
5.0000	SER2810CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 5.0000MC0:ROHS
6.0000	SER2812CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 6.0000MC0:ROHS
8.0000	SER2815CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 8.0000MC0:ROHS
8.1920	SER2816CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 8.1920MC0:ROHS
10.0000	SER2818CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 10.0000MC0:ROHS
10.2400	SER2819CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 10.2400MC0:ROHS
12.0000	SER2822CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 12.0000MC0:ROHS
14.7456	SER2825CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 14.7456MC0:ROHS
16.0000	SER2827CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 16.0000MC0:ROHS
18.4320	SER2830CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 18.4320MC0:ROHS
20.0000	SER2833CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 20.0000MC0:ROHS
24.0000	SER2836CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 24.0000MC0:ROHS
25.0000	SER2837CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 25.0000MC0:ROHS
25.1750	SER2838CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 25.1750MC0:ROHS
27.0000	SER2839CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 27.0000MC0:ROHS
29.4912	SER2842CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 29.4912MC0:ROHS
30.0000	SER2843CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 30.0000MC0:ROHS
32.0000	SER2844CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 32.0000MC0:ROHS
33.0000	SER2847CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 33.0000MC0:ROHS
33.3333	SER2848CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 33.3333MC0:ROHS
36.0000	SER2849CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 36.0000MC0:ROHS
40.0000	SER2851CT-ND	3.18	2.73	2.27	1270.50	SG-636PCE 40.0000MC0:ROHS

† For Tape and Reel part number, change CT-ND to TR-ND.



**SG636PCV Series Surface Mount Quartz Crystal Oscillators**

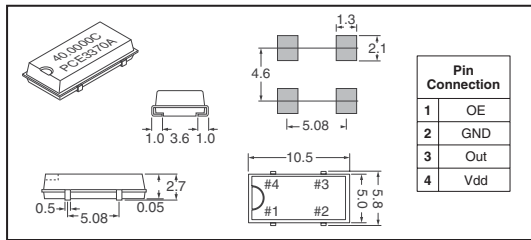


**Specifications:**

- Supply Voltage: 3.3V ±3V
- Operating Temperature: -10°C - 70°C
- Storage Temperature: -55°C - 100°C
- Frequency Tolerance: ±100ppm
- Supply Current: 9mA
- Disable Current: 5mA
- Duty @ CMOS Level (VDD/2): 45% - 55%
- Fall Time CMOS: 5ns Maximum
- Rise Time CMOS: 5ns Maximum
- Start-up Time: 4ms Maximum

Frequency (MHz)	Digi-Key Part No.	Cut Tape Price Each			Epson Part No.
		1	10	50	
55.0000	SE2855CT-ND	4.46	3.73	2.62	SG-636PCV 55.0000MC0

**SG636PTF Series Surface Mount Quartz Crystal Oscillators**

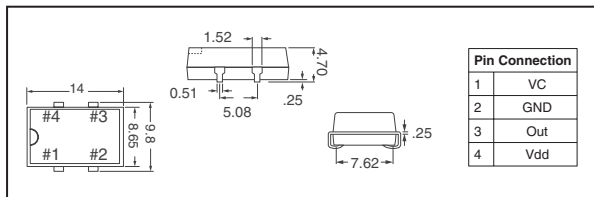


**Specifications:**

- Supply Voltage: 5V ±5V
- Operating Temperature: -20°C - 70°C
- Storage Temperature: -55°C - 100°C
- Frequency Tolerance: ±100ppm
- Supply Current: 17mA
- Disable Current: 10mA
- Duty @ CMOS Level (VDD/2): 40% - 60%
- Fall Time CMOS: 7ns Maximum
- Rise Time CMOS: 7ns Maximum
- Start-up Time: 4ms Maximum

Frequency (MHz)	Digi-Key Part No.	Cut Tape Price Each			Digi-Key Part No.	Tape & Reel Pricing 250	Epson Part No.
		1	10	50			
25.0000	SE3623CT-ND	2.54	2.18	1.82	SE3623TR-ND	303.11	SG-636PTF 25.0000MC3
40.0000	SE3624CT-ND	2.54	2.18	1.82	SE3624TR-ND	303.11	SG-636PTF 40.0000MC3
<b>RoHS Compliant</b>							
25.0000	SER3623CT-ND	2.54	2.18	1.82	SER3623TR-ND	277.70	SG-636PTF 25.0000MC3:ROHS
40.0000	SER3624CT-ND	2.54	2.18	1.82	SER3624TR-ND	277.70	SG-636PTF 40.0000MC3:ROHS

**Voltage Controlled Crystal Oscillators (VCXO) VG-1011JA Series**



**Features:** • Reflowable and high density • SMD mounting • Using the heat-resisting type AT cut quartz crystal allows almost the same temperature soldering as universal SMD IC • Using C-MOS IC allows low current consumption and assures high reliability

- Frequency Adjustment Range: ±75ppm
- Frequency Control Sensitivity: 2.5, ±2.0V, ±10%
- Supply Voltage: 5V ±5V
- Operating Temperature: -20°C - 70°C
- Storage Temperature: -55°C - 125°C
- Frequency Tolerance: ±20ppm
- Supply Current: 13mA
- Output Voltage: 4V (VOL)
- Output Current: -0.8mA IOH, 8mA IOL
- Duty @ CMOS Level (VDD/2): 40% - 60%
- Control Voltage: 4.5V - 5.5V
- Fall Time: 8ns
- Rise Time: 8ns

Frequency (MHz)	Digi-Key Part No.	Cut Tape Price Each			Epson Part No.
		1	10	50	
19.2000	SE3605CT-ND	11.59	9.94	8.28	VG-1011JA 19.2000MAVK0

**Free shipping on orders over £50! All prices are in British pound sterling and include duties.**

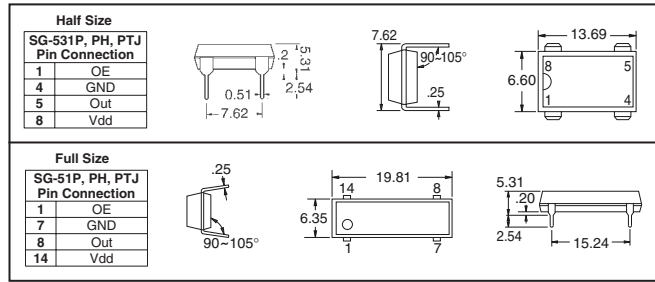
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(UK091) 1333

# EPSON TOYOCOM CMOS/TTL Oscillators

Specifications	SG-531P SG-51P	SG-531PTJ SG-51PTJ	SG-531PH SG-51PH
Supply Voltage	5.0V ± 0.5V		
Storage Temperature	-55°C ~ 125°C		
Operating Temperature	-20°C ~ 70°C		
Frequency Tolerance	±10ppm		
Current Consumption	23mA Max.	35mA Max.	
Output Disable Current	12mA Max.	28mA Max.	20mA Max.
Duty			
CMOS	40% ~ 60%	—	40% ~ 60%
TTL	40% ~ 60%	45% ~ 55%	—
Output Voltage			
VOH	Vcc - 0.4V Min.	2.4V Min.	Vcc - 0.4V Min.
VOL	0.4V Max.		
Output Enable / Disable Input Voltage			
VIH	2.0V Min.	3.5V Min.	2.0V Min.
VIL	0.8V Max.	1.5V Max.	0.8V Max.
Output Rise Time	8ns Max.	—	7ns Max.
Output Fall Time	8ns Max.	5ns Max.	—
Oscillation Start-up Time	4ms Max.	10ms Max.	

Features: • High reliability by cylinder type AT Crystal • Automatic mountable • Lower current consumption by C-MOS IC • TTL-10 output load by using C-MOS IC • DIP 14-pin plastic package compatible with metal package oscillator • DIP 8-pin plastic package compatible with half size metal package oscillator



Series	Frequency (MHz)	Digi-Key Part No.	Price Each			Epson Part No.
			1	10	50	
<b>Half Size</b>						
SG-531P CMOS/TTL with Output Enable	1.544000	SE1216-ND	2.13	1.78	1.24	SG-531P 1.5440MC
	1.843200	SE1201-ND	2.13	1.78	1.24	SG-531P 1.8432MC
	2.000000	SE1217-ND	2.13	1.78	1.24	SG-531P 2.0000MC
	2.048000	SE1218-ND	2.13	1.78	1.24	SG-531P 2.0480MC
	2.457600	SE1202-ND	2.13	1.78	1.24	SG-531P 2.4576MC
	3.072000	SE1219-ND	2.13	1.78	1.24	SG-531P 3.0720MC
	3.088000	SE1220-ND	2.13	1.78	1.24	SG-531P 3.0880MC
	3.276800	SE1221-ND	2.13	1.78	1.24	SG-531P 3.2768MC
	3.579545	SE1222-ND	2.13	1.78	1.24	SG-531P 3.579545MC
	3.686000	SE1223-ND	2.13	1.78	1.24	SG-531P 3.6864MC
	4.000000	SE1203-ND	2.13	1.78	1.24	SG-531P 4.0000MC
	4.096000	SE1224-ND	2.13	1.78	1.24	SG-531P 4.0960MC
	4.915200	SE1204-ND	2.13	1.78	1.24	SG-531P 4.9152MC
	5.000000	SE1205-ND	2.13	1.78	1.24	SG-531P 5.0000MC
	5.068800	SE1225-ND	2.13	1.78	1.24	SG-531P 5.0688MC
	6.000000	SE1206-ND	2.13	1.78	1.24	SG-531P 6.0000MC
	6.144000	SE1226-ND	2.13	1.78	1.24	SG-531P 6.1440MC
	7.372800	SE1227-ND	2.13	1.78	1.24	SG-531P 7.3728MC
	8.000000	SE1207-ND	2.13	1.78	1.24	SG-531P 8.0000MC
	8.192000	SE1228-ND	2.13	1.78	1.24	SG-531P 8.1920MC
	9.830400	SE1229-ND	2.13	1.78	1.24	SG-531P 9.8304MC
	10.000000	SE1208-ND	2.13	1.78	1.24	SG-531P 10.0000MC
	10.240000	SE1230-ND	2.13	1.78	1.24	SG-531P 10.2400MC
	11.000000	SE1231-ND	2.13	1.78	1.24	SG-531P 11.0000MC
	11.059200	SE1232-ND	2.13	1.78	1.24	SG-531P 11.0592MC
12.000000	SE1209-ND	2.13	1.78	1.24	SG-531P 12.0000MC	
12.288000	SE1233-ND	2.13	1.78	1.24	SG-531P 12.2880MC	
14.318180	SE1210-ND	2.13	1.78	1.24	SG-531P 14.31818MC	
14.745600	SE1234-ND	2.13	1.78	1.24	SG-531P 14.7456MC	
15.000000	SE1235-ND	2.13	1.78	1.24	SG-531P 15.0000MC	
16.257000	SE1236-ND	2.13	1.78	1.24	SG-531P 16.2570MC	
18.000000	SE1237-ND	2.13	1.78	1.24	SG-531P 18.0000MC	
18.432000	SE1238-ND	2.13	1.78	1.24	SG-531P 18.4320MC	
18.869600	SE1239-ND	2.13	1.78	1.24	SG-531P 18.8696MC	
19.660800	SE1240-ND	2.13	1.78	1.24	SG-531P 19.6608MC	
20.480000	SE1241-ND	2.13	1.78	1.24	SG-531P 20.4800MC	
22.118400	SE1242-ND	2.13	1.78	1.24	SG-531P 22.1184MC	
24.000000	SE1213-ND	2.13	1.78	1.24	SG-531P 24.0000MC	
25.175000	SE1215-ND	2.13	1.78	1.24	SG-531P 25.1750MC	
25.576000	SE1243-ND	2.13	1.78	1.24	SG-531P 25.5760MC	
SG-531PH CMOS with Output Enable	32.000000	SE1111-ND	2.13	1.78	1.24	SG-531PH 32.0000MC
	32.514000	SE1112-ND	2.13	1.78	1.24	SG-531PH 32.5140MC
	32.768000	SE1113-ND	2.13	1.78	1.24	SG-531PH 32.7680MC
	33.000000	SE1114-ND	2.13	1.78	1.24	SG-531PH 33.0000MC
	33.333000	SE1115-ND	2.13	1.78	1.24	SG-531PH 33.3330MC
	36.000000	SE1116-ND	2.13	1.78	1.24	SG-531PH 36.0000MC
	38.000000	SE1117-ND	2.13	1.78	1.24	SG-531PH 38.0000MC
	42.000000	SE1119-ND	2.13	1.78	1.24	SG-531PH 42.0000MC
	44.900000	SE1120-ND	2.13	1.78	1.24	SG-531PH 44.9000MC
	48.000000	SE1122-ND	2.13	1.78	1.24	SG-531PH 48.0000MC
SG-531PTJ TTL with Output Enable	64.000000	SE1126-ND	2.24	1.87	1.31	SG-531PH 64.0000MC
	65.000000	SE1127-ND	2.24	1.87	1.31	SG-531PH 65.0000MC
	66.000000	SE1128-ND	2.24	1.87	1.31	SG-531PH 66.0000MC
	66.666700	SE1129-ND	2.24	1.87	1.31	SG-531PH 66.6667MC
	27.000000	SE1817-ND	2.13	1.78	1.24	SG-531PTJ 27.0000MC
	28.000000	SE1818-ND	2.13	1.78	1.24	SG-531PTJ 28.0000MC
	28.322000	SE1819-ND	2.13	1.78	1.24	SG-531PTJ 28.3220MC
SG-51P CMOS/TTL with Output Enable	28.636360	SE1820-ND	2.13	1.78	1.24	SG-531PTJ 28.63636MC
	29.491000	SE1821-ND	2.13	1.78	1.24	SG-531PTJ 29.4910MC
	30.000000	SE1822-ND	2.13	1.78	1.24	SG-531PTJ 30.0000MC
	32.514000	SE1824-ND	2.13	1.78	1.24	SG-531PTJ 32.5140MC
	32.768000	SE1825-ND	2.13	1.78	1.24	SG-531PTJ 32.7680MC
	33.000000	SE1826-ND	2.13	1.78	1.24	SG-531PTJ 33.0000MC
	33.333300	SE1827-ND	2.13	1.78	1.24	SG-531PTJ 33.3333MC
	36.000000	SE1828-ND	2.13	1.78	1.24	SG-531PTJ 36.0000MC
	28.000000	SE1806-ND	2.13	1.78	1.24	SG-51PTJ 28.0000MC
	28.322000	SE1807-ND	2.13	1.78	1.24	SG-51PTJ 28.3220MC
28.636360	SE1808-ND	2.13	1.78	1.24	SG-51PTJ 28.63636MC	
29.491200	SE1809-ND	2.13	1.78	1.24	SG-51PTJ 29.4912MC	
30.000000	SE1810-ND	2.13	1.78	1.24	SG-51PTJ 30.0000MC	
32.000000	SE1811-ND	2.13	1.78	1.24	SG-51PTJ 32.0000MC	
32.768000	SE1813-ND	2.13	1.78	1.24	SG-51PTJ 32.7680MC	
33.000000	SE1814-ND	2.13	1.78	1.24	SG-51PTJ 33.0000MC	
33.333300	SE1815-ND	2.13	1.78	1.24	SG-51PTJ 33.3333MC	
36.000000	SE1816-ND	2.13	1.78	1.24	SG-51PTJ 36.0000MC	

Series	Frequency (MHz)	Digi-Key Part No.	Price Each			Epson Part No.
			1	10	50	
<b>Full Size</b>						
SG-51P CMOS/TTL with Output Enable	1.544000	SE1716-ND	2.13	1.78	1.24	SG-51P 1.5440MC
	1.843200	SE1701-ND	2.13	1.78	1.24	SG-51P 1.8432MC
	2.000000	SE1717-ND	2.13	1.78	1.24	SG-51P 2.0000MC
	2.048000	SE1718-ND	2.13	1.78	1.24	SG-51P 2.0480MC
	3.072000	SE1719-ND	2.13	1.78	1.24	SG-51P 3.0720MC
	3.088000	SE1720-ND	2.13	1.78	1.24	SG-51P 3.0880MC
	3.276800	SE1721-ND	2.13	1.78	1.24	SG-51P 3.2768MC
	3.579545	SE1722-ND	2.13	1.78	1.24	SG-51P 3.579545MC
	3.686400	SE1723-ND	2.13	1.78	1.24	SG-51P 3.6864MC
	4.000000	SE1703-ND	2.13	1.78	1.24	SG-51P 4.0000MC
	4.096000	SE1724-ND	2.13	1.78	1.24	SG-51P 4.0960MC
	4.915200	SE1704-ND	2.13	1.78	1.24	SG-51P 4.9152MC
	5.000000	SE1705-ND	2.13	1.78	1.24	SG-51P 5.0000MC
	5.068800	SE1725-ND	2.13	1.78	1.24	SG-51P 5.0688MC
	6.000000	SE1706-ND	2.13	1.78	1.24	SG-51P 6.0000MC
	6.144800	SE1726-ND	2.13	1.78	1.24	SG-51P 6.1448MC
	7.372800	SE1727-ND	2.13	1.78	1.24	SG-51P 7.3728MC
	8.000000	SE1707-ND	2.13	1.78	1.24	SG-51P 8.0000MC
	8.192000	SE1728-ND	2.13	1.78	1.24	SG-51P 8.1920MC
	9.830400	SE1729-ND	2.13	1.78	1.24	SG-51P 9.8304MC
	10.000000	SE1708-ND	2.13	1.78	1.24	SG-51P 10.0000MC
	10.240000	SE1730-ND	2.13	1.78	1.24	SG-51P 10.2400MC
	11.000000	SE1731-ND	2.13	1.78	1.24	SG-51P 11.0000MC
	11.059200	SE1732-ND	2.13	1.78	1.24	SG-51P 11.0592MC
	12.000000	SE1709-ND	2.13	1.78	1.24	SG-51P 12.0000MC
12.288000	SE1733-ND	2.13	1.78	1.24	SG-51P 12.2880MC	
14.318180	SE1710-ND	2.13	1.78	1.24	SG-51P 14.31818MC	
14.745600	SE1734-ND	2.13	1.78	1.24	SG-51P 14.7456MC	
15.000000	SE1735-ND	2.13	1.78	1.24	SG-51P 15.0000MC	
16.000000	SE1711-ND	2.13	1.78	1.24	SG-51P 16.0000MC	
16.257000	SE1736-ND	2.13	1.78	1.24	SG-51P 16.2570MC	
18.000000	SE1737-ND	2.13	1.78	1.24	SG-51P 18.0000MC	
18.432000	SE1738-ND	2.13	1.78	1.24	SG-51P 18.4320MC	
18.869600	SE1739-ND	2.13	1.78	1.24	SG-51P 18.8696MC	
19.660800	SE1740-ND	2.13	1.78	1.24	SG-51P 19.6608MC	
20.000000	SE1712-ND	2.13	1.78	1.24	SG-51P 20.0000MC	
20.480000	SE1741-ND	2.13	1.78	1.24	SG-51P 20.4800MC	
22.118000	SE1742-ND	2.13	1.78	1.24	SG-51P 22.1184MC	
24.000000	SE1713-ND	2.13	1.78	1.24	SG-51P 24.0000MC	
24.576000	SE1743-ND	2.13	1.78	1.24	SG-51P 24.5760MC	
25.000000	SE1714-ND	2.13	1.78	1.24	SG-51P 25.0000MC	
25.175000	SE1715-ND	2.13	1.78	1.24	SG-51P 25.1750MC	
SG-51PH CMOS/TTL with Output Enable	32.768000	SE1902-ND	2.13	1.78	1.24	SG-51PH 32.7680MC
	33.000000	SE1903-ND	2.13	1.78	1.24	SG-51PH 33.0000MC
	33.333000	SE1904-ND	2.13	1.78	1.24	SG-51PH 33.3330MC
	36.000000	SE1905-ND	2.13	1.78	1.24	SG-51PH 36.0000MC
	38.000000	SE1906-ND	2.13	1.78	1.24	SG-51PH 38.0000MC
	42.000000	SE1908-ND	2.13	1.78	1.24	SG-51PH 42.0000MC
	44.900000	SE1909-ND	2.13	1.78	1.24	SG-51PH 44.9000MC
	46.000000	SE1910-ND	2.13	1.78	1.24	SG-51PH 46.0000MC
	48.000000	SE1911-ND	2.13	1.78	1.24	SG-51PH 48.0000MC
	50.000000	SE1912-ND	2.13	1		

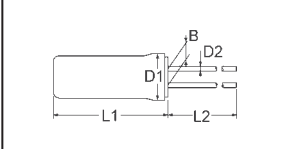
Series	Frequency (MHz)	Digi-Key Part No.	Price Each			Epson Part No.
			1	10	50	
<b>Half Size — RoHS Compliant</b>						
SG-531P CMOS/TTL with Output Enable	1.544000	SER1216-ND	2.49	2.14	1.64	SG-531P 1.5440MC:ROHS
	1.843200	SER1201-ND	2.49	2.14	1.64	SG-531P 1.8432MC:ROHS
	2.457600	SER1202-ND	2.49	2.14	1.64	SG-531P 2.4576MC:ROHS
	3.276800	SER1221-ND	2.49	2.14	1.64	SG-531P 3.2768MC:ROHS
	3.579545	SER1222-ND	2.49	2.14	1.64	SG-531P 3.579545MC:ROHS
	3.686400	SER1223-ND	2.49	2.14	1.64	SG-531P 3.6864MC:ROHS
	4.000000	SER1203-ND	2.49	2.14	1.64	SG-531P 4.0000MC:ROHS
	4.096000	SER1224-ND	2.49	2.14	1.64	SG-531P 4.0960MC:ROHS
	4.915200	SER1204-ND	2.49	2.14	1.64	SG-531P 4.9152MC:ROHS
	7.372800	SER1227-ND	2.49	2.14	1.64	SG-531P 7.3728MC:ROHS
	8.000000	SER1207-ND	2.49	2.14	1.64	SG-531P 8.0000MC:ROHS
	8.192000	SER1228-ND	2.49	2.14	1.64	SG-531P 8.1920MC:ROHS
	10.000000	SER1208-ND	2.49	2.14	1.64	SG-531P 10.0000MC:ROHS
	11.059200	SER1232-ND	2.49	2.14	1.64	SG-531P 11.0592MC:ROHS
	12.288000	SER1233-ND	2.49	2.14	1.64	SG-531P 12.2880MC:ROHS
	14.745600	SER1234-ND	2.49	2.14	1.64	SG-531P 14.7456MC:ROHS
	18.432000	SER1238-ND	2.49	2.14	1.64	SG-531P 18.4320MC:ROHS
	19.660800	SER1240-ND	2.49	2.14	1.64	SG-531P 19.6608MC:ROHS
22.118400	SER1242-ND	2.49	2.14	1.64	SG-531P 22.1184MC:ROHS	
24.000000	SER1213-ND	2.49	2.14	1.64	SG-531P 24.0000MC:ROHS	
SG-531PH CMOS with Output Enable	32.000000	SER1111-ND	2.49	2.14	1.64	SG-531PH 32.0000MC:ROHS
	33.000000	SER1114-ND	2.49	2.14	1.64	SG-531PH 33.0000MC:ROHS
	48.000000	SER1122-ND	2.49	2.14	1.64	SG-531PH 48.0000MC:ROHS
SG-531PTJ TTL with Output Enable	66.000000	SER1128-ND	2.62	2.25	1.72	SG-531PH 66.0000MC:ROHS
	27.000000	SER1817-ND	2.49	2.14	1.64	SG-531PTJ 27.0000MC:ROHS
SG-531PTJ TTL with Output Enable	28.636360	SER1820-ND	2.49	2.14	1.64	SG-531PTJ 28.63636MC:ROHS
	29.491000	SER1821-ND	2.49	2.14	1.64	SG-531PTJ 29.4910MC:ROHS
	33.000000	SER1826-ND	2.49	2.14	1.64	SG-531PTJ 33.0000MC:ROHS
<b>Full Size — RoHS Compliant</b>						
SG-51P CMOS/TTL with Output Enable	1.843200	SER1701-ND	2.49	2.14	1.64	SG-51P 1.8432MC:ROHS
	2.000000	SER1717-ND	2.49	2.14	1.64	SG-51P 2.0000MC:ROHS
	4.000000	SER1703-ND	2.49	2.14	1.64	SG-51P 4.0000MC:ROHS
	6.000000	SER1706-ND	2.49	2.14	1.64	SG-51P 6.0000MC:ROHS
	7.372800	SER1727-ND	2.49	2.14	1.64	SG-51P 7.3728MC:ROHS
	8.000000	SER1707-ND	2.49	2.14	1.64	SG-51P 8.0000MC:ROHS
	10.000000	SER1708-ND	2.49	2.14	1.64	SG-51P 10.0000MC:ROHS
	12.000000	SER1709-ND	2.49	2.14	1.64	SG-51P 12.0000MC:ROHS
	12.288000	SER1733-ND	2.49	2.14	1.64	SG-51P 12.2880MC:ROHS
	14.745600	SER1734-ND	2.49	2.14	1.64	SG-51P 14.7456MC:ROHS
	16.000000	SER1711-ND	2.49	2.14	1.64	SG-51P 16.0000MC:ROHS
	18.432000	SER1738-ND	2.49	2.14	1.64	SG-51P 18.4320MC:ROHS
	20.000000	SER1712-ND	2.49	2.14	1.64	SG-51P 20.0000MC:ROHS
	24.576000	SER1743-ND	2.49	2.14	1.64	SG-51P 24.5760MC:ROHS
	SG-51PTJ with Output Enable	32.000000	SER1811-ND	2.49	2.14	1.64

A462-ND Aries Electronics Inc., Full Size, 4-Pin Oscillator Sockets..... .42/1 8.77/25 28.40/100  
A463-ND Aries Electronics Inc., Half Size, 4-Pin Oscillator Sockets..... .42/1 8.77/25 28.40/100

## Quartz Crystals - C-Type, Cylinder

Specifications:  
• Nominal Frequency: 32.768kHz • Operating Temperature: -10°C ~ 60°C • Drive Level: 1.0µW Maximum  
• Frequency Tolerance (Standard): ±20ppm • Series Resistance: C-001R = 35kΩ Maximum (18kΩ Typ.); C-002RX and C-004R = 50kΩ Maximum (30kΩ Typ.); and C-005R = 50kΩ Maximum (37kΩ Typ.)

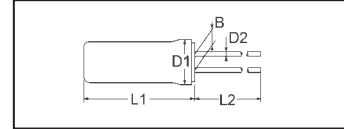
Model	L1 Max.	L2 Min.	D1 Max.	D2	B
C-001R	8.0	9.0	ø3.1	ø0.3	1.1
C-002RX	6.0	4.0	ø2.0	ø0.2	0.7
C-004R	5.0	4.0	ø1.5	ø0.18	0.5
C-005R	4.6	4.0	ø1.2	ø0.15	0.3



Load Cap. (pF)	Digi-Key Part No.	1	10	50	Epson Part No.
9	SE3204-ND	4.09	3.42	2.42	C-005R 32.7680K-AC
<b>RoHS Compliant</b>					
12.5	SER3201-ND	.23	.20	.16	C-001R 32.7680K-A:PBFFREE
12.5	SER3202-ND	.23	.20	.16	C-002RX 32.7680K-A:PBFFREE
6	SER3205-ND	.23	.20	.16	C-002RX 32.7680K-E:PBFFREE
12.5	SER3203-ND	1.17	1.01	.77	C-004R 32.7680K-A:PBFFREE
9	SER3204-ND	4.78	4.10	3.14	C-005R 32.7680K-AC:PBFFREE

## Quartz Crystals - C-2-Type, Cylinder

Specifications:  
• Operating Temperature: -10°C ~ 60°C  
• Drive Level: 1.0µW Maximum  
• Crystal Load Capacitance/Tolerance: All parts have 11pF load capacitance, ±100ppm except: C-2 32.560KH-AG, 7pF, ±190ppm; C-2 38.000KA-P 12.5pF, ±20ppm  
• Series Resistance Over 20kHz and Under 99kHz: 35kΩ ~ 15kΩ  
• Series Resistance Over 100kHz and Under 200kHz: 12kΩ ~ 8kΩ



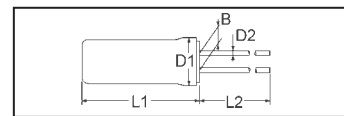
Model	L1 Max.	L2 Min.	D1 Max.	D2	B
C-2-Type	6.0	4.0	ø2.0	ø0.2	0.7

Frequency (kHz)	Digi-Key Part No.	1	10	50	Epson Part No.
20.0000	SE3301-ND	.89	.75	.53	C-2 20.0000K-P
26.6670	SE3303-ND	.89	.75	.53	C-2 26.6670K-P
31.2500	SE3308-ND	.89	.75	.53	C-2 31.2500K-P
31.5000	SE3309-ND	.89	.75	.53	C-2 31.5000K-P
32.5600	SE3311-ND	.89	.75	.53	C-2 32.5600KH-AG
32.9190	SE3312-ND	.89	.75	.53	C-2 32.9190K-C-P
36.0000	SE3313-ND	.89	.75	.53	C-2 36.0000K-P
38.0000	SE3314-ND	.98	.82	.53	C-2 38.0000KA-P
38.4000	SE3315-ND	.89	.75	.53	C-2 38.4000K-P
46.6084	SE3317-ND	.89	.75	.53	C-2 46.6084KC-P
50.0000	SE3318-ND	.89	.75	.53	C-2 50.0000K-P
60.0020	SE3321-ND	.89	.75	.53	C-2 60.0020K-C-P
75.0000	SE3323-ND	.89	.75	.53	C-2 75.0000K-P
76.8000	SE3324-ND	.89	.75	.53	C-2 76.8000K-P
83.0000	SE3330-ND	1.07	.89	.64	C-2 83.0000K-P
111.0000	SE3334-ND	1.07	.89	.64	C-2 111.0000K-P
120.8475	SE3336-ND	1.07	.89	.64	C-2 120.8475K-P
149.4750	SE3338-ND	1.29	1.08	.76	C-2 149.4750K-P
<b>RoHS Compliant</b>					
20.0000	SER3301-ND	1.05	.90	.69	C-2 20.0000K-P:PBFFREE
25.6000	SER3302-ND	1.05	.90	.69	C-2 25.6000K-P:PBFFREE
26.6670	SER3303-ND	1.05	.90	.69	C-2 26.6670K-P:PBFFREE
28.0000	SER3304-ND	1.05	.90	.69	C-2 28.0000K-P:PBFFREE
30.0000	SER3305-ND	1.05	.90	.69	C-2 30.0000K-P:PBFFREE
31.2500	SER3308-ND	1.05	.90	.69	C-2 31.2500K-P:PBFFREE
32.0000	SER3310-ND	1.05	.90	.69	C-2 32.0000K-P:PBFFREE
36.0000	SER3313-ND	1.05	.90	.69	C-2 36.0000K-P:PBFFREE
38.0000	SER3314-ND	1.15	.98	.76	C-2 38.0000KA-P:PBFFREE
38.4000	SER3315-ND	1.05	.90	.69	C-2 38.4000K-P:PBFFREE
40.0000	SER3316-ND	1.05	.90	.69	C-2 40.0000K-P:PBFFREE
60.0000	SER3320-ND	1.05	.90	.69	C-2 60.000K-P:PBFFREE
65.5350	SER3322-ND	1.05	.90	.69	C-2 65.5350K-P:PBFFREE
75.0000	SER3323-ND	1.05	.90	.69	C-2 75.0000K-P:PBFFREE
76.8000	SER3324-ND	1.05	.90	.69	C-2 76.8000K-P:PBFFREE
83.0000	SER3330-ND	1.25	1.07	.82	C-2 83.0000K-P:PBFFREE
96.0000	SER3331-ND	1.25	1.07	.82	C-2 96.0000K-P:PBFFREE
100.0000	SER3333-ND	1.25	1.07	.82	C-2 100-0000K-P:PBFFREE
120.0000	SER3335-ND	1.25	1.07	.82	C-2 120.0000K-P:PBFFREE
131.0720	SER3337-ND	1.50	1.29	.99	C-2 131.0720K-P:PBFFREE
149.4750	SER3338-ND	1.50	1.29	.99	C-2 149.4750K-P:PBFFREE

## Quartz Crystals - CA-301 Type, Cylinder

Specifications:  
• Operating Temperature: -20°C ~ 70°C • Drive Level: 2mW Maximum • Recommended Level: 10µW ~ 100µW Typ. • Frequency Tolerance (Standard): ±30ppm • Load Capacitance: 81pF

Frequency MHz	Series Resistance	Mode	
4.0	5.5 150Ω Max.	Fundamental	
5.5	6.0 100Ω Max.		
6.0	10.0 80Ω Max.		
10.0	12.0 60Ω Max.		
12.0	16.0 50Ω Max.		
16.0	30.0 40Ω Max.		
30.0	36.0 100Ω Max.		3rd Overtone
36.0	64.0 80Ω Max.		



Model	L1 Max.	L2 Min.	D1 Max.	D2	B
Under 5.5MHz	9.3	9.5	ø3.1	ø0.3	1.1
Over 5.5MHz	8.9	9.5	ø3.1	ø0.3	1.1

Frequency (MHz)	Digi-Key Part No.	1	10	50	Epson Part No.
4.194304	SE3405-ND	1.55	1.29	.91	CA-301 4.194304M-C
4.433619	SE3406-ND	1.55	1.29	.91	CA-301 4.433619M-C
6.144000	SE3410-ND	.70	.59	.41	CA-301 6.1440M-C
6.757000	SE3411-ND	.70	.59	.41	CA-301 6.7570M-C

(Continued)

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