

Crystal Name  
Package

- 10=49/U
- 11=49/U1
- 12=49/U2
- 14=49/U(SMD)
- 15=49/U1(SMD)
- 17=49/U3(SMD)
- 20=LP-2.0
- 21=LP-2.5
- 22=LP-3.5(49U3H)
- 23=LP-3.2S
- 24=LP-3.5S
- 25=LP-4.2S(MS3H)
- 27=MG3A
- 52=SX-7050
- 53=SX-6035
- 54=SX-5032
- 55=SX-4025
- 57=SX-3225
- 58=SX-2520
- 60=GX-80452
- 61=GX-70502
- 62=GX-70504
- 63=GX-60352
- 64=GX-60354
- 65=GX-50324
- 66=GX-50322
- 67=GX-32254

AA.BBBMHz  
AA=Integer (1~3 Digits)  
BBB=Decimal (1~6 Digits)  
AA+BB=  
Maximum 9 Digits  
32.768MHz  
136 MHz  
3.579545 MHz

Frequency Tolerance

Frequency  
Temperature  
Characteristics

- 101= ± 100ppm
- 750= ± 75ppm
- 500= ± 50ppm
- 300= ± 30ppm
- 250= ± 25ppm
- 200= ± 20ppm
- 150= ± 15ppm
- 100= ± 10ppm
- 050= ± 5ppm
- 999=Custom

Operating Temperature  
Low High

- A=+25
- B=+20
- C=+15
- D=+10
- E=+ 5
- F= 0
- G=- 5
- H=- 10
- I=- 15
- J=-20
- K=-25
- L=- 30
- M=- 35
- N=-40
- O=-45
- P=-50
- Q=-55

- A=+30
- B=+35
- C=+40
- D=+45
- E=+50
- F=+55
- G=+60
- H=+65
- I=+70
- J=+75
- K=+80
- L=+85
- M=+90
- N=+95
- O=+100
- P=+105
- Q=+110
- R=+115
- S=+120
- T=+125

- B= ± 5ppm
- C= ± 7ppm
- E= ± 10ppm
- F= ± 15ppm
- G= ± 20ppm
- I= ± 30ppm
- J= ± 40ppm
- K= ± 50ppm
- P= ± 100ppm
- X=Custom

Load Capacitance

- 0.00= Series Resonant
- 16.0= 16.0pF
- 18.0= 18.0pF
- 20.5= 20.5pF
- 30.0= 32.0pF

Options

- BK= Bulk
- IS= Insulator
- TR= Tape & Reel
- AM= AMO Pack
- TI= T&R w/Insulator
- BT= Bend Lead w/T&R

Vibration Mode

- 0=BT cut
- 1=AT Fundamental
- 3=3rd Overtone
- 5=5th Overtone

Please contact our sales offices for other specifications not listed or covered on the page .

Example of a SX-4025 13.000MHz

XTL551200JIJ-13MHz-16.0-TR

■ Applications

Mobile communication • Bluetooth • Wireless LAN

■ Features

Ultra-thin • Dimensions (2.5 × 2.0 × 0.5)  
 Ceramic SMD Package  
 Leadless Type • Vacuum Seam Sealed  
 Tight Tolerance and Stability  
 Reflow Soldering • Emboss Taping  
 RoHS Compliant



■ Specifications

Type	SX-2520	
Nominal frequency range	20.000~50.000MHz	
Crystal cut	Fundamental [AT-cut]	
Storage temperature range	-40~+90°C	
Operating temperature range	-20~+75°C	-30~+85°C
Frequency temperature characteristics (Ref. to +25°C)	$\pm 10 \times 10^{-6}$	$\pm 15 \times 10^{-6}$
Frequency tolerance(at +25°C)	$\pm 10 \times 10^{-6}$	
Equivalent series resistance	100 Ω : 20.000~34.999 50 Ω : 35.000~50.000	
Load capacitance	8pF, 10pF, 12pF	
Shunt capacitance	5pF max.	
Level of drive	10 μW (100 μW max.)	

Please consult with us for dimensions and angles you expected. [sales@mail.siward.com.tw](mailto:sales@mail.siward.com.tw)  
 Package quantity : 3,000pcs max./reel.

■ Outline Dimensions [unit:mm]

**Top View**

#1, #3 : Crystal terminal  
 #2, #4 : Connected to cover.  
 (Please connect it with GND.)

**Example of a Terminal Land Pattern**

Maximum marking length		Marking
line1	line2	
4	4	Laser

■ Applications

OA·AV machine·Bluetooth·Wireless LAN

■ Features

Ultra-thin·Dimensions (3.2×2.5×0.6)  
 Ceramic SMD Package  
 Leadless Type·Vacuum Seam Sealed  
 Tight Tolerance and Stability  
 Reflow Soldering·Emboss Taping  
 RoHS Compliant



■ Specifications

Type	SX-3225	
Nominal frequency range	12.000~50.000MHz	
Crystal cut	Fundamental [AT cut]	
Storage temperature range	-40~+90°C	
Operating temperature range	-10~+60°C	-30~+85°C
Frequency temperature characteristics (Ref. to +25°C)	±10×10 <sup>-6</sup>	±15×10 <sup>-6</sup>
Frequency tolerance(at +25°C)	±10×10 <sup>-6</sup>	
Equivalent series resistance	100Ω: 16.000~18.999 80Ω: 19.000~29.999 60Ω: 30.000~50.000	
Load capacitance	Series, 10pF, 12pF, 16pF	
Shunt capacitance	5pF max.	
Level of drive	10 μW (100 μW max.)	

Please consult with us for dimensions and angles you expected. [sales@mail.siward.com.tw](mailto:sales@mail.siward.com.tw)

Package quantity: 1,000pcs max./reel.

■ Outline Dimensions [unit:mm]

Top View

Maximum marking length		Marking
line1	line2	
4	4	Laser

#1, #3: Crystal terminal  
 #2, #4: Connected to cover.  
 (Please connect it with GND.)

Example of a Terminal Land Pattern

■ Applications  
Bluetooth · Cellular

■ Features  
Ultra-thin · Dimensions (4.0 × 2.5 × 0.55)  
Ceramic SMD Package  
Leadless Type · Seam Sealed  
Tight Tolerance and Stability  
Reflow Soldering · Emboss Taping  
RoHS Compliant

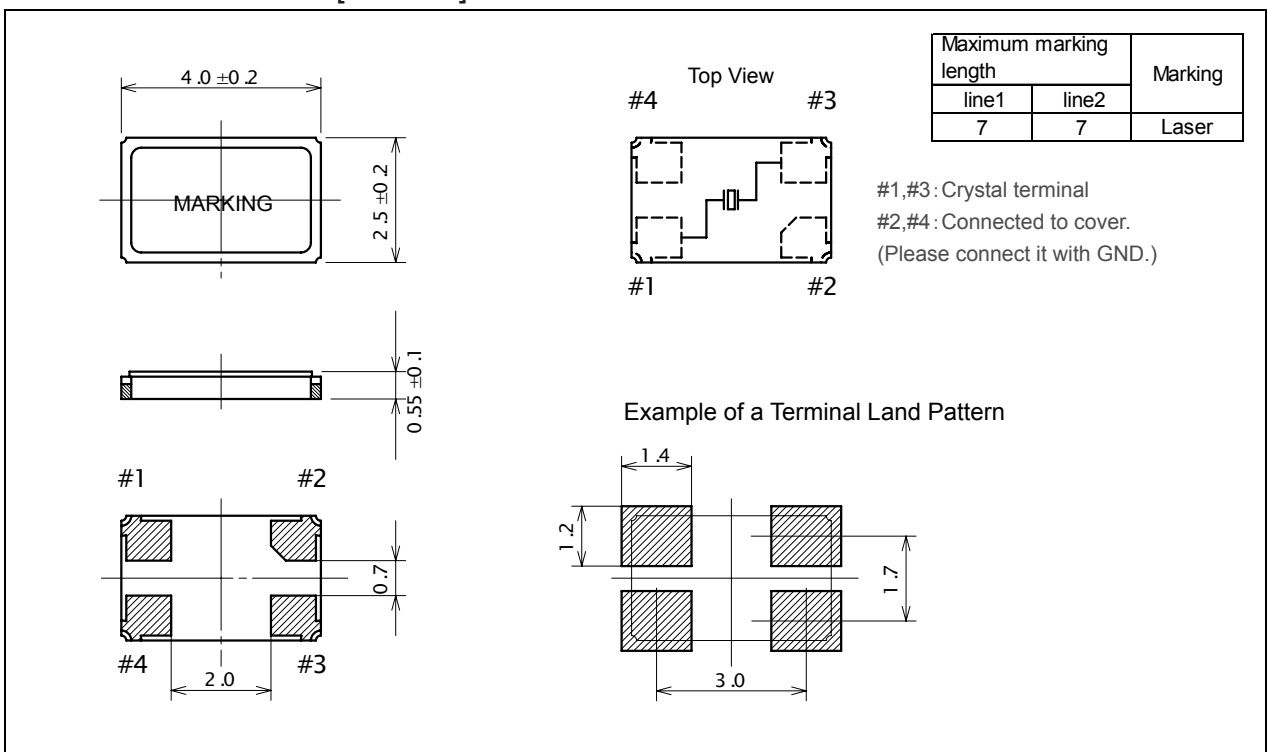


■ Specifications

Type	SX-4025	
Nominal frequency range	12.000~50.000MHz	
Crystal cut	Fundamental [AT cut]	
Storage temperature range	-40~+90°C	
Operating temperature range	-10~+60°C	-30~+85°C
Frequency temperature characteristics (Ref. to +25°C)	$\pm 10 \times 10^{-6}$	$\pm 15 \times 10^{-6}$
Frequency tolerance(at +25°C)	$\pm 10 \times 10^{-6}$	
Equivalent series resistance	100 Ω : 12.000~12.999 80 Ω : 13.000~18.999 60 Ω : 19.000~39.999 50 Ω : 40.000~50.000	
Load capacitance	Series, 10pF, 12pF, 16pF	
Shunt capacitance	5pF max.	
Level of drive	10 μW (100 μW max.)	

Please consult with us for dimensions and angles you expected. [sales@mail.siward.com.tw](mailto:sales@mail.siward.com.tw)  
Package quantity 1,000pcs max./reel.

■ Outline Dimensions [unit:mm]



■ Applications

Cellular • PHS • Cordless Telephones • Pagers

■ Features

Ultra-thin • Dimensions (5.0 × 3.2 × 0.7)  
 Ceramic SMD Package  
 Leadless Type • Seam Sealed  
 Tight Tolerance and Stability  
 Reflow Soldering • Emboss Taping  
 RoHS Compliant



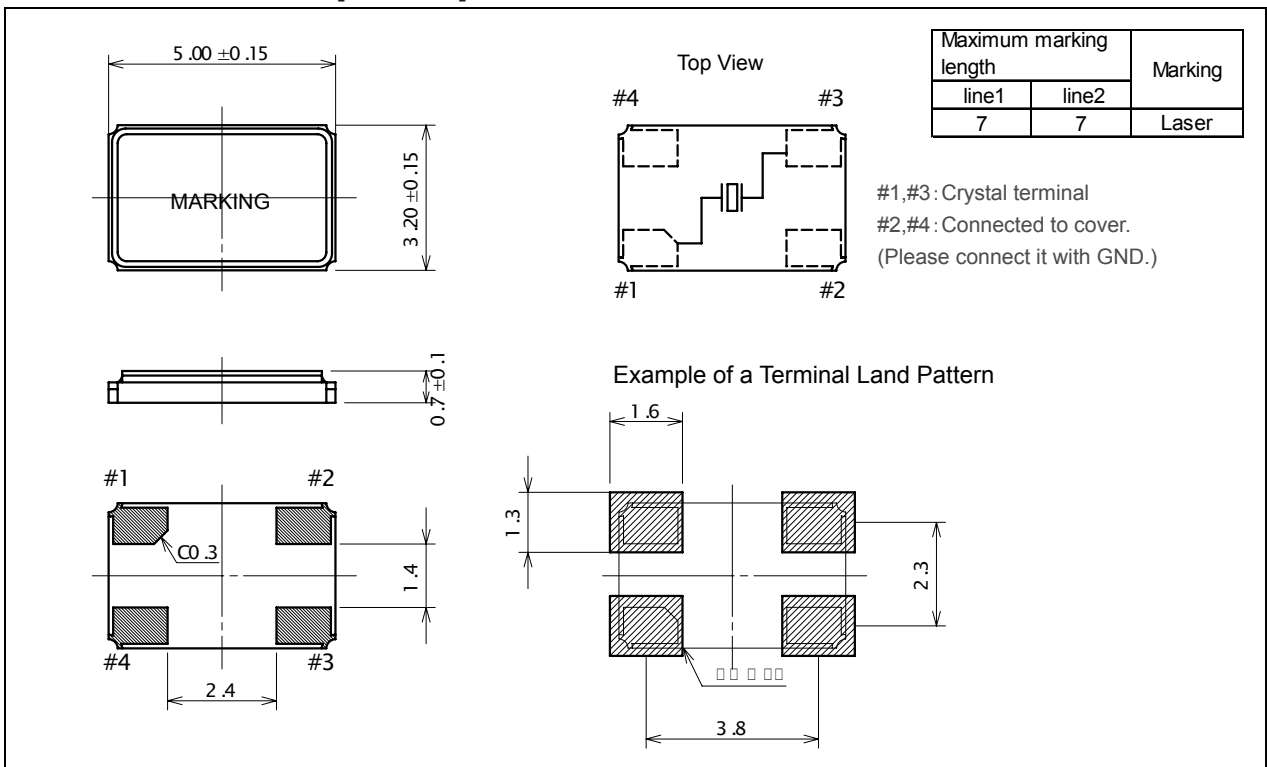
■ Specifications

Type	SX-5032	
Nominal frequency range	10.000~50.000MHz	
Crystal cut	Fundamental [AT cut]	
Storage temperature range	-40~+90°C	
Operating temperature range	-10~+60°C	-30~+85°C
Frequency temperature characteristics (Ref. to +25°C)	±10 × 10 <sup>-6</sup>	±15 × 10 <sup>-6</sup>
Frequency tolerance(at +25°C)	±10 × 10 <sup>-6</sup>	
Equivalent series resistance	60 Ω : 10.000~10.999 50 Ω : 11.000~11.999	40 Ω : 12.000~24.999 30 Ω : 25.000~50.000
Load capacitance	Series, 10pF, 12pF, 16pF	
Shunt capacitance	5pF max.	
Level of drive	10 μW (100 μW max.)	

Please consult with us for dimensions and angles you expected. [sales@mail.siward.com.tw](mailto:sales@mail.siward.com.tw)

Package quantity : 1,000pcs max./reel.

■ Outline Dimensions [unit:mm]



■ Applications

Cellular • PHS • Cordless Telephones • Pagers

■ Features

Ultra-thin • Dimensions (6.0 × 3.5 × 0.9)  
 Ceramic SMD Package  
 Leadless Type • Seam Sealed  
 Tight Tolerance and Stability  
 Reflow Soldering • Emboss Taping  
 RoHS Compliant



■ Specifications

Type	SX-6035	
Nominal frequency range	9.000~50.000MHz	
Crystal cut	Fundamental [AT cut]	
Storage temperature range	-40~+90°C	
Operating temperature range	-10~+60°C	-30~+85°C
Frequency temperature characteristics (Ref. to +25°C)	±10 × 10 <sup>-6</sup>	±15 × 10 <sup>-6</sup>
Frequency tolerance(at +25°C)	±10 × 10 <sup>-6</sup>	
Equivalent series resistance	60 Ω : 9.000~ 9.999 50 Ω : 10.000~ 11.999	40 Ω : 12.000~ 24.999 30 Ω : 25.000~ 50.000
Load capacitance	Series, 10pF, 12pF, 16pF	
Shunt capacitance	5pF max.	
Level of drive	10 μW (100 μW max.)	

Please consult with us for dimensions and angles you expected. [sales@mail.siward.com.tw](mailto:sales@mail.siward.com.tw)

Package quantity : 1,000pcs max./reel.

■ Outline Dimensions [unit:mm]

Maximum marking length		Marking
line1	line2	
7	7	Laser

#1, #3 : Crystal terminal  
 #2, #4 : Connected to cover.  
 (Please connect it with GND.)

Example of a Terminal Land Pattern

■ Applications

Cellular • PHS • Cordless Telephones • Pagers

■ Features

- Thin-Dimensions (7.0 × 5.0 × 1.1)
- Ceramic SMD Package
- Leadless Type • Seam Sealed
- Tight Tolerance and Stability
- Reflow Soldering • Emboss Taping
- RoHS Compliant



■ Specifications

Type	SX-7050			
Nominal frequency range	8.000~40.000MHz		30.000~100.000MHz	
Crystal cut	Fundamental [AT cut]		3rd overtone [AT cut]	
Storage temperature range	-40~+90°C			
Operating temperature range	-10~+60°C	-30~+80°C	-10~+60°C	-30~+80°C
Frequency temperature characteristics (Ref. to +25°C)	±10 × 10 <sup>-6</sup>	±20 × 10 <sup>-6</sup>	±10 × 10 <sup>-6</sup>	±20 × 10 <sup>-6</sup>
Frequency tolerance(at +25°C)	±10 × 10 <sup>-6</sup> , ±20 × 10 <sup>-6</sup> , ±30 × 10 <sup>-6</sup>			
Equivalent series resistance	60 Ω : 8.000~ 9.999 40 Ω : 10.000~14.999 30 Ω : 15.000~40.000		80 Ω : 30.000~100.000	
Load capacitance	Series, 16pF, 20pF, 30pF			
Shunt capacitance	5pF max.			
Level of drive	10 μW (100 μW max.)			

Please consult with us for dimensions and angles you expected. [sales@mail.siward.com.tw](mailto:sales@mail.siward.com.tw)

Package quantity 1,000pcs max./reel

■ Outline Dimensions [unit:mm]

Maximum marking length		Marking
line1	line2	
8	8	Laser

#1, #3: Crystal terminal  
#2, #4: Connected to cover.  
(Please connect it with GND.)

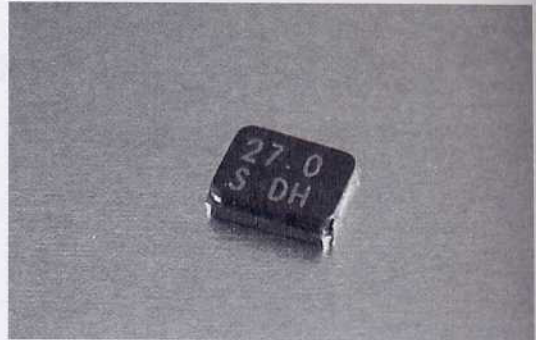
Example of a Terminal Land Pattern

### ■ Applications

Computer Clocks • DVC • DSC • OA • AV Machine

### ■ Features

Miniature • Thin • Dimensions (3.2x2.5 x 0.8)  
 Ceramic SMD Package  
 Glass Sealed  
 Tight Tolerance and Stability  
 Reflow Soldering • Emboss Taping  
 RoHS Compliant

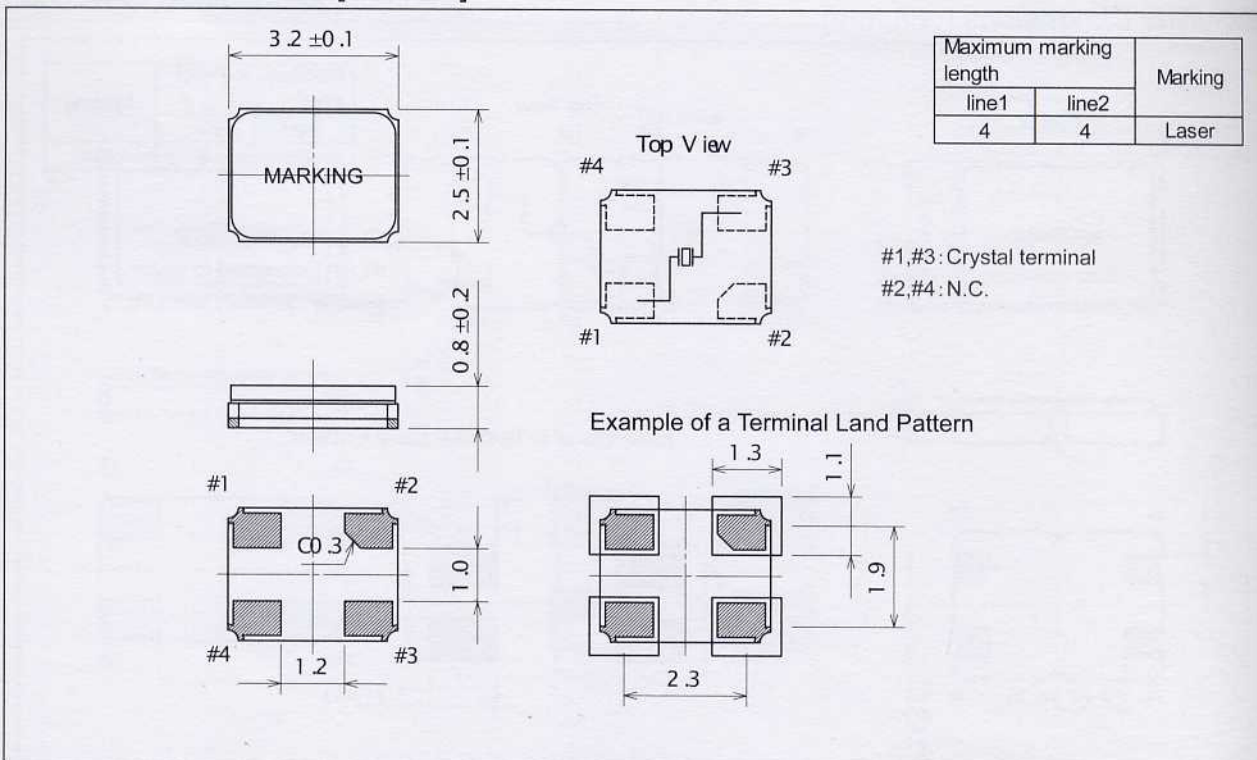


### ■ Specifications

Type	GX-32254	
Nominal frequency range	16.000~50.000MHz	
Crystal cut	Fundamental [AT cut]	
Storage temperature range	-40~+90°C	
Operating temperature range	-10~+60°C	-30~+85°C
Frequency temperature characteristics (Ref. to +25°C)	$\pm 30 \times 10^{-6}$	$\pm 50 \times 10^{-6}$
Frequency tolerance(at +25°C)	$\pm 30 \times 10^{-6}$ , $\pm 50 \times 10^{-6}$	
Equivalent series resistance	100Ω : 16.000~18.999 80Ω : 19.000~29.999 60Ω : 30.000~50.000	
Load capacitance	Series, 10pF, 12pF, 16pF	
Shunt capacitance	5pF max.	
Level of drive	10 μW (100 μW max.)	

Please consult with us for dimensions and angles you expected. [sales@mail.siward.com.tw](mailto:sales@mail.siward.com.tw)

### ■ Outline Dimensions [unit:mm]





● **Typical applications**

Cordless telephones, Facsimile and Computer clocks

● **Features**

Small and thin surface mounting crystal units, with the superior heat-resistant glass sealing, reflow soldering can be accommodated. Automatic mounting is enabled by emboss taping. RoHS Compliant

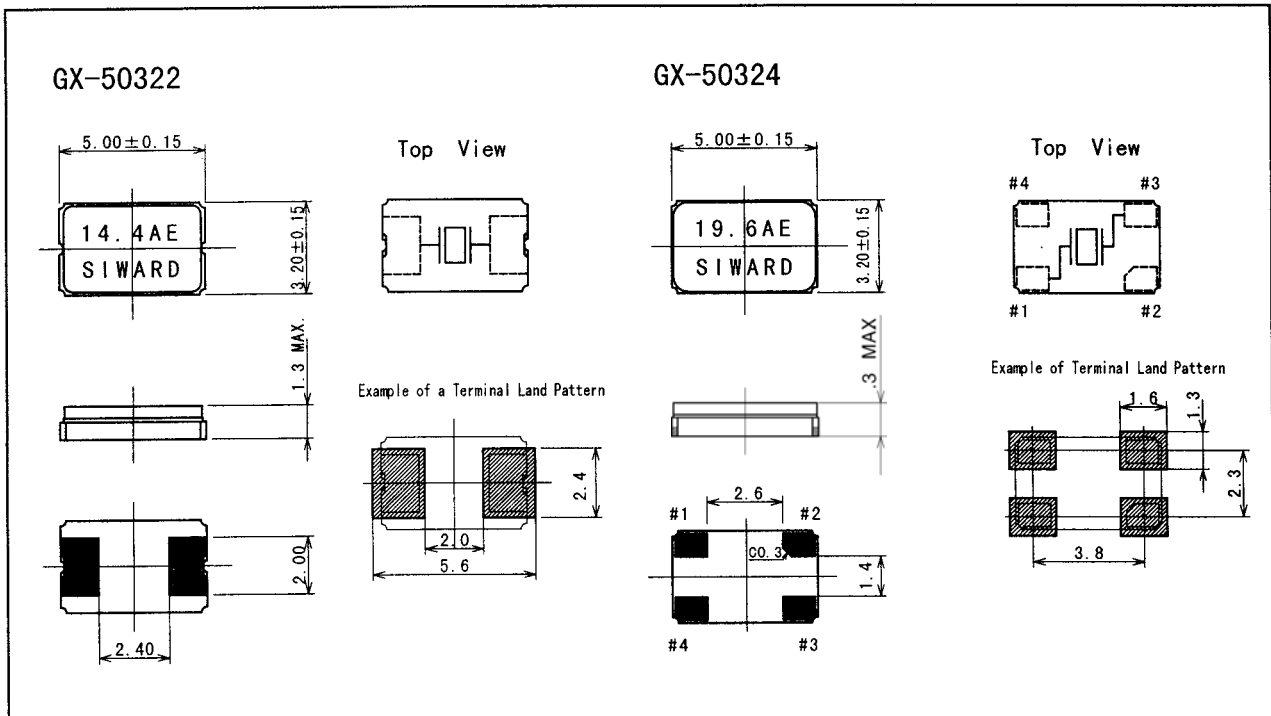


● **Typical specifications**

Type	GX-50322, GX-50324
Frequency range	10.000~50.000MHz
Crystal cut	Fundamental [AT-cut]
Load capacitance	18pF (Standard)
Level of drive	10 $\mu$ W ( 100 $\mu$ W MAX.)
Frequency tolerance(at +25°C)	$\pm 30 \times 10^{-6}$ , $\pm 50 \times 10^{-6}$
Equivalent series resistance	10.000~15.999MHz 60 ( $\Omega$ ) 16.000~40.000MHz 50 ( $\Omega$ )
Frequency stability	$\pm 30 \times 10^{-6}$ , $\pm 50 \times 10^{-6}$ (-10~+70°C) $\pm 50 \times 10^{-6}$ , $\pm 100 \times 10^{-6}$ (-40~+85°C)
Operating temperature range	-10~+70°C, -40~+85°C
Aging	$\pm 3$ , $\pm 5$ ppm/year
Storage temperature range	-40~+90°C

· Please consult with us for other specification. · Packing quantity 1,000pcs/reel.

● **Outline Dimensions [Unit : mm]**



● **Standard Frequencies list**

GX-50322, GX-50324	
Nominal frequency(MHz)	
12.600000	19.200000
12.800000	19.680000
13.000000	20.945000
14.400000	
16.000000	

● **Typical applications**

Cordless telephones, Facsimile and Computer clocks

● **Features**

It is surface mounting crystal unit of small thin.  
 As for the superior heat-resistant glass sealing, reflow soldering is possible.  
 Also automatic mounting is enabled by emboss taping. RoHS Compliant

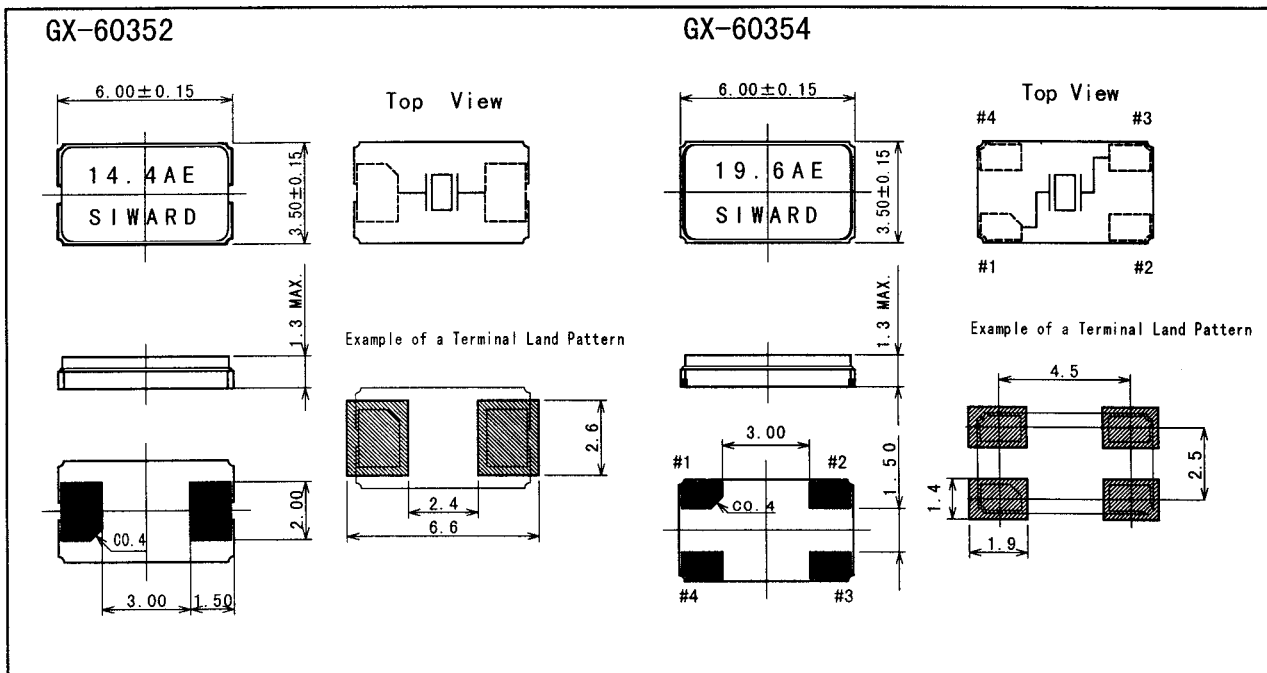


● **Typical specifications**

Type	GX-60352, GX-60354
Frequency range	10.000~50.000MHz
Crystal cut	Fundamental [AT-cut]
Load capacitance	18pF (Standard)
Level of drive	10 $\mu$ W ( 100 $\mu$ W MAX.)
Frequency tolerance(at +25°C)	$\pm 30 \times 10^{-6}$ , $\pm 50 \times 10^{-6}$
Equivalent series resistance	10.000~15.999MHz 60 ( $\Omega$ ) 16.000~40.000MHz 50 ( $\Omega$ )
Frequency stability	$\pm 30 \times 10^{-6}$ , $\pm 50 \times 10^{-6}$ (-10~+70°C) $\pm 50 \times 10^{-6}$ , $\pm 100 \times 10^{-6}$ (-40~+85°C)
Operating temperature range	-10~+70°C, -40~+85°C
Aging	$\pm 3$ , $\pm 5$ ppm/year
Storage temperature range	-40~+90°C

· Please consult with us for other specification. · Packing quantity 1,000pcs/reel.

● **Outline Dimensions [Unit : mm]**



● **Standard Frequencies list**

GX-60352, GX-60354			
Nominal frequency(MHz)			
12.600000	16.000000	19.800000	24.000000
12.800000	16.800000	20.000000	24.553500
13.000000	19.200000	20.400000	26.000000
14.400000	19.440000	20.945000	27.000000
15.360000	19.680000	21.250000	

● **Typical applications**

Cordless telephones, Facsimile and Computer clocks

● **Features**

It is surface mounting crystal unit of small thin.  
 As for the superior heat-resistant glass sealing, reflow soldering is possible.  
 Also automatic mounting is enabled by emboss taping. RoHS Compliant

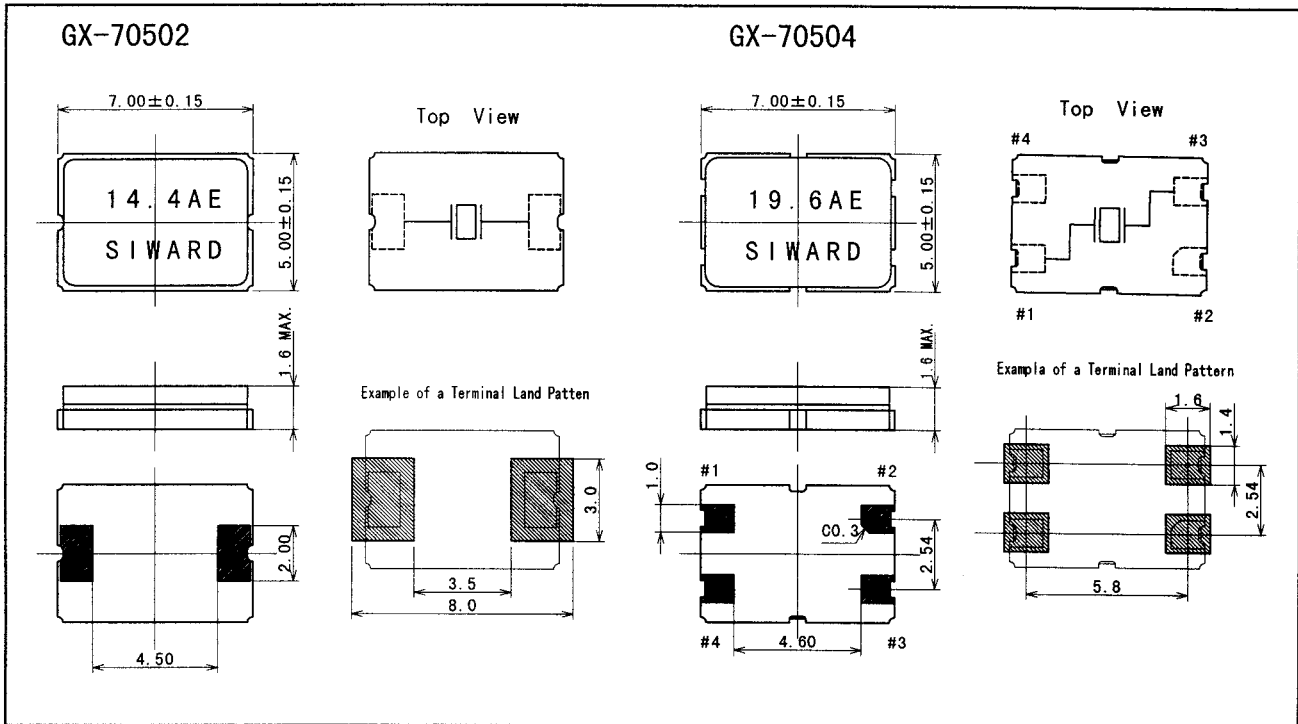


● **Typical specifications**

Type	GX-70502, GX-70504	
Frequency range	10.000~50.000MHz	30.000~60.000MHz
Crystal cut	Fundamental [AT-cut]	3rd overtone [AT-cut]
Load capacitance	18pF (Standard)	
Level of drive	10 $\mu$ W ( 100 $\mu$ W MAX.)	
Frequency tolerance(at +25°C)	$\pm 30 \times 10^{-6}$ , $\pm 50 \times 10^{-6}$	
Equivalent series resistance	10.000~15.999MHz 60 ( $\Omega$ ) 16.000~40.000MHz 50 ( $\Omega$ )	80 ( $\Omega$ )
Frequency stability	$\pm 30 \times 10^{-6}$ , $\pm 50 \times 10^{-6}$ (-10~+70°C) $\pm 50 \times 10^{-6}$ , $\pm 100 \times 10^{-6}$ (-40~+85°C)	
Operating temperature range	-10~+70°C, -40~+85°C	
Aging	$\pm 3$ , $\pm 5$ ppm/year	
Storage temperature range	-40~+90°C	

· Please consult with us for other specification. · Packing quantity 1,000pcs/reel.

● **Outline Dimensions** [Unit : mm]



● **Typical applications**

Cordless telephones, Facsimile and Computer clocks

● **Features**

It is surface mounting crystal unit of small thin.  
 As for the superior heat-resistant glass sealing,  
 a reflow soldering is possible.  
 Also automatic mounting is enabled by emboss taping. RoHS Compliant

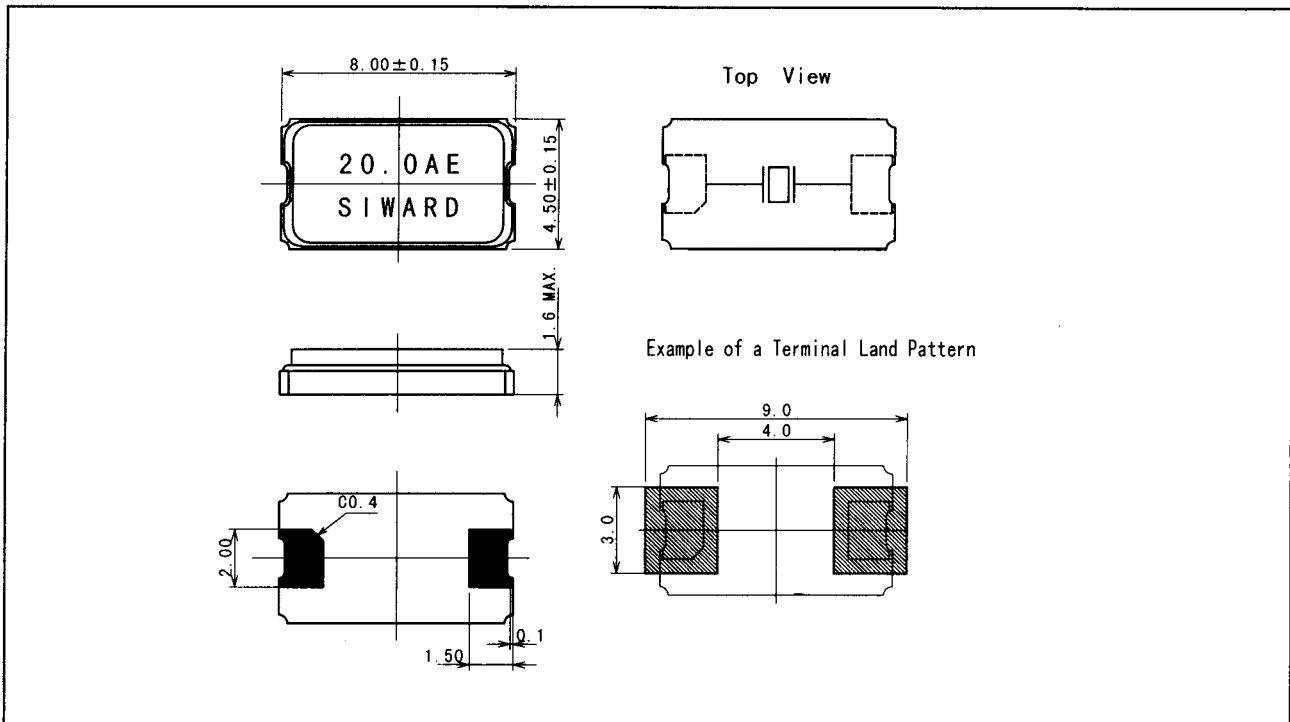


● **Typical specifications**

Type	GX-80452	
Frequency range	10.000~50.000MHz	30.000~60.000MHz
Crystal cut	Fundamental [AT-cut]	3rd overtone [AT-cut]
Load capacitance	18pF (Standard)	
Level of drive	10 μW ( 100 μW MAX.)	
Frequency tolerance(at +25°C)	±30×10 <sup>-6</sup> , ±50×10 <sup>-6</sup>	
Equivalent series resistance	10.000~15.999MHz 60 (Ω) 16.000~40.000MHz 50 (Ω)	80 (Ω)
Frequency stability	±30×10 <sup>-6</sup> , ±50×10 <sup>-6</sup> (-10~+70°C) ±50×10 <sup>-6</sup> , ±100×10 <sup>-6</sup> (-40~+85°C)	
Operating temperature range	-10~+70°C, -40~+85°C	
Aging	±3, ±5ppm/year	
Storage temperature range	-40~+90°C	

· Please consult with us for other specification. · Packing quantity 1,000pcs/reel.

● **Outline Dimensions** [Unit : mm]



● **Typical applications**

Microcomputer, VTR, Cordless Phones, Communication Equipments

● **Features**

The LP series is a highly reliable resistance-weld sealing is adopted to assure high realization.

RoHS Compliant



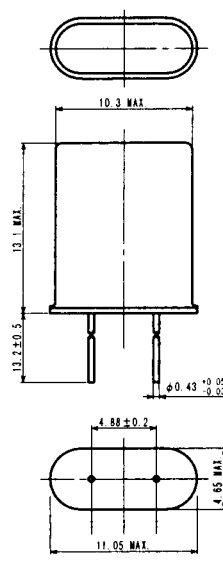
● **Typical specifications**

Type	HC-49/U (DIP), (SMD)		
Frequency range	1.500~30.0MHz	20.0~90.0MHz	70.0~160.0MHz
Crystal cut	Fundamental [AT]	3rd overtone [AT]	5th overtone [AT]
Frequency tolerance(at +25°C)	$\pm 10, \pm 15, \pm 20, \pm 30, \pm 50 \times 10^{-6}$		
Frequency stability	$\pm 30 \times 10^{-6}$		
Operating temperature range	-10~+60°C		
Equivalent series resistance	See Table 1		
Load capacitance	Series, 16pF, 20pF, 30pF		
Shunt capacitance	7pF MAX.		
Level of drive	10 $\mu$ W ( 1000 $\mu$ W MAX. )		
Aging	$\pm 3, \pm 5$ ppm/year		
Storage temperature range	-40~+90°C		

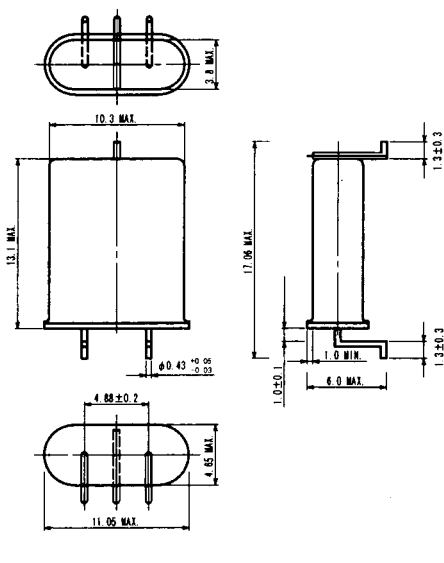
Please consult with us for other specification. Packing quantity 1,000pcs/box.

● **Outline Dimensions** [Unit : mm]

**HC-49/U (DIP)**



**HC-49/U (SMD)**



Holder	H
HC-49/U	13.1
HC-49/U1	9.5
HC-49/U2	11.0
HC-49/U3	11.4

● **Table 1.** HC-49/U Equivalent series resistance (ESR)

AT Fundamental	ESR(Ω)	AT Fundamental	ESR(Ω)	AT 3rd Over tone	ESR(Ω)
1.5~1.99 MHz	700	4.5~4.99 MHz	70	20.0~24.99 MHz	45
2.0~2.99 MHz	500	5.0~6.99 MHz	50	25.0~90.0 MHz	40
3.0~3.19 MHz	300	7.0~9.99 MHz	35	<b>AT 5th Over tone</b>	ESR(Ω)
3.2~3.99 MHz	150	10.0~30.0 MHz	25	70.0~160.0 MHz	70
4.0~4.49 MHz	90				

■ Applications

Cordless Telephones, Facsimile, Copy Machine

■ Features

- Dimensions ( 12.3x4.7xH )
- Metal Package
- Leadless Type • Resistance Sealed
- Tight Tolerance and Stability
- SMD Lower Height Design
- RoHS Compliant

■ Specifications

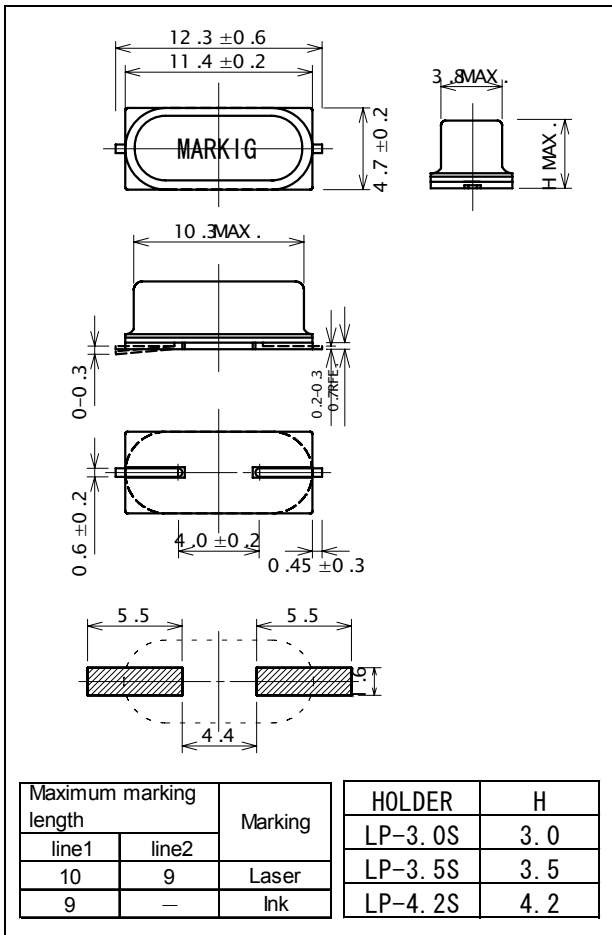


Type	LP-3.0S		LP-3.5S / LP-4.2S	
Nominal frequency range	10~40 MHz	30~80 MHz	3.5~40 MHz	30~80 MHz
Crystal cut	Fundamental [AT cut]	3rd overtone [AT cut]	Fundamental [AT cut]	3rd overtone [AT cut]
Storage temperature range	-40~+90°C			
Operating temperature range	-10~+70°C ( -40~+85°C )			
Frequency temperature characteristics (Ref. to +25°C)	±50 × 10 <sup>-6</sup>			
Frequency tolerance(at +25°C)	±50 × 10 <sup>-6</sup>			
Equivalent series resistance	Please refer to Table ESR			
Load capacitance	Series, 10pF, 12pF, 16pF			
Shunt capacitance	5pF max.			
Level of drive	10 μW(100 μW max.)			

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Package quantity : 1,000pcs max./reel

■ Outline Dimensions [unit:mm]



■ Table ESR

Frequency	ESR(Ω)
Fundamental	
3.500~ 3.999	150
4.000~ 4.999	120
5.000~ 5.999	100
6.000~ 8.999	80
9.000~ 9.999	60
10.000~12.999	50
13.000~18.999	40
19.000~40.000	30
3rd overtone	
Frequency	ESR(Ω)
30.000~44.999	80
45.000~59.999	70
60.000~79.999	60

■ Applications

Video camera, Audio Equipment  
Cordless Telephones, HDD

■ Features

Dimensions ( 11.35x4.8xH )  
Industry Standard Package  
Leadless Type • Resistance Sealed  
Tight Tolerance and Stability  
RoHS Compliant



■ Specifications

Type	LP-2.0		LP-2.5 / LP-3.5	
Nominal frequency range	10~40 MHz	30~80 MHz	3.5~40 MHz	30~80 MHz
Crystal cut	Fundamental [AT cut]	3rd overtone [AT cut]	Fundamental [AT cut]	3rd overtone [AT cut]
Storage temperature range	-40~+90°C			
Operating temperature range	-10~+70°C ( -40~+85°C )			
Frequency temperature characteristics (Ref. to +25°C)	±50 × 10 <sup>-6</sup>			
Frequency tolerance(at +25°C)	±50 × 10 <sup>-6</sup>			
Equivalent series resistance	Please refer to Table ESR			
Load capacitance	Series, 10pF, 12pF, 16pF			
Shunt capacitance	5pF max.			
Level of drive	10 μ W(100 μ W max.)			

Please consult with us for dimensions and angles you expected. [sales@mail.siward.com.tw](mailto:sales@mail.siward.com.tw)

Package quantity : 1,000pcs max./reel

■ Outline Dimensions [unit:mm]

Maximum marking length		Marking	HOLDER	H
line1	line2		LP-2.0	2.2
10	9	Laser	LP-2.5	2.5
9	—	Ink	LP-3.5	3.5

■ Table ESR

Frequency	ESR(Ω)
Fundamental	
3.500~ 3.999	150
4.000~ 4.999	120
5.000~ 5.999	100
6.000~ 8.999	80
9.000~ 9.999	60
10.000~12.999	50
13.000~18.999	40
19.000~40.000	30
3rd overtone	
30.000~44.999	80
45.000~59.999	70
60.000~80.000	60