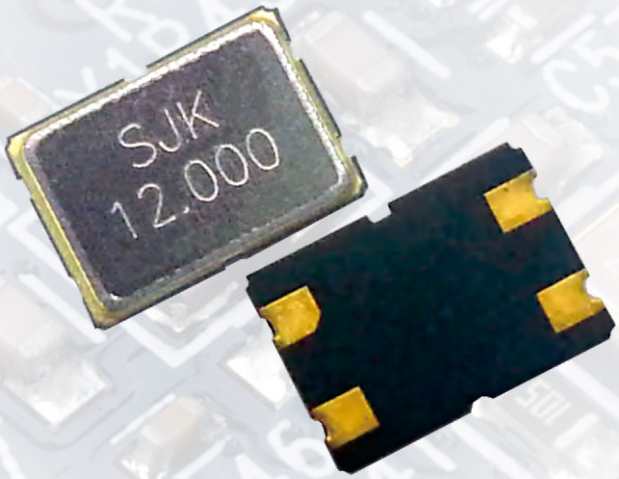
SJK



深圳市晶科鑫实业有限公司
SHENZHEN CRYSTAL TECHNOLOGY INDUSTRIAL CO.,LTD

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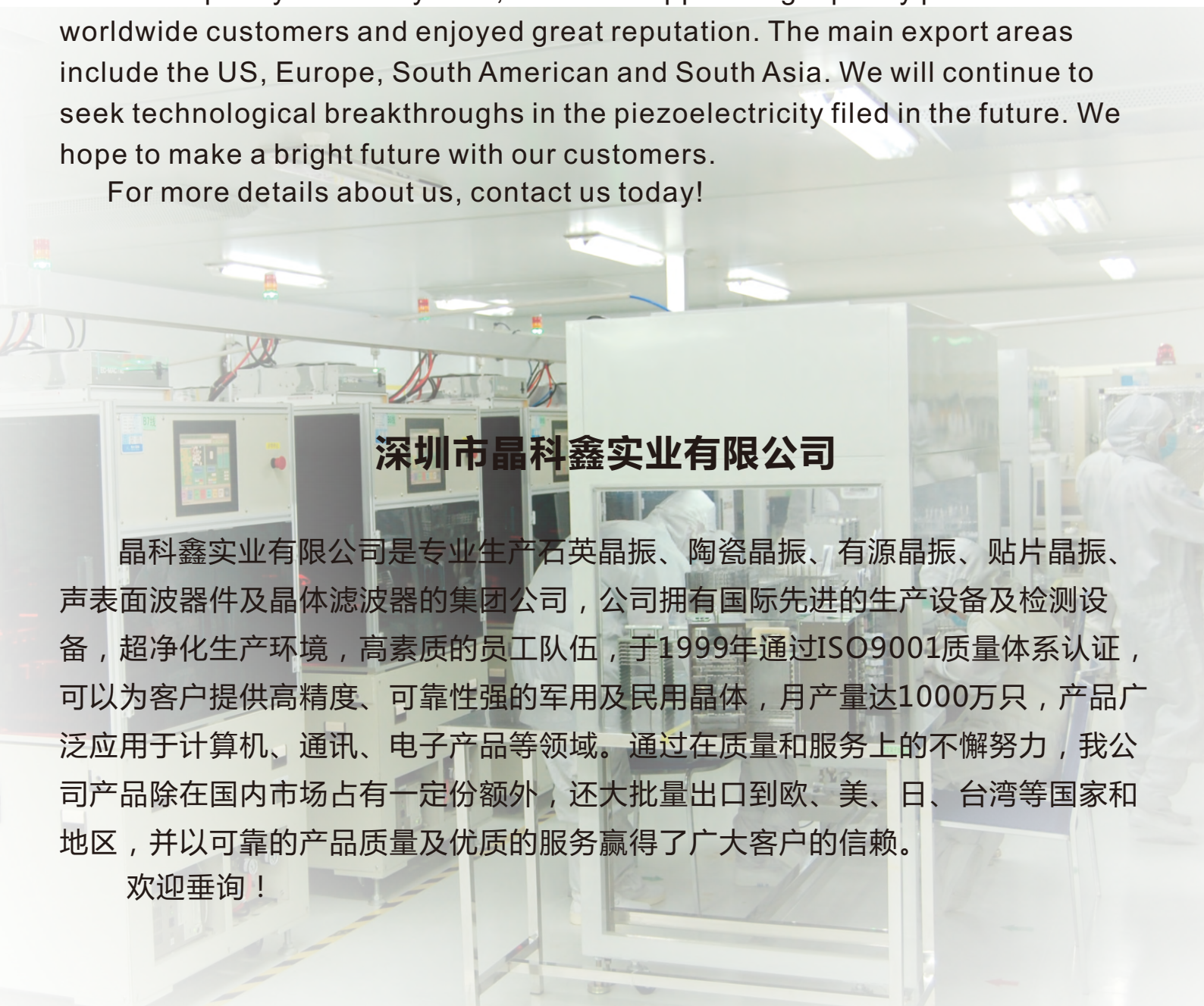
公司简介 Brief Introduction

Shenzhen Crystal Technology Industrial Co.,Ltd.

SJK is a professional manufacturer and export of quartz crystals, SMD X'TAL, SMD CXO, SMD VCXO, SMD TCXO, ceramic resonators (Filter, SMD), Saw devices. Products are wildly applied in the field of communication, computer, TV set, acoustics equipment, wireless communication, etc. Our full capacity can reach 100 million piece per year.

All the modern production facilities and technologies are imported from Japan and USA, With more than 15-year experience, powerful R&D team and ISO 9001 quality control system, we have supplied high quality products to worldwide customers and enjoyed great reputation. The main export areas include the US, Europe, South American and South Asia. We will continue to seek technological breakthroughs in the piezoelectricity filed in the future. We hope to make a bright future with our customers.

For more details about us, contact us today!



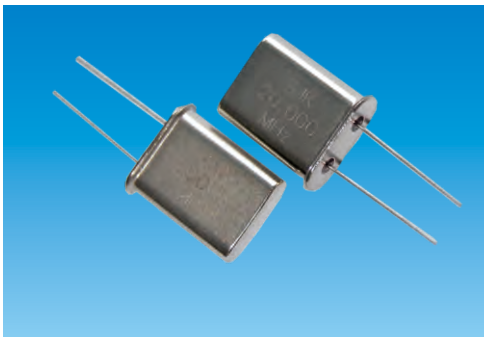
深圳市晶科鑫实业有限公司

晶科鑫实业有限公司是专业生产石英晶振、陶瓷晶振、有源晶振、贴片晶振、声表面波器件及晶体滤波器的集团公司，公司拥有国际先进的生产设备及检测设备，超净化生产环境，高素质的员工队伍，于1999年通过ISO9001质量体系认证，可以为客户提供高精度、可靠性强的军用及民用晶体，月产量达1000万只，产品广泛应用于计算机、通讯、电子产品等领域。通过在质量和服务上的不懈努力，我公司产品除在国内市场占有一定份额外，还大批量出口到欧、美、日、台湾等国家和地区，并以可靠的产品质量及优质的服务赢得了广大客户的信赖。

欢迎垂询！

Crystal Resonators

Series 6A, Resistance Welded HC-49/U Package



Feature

- Height 13.46mm.
- A resistance weld completely sealed type.
- The frequency stability is good, the reliability is high.
- Copes with high density mounting and is the optimum for Mass production.

Electrical Specifications

Item / Type	HC-49/U Crystal Resonators / 6A
Frequency Range	**1.843MHz to 150.000MHz**
Frequency Tolerance(at25℃)	±30ppm(Standard), or specify
Frequency Stability Over Operating Temperature Characteristics	±30ppm(Standard), or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-55°C ~ +125°C
Shunt Capacitance(C_0)	7pF Max
Drive Level(Typical)	100 μ Watts Typ.
Load Capacitance(C_L)	Series, 16pF, 20pF, 30pF, 32pF, or specify
Aging @ at 25°C 1st year(Max)	±5ppm / Year Maximum
Insulation Resistance	500 Megaohms Minimum at 100VDC

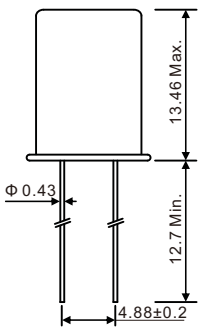
Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

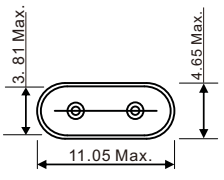
Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
1.843MHz~1.999MHz	350Max.	Fundamental/AT	6.000MHz~6.999MHz	50Max.	Fundamental/AT
2.000MHz~2.399MHz	300Max.	Fundamental/AT	7.000MHz~9.999MHz	40Max.	Fundamental/AT
2.400MHz~2.999MHz	200Max.	Fundamental/AT	10.000MHz~12.999MHz	30Max.	Fundamental/AT
3.000MHz~3.199MHz	150Max.	Fundamental/AT	13.000MHz~30.000MHz	25Max.	Fundamental/AT
3.200MHz~3.499MHz	100Max.	Fundamental/AT	24.000MHz~29.999MHz	50Max.	Third Overtone
3.500MHz~3.899MHz	90Max.	Fundamental/AT	30.000MHz~65.000MHz	40Max.	Third Overtone
3.900MHz~4.099MHz	70Max.	Fundamental/AT	60.000MHz~99.999MHz	90Max.	Third Overtone
4.100MHz~5.999MHz	60Max.	Fundamental/AT	100.000MHz~150.000MHz	60Max.	Third / Fifth Overtone

Frequency Stability Us Operating Temperature Range

Temperature Range	Frequency Stability					
	+/-10ppm	+/-15ppm	+/-20ppm	+/-30ppm	+/-40ppm	+/-50ppm
-10℃~+60℃	√	√	√	√	√	√
-20℃~+70℃	√	√	√	√	√	√
-40℃~+85℃		√	√	√	√	√

Dimensions [mm]





SJK-6A-

20.000	20	30	40	F	A	30
Frequency e.g: 20.000:20.000 MHz	Load capacitance e.g: 20:20pF s:series	Frequency Tolerance e.g: 30:±30ppm	E.S.R.max e.g: 40:40Ω max	Oscillate Mode: F:Fundemental 3:3rd overtone 5:5th overtone	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 30:±30ppm

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Crystal Resonators

Series 6B, Resistance Welded HC-49/S Package

Feature

- Height 3.5mm, The volume is compact at about one-fouth the former product (HC-49/U).
- A resistance weld completely sealed type.
- The frequency stability is good, the reliability is high.
- Copes with high density mounting and is the optimum for Mass production.

Electrical Specifications

Item / Type	HC-49/S Quartz Crystal / 6B
Frequency Range	**3.000MHz to 100.000MHz**
Frequency Tolerance(at25℃)	±30ppm(Standard), or specify
Frequency Stability Over Operating Temperature Characteristics	±30ppm(Standard), or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-40°C ~ +85°C
Shunt Capacitance(C_0)	7pF Max
Drive Level	100 μ Watts Typ.
Load Capacitance(C_L)	Series, 16pF, 20pF, 30pF, 32pF, or specify
Aging (@ at 25°C)	±5ppm / Year Maximum
Insulation Resistance	500 Megaohms Minimum at 100VDC

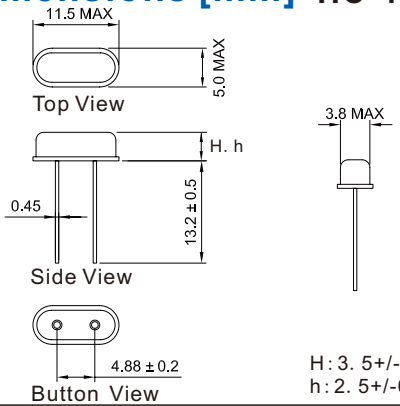
Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
3.000MHz~5.999MHz	150Max.	Fundamental/AT	24.000MHz~40.320MHz	30Max.	Fundamental/AT
6.000MHz~7.999MHz	60Max.	Fundamental/AT	24.000MHz~29.999MHz	100Max.	Third Overtone/AT
8.000MHz~15.999MHz	50Max.	Fundamental/AT	30.000MHz~49.999MHz	80Max.	Third Overtone/AT
16.000MHz~30.000MHz	30Max.	Fundamental/AT	50.000MHz~100.000MHz	60Max.	Third Overtone/AT

Frequency Stability Us Operating Temperature Range

Temperature Range	Frequency Stability					
	+/-10ppm	+/-15ppm	+/-20ppm	+/-30ppm	+/-40ppm	+/-50ppm
-10℃~+60℃	√	√	√	√	√	√
-20℃~+70℃	√	√	√	√	√	√
-40℃~+85℃		√	√	√	√	√

Dimensions [mm] HC-49S



SJK-6B-

20. 000	20	30	40	F	B	30	H
Frequency e.g: 20.000:20.000 MHz	Load capacitance e.g: 20:20pF s:series	Frequency Tolerance e.g: 30:±30ppm	E.S.R.max e.g: 40:40Ω max	Oscillate Mode: F:Fundemental 3:3rd overtone 5:5th overtone	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 30:±30ppm	H:Normal (3.5mm) h:Low (2.5mm)

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SMD Crystal Resonators

Series 6C, Resistance Welded HC-49/S Surface MountPackage

Feature

- Height 4.0mm, or 3.0mm, Compact crystal unit for surface mount.
- Able to by means of a metal case and completely sealed high
- resolution characteristics.
- Copes with high density mounting and is the optimum for mass production.

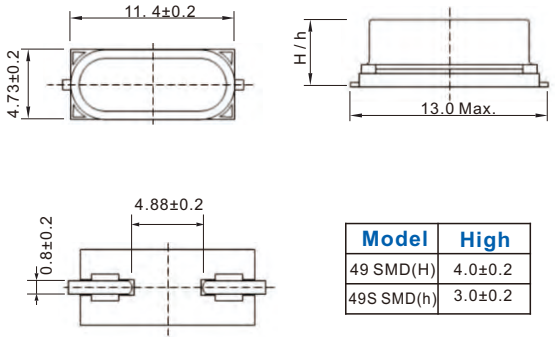
Electrical Specifications

Item / Type	HC-49/SMD Quartz Crystal / 6C
Frequency Range	**3.000MHz to 100.000MHz**
Frequency Tolerance(at25℃)	±30ppm(Standard), or specify
Frequency Stability Over Operating Temperature Characteristics	±30ppm(Standard), or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-40°C ~ +85°C
Shunt Capacitance(C_0)	7pF Max
Drive Level	100 μ Watts Typ.
Load Capacitance(C_L)	Series, 16pF, 20pF, 30pF, 32pF, or specify
Aging (@ at 25°C)	±5ppm / Year Maximum
Insulation Resistance	500 Megaohms Minimum at 100VDC

Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

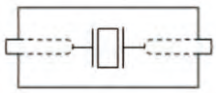
Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
3.000MHz~5.999MHz	150Max.	Fundamental/AT	24.000MHz~40.320MHz	30Max.	Fundamental/AT
6.000MHz~7.999MHz	60Max.	Fundamental/AT	24.000MHz~29.999MHz	120Max.	Third Overtone/AT
8.000MHz~15.999MHz	50Max.	Fundamental/AT	30.000MHz~49.999MHz	80Max.	Third Overtone/AT
16.000MHz~30.000MHz	30Max.	Fundamental/AT	50.000MHz~100.000MHz	60Max.	Third Overtone/AT

Dimensions [mm]

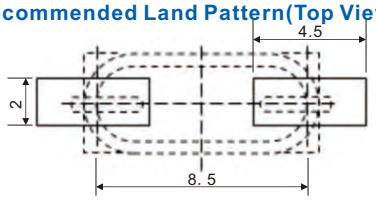


Model	High
49 SMD(H)	4.0±0.2
49S SMD(h)	3.0±0.2

Internal Connections(Top View)



Recommended Land Pattern(Top View)



SJK-6C-

16.000	18	30	30	F	B	30	H
Frequency e.g: 16.000:16.000 MHz	Load capacitance e.g: 18:18pF s:series	Frequency Tolerance e.g: 30:±30ppm	E.S.R.max e.g: 30:30Ω max	Oscillate Mode: F:Fundemental 3:3rd overtone 5:5th overtone	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 30:±30ppm	H:Normal (4.0mm) h:Low (3.0mm)

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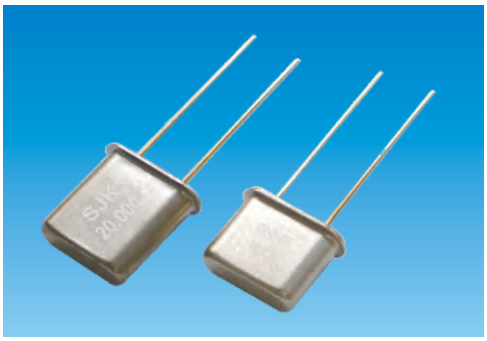
MHZ Crystal Resonators

Series 6D(UM-1),6E(UM-5) Resistance Welded Package



Feature

- Excellent frequency temperature characteristics extending across a wide temperature range.
- Excellent aging characteristics.
- Uniform frequency tuning range and modulation sensitivity.
- Excellent shock resistance.

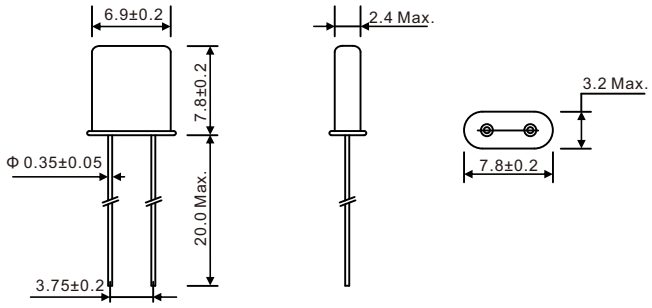
Electrical Specifications

Item / Type	UM-1 /UM-5 Crystal Resonators / 6D /6E
Frequency Range	**4.000MHz to 200.000MHz**
Frequency Tolerance(at25℃)	±10ppm~±50ppm, or specify
Frequency Stability	See table2
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Mode of Vibration	Fundamental /3rd Overtone /5th Overtone /7th Overtone
Shunt Capacitance(C_0)	4.5pF~7pF(Typ.)
Drive Level(Typical)	100 μ Watts Typ.
Load Capacitance(C_L)	Series or 9pF ~ 50pF
Equivalent Series Resistance(ESR)	See table1
Aging @ at 25°C 1st year(Max)	±5ppm / Year Maximum

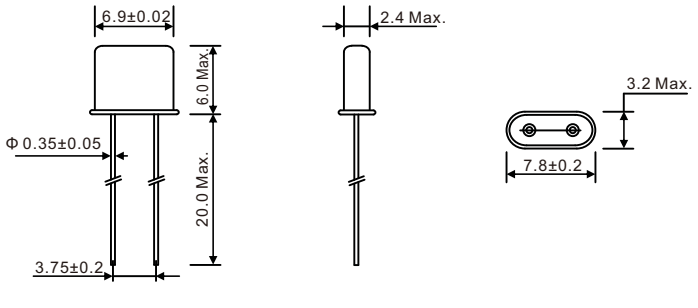
Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
4.000MHz~4.999MHz	100Max.	Fundamental	14.000MHz~19.999MHz	40Max.	Fundamental
5.000MHz~5.999MHz	90Max.	Fundamental	20.000MHz~23.999MHz	30Max.	Fundamental
6.000MHz~6.999MHz	80Max.	Fundamental	24.000MHz~34.999MHz	40Max.	3rd Overtone
7.000MHz~9.999MHz	60Max.	Fundamental	35.000MHz~100.000MHz	80Max.	3rd Overtone
10.000MHz~13.999MHz	50Max.	Fundamental	100.000MHz~200.000MHz	100Max.	5th / 7th Overtone

Dimensions [mm]



UM-1



UM-5

SJK-	6D	24.000	16	10	30	F	B	30
	6D:UM-1 6E:UM-5	Frequency e.g: 24.000:24.000 MHz	Load capacitance e.g: 16:16pF s:series	Frequency Tolerance e.g: 10:±10ppm	E.S.R.max e.g: 30:30Ω max	Oscillate Mode: F:Fundemental 3:3rd overtone 5:5th overtone 7:7th overtone	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 30:±30ppm

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SMD Crystal Resonators

Series 6F, Seam Sealed Ceramic 7.0×5mm Surface Mount Package

Feature

- Ultra-thin, thickness 1.0mm.
- Leadless type.
- High precision characteristic covering up to high frequency range.
- Automatic mounting.
- Emboss taping specification.
- Reflow soldering.

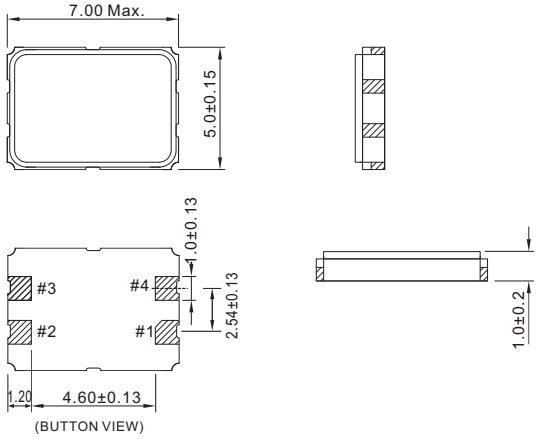
Electrical Specifications

Item / Type	SMD 7050 Crystal Resonator / 6F
Frequency Range	**6.000MHz to100.000MHz**
Frequency Tolerance(at25℃)	±10ppm, ±20ppm, ±30ppm, or specify
Frequency Stability	±10ppm, ±20ppm, ±30ppm, or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-40°C ~ +85°C
Drive Level(Typical)	10μW ~ 100 μW(10μW Typical)
Load Capacitance(C_L)	Series, 16pF, 20pF, 30pF, 32pF, or specify
Equivalent Series Resistance(ESR) and Mode	See table1
Aging @ at 25°C 1st year(Max)	±1ppm, ±3ppm / Year Maximum
Size(mm)	7.0mm×5.0mm

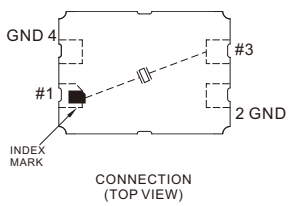
Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
8.000MHz~7.999MHz	70Max.	Fundamental	32.000MHz~44.999MHz	60Max.	Third Overtone / AT
8.000MHz~15.999MHz	40Max.	Fundamental	45.000MHz~89.999MHz	50Max.	Third Overtone / AT
16.000MHz~31.999MHz	40Max.	Fundamental	90.000MHz~110.000MHz	50Max.	Third Overtone / AT

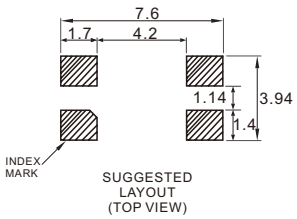
Dimensions [mm]



Internal Connections(Top View)



Recommended Land Pattern(Top View)



SJK-6F-

16. 000	20	20	35	F	A	30
Frequency e.g: 16.000:16.000 MHz	Load capacitance e.g: 20:20pF s:series	Frequency Tolerance e.g: 20:±20ppm	E.S.R.max e.g: 35:35Ω max	Oscillate Mode: F:Fundemental 3:3rd overtone 5:5th overtone	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 30:±30ppm

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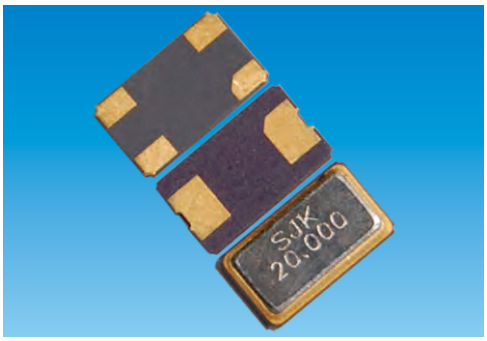
SMD Crystal Resonators

Series 6G, Seam Sealed Ceramic 6×3.5mm Surface Mount Package



Feature

- Ultra-thin, thickness 1.0mm.
- Leadless type.
- High precision characteristic covering up to high frequency range.
- Automatic mounting.
- Emboss taping specification.
- Reflow soldering.

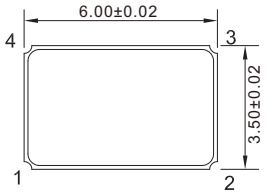
Electrical Specifications

Item / Type	SMD 6035 Crystal Resonator / 6G
Frequency Range	**8.000MHz to 80.000MHz**
Frequency Tolerance(at25℃)	±30ppm~±50ppm, or specify
Frequency Stability	±30ppm~±50ppm, or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-55°C ~ +125°C
Shunt Capacitance(C_0)	5.0pF Max
Drive Level(Typical)	10μW ~ 100 μW
Load Capacitance(C_L)	Series, 16pF, 20pF, 30pF, 32pF, or specify
Equivalent Series Resistance(ESR) and Mode	See table1
Aging @ at 25°C 1st year(Max)	±3ppm / Year
Shock Resistance	Drop test of 3times on 2mm stainless plate from 75cm height

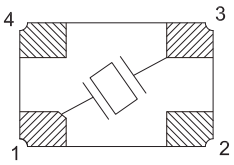
Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
8.000MHz~9.999MHz	70Max.	Fundamental	30.000MHz~44.999MHz	60Max.	Third Overtone / AT
10.000MHz~29.999MHz	40Max.	Fundamental	45.000MHz~80.000MHz	50Max.	Third Overtone / AT

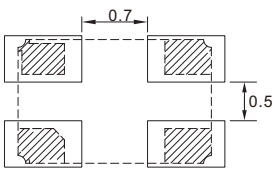
Dimensions [mm]

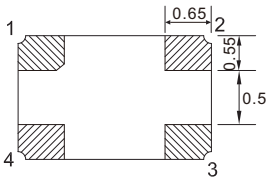


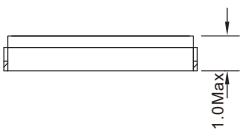
Internal Connections(Top View)



Recommended Land Pattern(Top View)







SJK-

6G4	16. 000	20	20	35	F	A	30
6G2: 2Pads 6G4: 4Pads	Frequency e.g: 16.000:16.000 MHz	Load capacitance e.g: 20:20pF s:series	Frequency Tolerance e.g: 20:±20ppm	E.S.R.max e.g: 35:35Ω max	Oscillate Mode: F:Fundemental 3:3rd overtone 5:5th overtone 7:7th overtone	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 30:±30ppm

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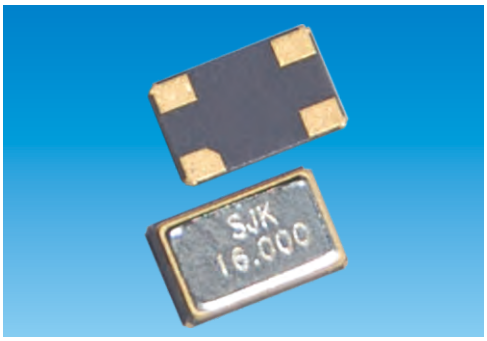
SMD Crystal Resonators

Series 7I, Seam Sealed Ceramic 5×3.2mm Surface Mount Package



Feature

. Ultra-thin, thickness 1.0mm.
. Leadless type.
. High precision characteristic covering up to high frequency range.
. Automatic mounting.
. Emboss taping specification.
. Suitable for reflow soldering.

Applications

. Ideally suited designed for disc drivers, Wireless communications, NB, PCs and hand-held electronic products.

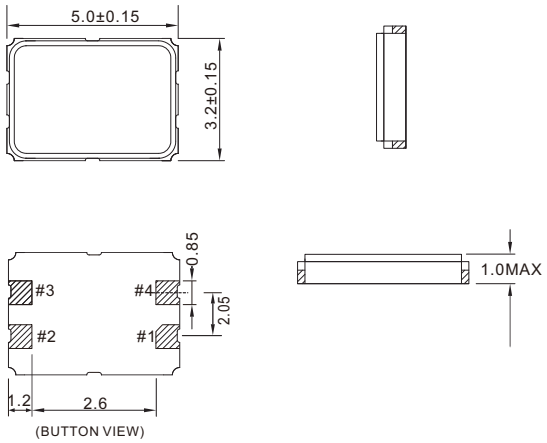
Electrical Specifications

Item / Type	SMD 5032 Crystal Resonator / 7I
Frequency Range	**8.000MHz to 48.000MHz**
Frequency Tolerance(at25℃)	±30ppm~±50ppm, or specify
Frequency Stability	±30ppm~±50ppm, or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-55°C ~ +125°C
Drive Level(Typical)	10μW ~ 100 μW
Shunt Capacitance(C_0)	5.0pF Max
Load Capacitance(C_L)	Series, 16pF, 20pF, 30pF, 32pF, or specify
Equivalent Series Resistance(ESR) and Mode	See table1
Aging @ at 25°C 1st year(Max)	±3ppm / Year
Size(L×W)	5.0mm×3.2mm

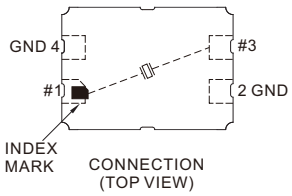
Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
8.000MHz~29.999MHz	60Max.	Fundamental	30.000MHz~48.000MHz	45Max.	Fundamental / AT

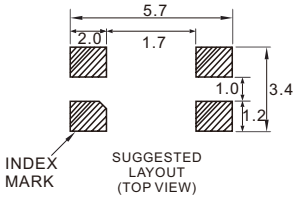
Dimensions [mm]



Internal Connections(Top View)



Recommended Land Pattern(Top View)



SJK-7I-

16. 000	20	30	60	F	30
Frequency e.g: 16.000:16.000 MHz	Load capacitance e.g: 20:20pF s:series	Frequency Tolerance e.g: 30:±30ppm	E.S.R.max e.g: 60:60Ω max	Oscillate Mode: F:Fundemental 3:3rd overtone 5:5th overtone	Temperature stability: e.g: 30:±30ppm

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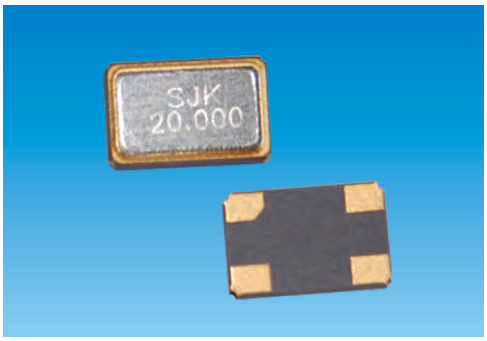
SMD Crystal Resonators

Series 6U, Seam Sealed Ceramic 4×2.5mm Surface Mount Package



Feature

- Ultra-thin, thickness 1.0mm.
- Leadless type.
- High precision characteristic covering up to high frequency range.
- Automatic mounting.
- Emboss taping specification.
- Reflow soldering.

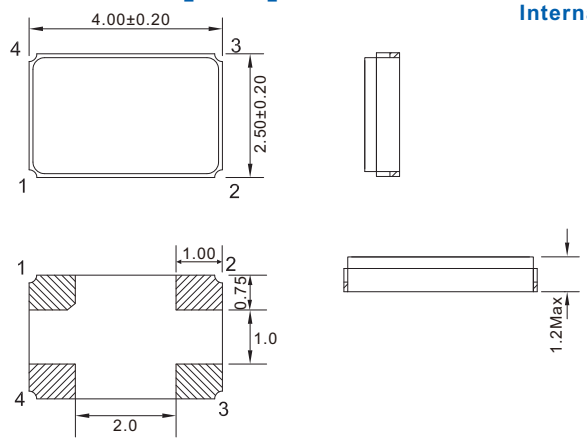
Electrical Specifications

Item / Type	SMD 4025 Crystal Resonator / 6U
Frequency Range	**12.000MHz to 48.000MHz**
Frequency Tolerance(at25℃)	±10ppm~±30ppm, or specify
Frequency Stability	±10ppm~±30ppm, or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-55°C ~ +125°C
Shunt Capacitance(C_0)	5.0pF Max
Drive Level(Typical)	10μW ~ 100 μW
Load Capacitance(C_L)	Series, 16pF, 20pF, 30pF, 32pF, or specify
Equivalent Series Resistance(ESR) and Mode	See table1
Aging @ at 25°C 1st year(Max)	±3ppm / Year
Shock Resistance	Drop test of 3times on 2mm stainless plate from 75cm height

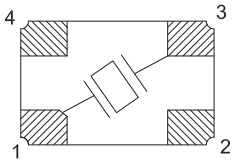
Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
12.000MHz~23.999MHz	80Max.	Fundamental	24.000MHz~48.000MHz	60Max.	Fudamental / AT

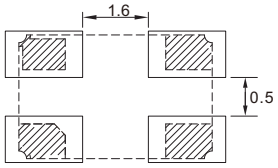
Dimensions [mm]



Internal Connections(Top View)



Recommended Land Pattern(Top View)



SJK — 6U —

16. 000	20	20	35	F	A	30
Frequency e.g: 16.000:16.000 MHz	Load capacitance e.g: 20:20pF s:series	Frequency Tolerance e.g: 20:±20ppm	E.S.R.max e.g: 35:35Ω max	Oscillate Mode: F:Fundemental 3:3rd overtone 5:5th overtone 7:7th overtone	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 30:±30ppm

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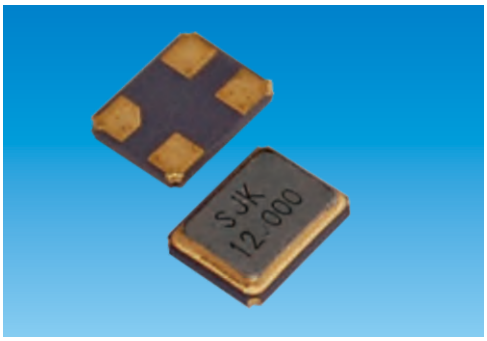
SMD Crystal Resonators

Series 7U, Seam Sealed Ceramic 3.2×2.5mm Surface Mount Package



Feature

- High precision and high frequency stability.
- Leadless type.
- Wide frequency range from 12MHz to 48MHz.
- Designed for automatic mounting and reflow soldering.
- Emboss taping specification.
- RoHS & Pb Free compliant.
- The best choice of bluetooth wireless communications, DSN, PDA, Mobile phone, PC and more.

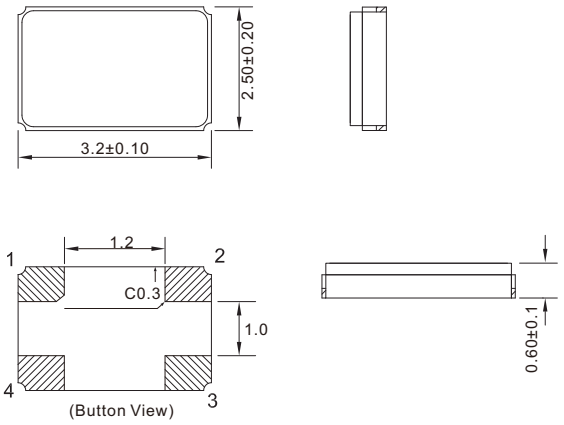
Electrical Specifications

Item / Type	SMD 3225 Crystal Resonator / 7U
Frequency Range	**12.000MHz to 48.000MHz**
Frequency Tolerance(at25℃)	±10ppm~±30ppm, or specify
Frequency Stability	±10ppm~±30ppm, or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-55°C ~ +125°C
Drive Level(Typical)	10μW ~ 100 μW
Shunt Capacitance(C_0)	5.0pF Max
Load Capacitance(C_L)	Series, 16pF, 20pF, 30pF, 32pF, or specify
Equivalent Series Resistance(ESR) and Mode	See table1
Aging @ at 25°C 1st year(Max)	±3ppm / Year
Size(L×W)	3.2mm×2.5mm

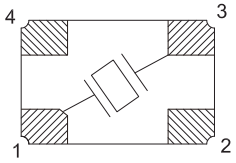
Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
12.000MHz~23.999MHz	80Max.	Fundamental	24.000MHz~48.000MHz	60Max.	Fundamental / AT

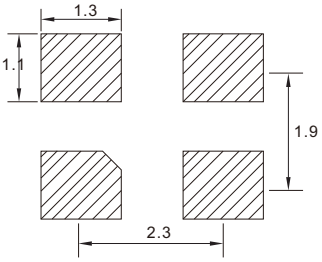
Dimensions [mm]



Internal Connections(Top View)



Recommended Land Pattern(Top View)



SJK-7U-

16. 000	9	10	80	A	15
Frequency e.g: 16.000:16.000 MHz	Load capacitance e.g: 9:9pF s:series	Frequency Tolerance e.g: 10:±10ppm	E.S.R.max e.g: 80:80Ω max	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 15:±15ppm

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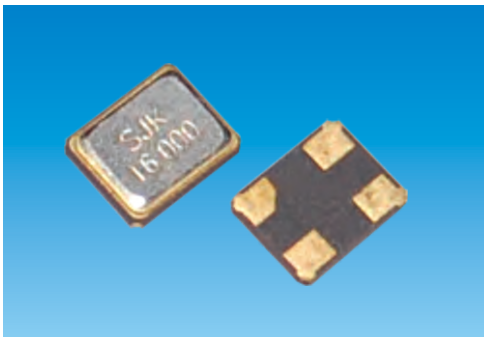
SMD Crystal Resonators

Series 7E, Seam Sealed Ceramic 2.5×2.0mm Surface Mount Package



Feature

- High frequency stability and high reliability.
- Leadless type.
- High precision characteristic covering up to high frequency range.
- Automatic mounting.
- Emboss taping specification.
- Reflow soldering.
- Excellent heat resistance and environmental characteristics.

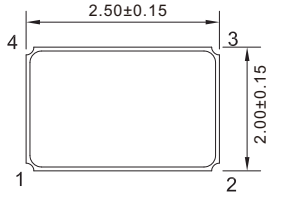
Electrical Specifications

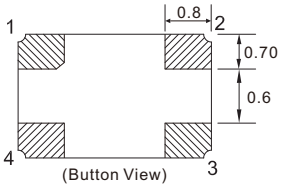
Item / Type	SMD 2520 Crystal Resonator / 7E
Frequency Range	**12.000MHz to 48.000MHz**
Frequency Tolerance(at25℃)	±10ppm~±30ppm, or specify
Frequency Stability	±10ppm~±30ppm, or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-55°C ~ +125°C
Drive Level(Typical)	10μW ~ 100 μW
Shunt Capacitance(C_0)	3pF Max
Load Capacitance(C_L)	Series, 12pF, 16pF, 20pF, 30pF, 32pF, or specify
Equivalent Series Resistance(ESR) and Mode	See table1
Aging @ at 25°C 1st year(Max)	±3ppm / Year
Size(L×W)	2.5mm×2.0mm

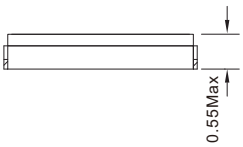
Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
12.000MHz~23.999MHz	100Max.	Fundamental	24.000MHz~48.000MHz	60Max.	Fundamental / AT

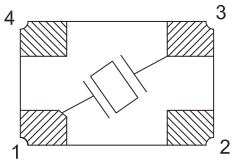
Dimensions [mm]



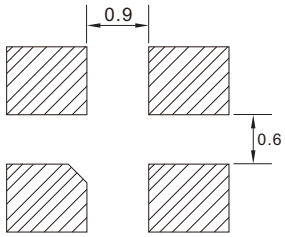




Internal Connections(Top View)



Recommended Land Pattern(Top View)



SJK-7E-

16. 000	9	10	80	A	15
Frequency e.g: 16.000:16.000 MHz	Load capacitance e.g: 9:9pF s:series	Frequency Tolerance e.g: 10:±10ppm	E.S.R.max e.g: 80:80Ω max	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 15:±15ppm

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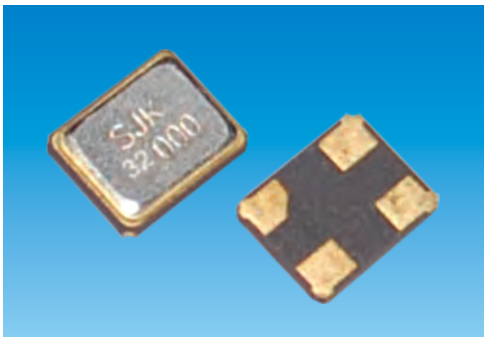
SMD Crystal Resonators

Series 7F, Seam Sealed Ceramic 2.0×1.6mm Surface Mount Package



Feature

- High precision and high frequency stability.
- Leadless type.
- Wide frequency range from 20MHz to 54MHz.
- Automatic mounting.
- Emboss taping specification.
- Reflow soldering.
- RoHS & Pb Free compliant.

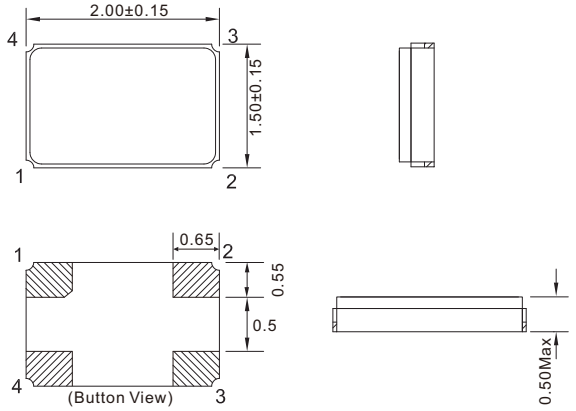
Electrical Specifications

Item / Type	SMD 2016 Crystal Resonator / 7F
Frequency Range	**20.000MHz to 54.000MHz**
Frequency Tolerance(at25℃)	±10ppm~±30ppm, or specify
Frequency Stability	±10ppm~±30ppm, or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-55°C ~ +125°C
Drive Level(Typical)	10μW ~ 100 μW
Shunt Capacitance(C_0)	3pF Max
Load Capacitance(C_L)	Series, 12pF, 16pF, 20pF, 30pF, 32pF, or specify
Equivalent Series Resistance(ESR) and Mode	See table1
Aging @ at 25°C 1st year(Max)	±3ppm / Year
Size(L×W)	2.0mm×1.6mm

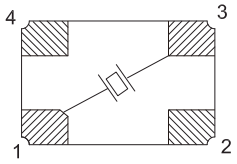
Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
20.000MHz~29.999MHz	100Max.	Fundamental	30.000MHz~54.000MHz	80Max.	Fundamental / AT

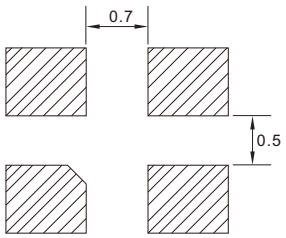
Dimensions [mm]



Internal Connections(Top View)



Recommended Land Pattern(Top View)



SJK-7F-

20. 000	9	10	80	A	15
Frequency e.g: 20.000:20.000 MHz	Load capacitance e.g: 9:9pF s:series	Frequency Tolerance e.g: 10:±10ppm	E.S.R.max e.g: 80:80Ω max	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 15:±15ppm

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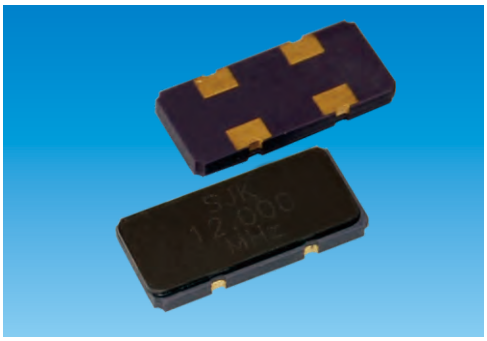
SMD Crystal Resonators

C4 Type, SMD Crystal Resonators / MHZ Band Crystal Resonators



Feature

- 11.8×5.5×1.55mm glass sealed ceramic SMD crystal resonator.
- Excellent heat resistance and high reliability.
- High frequency range from 3.2MHz to 70MHz.
- Tape & Reel package for automatic assembly.
- Excellent anti-shock performance.
- Lead Free and RoHS compliant.

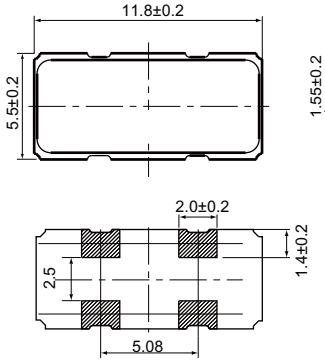
Electrical Specifications

Item / Type	SMD Crystal Resonators / C4 Type
Frequency Range	**3.200MHz to 70.000MHz**
Frequency Tolerance(at25℃)	±10ppm~±30ppm, or specify
Frequency Stability	±10ppm~±30ppm, or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-55°C ~ +125°C
Drive Level(Typical)	50μW ~ 500 μW
Shunt Capacitance(C_0)	7.0pF Max
Load Capacitance(C_L)	Series, 16pF, 20pF, 30pF, 32pF, or specify
Equivalent Series Resistance(ESR) and Mode	See table1
Aging @ at 25°C 1st year(Max)	±3ppm / Year
Size(L×W)	11.8×5.5mm

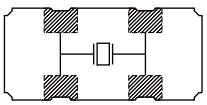
Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
3.200MHz~4.000MHz	120Max.	AT/Fundamental	12.001MHz~25.999MHz	40Max.	Third Overtone / AT
4.001MHz~6.000MHz	100Max.	AT/Fundamental	26.000MHz~40.000MHz	100Max.	Third Overtone / AT
6.0001MHz~8.000MHz	80Max.	AT/Fundamental	40.001MHz~72.000MHz	80Max.	Third Overtone / AT
8.001MHz~12.000MHz	60Max.	AT/Fundamental			

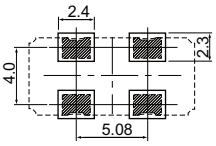
Dimensions [mm]



Internal Connections(Top View)



Recommended Land Pattern(Top View)



SJK-C4-	8.192	20	30	100	F	A	30
	Frequency e.g: 8.192:8.192 MHz	Load capacitance e.g: 20:20pF s:series	Frequency Tolerance e.g: 30:±30ppm	E.S.R.max e.g: 100:100Ω max	Oscillate Mode: F:Fundemental 3:3rd overtone 5:5th overtone	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 30:±30ppm

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SMD Crystal Resonators

Series 6H, Glass Sealed Ceramic 8.0×4.5mm Surface Mount Package

Feature

- Rugged AT-cut crystal construction.
- Leadless type.
- Wide frequency range from 8MHz to 80MHz.
- Automatic mounting.
- Available on tape and reel, 1000pcs per reel.
- Suitable for reflow soldering.
- Ideally suited designed for disc drivers, NB, Pcs and hand-held electronic products.

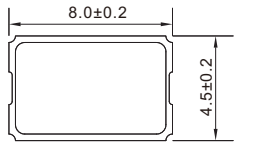
Electrical Specifications

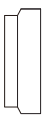
Item / Type	SMD 8045 Crystal Resonator / 6H
Frequency Range	**8.000MHz to 80.000MHz**
Frequency Tolerance(at25℃)	±10ppm~±50ppm, or specify
Frequency Stability	±10ppm~±50ppm, or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-55°C ~ +125°C
Drive Level(Typical)	10μW ~ 100 μW
Shunt Capacitance(C_0)	5.0pF Max
Load Capacitance(C_L)	Series, 16pF, 20pF, 30pF, 32pF, or specify
Equivalent Series Resistance(ESR) and Mode	See table1
Aging @ at 25°C 1st year(Max)	±3ppm, ±5ppm / Year
Size(L×W)	8.0mm×4.5mm

Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

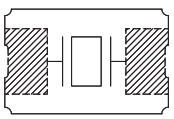
Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
8.000MHz~9.999MHz	70Max.	Fundamental	30.000MHz~44.999MHz	60Max.	Third Overtone / AT
10.000MHz~29.999MHz	40Max.	Fundamental	45.000MHz~80.000MHz	50Max.	Third Overtone / AT

Dimensions [mm]

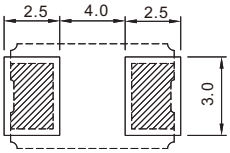


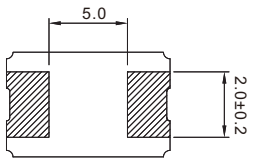


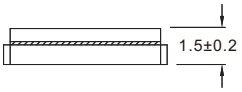
Internal Connections(Top View)



Recommended Land Pattern(Top View)







SJK-6H-

8.192	20	30	100	F	A	30
Frequency e.g: 8.192:8.192 MHz	Load capacitance e.g: 20:20pF s:series	Frequency Tolerance e.g: 30:±30ppm	E.S.R.max e.g: 100:100Ω max	Oscillate Mode: F:Fundemental 3:3rd overtone 5:5th overtone	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 30:±30ppm

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SMD Crystal Resonators

Series 6I, Glass Sealed Ceramic 5.0×3.2mm Surface Mount Package

Feature

- Ultra-thin, thickness 1.0mm.
- Leadless type.
- Wide frequency range from 10MHz to 48MHz.
- Automatic mounting.
- High frequency stability and high reliability.
- Suitable for reflow soldering.
- Ideally suited designed for disc drivers, NB, Pcs and hand-held electronic products.

Electrical Specifications

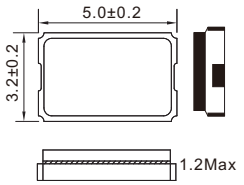
Item / Type	SMD 5032 Glass Quartz Crystal / 6I
Frequency Range	**10.000MHz to 48.000MHz**
Frequency Tolerance(at25℃)	±30ppm~±50ppm, or specify
Frequency Stability	±30ppm~±50ppm, or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-55°C ~ +125°C
Drive Level(Typical)	10μW ~ 100 μW
Shunt Capacitance(C_0)	5.0pF Max
Load Capacitance(C_L)	Series, 16pF, 20pF, 30pF, 32pF, or specify
Equivalent Series Resistance(ESR) and Mode	See table1
Aging @ at 25°C 1st year(Max)	±3ppm, ±5ppm / Year
Size(L×W)	5.0mm×3.2mm
Pad	4Pins / 2Pins

Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

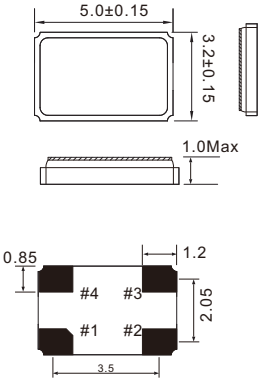
Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
10.000MHz~29.999MHz	70Max.	Fundamental	30.000MHz~48.000MHz	60Max.	Fundamental / AT

Dimensions [mm]

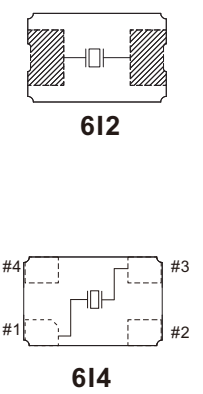
6I2



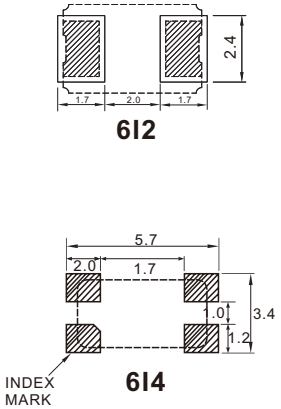
6I4



Internal Connections(Top View)



Recommended Land Pattern(Top View)



SJK-	6I2	16.000	20	30	60	F	A	30
	6I2: 2Pads 6I4: 4Pads	Frequency e.g: 16.000:16.000 MHz	Load capacitance e.g: 20:20pF s:series	Frequency Tolerance e.g: 30:±30ppm	E.S.R.max e.g: 60:60Ω max	Oscillate Mode: F:Fundemental 3:3rd overtone 5:5th overtone 7:7th overtone	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 30:±30ppm

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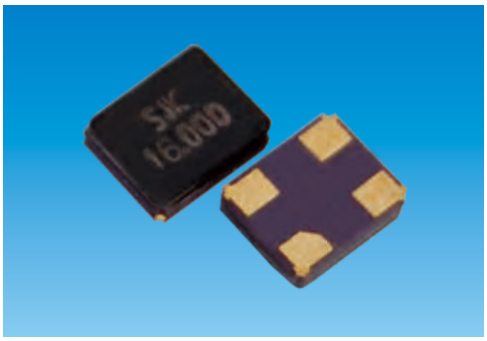
SMD Crystal Resonators

Series 7V, Glass Sealed Ceramic 3.2×2.5mm Surface Mount Package



Feature

- Ultra-thin, thickness 1.0mm.
- Leadless type.
- Wide frequency range from 10MHz to 48MHz.
- Automatic mounting.
- High frequency stability and high reliability.
- Suitable for reflow soldering.
- The best choice of Bluetooth wireless communications sets, DSN, PDA, Mobile phone, GPS, USB device and more.

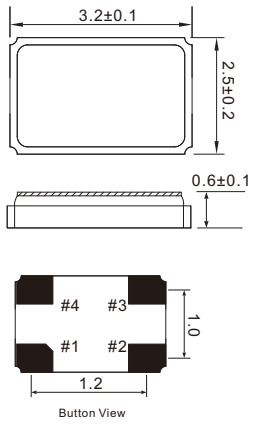
Electrical Specifications

Item / Type	SMD 3225 Glass Quartz Crystal / 7V
Frequency Range	**12.000MHz to 48.000MHz**
Frequency Tolerance(at25℃)	±10ppm~±30ppm, or specify
Frequency Stability	±10ppm~±30ppm, or specify
Operating Temperature Range	-10°C ~ +60°C, -20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range	-55°C ~ +125°C
Drive Level(Typical)	10μW ~ 100 μW
Shunt Capacitance(C_0)	5.0pF Max
Load Capacitance(C_L)	Series, 16pF, 20pF, 30pF, 32pF, or specify
Equivalent Series Resistance(ESR) and Mode	See table1
Aging @ at 25°C 1st year(Max)	±3ppm / Year
Size(L×W)	3.2mm×2.5mm
Package	Glass Sealed Ceramic Surface Mount Package

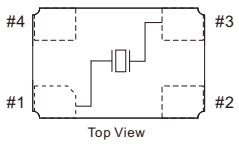
Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
12.000MHz~23.999MHz	80Max.	Fundamental	24.000MHz~48.000MHz	60Max.	Fundamental / AT

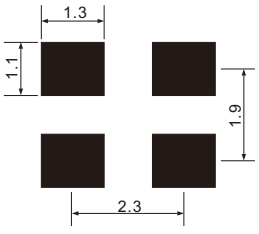
Dimensions [mm]



Internal Connections(Top View)



Recommended Land Pattern(Top View)



SJK-7V-

16.000	9	10	80	F	A	30
Frequency e.g: 16:16.000 MHz	Load capacitance e.g: 9:9pF s:series	Frequency Tolerance e.g: 10:±10ppm	E.S.R max e.g: 80:80Ω max	Oscillate Mode: F:Fundemental 3:3rd overtone 5:5th overtone	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃	Temperature stability: e.g: 30:±30ppm

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kHz Band Crystal Resonators

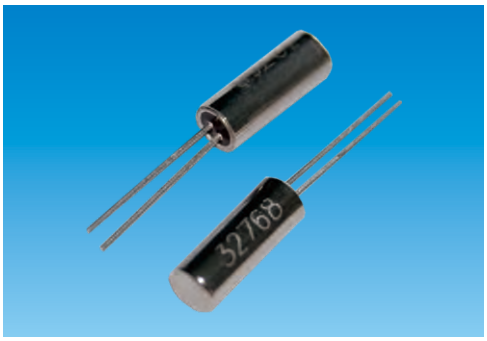
Series 6K6 & 6K8, Tuning fork Crystal Resonators

Feature

- Wide frequency range.
- High shock tolerance.
- Small size.
- Good frequency stability
- A cylindrical type tuning fork crystal resonator.

Applications

- Microprocessor systems.
- Consumer electronics.
- Instrumentation.
- Automotive electronics.

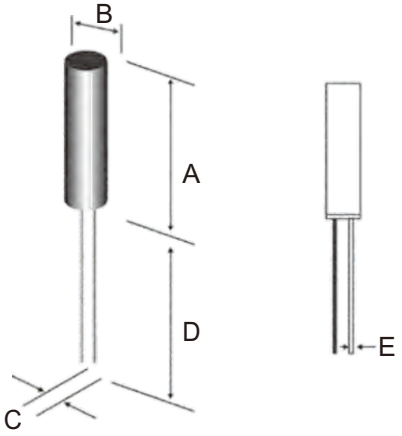


Electrical Specifications

Item / Type	kHz Quartz Crystal / 6K6 / 6K8
Frequency Range	**30.000 kHz to 350 kHz**
Frequency Tolerance (at 25°C)	±20ppm ~ ±100ppm
	32kHz~40kHz: 40Kohm Max
	40kHz~60kHz: 40Kohm Max
	60kHz~70kHz: 40Kohm Max
	70kHz~200kHz: 40Kohm Max
	200kHz~350kHz: 40Kohm Max
Turnover Temperature	25ºC ± 5ºC
Frequency Temperature Cure	-0.034 (±0.006)ppm /°C^2
Storage Temperature Range	-55°C~+125°C
Operating Temperature Range	-10°C~+60°C, -20°C~+70°C ,-40°C~+85°C
Shunt Capacitance (C_0)	1.5pF Typ
Dynamic Capacitance (C_1)	3.0fF Typ
Drive Level (Typical)	1μW Max
Load Capacitance (C_L)	6.0pF ~ 12.5pF, or specify
Aging @ 25°C 1st year (Max)	±3ppm, ±5ppm / Year
Size	2×6mm(6K6), 3×8mm(6K8)

Dimensions [mm]

See table 1



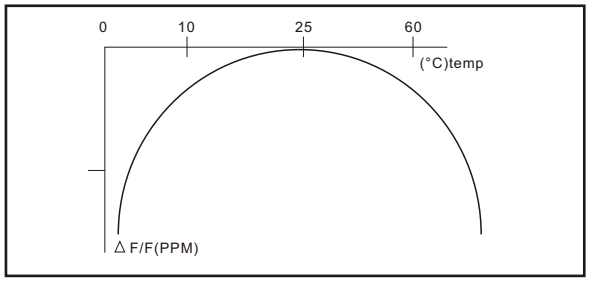


Table 1

Model	A	B	C	D	E
6K6	6.3	1.95	0.7	7.0	0.2
6K8	8.3	3.1	1.1	10.0	0.3

SJK- | 6K8 (6K6: 2×6mm; 6K8: 3×8mm) | 32.768K (Frequency) | 12.5 (Load capacitance: e.g: 12.5: 12.5pF) | 20 (Frequency tolerance e.g: 20: ±20ppm) | 40 (E.S.R e.g: 40: 40KΩ) | A (Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃)

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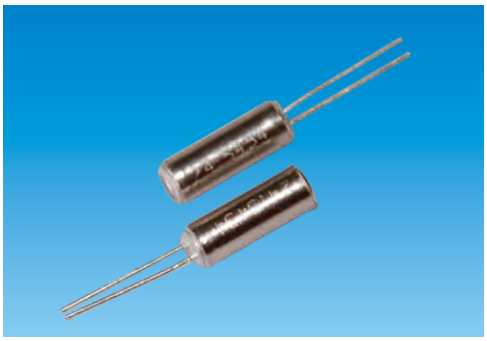
MHZ Band Crystal resonators

Series 6K, Tuning Fork Crystal Resonators



Feature

- Wide frequency range.
- High shock tolerance.
- Small size.
- Good frequency stability

Applications

- Microprocessor systems.
- Consumer electronics.
- Instrumentation.
- Automotive electronics.

Electrical Specifications

Item / Type	MHZ Quartz Crystal / 6K	
Hold Type	Φ3×10 / Φ3×9	Φ3×8/ Φ2×6
	3.579 MHZ ~ 4.000MHz	4.000 MHZ ~ 50.000MHz
Frequency Range	3.579MHz ~ 50.000MHz	
Oscillator mode	±10ppm, ±20ppm, ±30ppm or specify	
Frequency Tolerance (at 25°C)	See Table	
ESR	See Table	
Frequency stability	See Table	
Operating Temperature Range	-10°C~+60°C, -20°C~+70°C, -40°C~+85°C	
Storage Temperature Range	-55°C~+125°C	
Shunt Capacitance (C0)	5.0pF Typ	
Drive Level (Typical)	10μW ~ 100μW	
Load Capacitance (CL)	12pF, 16pF, 20pF or specify	
Insulation Resistance	500M Ω AT DC100V	
Aging @ 25°C 1st year (Max)	±3ppm / Year	
Size	2×6mm(6K6) / 3×8mm(6K8) / 3×9mm(6K9) / 3×10mm(6K10)	

Equivalent Series Resistance(ESR) And Mode Of Operation(Mode)

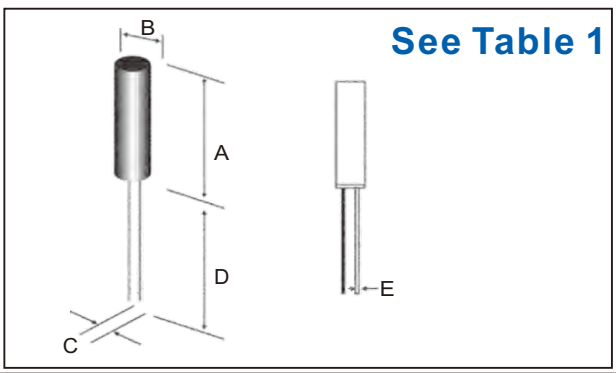
Frequency Range	E.S.R(Ω)	Mode	Frequency Range	E.S.R(Ω)	Mode
3.579MHz~3.999MHz	180Max.	Fundamental/AT	7.000MHz~9.999MHz	80Max.	Fundamental/AT
4.000MHz~4.499MHz	150Max.	Fundamental/AT	10.000MHz~11.999MHz	60Max.	Fundamental/AT
4.500MHz~4.999MHz	120Max.	Fundamental/AT	12.000MHz~29.999MHz	40Max.	Fundamental/AT
5.000MHz~6.999MHz	100Max.	Fundamental/AT	30.000MHz~50.000MHz	80Max.	3rd Overtone/AT

Frequency Stability Us Operating Temperature Range

Temperature Range	Frequency Stability					
	+/-10ppm	+/-15ppm	+/-20ppm	+/-30ppm	+/-40ppm	+/-50ppm
-10℃~+60℃	√	√	√	√	√	√
-20℃~+70℃	√	√	√	√	√	√
-40℃~+85℃		√	√	√	√	√

Dimensions [mm]

Model	A	B	C	D	E
6K6	6.2±0.2	2.1±0.2	0.7±0.2	6.3±0.5	0.2±0.1
6K8	8.3±0.5	3.1±0.3	1.1±0.2	9.0±0.5	0.3±0.1
6K9	9.0±0.5	3.1±0.2	1.1±0.2	10.0±0.5	0.3±0.1
6K10	10.06±0.5	3.02±0.3	1.1±0.2	9.7±0.5	0.3±0.2



See Table 1

SJK- 6K8 (6K6:2×6mm 6K8:3×8mm 6K9:3×9mm 6K10:3×10mm) — 16.000 (Frequency e.g: 16.000:16.000 MHz) — 20 (Load capacitance e.g: 20:20pF s:series) — 30 (Frequency Tolerance e.g: 30:±30ppm) — 60 (E.S.R.max e.g: 60:60Ω max) — F (Oscillate Mode: F:Fundemental 3:3rd overtone 5:5th overtone 7:7th overtone) — A (Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃) — 30 (Temperature stability: e.g: 30:±30ppm)

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SMD Tuning Fork Crystal Resonators

Series 6L, SMD Tuning Fork Crystal Resonators

Feature

- Wide frequency range.
- High shock tolerance.
- Small size.
- Good frequency stability
- Tape / Reel

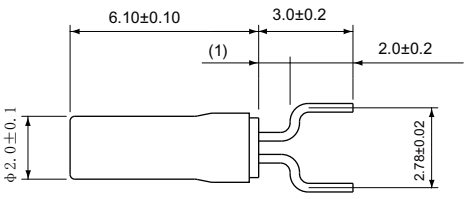
Applications

- Microprocessor systems.
- Consumer electronics.
- Instrumentation.
- Automotive electronics.

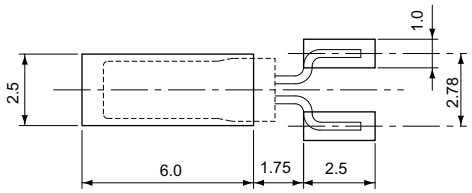
Electrical Specifications For 206A & 206B

Item / Type	kHz Crystal Resonators / 6L Series
Frequency Range	**30.000 kHz to 350 kHz**
Frequency Tolerance (at 25°C)	±20ppm ~ ±100ppm
ESR	32kHz~40kHz: 40Kohm Max
	40kHz~60kHz: 40Kohm Max
	60kHz~70kHz: 40Kohm Max
	70kHz~200kHz: 40Kohm Max
	200kHz~350kHz: 40Kohm Max
Turnover Temperature	25ºC ± 5ºC
Frequency Temperature Cure	-0.034 (±0.006)ppm /°C^2
Storage Temperature Range	-40°C~+85°C
Operating Temperature Range	-10°C~+60°C, -20°C~+70°C ,-40°C~+85°C
Shunt Capacitance (C_0)	2.0pF Typ
Dynamic Capacitance (C_1)	4.0fF Typ
Drive Level (Typical)	1μW Max
Load Capacitance (C_L)	6.0pF ~ 12.5pF, or specify
Aging @ 25°C 1st year (Max)	±3ppm, ±5ppm / Year
Size	2×6mm

Dimensions [mm]



Recommended Land Pattern(Top View)



SJK-

6LB	32. 768	12.5	20	50	C
6LA:206A 6LB:206B 6LC:308C	Frequency e.g: 32.768:32.768 kHz	Load capacitance e.g: 12.5:12.5pF s:series	Frequency Tolerance e.g: 20:±20ppm	E.S.R e.g: 50:50KΩ	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃

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SMD Tuning Fork Crystal Resonators

Series 6L, SMD Tuning Fork Crystal Resonators

Feature

- Wide frequency range.
- High shock tolerance.
- Small size.
- Good frequency stability
- Tape / Reel

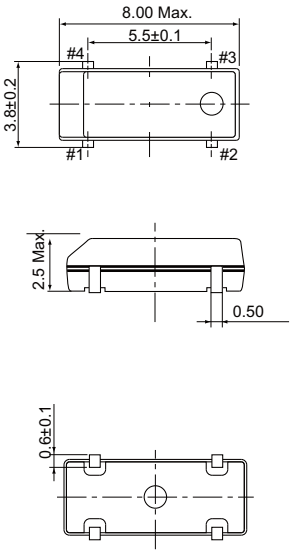
Applications

- Microprocessor systems.
- Consumer electronics.
- Instrumentation.
- Automotive electronics.

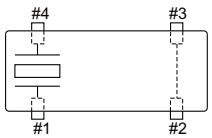
Electrical Specifications

Item / Type	Sym.	kHz Crystal Resonators / 6L Series
Frequency	FO	**32.768 kHz**
Frequency Tolerance (at 25°C)	$\Delta f/f_o$	±20ppm ~ ±100ppm
ESR	R1	30Kohm~50Kohms Max
Turnover	TO	25ºC ± 5ºC
Quality Factor	Q	100000 Typ
Frequency Stability Temperature		-0.034 (±0.006)ppm /°C^2
Operating Temperature Range	T	-10°C~+60°C, -20°C~+70°C ,-40°C~+85°C
Storage Temperature Range	T	-40°C~+85°C
Insulation Resistance	IR	≥500Mahm
Load Capacitance	C_L	6.0pF ~ 12.5pF, or specify
Dynamic Capacitance	C_1	2.4 fF Type
Shunt Capacitance	C_0	1.3 pF Type
Drive Level	DL	1μW Max
Aging		±3ppm, ±5ppm / Year
Size		3×8mm

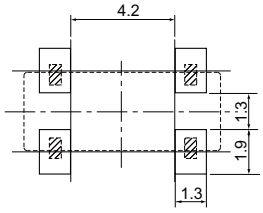
Dimensions [mm]



Internal Connections(Top View)



Recommended Land Pattern(Top View)



SJK-	6LC	32. 768	12.5	20	50	C
	6LA:206A 6LB:206B 6LC:308C	Frequency e.g: 32.768:32.768 kHz	Load capacitance e.g: 12.5:12.5pF s:series	Frequency Tolerance e.g: 20:±20ppm	E.S.R e.g: 50:50KΩ	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃

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SMD Tuning Fork Crystal Resonators

Series 7L, SMD For Tuning Fork Crystal Resonators

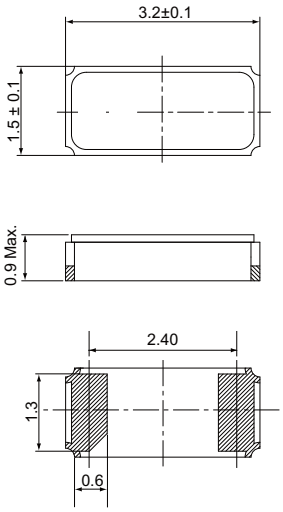
Feature

- Most appropriate for high-density circuit board by the small surface mount type.
- Embedded with heat resistant cylinder type crystal bring highly stable characteristics.
- Suitable for small mobile telecommunication devices.
- RoHS compliant / Pb Free.

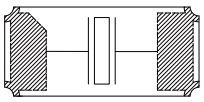
Electrical Specifications

Item / Type	32.768KHz Quartz Crystal / 7L
Frequency Range	**32.768KHz**
Frequency Tolerance (at 25°C)	±20ppm (at 25°C)
Load Capacitance (C_L)	12.5pF
Turnover Temperature	25ºC ± 5ºC
Temperature Coefficient	-0.034±0.006ppm /°C^2
Operating Temperature Range	-10°C~+60°C, -20°C~+70°C ,-40°C~+85°C
Storage Temperature Range	-55°C~+125°C
Motional (series) resistance	50 ~ 70 KΩ
Drive Level	1μW Max
Shunt Capacitance (C_0)	1.20pF Typ
Quality Factor	50000Typ
Aging @ 25°C 1st year (Max)	±3ppm / Year
Size	3.2×1.5mm

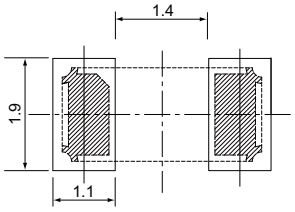
Dimensions [mm]



Internal Connections(Top View)



Recommended Land Pattern(Top View)



SJK-7L-	32.768	12.5	20	50	C
	Frequency e.g: 32.768:32.768 KHz	Load capacitance e.g: 12.5:12.5pF s:series	Frequency Tolerance e.g: 20:±20ppm	E.S.R max e.g: 50:50KΩmax	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃

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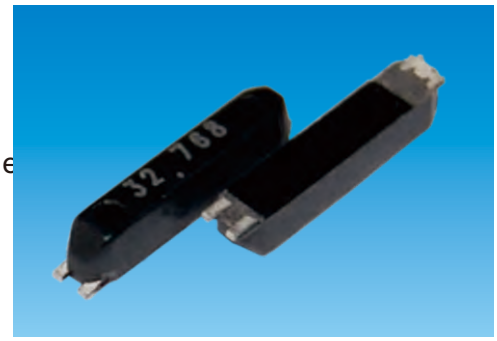
32.768KHz Crystal Resonators

Series 7M, SMD Tuning Fork Crystal Resonators



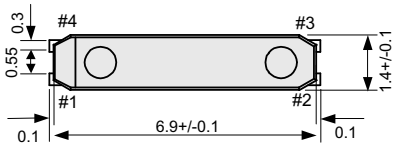
Feature

- Most appropriate for high-density circuit board by the small surface mount type.
- Embedded with heat resistant cylinder type crystal bring highly stable characteristics.
- Suitable for small mobile telecommunication devices.
- RoHS compliant / Pb Free.

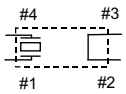
Electrical Specifications

Item / Type	32.768KHz Crystal Resonators / 7M
Frequency Range	**32.768KHz**
Frequency Tolerance (at 25°C)	±20ppm (at 25°C)
Load Capacitance (C_L)	12.5pF
Turnover Temperature	25ºC ± 5ºC
Temperature Coefficient	-0.034±0.006ppm /°C^2
Operating Temperature Range	-10°C~+60°C, -20°C~+70°C ,-40°C~+85°C
Storage Temperature Range	-55°C~+125°C
Motional (series) resistance	50 ~ 70 KΩ
Drive Level	1μW Max
Shunt Capacitance (C_0)	1.20pF Typ
Quality Factor	50000Typ
Aging @ 25°C 1st year (Max)	±3ppm / Year
Size	7×1.5mm

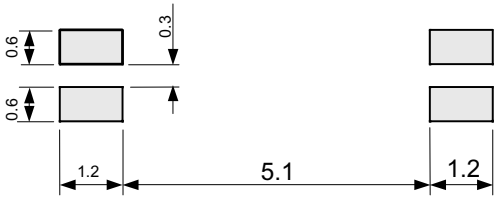
Dimensions [mm]

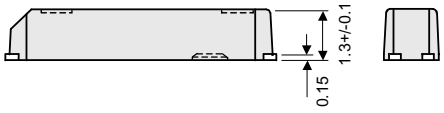


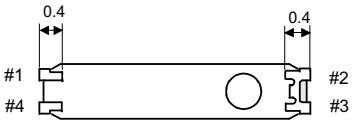
Internal Connections(Top View)



Recommended Land Pattern(Top View)







SJK-7M-

32.768	12.5	20	50	C
Frequency e.g: 32.768:32.768 KHz	Load capacitance e.g: 12.5:12.5pF s:series	Frequency Tolerance e.g: 20:±20ppm	E.S.R max e.g: 50:50KΩmax	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃

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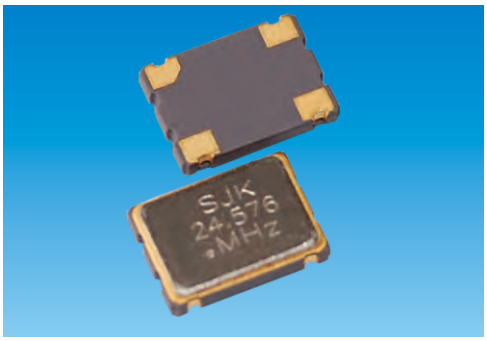
SMD Crystal Oscillators

Series 6N, Seam Sealed Ceramic 7.0×5.0mm Surface Mount Package



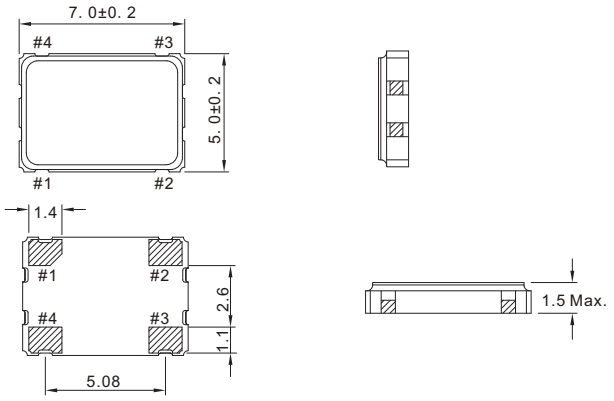
Features

- Broad frequency range from 1.544MHz to 150MHz.
  Compact and thin ceramic package with a medalist for surface
- mounting and automatically loaded.
- Reflow soldering is possible.
- Low noise and current with reduced power consumption.
- Built-in CMOS IC with tristate function.
- 5V and 3.3V supply model available.

Electrical Specifications

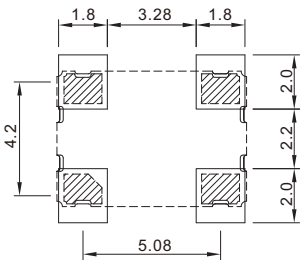
Parmetersl	Model / Condition	6NC1	6NC2	6NC3	6NC4
Output Type		TTL/CMOS	CMOS	TTL	TTL
Supply Voltage		5V	3.3V	5V	3.3V
Frequency Range		1.544MHz to 150MHz			
Operating Temperature Range		-10°C~+70°C, -20°C~+70°C, -40°C~+85°C			
Input Current	Frequency Range	1.544~31.999MHz 35mA max (15pF) 40mA max (50pF) 32~150MHz 45mA max (15pF) 55mA max (50pF)	1.544~31.999MHz 25mA max 32~150MHz 40mA max	1.544~31.999MHz 30mA max 32~150MHz 45mA max	1.544~31.999MHz 25mA max 32~150MHz 40mA max (15pF)
Frequency stability	All Conditions	±25ppm, ±50ppm, ±100ppm			
Symmetry	AT ½ Vdd	40/60%			
Output Voltage	Vol(Max)	0.4V /0.5V	0.33V	0.5V	0.33V
	Voh(Min)	2.4V /4.5V	2.97V	4.5V	2.97V
Rise/Fall Time	AT0.1Vod~0.9Vod	10 ns Max.			
Driving Ability	10 LSTTL Load Max			15pF	15pF
	CMOS Load Max	15pF/50pF	15pF		
	TTL Load Max	10TTL			
Start-up Time	Load Range	10 ms Max.			
E/D Function	Pin#1 Open	Pin#3 Active			
	Pin#1>=2.2V	Pin#3 Active			
	Pin#1<=0.8V	Pin#3 Active			
PAD Connection		Pin#1 E/D		Pin#3 OUT	
		Pin#2 GND		Pin#4 Vdd	

Dimensions [mm]



PAD Function:
1: Enable Control
2: GND
3: Out
4: Vdd

Recommended Land Pattern(Top View)



SJK- | 6NC2 (6NC1, 6NC2, 6NC3, 6NC4) | 48.000 (Frequency e.g: 48.000:48.000 MHz) | 50 (Frequency tolerance e.g: 50:±50ppm) | B (Operating temperature range: A: -10~+70℃ B: -20~+70℃ C: -40~+85℃)

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SMD Crystal Oscillators

Series 7N, Seam Sealed Ceramic 5.0×3.2mm Surface Mount Package

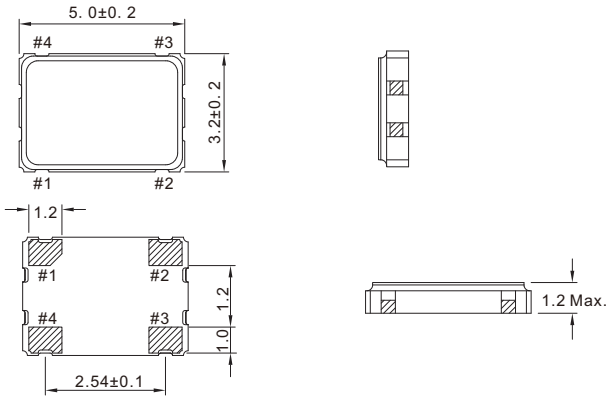
Features

- Broad frequency range from 1.544MHz to 125MHz.
  Compact and thin ceramic package with a medalist for surface
- mounting and automatically loaded.
- Reflow soldering is possible.
- Low noise and current with reduced power consumption.
- Built-in CMOS IC with tristate function.
- 5V and 3.3V supply model available.

Electrical Specifications

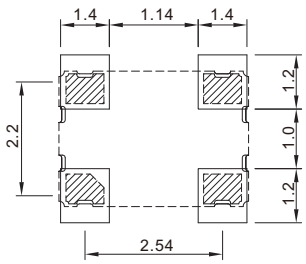
Parmetersl	Model / Condition	7NC1	7NC2	7NC3	7NC4
Output Type		TTL/CMOS	CMOS	TTL	TTL
Supply Voltage		5V	3.3V	5V	3.3V
Frequency Range		1.544MHz to 125MHz			
Operating Temperature Range		-10°C~+70°C, -20°C~+70°C, -40°C~+85°C			
Input Current	Frequency Range	1.544~31.999MHz 35mA max (15pF) 40mA max (50pF) 32~150MHz 45mA max (15pF) 55mA max (50pF)	1.544~31.999MHz 25mA max 32~150MHz 40mA max	1.544~31.999MHz 30mA max 32~150MHz 45mA max	1.544~31.999MHz 25mA max 32~150MHz 40mA max (15pF)
Frequency stability	All Conditions	±25ppm, ±50ppm, ±100ppm			
Symmetry	AT ½ Vdd	40/60%			
Output Voltage	Vol(Max)	0.4V /0.5V	0.33V	0.5V	0.33V
	Voh(Min)	2.4V /4.5V	2.97V	4.5V	2.97V
Rise/Fall Time	AT0.1Vod~0.9Vod	10 ns Max.			
Driving Ability	10 LSTTL Load Max			15pF	15pF
	CMOS Load Max	15pF/50pF	15pF		
	TTL Load Max	10TTL			
Start-up Time	Load Range	10 ms Max.			
E/D Function	Pin#1 Open	Pin#3 Active			
	Pin#1>=2.2V	Pin#3 Active			
	Pin#1<=0.8V	Pin#3 Highz			
PAD Connection		Pin#1 E/D		Pin#3 OUT	
		Pin#2 GND		Pin#4 Vdd	

Dimensions [mm]



PAD Function:
1: Enable Control
2: GND
3: Out
4: Vdd

Recommended Land Pattern(Top View)



SJK- | 7NC2 (7NC1, 7NC2, 7NC3, 7NC4) | 3.6864 (Frequency e.g: 3.6864:3.686400 MHz) | 50 (Frequency tolerance e.g: 50:±50ppm) | B (Operating temperature range: A: -10~+70℃ B: -20~+70℃ C: -40~+85℃)

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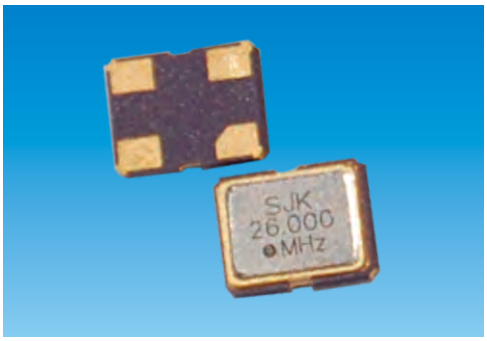
SMD Crystal Oscillators

Series 3N, Seam Sealed Ceramic 3.2×2.5mm Surface Mount Package



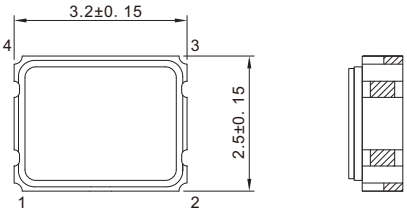
Feature

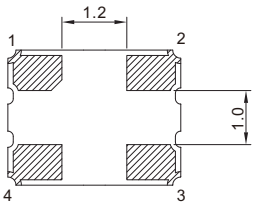
- Broad frequency range from 1MHz to 106.25MHz.
- Compact and thin ceramic package with a medalist surface mount.
- Reflow soldering is possible.
- Low voltage operation.
- Low noise and current with reduced power consumption.
- Built-in CMOS IC with tristate function.
- RoHS compliant / Pb Free.

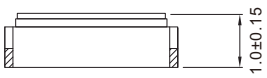
Electrical Specifications

Item / Type	SMD Crystal Oscillator 3225 / 3N
Frequency Range	**1MHz to 106.25MHz**
Output Type	CMOS
Output Load	15pF, or specify
Oscillator Mode	Fundamental
Supply Voltage	3.3V (1.8V, 2.5V available)
Frequency stability	±25ppm, ±50ppm
Voltage Vol(max)/Voh(min)	0.1Vdd/0.9Vdd
Operating Temperature Range	-10°C~+60°C, -20°C~+70°C, -40°C~+85°C
Storage Temperature Range	-55°C~+125°C
Rise(Tr)/Fall(Tf) Time	10 ns Max
Supply Current	20mA Max
Symmetry	45~55%
Start-up Time	10 ms Max
Phase Jitter (12KHz~20MHz)	1 ps Max
Aging (at 25°C)	±3ppm /Year Max
Size(mm)	3.2×2.5

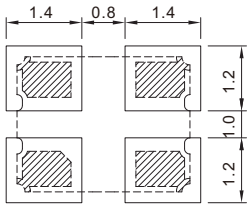
Dimensions [mm]







Recommended Land Pattern(Top View)



PAD Function:
1: Enable Control
2: GND
3: Out
4: Vdd

SJK-3N-

16.000	3.3	50	C
Frequency e.g: 16.000: 16.000 MHz	Supply Voltage: 3.3: 3.3V 2.5: 2.5V	Frequency Tolerance e.g: 50:±50ppm	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃

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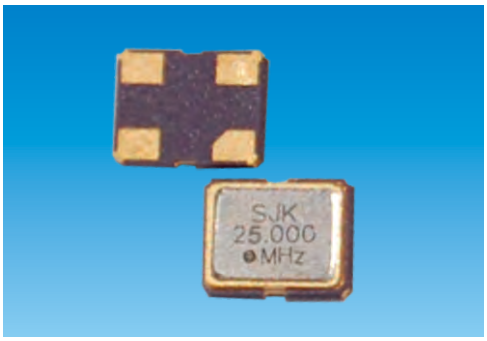
SMD Crystal Oscillators

Series 2N, Seam Sealed Ceramic 2.5×2.0mm Surface Mount Package



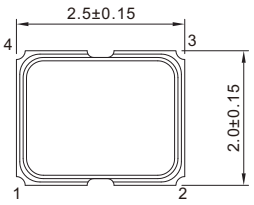
Feature

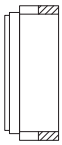
- Broad frequency range from 4MHz to 54MHz.
  Compact and thin ceramic package with a medalist surface mount.
- Reflow soldering is possible.
- Low voltage operation.
- Low noise and current with reduced power consumption.
- Built-in CMOS IC with tristate function.
- RoHS compliant / Pb Free.

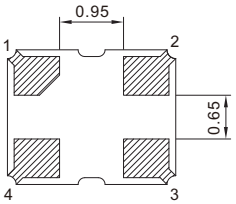
Electrical Specifications

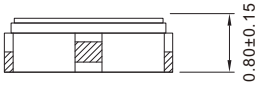
Item / Type	SMD Crystal Oscillator 2520 / 2N
Frequency Range	**4 MHz to 54 MHz**
Output Type	CMOS
Output Load	15 pF, or specify
Oscillator Mode	Fundamental
Supply Voltage	3.3 V (1.8 V, 2.5 V available)
Frequency stability	±25 ppm, ±50 ppm
Voltage Vol(max)/Voh(min)	0.1Vdd/0.9Vdd
Operating Temperature Range	-10°C~+60°C, -20°C~+70°C, -40°C~+85°C
Storage Temperature Range	-55°C~+125°C
Rise(Tr)/Fall(Tf) Time	8 ns Max
Supply Current	15 mA Max
Symmetry	45~55%
Start-up Time	5 ms Max
Phase Jitter (12 KHz~20 MHz)	2 ps Max
Aging (at 25°C)	±3 ppm /Year Max
Size(mm)	2.5×2.0

Dimensions [mm]

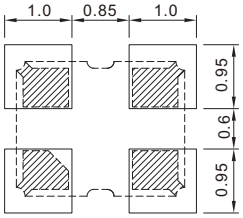








Recommended Land Pattern(Top View)



PAD Function:
1: Enable Control
2: GND
3: Out
4: Vdd

SJK-2N-

16.000	3.3	50	C
Frequency e.g: 16.000: 16.000 MHz	Supply Voltage: 3.3: 3.3V 2.5: 2.5V	Frequency Tolerance e.g: 50:±50ppm	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃

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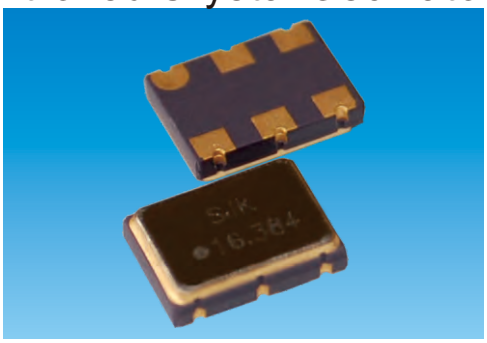
SMD Voltage Controlled Crystal Oscillator

Series 6S, Seam Sealed Ceramic 7×5mm Voltage Controlled Crystal Oscillator



Features

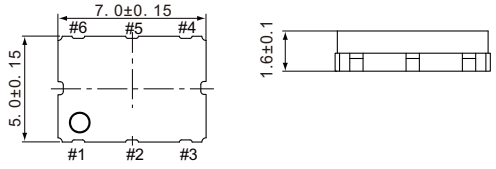
- Compact and thin ceramic package with a medalist for surface
- mounting and automatically loaded.
  Reflow soldering is possible.
- Automatic mounting.
- Built-in CMOS IC with tristate function.
- 5V and 3.3V supply model available.
- High precision characteristic covering to high frequency range.
- RoHS and Pb Free compliant.

Electrical Specifications

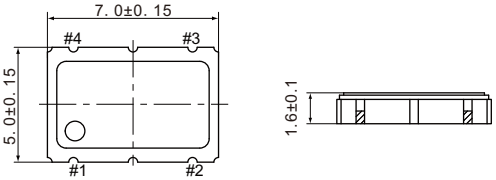
Parameters		C1	C2	C3	C4
Output Type		CMOS		TTL	
Supply Voltage		5V	3.3V	5V	3.3V
Frequency Range		1MHz to 125MHz			
Frequency Stability (at 25°C)		±25ppm, ±50ppm, ±100ppm			
Pad Type		6Pads, 4Pads			
Operating Temperature Range		-10°C ~ +70°C, -40°C ~ +85°C			
Storage Temperature Range		-55°C ~ +125°C			
Supply Current		<=30MHz, 30mA; >30MHz, 45mA			
Aging (at 25°C)		±3ppm /Year Maximum			
Size (mm)		7.0×5.0			
Load	Output Load Capacitance				
	Voltage Voh (Min.)	4.5Vdc	2.97Vdc	4.5Vdc	2.97Vdc
	Voltage Vol (Max.)	0.5Vdc	0.33Vdc	0.5Vdc	0.33Vdc
	Symmetry (Duty Cycle)	40~60% Maximum			
	Rise /Fall Time	10 ns Max.			
	Start-up Time	10 ms Max.			
Frequency Control	Pullability	100ppm Minimum or specify			
	Voltage Control	0.5~4.5Vdc	0.3~3.0Vdc	0.5~4.5Vdc	0.3~3.0Vdc
	Monotonic Linearity	<± 10%			
	Input Impedance	50K ohms Normal			

Dimensions [mm]

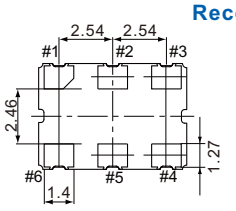
6S6

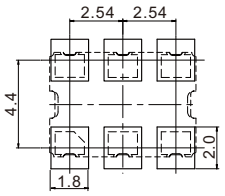


6S4



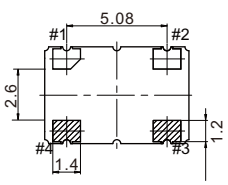
Recommended Land Pattern(Top View)

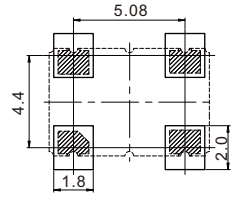




PAD Function:
1: Control Voltage
3: GND
4: Output
6: Supply Voltage

2.5: Enable Function Selected





PAD Function:
1: Control Voltage
2: GND
3: Output
4: Supply Voltage

SJK- 6S4 | C1 | 48 | 50 | A

- 6S4: 6S4: 4 pad; 6S6: 6 pad
- C1: C1, C2, C3, C4
- 48: Frequency e.g: 48.000: 48.000 MHz
- 50: Frequency Stability: 50: ±50ppm
- A: Operating temperature range: A: -10~+70℃; B: -40~+85℃

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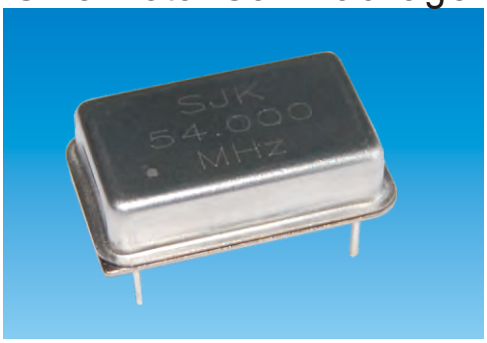
Full Size VCXO Oscillators

Series 6R,Voltage Controlled Crystal Oscillator, Full Size Metal Can Package



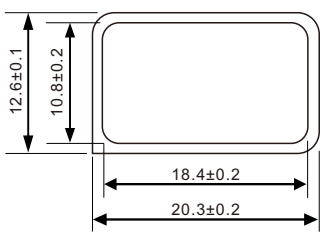
Features

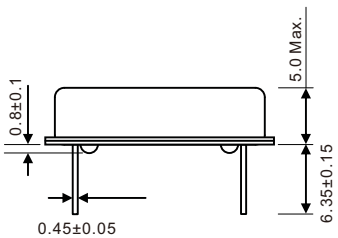
- 'Small Size' as small as 20.26×12.6×5.1mm.
- Hybrid IC Circuit Construction.
- CMOS compatible output.
- 5V and 3.3V supply model available.
- All metal, hermetically sealed welded package.
- High precision characteristic covering to high frequency range.
- RoHS and Pb Free compliant.

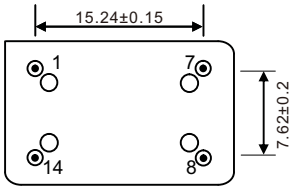
Electrical Specifications

Model / Type		Full Size VCXO Oscillator / 6R	
Output Type		HCMOS Squarawave	
Supply Voltage		5Vdc ±5%	3.3Vdc ±5%
Frequency Range		1MHz to 80MHz	
Frequency Stability (at 25°C)		±25ppm, ±50ppm	
Operating Temperature Range		-0°C ~ +70°C	
Supply Current		60mA Maximum	40mA Maximum
Size (mm)		20.26×12.6×5.1	
Load		15pF	15pF
	Voltage Voh (Min.)	4.5V Maximum	3.0V Maximum
	Voltage Vol (Max.)	0.4V Maximum	0.3V Maximum
	Current Ioh	-8.0 mA	-4.0 mA
	Current Iol	8.0 mA	4.0 mA
	Symmetry (Duty Cycle)	40/60 Maximum	40/60 Maximum
	Rise /Fall Time	5 ns	5 ns
Frequency Control		Positive Transfer Characteristic	
	Pullability	± 50ppm, ± 100ppm, ± 150ppm, ± 200ppm Minimum	
	Voltage Control	0.5Vdc to 4.5Vdc	0.3Vdc to 3.0Vdc
	Center Frequency	2.5Vdc	1.65Vdc
	Monotonic Linearity	< ±15%	< ±15%
	Input Impedance	50K ohms Normal	50K ohms Normal

Dimensions [mm]







PAD Function:
1: Control Voltage
7: GND
8: Out
14: Vdd (5V/3.3V)

SJK-

6RF	50.000	50	5	B
Full size 14Pin	Frequency e.g: 50.000: 50.000 MHz	Frequency tolerance e.g: 25:±25ppm	Supply Voltage: 5: 5V 3.3: 3.3V	Operating temperature range: A: -10~+70℃ B: -20~+70℃ C: -40~+85℃

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Half Size VCXO Oscillators

Series 6R,Voltage Controlled Crystal Oscillator, Half Size Metal Can Package

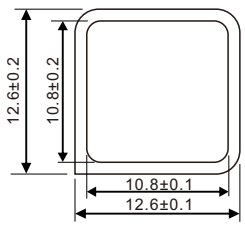
Features

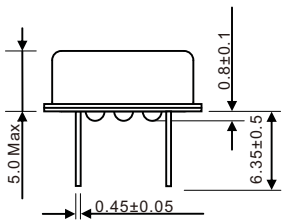
- 'Small Size' as small as 12.6×12.6×5.1mm.
- Hybrid IC Circuit Construction.
- CMOS compatible output.
- 5V and 3.3V supply model available.
- All metal, hermetically sealed welded package.
- High precision characteristic covering to high frequency range.
- RoHS and Pb Free compliant.

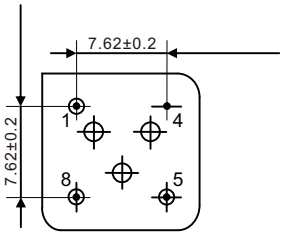
Electrical Specifications

Model / Type		Half Size VCXO Oscillator / 6R	
Output Type		HCMOS Squarawave	
Supply Voltage		5Vdc ±5%	3.3Vdc ±5%
Frequency Range		1MHz to 80MHz	
Frequency Stability (at 25°C)		±25ppm, ±50ppm	
Operating Temperature Range		-0°C ~ +70°C	
Supply Current		60mA Maximum	40mA Maximum
Size (mm)		12.6×12.6×5.1	
Load		15pF	15pF
	Voltage Voh (Min.)	4.5V Maximum	3.0V Maximum
	Voltage Vol (Max.)	0.4V Maximum	0.3V Maximum
	Current Ioh	-8.0 mA	-4.0 mA
	Current Iol	8.0 mA	4.0 mA
	Symmetry (Duty Cycle)	40/60 Maximum	40/60 Maximum
	Rise /Fall Time	5 ns	5 ns
Frequency Control		Positive Transfer Characteristic	
	Pullability	± 50ppm, ± 100ppm, ± 150ppm, ± 200ppm Minimum	
	Voltage Control	0.5Vdc to 4.5Vdc	0.3Vdc to 3.0Vdc
	Center Frequency	2.5Vdc	1.65Vdc
	Monotonic Linearity	< ±15%	< ±15%
	Input Impedance	50K ohms Normal	50K ohms Normal

Dimensions [mm]







PAD Function:
1: Control Voltage
4: GND
5: Out
8: Vdd (5V/3.3V)

SJK-	6RH	48.000	50	5	B
	Half Size 8Pin	Frequency e.g: 48.000: 48.000 MHz	Frequency tolerance e.g: 25:±25ppm	Supply Voltage: 5: 5V 3.3: 3.3V	Operating temperature range: A: -10~+70℃ B: -20~+70℃ C: -40~+85℃

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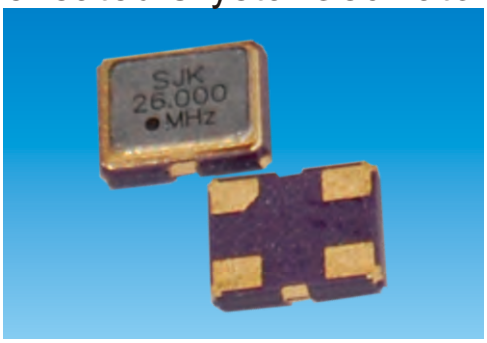
SMD TCXO

Series 7T, Seam Sealed 3.2×2.5mm Temperature Compensated Crystal Oscillator



Features

- Low phase noise.
- Wide frequency range.
- Low voltage operation.
- Ultra-thin, Small size.
- Single package structure.
- Lead Free & RoHS Compliant.

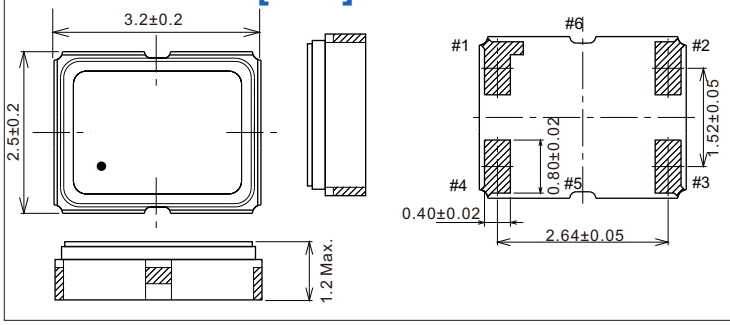
Applications

- Mobile communication, Avionics, Test equipment, Electronic instruments.
- GPS, Mobile phones.
- Other wireless radio communications and more.

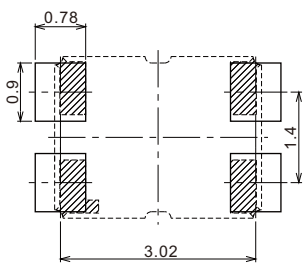
Electrical Specifications

Parameter	Value	Condition
Model / Type	**SMD TCXO Oscillator 3225 / 7T**	
Frequency Range	16.000MHz to 26.000MHz	
Supply Voltage	+1.7V ~ 3.5V	
Output Level	0.8 Vp-p Min (Clipped Sine Wave)	10kohm//10pF ±10% each
Current	20mA	10kohm//10pF ±10% each
Operating Temperature Range	-30°C~+85°C	
Storage Temperature Range	-40°C~+85°C	
Frequency Stability		
vs. Temperature	±2.5ppm Max.	Referenced to the mid point between min. and max. frequency
vs. Supply Voltage	±0.1ppm Max.	VCC±5%
vs. Load	±0.2ppm Max.	10kohm//10pF ±10% each
vs. Aging	±1.0ppm Max.	1 Year
vs. Reflow Soldering	±1.0ppm Max.	2 Times
Initial Frequency Tolerance	±1.0ppm Max.	25°C
Phase Noise	-58dBc/Hz Typ.	1Hz offset
	-88dBc/Hz Typ.	10Hz offset
	-113dBc/Hz Typ.	100Hz offset
	-135dBc/Hz Typ.	1KHz offset
	-145dBc/Hz Typ.	10KHz offset
Frequency Slop	/-0.1ppm/°C Max.	/-0.1ppm/°C Max.
Size(mm)	3.2×2.5	

Dimensions [mm]



Recommended Land Pattern(Top View)



PAD Function:
1: GND
2: GND
3: Output
4: +Vcc
5: CS
6: ADIO

SJK-7T- | 16.000 (Frequency e.g: 16.000:16.000 MHz) | 3.3 (Supply Voltage 3.3: 3.3V 2.8: 2.8V) | C (Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃)

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SMD VC-TCXO

Series 6V, 3.2×2.5mm Voltage Controlled Temperature Compensated Crystal Oscillator

Features

- Low phase noise.
- Wide frequency range.
- Low voltage operation.
- Ultra-thin, Small size.
- Single package structure.
- Lead Free & RoHS Compliant.

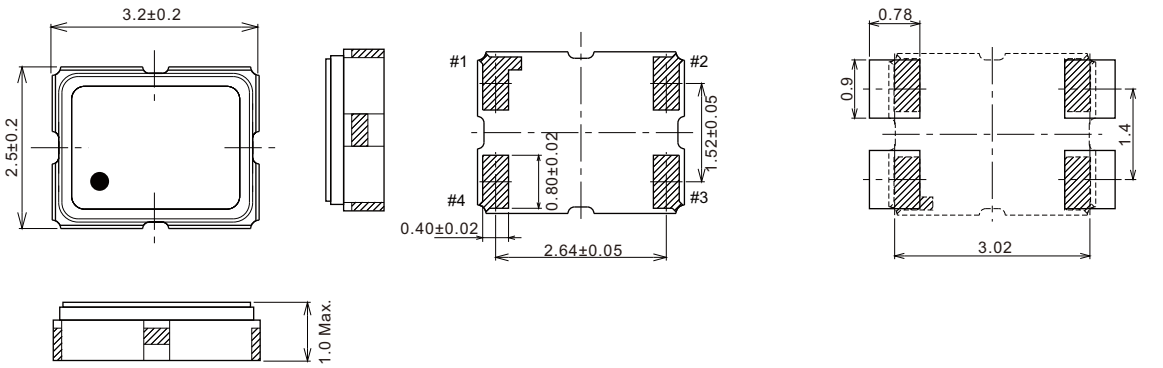
Applications

- Mobile communication, Avionics, Test equipment, Electronic instruments.
- GPS, Mobile phones.
- Other wireless radio communications and more.

Electrical Specifications

Parameter	Value	Condition
Model /Type	**SMD VC-TCXO Oscillators 3225 / 6V**	
Frequency Range	13.000MHz to 40.000MHz	
Supply Voltage	+1.7V ~ +3.5V	
Output Level	0.8 Vp-p Min (Clipped Sine Wave)	10kohm//10pF ±10% each
Current	1.5mA	10kohm//10pF ±10% each
Operating Temperature Range	-30°C~+85°C	
Storage Temperature Range	-40°C~+85°C	
Frequency Stability		
vs. Temperature	±2.5ppm Max.	Referenced to the mid point between min. and max. frequency
vs. Supply Voltage	±0.3ppm Max.	3.0V±5%
vs. Load	±0.2ppm Max.	10kohm//10pF ±10% each
vs. Aging	±1.0ppm Max.	1 Year
vs. Reflow Soldering	±1.0ppm Max.	2 Times
Initial Frequency Tolerance	±2.0ppm Max.	25°C
Voltage Control Range	±9.0ppm to ±16.0ppm	Vcont=+1.5V±1.0V
Phase Noise	-5dBc/Hz Typ.	100Hz offset
Harmonics	-5dBc Max.	
Size(mm)	3.2×2.5	

Dimensions [mm]



PAD Function:
1: Vcont
4: GND
5: Output
8: +Vcc

SJK-6V-

16.368	2.8	C
Frequency e.g: 16.368:16.368 MHz	Supply Voltage 3.3: 3.3V 2.8: 2.8V	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃

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TCXO Oscillators

Series 6T, Temperature Compensated Crystal Oscillators

Features

- High frequency stability.
- High frequency range.
- All metal hermetically sealed welded package.
- 3.3V, 5V, 12V supply voltage.
- High reliability and high precision.
- Lead Free & RoHS Compliant.

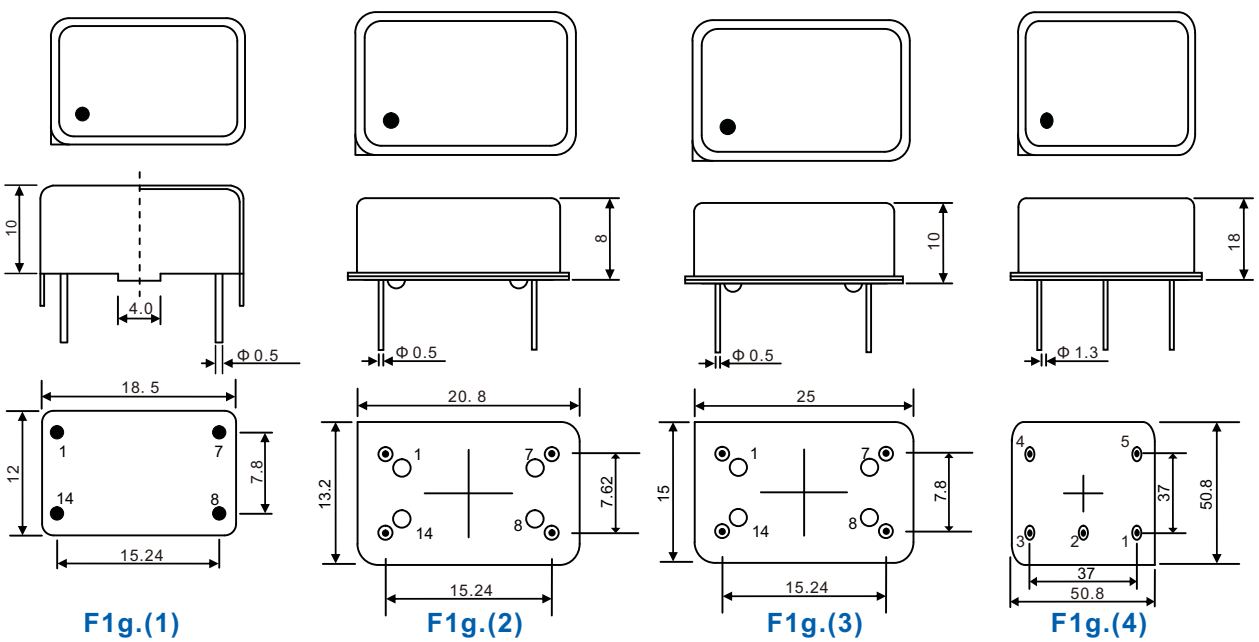
Applications

- Mobile communication, Avionics, Test equipment, Electronic instruments.

Electrical Specifications

Items		TFT210	TFT230	TFT250	TFT270	TFT300
Model /Type		TCXO Oscillator / 6T				
Frequency Range (MHz)		1~32	30~95	90~155	150~210	200~1500
F-T Stability (ppm)		±0.5ppm ~ ±5ppm			±0.5ppm ~ ±5ppm	
Operating Temperature Range		-10°C~+60°C, 0°C~+70°C, -20°C~+70°C, -40°C~+70°C, -50°C~+85°C				
Storage Temperature Range		-55°C~+125°C				
Power	Voltage	+3.3V, +5.0V, +12V				
	Current	2mA ~ 20mA				
Output	Waveform	Sine / Pulse		Sine		
	Impedance	50Ω / 100Ω		50Ω		
	Level	Pulse: TTL / HCMOS		Sine:>=1.5Vp-p/50Ω		
	Types	Pins: SMA				
Aging /Year		±1ppm ~ ±3ppm				
Frequency trim		±1ppm ~ ±5ppm (Mechanical or electrical)				
F-V Stability		(3~5)×10-7 (3.3V±5%, 5V±10%, 12V±10%)				
Dimension (mm)		18.5×12×(8~10), 20.8×13.2×(8~10), 25×15×10,30×20×10, 40×25×15, 44×27×19, 50.8×50.8×18,91×56×20				
Package		All Metal, hermetically sealed Welded package				

Dimensions(Unit:mm)



F1g.(1) F1g.(2) F1g.(3) F1g.(4)

F1g.(1).(2).(3)
PAD Function
1: Vc
7: GND
8: Output
14: +Vcc

F1g.(4)
PAD Function
1: Vc
2: E1(OS.)
3: Output
4: GND
5: E2(OVEN)

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Full SizeCrystal Oscillators

Series 6MF, HCMOS/TTL Full Size Crystal Oscillator

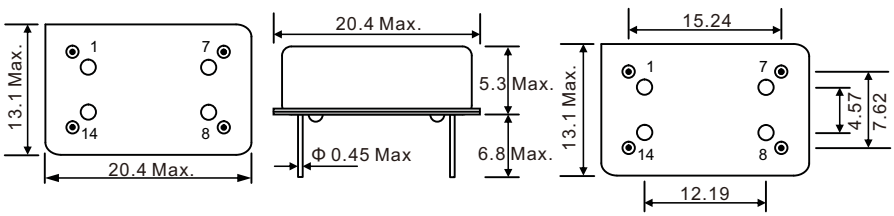
Features

- High frequency stability.
- High frequency range.
- All metal hermetically sealedwelded package.
- CMOS IC circuit construction built-in with tristate function.
- 3.3V, 5V supply voltage.
- CMOS/TTL compatible in general application.
- Lead Free & RoHS Compliant.

Electrical Specifications

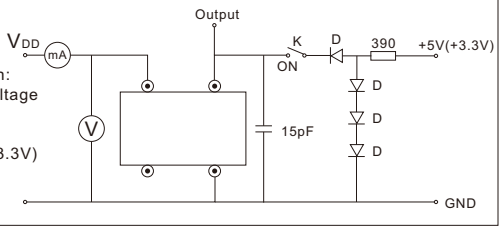
Model Type		Full Size Crystal Oscillators			
Model		HCMOS/TTL Crystal Oscillator / 6M			
Output Type		TTL/CMOS	CMOS		
Supply Voltage		5.0V	3.3V		
Frequency Range		0.25~180MHz	0.25~180MHz		
Operating Temperature Range		0°C~+70°C, -20°C~+70°C, -40°C~+85°C			
Frequency Range Input Current (Max.)	0.25MHz~9.999MHz	15mA	10mA		
	10.00MHz~23.999MHz	15mA	10mA		
	24.00MHz~49.999MHz	30mA	20mA		
	50.00MHz~79.999MHz	40mA	20mA		
	80.00MHz~180.000MHz	50mA	30mA		
Frequency Stability	All Conditions	±10ppm, ±20ppm, ±25ppm, ±50ppm, ±100ppm			
Symmetry	AT ½ Vdd	45 / 55%			
Input Voltage	Vol (Max.)	0.4V/0.5V	0.3V		
	Voh (Min.)	2.4V/4.5V	3.0V		
Rise/Fall Time	AT 0.1Vdd~0.9Vdd	5ns Max.			
Driving Ability	CMOS Load Max.	15pF / 50pF	15pF		
	TTL Load Max.	10TTL			
Start-up Time	Load Range	10 ms Max.			
E/D Function	#1 Open	#8 Open			
	#1 >=2.2V	#8 Open			
	#1 <=0.8V	#8 Highz			
PAD Connection		Pin#1 E/D	Pin#7 GND	Pin#8 Out	Pin#14 Vdd

Dimensions [mm]



PAD Function:
1: Control Voltage
7: GND
8: Out
14: Vdd (5V/3.3V)

Circuit Printciple



SJK-6MF-

48.000	5	50	X	A
Frequency e.g: 48.000: 48.000 MHz	Supply Voltage 5: 5V 3.3: 3.3V	Frequency Tolerance 50: ±50ppm 25: ±25ppm	Output Type: X: TTL/CMOS Y: CMOS Z: TTL	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃

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Half Size Crystal Oscillators

Series 6MH, HCMOS/TTL Half Size Crystal Oscillator

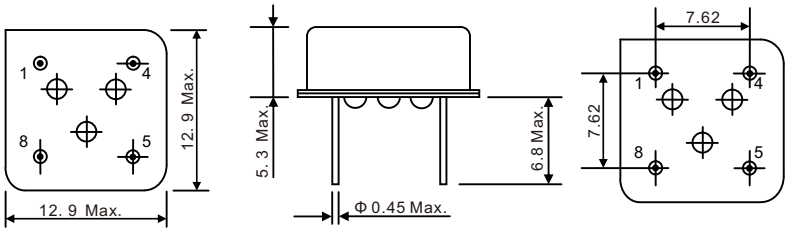
Features

- High frequency stability.
- High frequency range.
- All metal hermetically sealedwelded package.
- CMOS IC circuit construction built-in with tristate function.
- 3.3V, 5V supply voltage.
- CMOS/TTL compatible in general application.
- Lead Free & RoHS Compliant.

Electrical Specifications

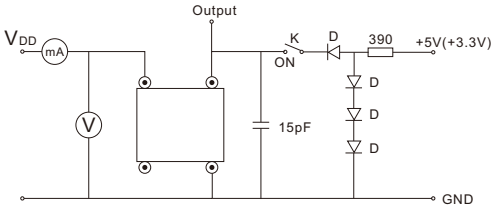
Model Type		Half Size Crystal Oscillators			
Model		HCMOS/TTL Crystal Oscillator / 6M			
Output Type		TTL/CMOS	CMOS		
Supply Voltage		5.0V	3.3V		
Frequency Range		0.25~180MHz	0.25~180MHz		
Operating Temperature Range		0°C~+70°C, -20°C~+70°C, -40°C~+85°C			
Frequency Range Input Current (Max.)	0.25MHz~9.999MHz	15mA	10mA		
	10.00MHz~23.999MHz	15mA	10mA		
	24.00MHz~49.999MHz	30mA	20mA		
	50.00MHz~79.999MHz	40mA	20mA		
	80.00MHz~180.000MHz	50mA	30mA		
Frequency Stability	All Conditions	±10ppm, ±20ppm, ±25ppm, ±50ppm, ±100ppm			
Symmetry	AT ½ Vdd	45 / 55%			
Input Voltage	Vol (Max.)	0.4V/0.5V	0.3V		
	Voh (Min.)	2.4V/4.5V	3.0V		
Rise/Fall Time	AT 0.1Vdd~0.9Vdd	5ns Max.			
Driving Ability	CMOS Load Max.	15pF / 50pF	15pF		
	TTL Load Max.	10TTL			
Start-up Time	Load Range	10 ms Max.			
E/D Function	#1 Open	#5 Open			
	#1 >=2.2V	#5 Open			
	#1 <=0.8V	#5 Highz			
PAD Connection		Pin#1 E/D	Pin#4 GND	Pin#5 Out	Pin#8 Vdd

Dimensions [mm]



PAD Function:
1: Control Voltage
4: GND
5: Out
8: Vdd (5V/3.3V)

Circuit Printciple



SJK-6MH-

32.000	3.3	25	X	B
Frequency e.g: 32.000: 32.000 MHz	Supply Voltage 5: 5V 3.3: 3.3V	Frequency Tolerance 50: ±50ppm 25: ±25ppm	Output Type: X: TTL/CMOS Y: CMOS Z: TTL	Operating temperature range: A:-10~60℃ B:-20~70℃ C:-40~85℃

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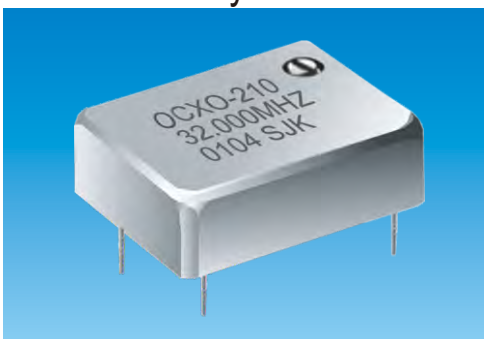
Oven Controlled Crystal Oscillators

Series 6X, Oven Controlled Crystal Oscillator



Features

- Excellent Temperature Characteristics.
- Low power consumption
- Excellent rise characteristics.
- Excellent phase noise characteristics.
- Compact.
- Excellent long-term frequency stability.

Applications

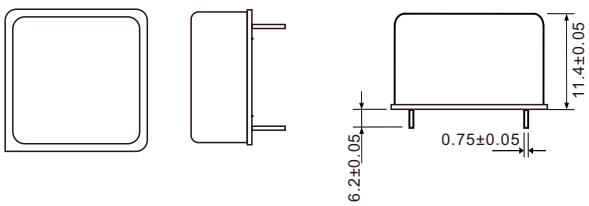
- Mobile communication, Avionics, Test equipment, Electronic instruments.

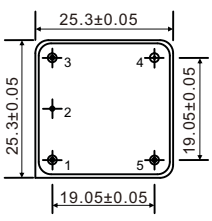
Electrical Specifications

Model		OCXO- 1/2 / 6X	
Item / Type		SC-Cut	AT-Cut
Frequency Range		10.000MHz, 12.800MHz, 13.000MHz, 19.440MHz, 20.480MHz, 26.000MHz, 100MHz	
Operating Temperature Range		-40°C to +85°C, -20°C to +70°C, 0°C to +70°C	
Temperature Stability		20ppb, 10ppb, 5ppb	100ppb, 50ppb, 20ppb
Supply Voltage		+3.3V, +5V, +12V	
Aging	Aging / Day	2ppb to 0.5ppb	
	Aging / Year	0.1ppm to 0.02ppm	
Warm-up Power		5W	
Warm-up Time		5minutes to better than 0.1ppm of operating frequency	
		10minutes to better than 0.5ppm of steady state frequency at 4 hours	
Steady State Power (at25°C)		<1.5 Watts	
Aging Adjustment		External potentiometer / DAC / Synchronization	
Adjustment Range		0.5ppm Min. / 2.0ppm Max.	
Center Voltage		5V to 2.5V for 12V Input	
		3.3V to 1.65V for 5V Input	
Slope		Positive	
Phase Noise	Phase Noise @ (at10.000 MHz)	SC-Cut	AT-Cut
	1Hz	-90 dBc/Hz	-75 dBc/Hz
	10Hz	-120 dBc/Hz	-100 dBc/Hz
	100Hz	-135 dBc/Hz	-130 dBc/Hz
	1kHz	-150 dBc/Hz	-140 dBc/Hz
	10kHz	-150 dBc/Hz	-150 dBc/Hz
	100kHz	-150 dBc/Hz	-150 dBc/Hz
Output Ware Form		Sine	
Spurious		-75 dBc	
Harmonics		-30 dBc	
Load		50 ohms	

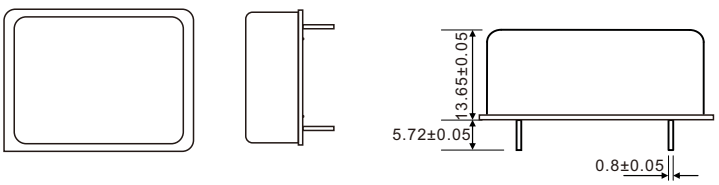
Dimensions [mm]

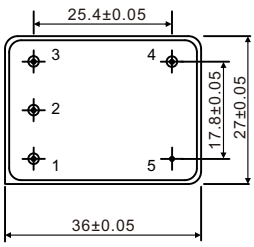
OCXO-1





OCXO-2



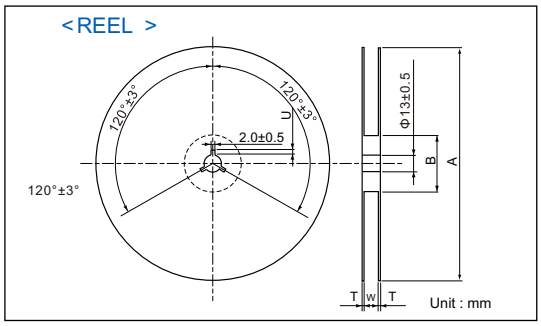


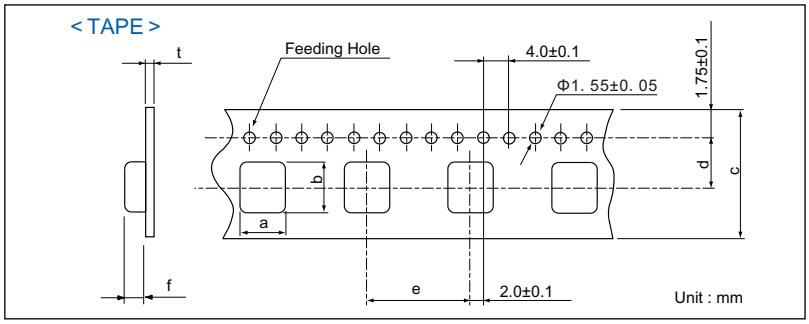
Pin Connection

Pin	Function
1	Output
2	GND
3	Control Voltage or N/C
4	Reference Voltage or N/C
5	Vcc

Http://www.q-crystal.com Mail:sjk@q-crystal.com Tel:86-755-88352809 Fax:86-755-88353718

Emboss Carrier Tape





■ Standard Specification

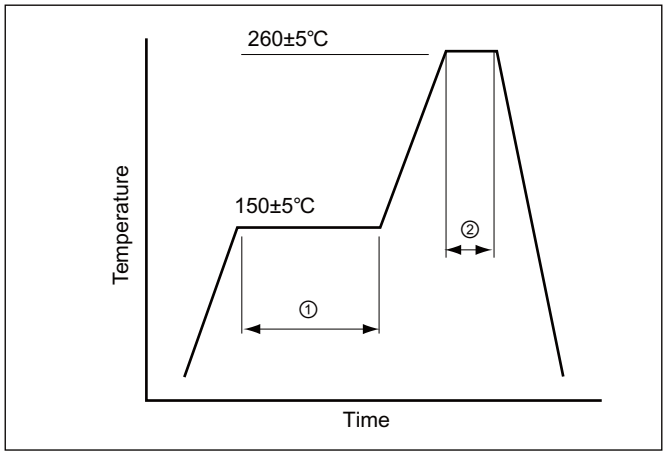
TYPE	a	b	c	d	e	f	t	A	B	T	U	W
SMD 7050 Crystal	5. 4±0. 1	7.5±0. 1	16.0±0. 3	7.5±0. 1	8.0±0. 1	1.4±0. 1	0.3±0. 05	Φ254±2	Φ80±1	2.0±0.5	4.0±0.8	17.5±1.5
SMD 6035 Crystal	3.9±0. 1	6.4±0. 1	12.0±0. 3	5.5±0. 1	8.0±0. 1	1.3±0. 1	0.3±0. 05	Φ180±2	Φ80±1	2.0±0.5	4.0±0.8	13.5±1.5
SMD 5032 Crystal	3.5±0. 1	5.3±0. 1	12.0±0. 2	5.5±0. 1	8.0±0. 1	1.4±0. 1	0.3±0. 05	Φ180±2	Φ80±1	1.2±0.5	4.0±0.8	13.0±1.5
SMD 4025 Crystal	2.8±0. 1	4.4±0. 1	12.0±0. 3	4.5±0. 1	4.0±0. 1	1.4±0. 1	0.3±0. 05	Φ180±2	Φ60±1	1.2±0.5	4.0±1.0	9.0±1.0
SMD 3225 Crystal	2.8±0. 1	3.5±0. 1	8.0±0. 2	3.5±0. 05	4.0±0. 1	0.75±0. 1	0.25 ±0. 05	Φ180±2	Φ60±1	1.2±0.5	4.0±0.8	9.0±1.5
SMD 2520 Crystal	2.3±0. 1	2.8±0. 1	8.0±0. 2	3.5±0. 1	4.0±0. 1	0.75±0. 1	0.3±0. 05	Φ180±2	Φ60±1	1.2	4.0±1.0	9.0±0.3
SMD 2016 Crystal	1.85±0. 1	2.25±0. 1	8.0±0. 2	3.5±0. 1	4.0±0. 1	0.7±0. 1	0.3±0. 05	Φ180±2	Φ60±1	1.2	4.0±1.0	9.0±0.3
Glass C4 Typel	5.9±0. 1	12.25 ±0. 1	24.0±0. 3	11.5±0. 1	12.0±0. 1	2.55±0. 1	0.3±0. 05	Φ330±2	Φ80±1	1.6±0.5	4.0±0.8	22.4±2.0
Glass SMD 8045 crystal	5.05±0. 1	8.1±0. 1	16.0±0. 3	7.5±0. 1	8.0±0. 1	2.25±0. 1	0.3±0. 05	Φ254±2	Φ100±1	2.0±0.5	4.0±0.8	17.5±1.5
Glass SMD 5032 crystal	3.6±0. 1	5.45±0. 1	12.0±0. 2	5.5±0. 05	8.0±0. 1	1.55±0. 1	0.3±0. 05	Φ180±2	Φ80±1	2.0±0.5	4.0±0.8	13.5±1.5
Glass SMD 3225 crystal	2.8±0. 1	3.5±0. 1	8.0±0. 2	3.5±0. 05	4.0±0. 1	1.0±0. 1	0.25 ±0. 05	Φ180±2	Φ60±1	1.2±0.5	4.0±0.8	9.0±1.5
SPXO 7.0×5.0	5. 5±0. 1	7.7±0. 1	16.0±0. 3	7.5±0. 1	8.0±0. 1	2.4±0. 1	0.3±0. 05	Φ254±2	Φ80±1	2.0	4.0±1.0	17.0±0.5
SPXO 5.0×3.2	3.6±0. 1	5.5±0. 1	12.0±0. 2	5.5±0. 05	8.0±0. 1	1.55±0. 1	0.3±0. 05	Φ180±2	Φ60±1	1.2	4.0±1.0	13.0±0.3
SPXO 3.2×2.5	2.8±0. 1	3.5±0. 1	8.2±0. 2	3.5±0. 05	4.0±0. 1	1.5±0. 1	0.25 ±0. 05	Φ180±2	Φ60±1	1.2	4.0±1.0	9.0±0.3
SPXO 2.5×2.0	2.3±0. 1	2.8±0. 1	8.0±0. 2	3.5±0. 1	4.0±0. 1	1.2±0. 1	0.3±0. 05	Φ180±2	Φ60±1	1.2	4.0±1.0	9.0±0.3
VCXO 7.0×5.0	5. 5±0. 1	7.9±0. 1	16.0±0. 3	7.5±0. 1	8.0±0. 1	2.4±0. 1	0.3±0. 05	Φ180±2	Φ60±1	1.2	4.0±1.0	17.0±0.5
VC-TCXO 3.2×2.5	2.8±0. 1	3.5±0. 1	8.0±0. 2	3.5±0. 05	4.0±0. 1	1.5±0. 1	0.25 ±0. 05	Φ180±2	Φ60±1	1.2		9.0±0.3
TCXO 3.2×2.5	2.8±0. 1	3.5±0. 1	8.0±0. 2	3.5±0. 05	4.0±0. 1	1.5±0. 1	0.25 ±0. 05	Φ180±2	Φ60±1	1.2		9.0±0.3
7L Series	1.7±0. 05	3.4±0. 05	12.0±0. 2	5.5±0. 05	4.0±0. 1	0.95 ±0. 05	0.25 ±0. 05	Φ180±2	Φ60±1	1.25±0.5	4.0±0.8	13.0±0.3
7M Series	2.0±0. 1	7.6±0. 1	16.0±0. 3	7.0±0. 1	4.0±0. 1	1.3±0. 1	0.4±0. 05	Φ330±2	Φ80±1	2.0±0.5	4.0±1.0	17.5±1.5
308C Type	4.1±0. 1	8.5±0. 1	16.0±0. 3	7.5±0. 1	8.0±0. 1	2.7±0. 1	0.3±0. 05	Φ330±2	Φ80±1	2.0±0.5	4.0±1.0	17.5±1.5
206B Type	4.0±0. 1	9.5±0. 1	16.0±0. 3	7.5±0. 1	8.0±0. 1	2.15±0. 1	0.3±0. 05	Φ330±2	Φ80±1	2.0±0.5	4.0±1.0	17.5±1.5
49 SMD Series	5.0±0. 1	12.6±0. 1	24.0±0. 3	11.5±0. 1	8.0±0. 1	5.1±0. 1	0.4±0. 05	Φ330±2	Φ80±1	2.0±0.5	4.0±1.0	25.5±1.5
49S SMD Series	5.0±0. 1	12.6±0. 1	24.0±0. 3	11.5±0. 1	8.0±0. 1	3.2±0. 1	0.4±0. 05	Φ330±2	Φ80±1	2.0±0.5	4.0±1.0	25.5±1.5

※ 1. To indicate product name and other information, Place those information on a label, and affix the label on one side of the flange.
2.The taping dimensions should be as per EIAJ RC-1009B.

Reflow Temperature Profile

	Reflow Temperature Profile A	Reflow Temperature Profile B
SMD Crystal Resonators	HC-49(S)SMD Glass C4 Type Glass SMD 8.0×4. 5 Glass SMD 5.0×3.2 Glass SMD 3.2×2.5 SMD 7.0×5.0 SMD 6.0×3.5 SMD 5.0×3.2 SMD 4.0×2.5 SMD 3.2×2.5 SMD 2.5×2.0 SMD 2.0×1.6	
Khz SMD Crystal Resonators	7M Series 7L Series	6L Series Model: 206B / 308C
SPXO	SMD 7.0×5.0 SMD 5.0×3.2 SMD 3.2×2.5 SMD 2.5×2.0	
TCXO	7T Series (SMD 3.2×2.5)	
VCXO	6S Series (SMD 7.0×5.0)	
VC-TCXO	6V Series (SMD 3.2×2.5)	

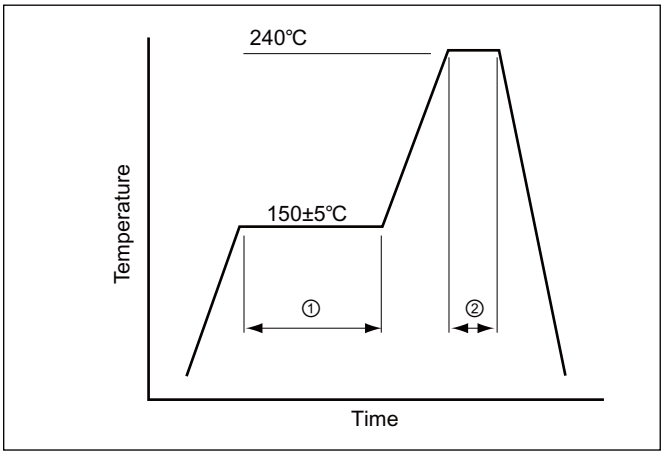
■ Reflow Temperature Profile A
(Available for lead free soldering)



①	Preheat	150±5℃	120sec.
②	Peak	260℃	10sec. max.

Total time 200sec. max. Solder melting point: 185℃

■ Reflow Temperature Profile B



①	Preheat	150±5℃	120sec.
②	Peak	240℃	5~10sec.

Total time 200sec. max.

※ The reflow temperature profile may vary depending on the product model, specifications and frequency range. Refer to the individual product specifications for details.