Voltage Controlled Crystal Oscillator/VCXO

Type	Package	Freq.range	Output	Feature
3S	3.2×2.5×0.9mm Seam sealed SMD	10~250MHz	CMOS	• Smaller size • Low jitter
3P/3V	3.2×2.5×0.9mm Seam sealed SMD	10~1500MHz	LVPECL/LVDS	• Smaller size • Differential logic
5S	5.0×3.2×1.2mm Seam sealed SMD	10~250MHz	CMOS	• Smaller size • Low jitter
5V/5P/5VH	5.0×3.2×1.2mm Seam sealed SMD	10~1500MHz	LVPECL/LVDS/ HCSL	• Smaller size • Differential logic
6S	7.0×5.0×1.4mm Seam sealed SMD	10~250MHz	CMOS	• Tight symmetry • Low phase noise
7P/6V/7VH	7.0×5.0×1.4mm Seam sealed SMD	10~1500MHz	LVPECL/LVDS/ HCSL	• Wide pulling range • Differential logic
9N/9P	14.0×9.1×3.6mm FR-4 PCB SMD Package	50~125MHz	CMOS/Sine wave	• FR-4 PCB based • 3-state available
6RH	12.9×12.9×5.5mm Through hole Package	1~200MHz	CMOS	• Standard DIP 8 Pin • Low phase noise
6RF	20.4×13.1×6.0mm Through hole Package	1~220MHz	CMOS	• Standard DIP 14 Pin • Low phase noise
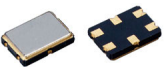
Tuning Fork Crystal Units

Type	Package	Freq.range	Feature
7K	1.6×1.0×0.5mm Seam sealed SMD Package	32.768kHZ	• Ultra smaller size • SMD Watch Crystal
7R	2.0×1.2×0.6mm Seam sealed SMD Package	32.768kHZ	• Ultra smaller size • SMD Watch Crystal
7L	3.2×1.5×0.75mm Seam sealed SMD Package	32.768kHZ	• Ultra smaller size • SMD Watch Crystal
7M	7.0×1.5×1.4mm Plastic SMD Package	32.768kHZ	• Small size • SMD Watch Crystal
6LC	8.0×3.8×2.5mm Plastic SMD Package	32.768kHZ (30~350kHz)	• SMD Watch Crystal
6K	2.0×6.0/3.0×8.0mm Through hole Package	32.768kHZ (30~350kHz)	• Watch Crystal
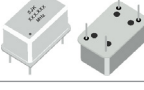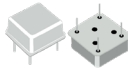
SAW Resonator/Filter

| Type	Package	Freq.range	Feature
6AW	3.2×2.5×0.7mm Seam Sealed SMD Package	315/433.92MHz	• Ultra small size • Low insert loss
QCC8D	3.0×3.0×1.4mm Seam sealed SMD Package	249.5~3700MHz	• Ultra small size • Low insert loss
DCC6C	3.0×3.0×1.5mm Seam sealed SMD Package	120~2675MHz	• Ultra small size • Low insert loss
QCC8B	3.8×3.8×1.3mm Seam sealed SMD Package	177~1990MHz	• Small size • Low insert loss
DCC6	3.8×3.8×1.5mm Seam sealed SMD Package	315~868MHz	• Ultra small size • Low insert loss
QCC4A	5.0×3.5×1.5mm Seam sealed SMD Package	315~868MHz	• Small size • Low insert loss
QCC8C	5.0×5.0×1.5mm Seam sealed SMD Package	299~868MHz	• Small size • Low insert loss
QCC12	13.3×6.5×1.6mm Seam sealed SMD Package	70~899MHz	• Small size • Low insert loss
TO-39	9.15×9.15×3.3mm TO-39 Package	303~868MHz	• Small size • Low insert loss
F-11	10.9×4.45×4.0mm F-11 Package	303~868MHz	• Small size • Low insert loss

Monolithic Crystal Filters/MCF

Type	Package	Freq.range	Feature
7DUT	11.5×4.5×11.2mm HC-49T Package	10.7~45MHz	• Low insertion loss • High selectivity
7DU1	7.8×3.1×8.0mm UM-1 Package	10.7~45MHz	• Low insertion loss • High selectivity
7DU5	7×3.1×6.0mm UM-5 Package	10.7~45MHz	• Low insertion loss • High selectivity
CF	7.0×5.0×1.3mm Seam sealed SMD Package	21.4~73.35MHz	• Excellent shock and vibration resistance • SMD package for automatic pick

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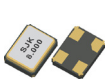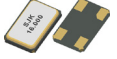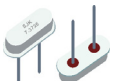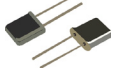
Crystal Oscillators(CMOS Output)

Type	Package	Freq.range	Output	Feature
8N	1.6×1.2×0.5mm Seam sealed SMD	1~80MHz	CMOS	• Ultra smaller size • Lo w jitter
1N	2.0×1.6×0.75mm Seam sealed SMD	32.768kHz~220MHz	CMOS	• Ultra smaller size • Low jitter
2N	2.5×2.0×0.8mm Seam sealed SMD	32.768kHz~220MHz	CMOS	• Smaller size • Low jitter
3N	3.2×2.5×1.0mm Seam sealed SMD	32.768kHz~220MHz	CMOS	• Smaller size • Low phase noise
7N	5.0×3.2×1.2mm Seam sealed SMD	32.768kHz~220MHz	CMOS	• Smaller size • Low current consumption
6N	7.0×5.0×1.3mm Seam sealed SMD	32.768kHz~220MHz	CMOS	• Smaller size • Low jitter
6MF	20.4×13.1×5.3mm Through hole Package	0.25~180MHz	CMOS	• All metal welded package • 14-Pin full-size
6MH	12.9×12.9×5.3mm Through hole Package	0.25~180MHz	CMOS	• All metal welded package • 8-Pin full-size
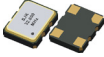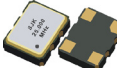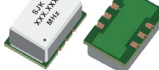
Oven Controlled Crystal Oscillator/OCXO

Type	Package	Freq.range	Output	Feature
1X	9.7×7.5×4.1mm Seam sealed SMD	10~40MHz	Rectangular /Clipped	• Ultra smaller size • SC-cut crystal
9X	14.5×9.6×6.5mm Seam sealed SMD	5~40MHz	HCMOS	• AT-cut crystal • Low power consumption
2X	20.3×12.7×11.0mm DIP-14 Full-size	5~100MHz	HCMOS /Sinewave	• SC or AT-cut crystal • High stability
3X	20.6×20.6×11.0mm Thru-hole DIP	5~40MHz	HCMOS	• Smaller size • SC-cut crystal
5X	25.4×22.1×11.0mm Seam sealed SMD	5~40MHz	HCMOS	• SC or AT-cut crystal • High stability
5X2	25.4×22.1×13.2mm Seam sealed SMD	10~100MHz	Sinewave	• SC-cut crystal • Fast warm-up
9M	25.4×25.4×12.7mm Thru-hole DIP Package	5~100MHz	Rectangular/ Sinewave	• SC-cut crystal • Low phase noise
6X	36.3×27.2×12.7mm Thru-hole DIP Package	5~100MHz	LVTTL/HCMOS /SineWave	• SC-cut crystal • Stratum 3E compliant
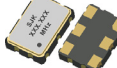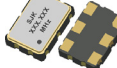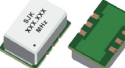
Quartz Crystal Unit

Type	Package	Freq.range	Feature
7S	1.2×1.0×0.3mm Seam sealed SMD Package	24~54MHz	• Ultra smaller size • High stability
7Y	1.6×1.2×0.35mm Seam sealed SMD Package	24~54MHz	• Ultra smaller size • High stability
7F	2.0×1.6×0.5mm Seam sealed SMD Package	16~96MHz	• Ultra smaller size • High stability
7E	2.5×2.0× 0.55mm Seam sealed SMD Package	12~54MHz	• Smaller size • High stability
7U	3.2×2.5×0.7mm Seam sealed SMD Package	8~64MHz	• High precision • High stability
7I	5.0×3.2×0.9mm Seam sealed SMD Package	8~125MHz	• High precision • High stability
6G	6.0×3.5×1.0mm Seam sealed SMD Package	8~100MHz	• Tight tolerance
6F	7.0×5.0×1.0mm Seam sealed SMD Package	6~160MHz	• Tight tolerance
6I	5.0×3.2×0.9mm Glass sealed SMD Package	8~54MHz	• Smaller size • Glass seam package
6A	11.05×4.65×13.46mm HC–49U Package	1.8432~150MHz	• High reliability • High stability
6B	10.5×3.5×3.0mm HC–49S Package	3~100MHz	• Standard footprint • PCB stacking
6C	13.0×4.8×4.0/3.0mm HC–49SMD Package	3~100MHz	• Metal can SMD package
6Z	2.0×6.0/3.0×8.0mm Cylinder Through hole	3.579~50MHz	• Small size • High shock tolerance
6D	7.8×3.2×7.8mm UM–1 Package	4~200MHz	• High frequency range
6E	7.8×3.2×6.0mm UM–5 Package	4~200MHz	• High frequency range

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Temperature Compensated Crystal Oscillators/TCXO

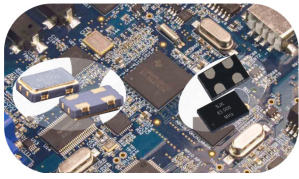| Type	Package	Freq.range	Output	Feature
7X	2.0×1.6×0.75mm Seam sealed SMD	10~60MHz	Clipped Sinewave	• Ultra smaller size • VCTCXO available
7Q	2.5×2.0×0.7mm Seam sealed SMD	32.768kHz~60MHz	Clipped Sinewave	• Ultra smaller size • VCTCXO available
7W	2.5×2.0×0.85mm Seam sealed SMD	10~60MHz	LVCMOS	• Ultra smaller size • 0.5ppm~2.0ppm
8W	3.2×2.5×1.0mm Seam sealed SMD	32.768kHz~60MHz	Clipped Sinewave	• Ultra smaller size • VCTCXO available
7T	3.2×2.5×1.0mm Seam sealed SMD	10~60MHz	LVCMOS	• Ultra smaller size • 0.5ppm~2.0ppm
5T	5.0×3.2×1.5mm Seam sealed SMD	10~60MHz	Clipped Sinewave	• Small size • VCTCXO available
8T	7.0×5.0×2.0mm Seam sealed SMD	32.768kHz~60MHz	Clipped Sinewave	• Small size • VCTCXO available
9T	14.5×9.6×6.5mm FR-4 PCB SMD Package	40~125MHz	LVCMOS	• Standard DIP 14Pin • Low phase noise
6T	20.4×12.8×7.8mm Through hole Package	1.25~52MHz	Clipped Sinewave	• FR-4 PCB based • VCTCXO available

Crystal Oscillators(Differential Output)

Type	Package	Freq.range	Output	Feature
3J/3D	3.2×2.5×1.0mm Seam sealed SMD	10~250MHz	LVPECL /LVDS	• Ultra smaller size • Low jitter
3H	3.2×2.5×1.0mm Seam sealed SMD	10~250MHz	HCSL	• Ultra smaller size • Low jitter
5J/5D	5.0×3.2×1.2mm Seam sealed SMD	10MHz~1.5GHz	LVPECL /LVDS	• Small size • Low jitter
5H	5.0×3.2×1.25mm Seam sealed SMD	10~220MHz	HCSL	• Small size • Low jitter
7J/7B	7.0×5.0×1.4mm Seam sealed SMD	10MHz~1.5GHz	LVPECL /LVDS	• Small size • Low jitter
7H	7.0×5.0×1.4mm Seam sealed SMD	10~220MHz	HCSL	• Small size • Low jitter
9J/9D	14.0×9.0×5.4mm SMD Package	25~700MHz	LVPECL /LVDS	• Low phase noise • Low jitter

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Special Introduced product - MEMS Oscillattor

MEMS Oscillator can be Pin-to-Pin quartz Oscillator
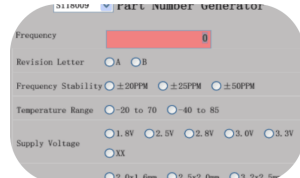
Programmable,Samples -48hrs fast delivery

High performance,Low power More reliable,Lower cost

Ultra-smaller,Up to 80% space reduction

32.768 kHz MEMS Oscillators

Type	Package	Freq.range	Output	Feature
	1.5×0.8×0.60mm MEMS Oscillator	32.768kHz	CMOS	• Ultra-size:1.5×0.8mm. • Ultra-low power:<1.0µA
	2.0×1.2×0.6mm MEMS Oscillator	32.768kHz	CMOS	• Ultra-size:2.0×1.2mm. • Ultra-low power:<1.0µA

Low Power MEMS Oscillator

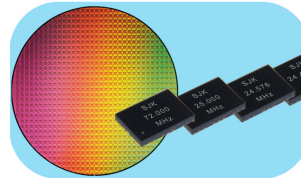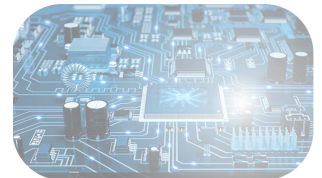| Type	Package	Freq.range	Output	Feature
	2.0×1.6 / 2.5×2.0 / 3.2×2.5 / 5.0×3.2 / 7.0×5.0 mm	1~137MHz	LVCMOS /HCMOS	• Low power of 3.5mA at 1.8V. • Faster delivery.

Differential MEMS Oscillator

Type	Package	Freq.range	Output	Feature
	3.2×2.5/ 5.0×3.2 / 7.0×5.0 mm	1~725MHz	LVPECL /LVDS/HCSL	• LVPECL/LVDS/HCSL output • Low phase jitter

High Temperature MEMS

Type	Package	Freq.range	Output	Feature
	2.0×1.6 / 2.5×2.0 / 3.2×2.5 / 5.0×3.2 / 7.0×5.0 mm	1~137MHz	LVCMOS /LVTTL	• Supply voltage:1.8,2.5,3.3V. • Faster delivery. • OTR:-40℃ ~+125℃

Spread Spectrum MEMS

Type	Package	Freq.range	Output	Feature
	2.0×1.6 / 2.5×2.0 / 3.2×2.5 mm	1~141MHz	LVCMOS /LVTTL	• Up to 30 dB reduction • EMI redution,Field Programmable

Ultra-performance MEMS

Type	Package	Freq.range	Output	Feature
	2.5×2.0 / 3.2×2.5 / 5.0×3.2 / 7.0×5.0mm	1~220MHz	LVCMOS /LVTTL	• Frequency stability:±10ppm • Phase jitter:0.5ps

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Output Type And Test Circuit

CMOS Output

Vcc
90% Vcc
50% Vcc
GND
10% Vcc

T_r T_f

T_1
$T_0=1/F_{OUT}$ Symmetry=$T_1/T_0 \times 100$ (%)

Measurement Circuit (CMOS Output)

Test Point

Oscillator ④ ③ ① ②

Power Supply Vcc

0.01μF

INH

CL

Clipped Sine Wave Output

Ground

Measurement Circuit (Clipped Sine Wave Output)

Power Supply Vcc

VC-TCXO ④ ③ ① ②

Vcon

Co

RL

CL

FET PROBE
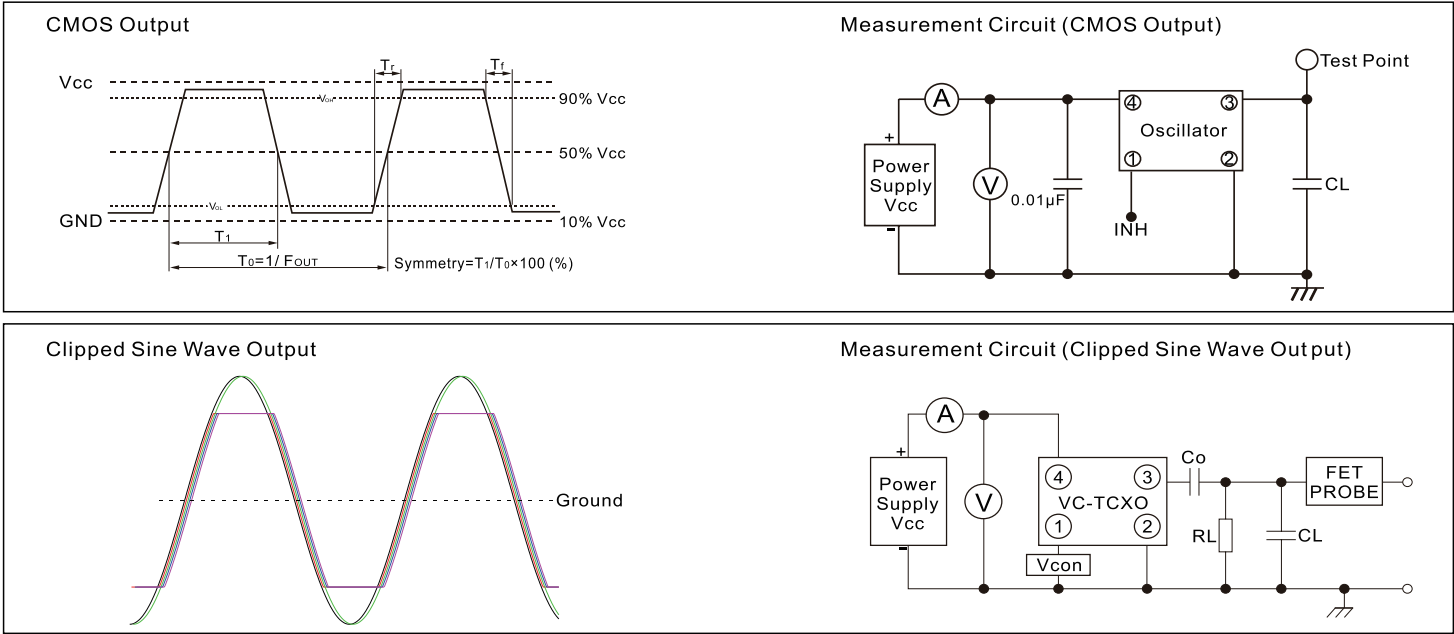
Guide To Order（订购指南）

Company（公司名）_____

Name（联系人）_____ Date（日期）_____

Phone（电话）_____ Fax（传真）_____ Email（邮件）_____

Crystal Resonator（石英晶体谐振器）

Frequency（频率）_____ MHz/kHz Quantity（需求量）_____

Type（型号）
☐ 7050 ☐ 6035 ☐ 5032 ☐ 3225 ☐ 2520 ☐ 2016 ☐ 1612 ☐ 1210
☐ 49SMD ☐ 49/S ☐ 49/U ☐ UM-1/5 ☐ 1610 ☐ 2012 ☐ 3215 ☐ MC146
☐ 308C ☐ 206B ☐ 2×6 ☐ 3×8 ☐ 2520G ☐ 3225G ☐ 5032G ☐ 8045G

Vibration mode（震荡模式）☐ AT-Cut ☐ BT-Cut ☐ Fund（基频） ☐ 3rd Overtone（三次泛音） ☐ 3rd Overtone（三次泛音）

Load Capacitance（负载电容）_____ PF（负载） Resistance ESR（晶体阻抗）_____ Max

Frequency Tolerance@25（调整频差）_____ PPM Frequency Stability（温度频差）_____ PPM

Operating Temperature Range（工作温度）_____ °C ~ + _____ °C

Crystal Oscillator（晶体振荡器）

_____   _____

☐ OSC ☐ VCXO ☐ TCXO ☐ OCXO ☐ RTC OSC
☐ 7×5 ☐ 5×3.2 ☐ 3.2×2.5 ☐ 2.5×2.0 ☐ 2.0×1.6 ☐ 1.6×1.2 ☐ 14×9.0 ☐ 25×22
☐ Full-Size ☐ Half-Size ☐ 25×25 ☐ 36×27

Output Type（输出模式） ☐ CMOS ☐ LVPECL ☐ LVDS ☐ HCSL ☐ Clipped Sine Wave ☐ Sine Wave

Frequency Stability（频率稳定）_____ ppm/ppb Operating Temperature（工作温度）____ °C ~ + _____ °C

Supply Voltage（工作电压）_____ Vdc Supply Current（电流）_____ mA

Rise/Fall Time（上升/下降时间）_____ ns Symmetey（占空比）_____ %

Control Voltage（控制电压）_____ v Linearity（线性度）_____ % Pullability（牵引力）_____ ppm