



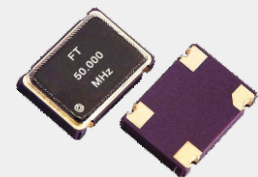
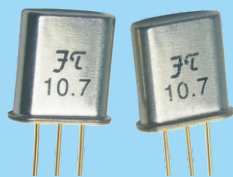
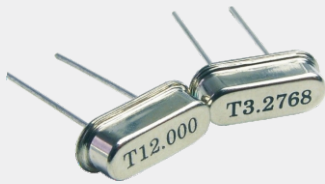
TCXO

VCTCXO

Clock Oscillator

Monolithic Crystal Filter

Quartz Crystal Resonator



COMPONENTES ELECTRÓNICOS ELCO, S.A.
Cl. de Can Ribes, 10 - 08520 Les Franqueses del Vallès
Telf. 93 879 01 94 - elcobcn@elcocomponentes.com

深圳市炬恒科技有限公司
Chip Sun Technology Co.,Ltd

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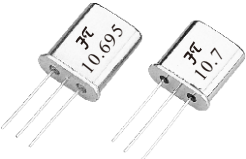




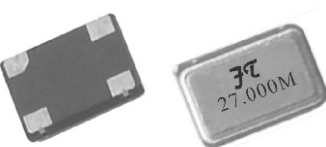
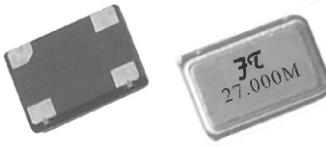
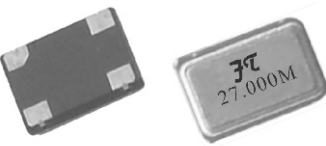
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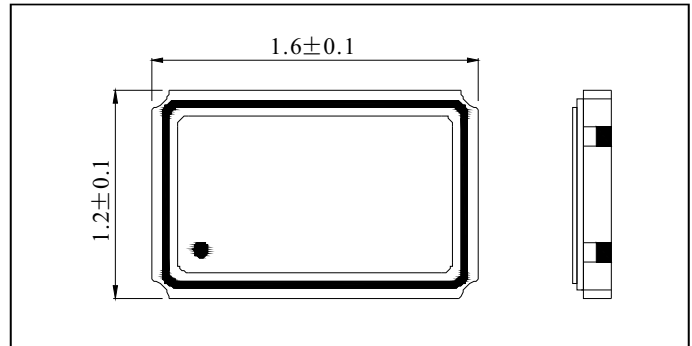
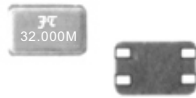
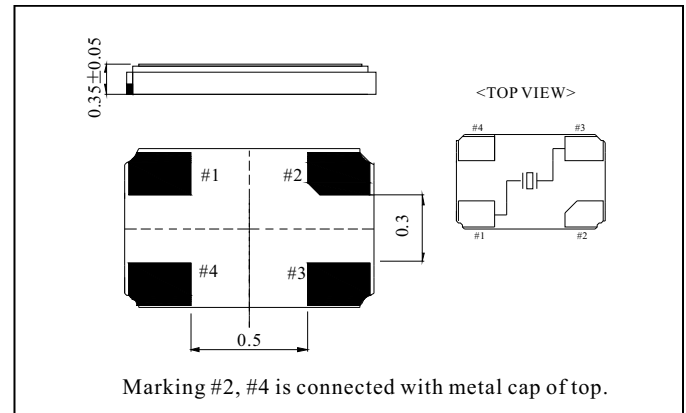
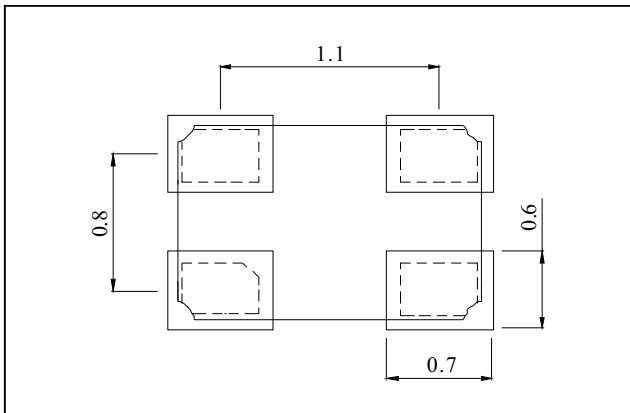
This catalog illustrates models of present standard products that are available for your ordering convenience.

If you don't find any product for your application in this catalog please contact us with the details of your requirements. These specifications may be adjusted to fit the needs of your application.

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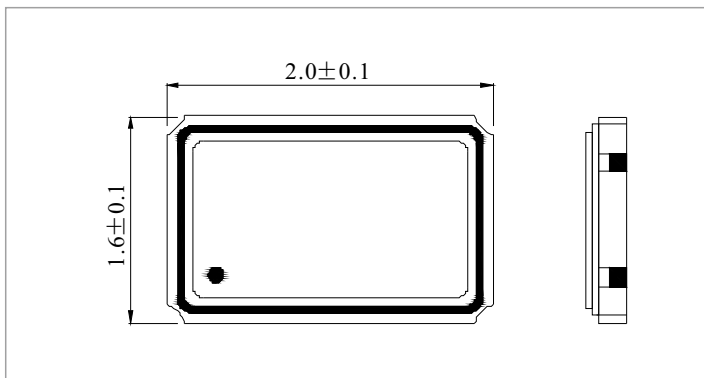
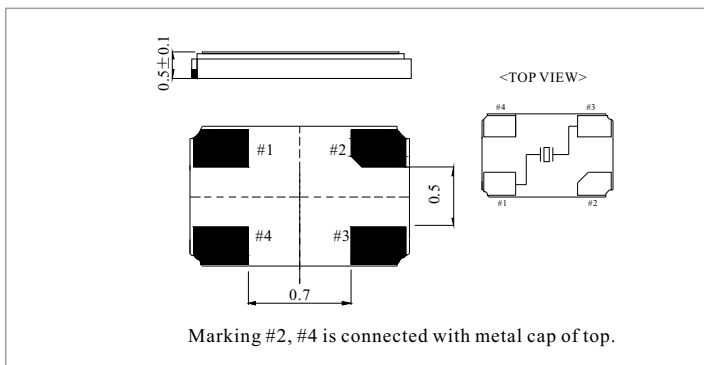
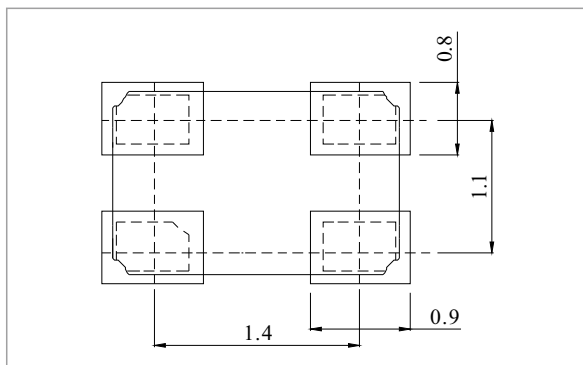
QUARTZ CRYSTAL RESONATOR
石英晶体谐振器
FTX111S TYPE
DIMENSIONS (Unit: mm) 外形尺寸

LAND PATTERN LAYOUT (EXAMPLE)

PART NUMBER GUIDE 部件号示例 e.g. *FTX32.000M10SM1S-10/10B (*SM1S=1.6×1.2 SMD SEAM TYPE)*

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Frequency Stability 温度频差	Operating temperature Range 工作温度
FT	X	32.000M	10	SM1S	10	10	B

PARAMETERS 技术参数

PARAMETERS	参数	SPECIFICATION 规格
Frequency Range	频率范围	26MHz / 32MHz Std. 26 ~ 52MHz
Operation Mode	振动模式	Fundamental
Loading Capacitance	负载电容	9pF Std. 7 to 32pF Series available
Drive Level	激励电平	10 μ W (100 μ W Max.)
Frequency Tolerance	频率偏差	±10ppm ~ ±50ppm (at 25°C)
Equivalent Resistance	谐振电阻	150 Ω Max. (Different by nominal frequency)
Frequency Stability	频率稳定性	±10ppm, ±15ppm, ±20ppm
Operating Temp. Range:	工作温度范围	-20 ~ +70°C, -40 ~ +85°C
Storage Temp. Range:	储存温度范围	-55 ~ +125°C

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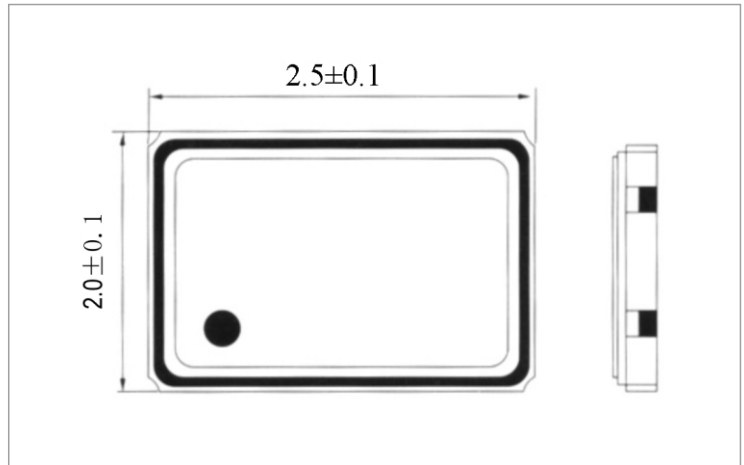
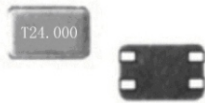
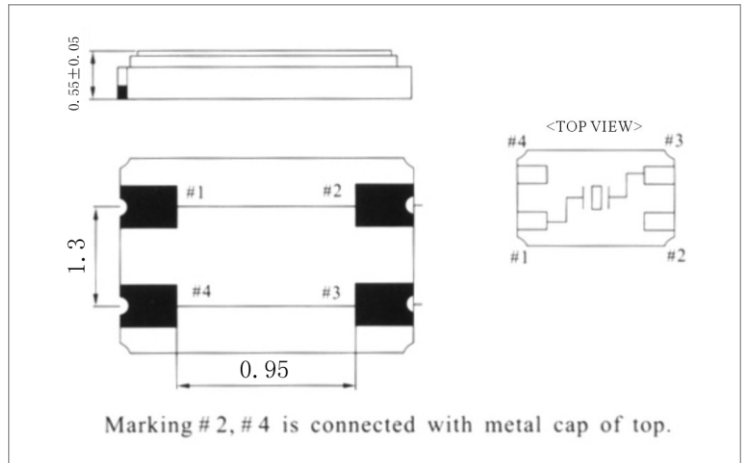
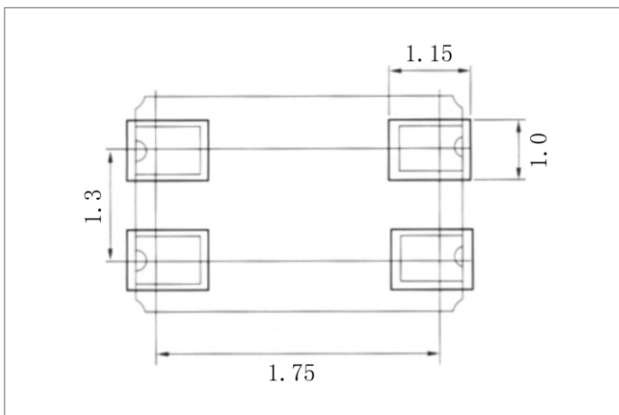
QUARTZ CRYSTAL RESONATOR
石英晶体谐振器
FTX201S TYPE
DIMENSIONS (Unit: mm) 外形尺寸

LAND PATTERN LAYOUT (EXAMPLE)

PART NUMBER GUIDE 部件号示例 e.g. FTX32.000M10SM2A-10/10B (*SM2A=2.0×1.6 SMD SEAM TYPE)

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Frequency Stability 温度频差	Operating temperature Range 工作温度
FT	X	32.000M	10	SM2A	10	10	B

PARAMETERS 技术参数

PARAMETERS	参数	SPECIFICATION 规格
Frequency Range	频率范围	24MHz / 26MHz / 32MHz Std. 16 ~ 54MHz
Operation Mode	振动模式	Fundamental
Loading Capacitance	负载电容	9pF Std. 7 to 32pF Series available
Drive Level	激励电平	10 μ W (100 μ W Max.)
Frequency Tolerance	频率偏差	±10ppm ~ ±50ppm (at 25°C)
Equivalent Resistance	谐振电阻	100 Ω Max. (Different by nominal frequency)
Frequency Stability	频率稳定性	±10ppm, ±15ppm, ±20ppm
Operating Temp. Range:	工作温度范围	-20 ~ +70°C, -40 ~ +85°C
Storage Temp. Range:	储存温度范围	-55 ~ +125°C

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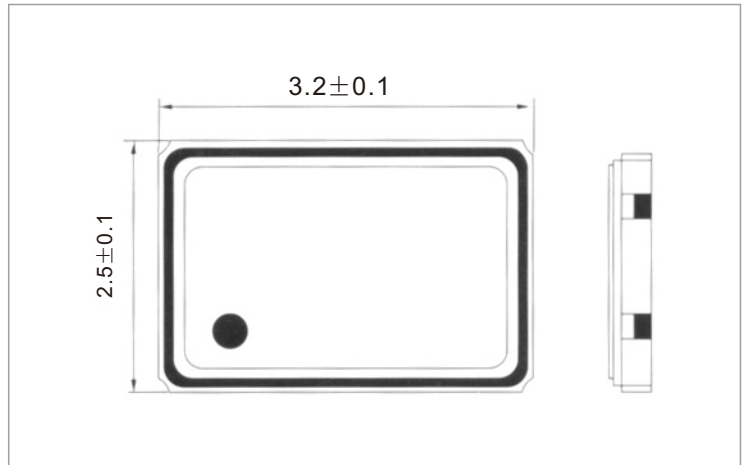
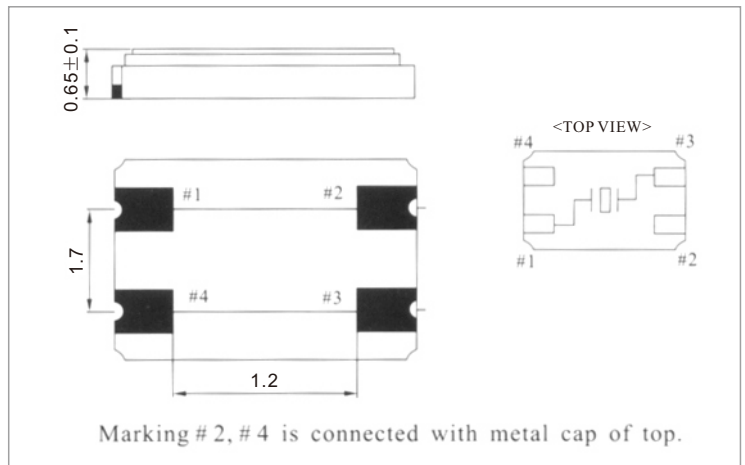
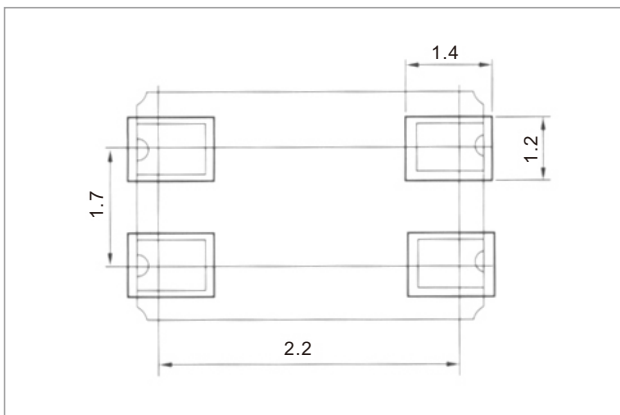
QUARTZ CRYSTAL RESONATOR
石英晶体谐振器
FTX221S TYPE
DIMENSIONS (Unit: mm) 外形尺寸

LAND PATTERN LAYOUT(EXAMPLE)

PART NUMBER GUIDE 部件号示例
*e.g. FTX26.000M9SM2S-10/10B (*SM2S=2.5×2.0 SMD S-SEAM TYPE)*

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Frequency Stability 温度频差	Operating temperature Range 工作温度
FT	X	26.000M	9	SM2S	10	10	B

PARAMETERS 技术参数

PARAMETERS	参数	SPECIFICATION 规格
Frequency Range	频率范围	16MHz / 24MHz / 26MHz Std. 12~54MHz
Operation Mode	振动模式	Fundamental
Load Capacitance	负载电容	9pF Std. 8 to 32pF Series available
Drive Level	激励电平	10 μ W (300 μ W Max)
Frequency Tolerance	频率偏差	±10ppm ~ ±30ppm (at 25°C)
Motional Resistance	谐振电阻	120 Ω Max (Different by nominal frequency)
Frequency Stability	频率稳定性	±10ppm, ±15ppm, ±20ppm
Operating Temp. Range	工作温度范围	-20~+70°C, -40~+85°C
Storage Temp. Range	储存温度范围	-55~+125°C

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QUARTZ CRYSTAL RESONATOR
石英晶体谐振器
FTX321S TYPE
DIMENSIONS (Unit: mm) 外形尺寸

LAND PATTERN LAYOUT(EXAMPLE)

PART NUMBER GUIDE 部件号示例

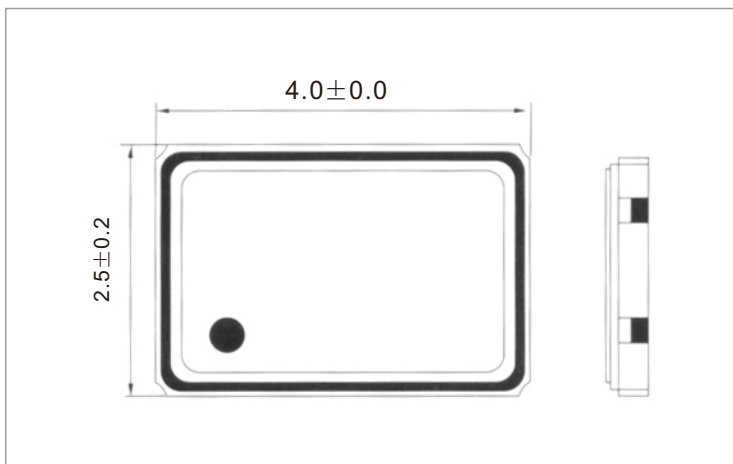
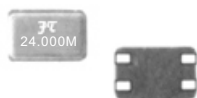
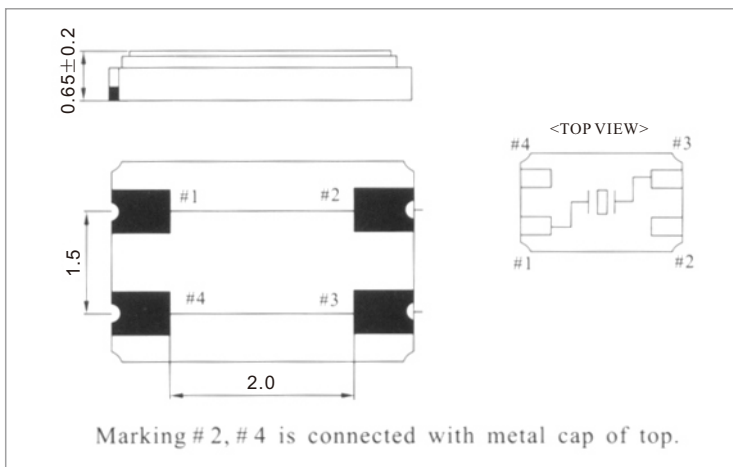
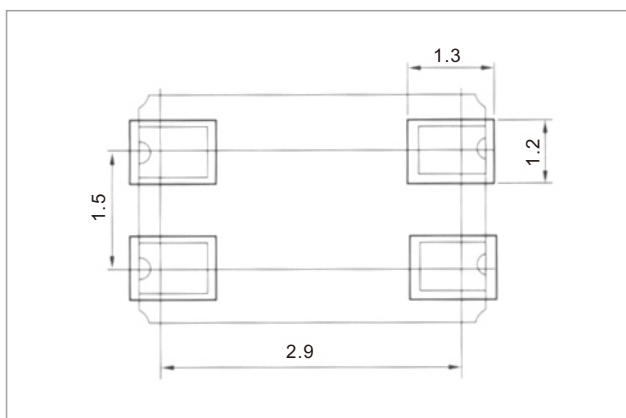
e.g. FTX24.000M20SM3S-20/20B (*SM3S=3.2×2.5 SMD S-SEAM TYPE)

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Frequency Stability 温度频差	Operating temperature Range 工作温度
FT	X	24.000M	20	SM3S	20	20	B

PARAMETERS 技术参数

PARAMETERS	参数	SPECIFICATION 规格
Frequency Range	频率范围	12MHz~54MHz
Operation Mode	振动模式	Fundamental
Load Capacitance	负载电容	9pF Std. 6 to 32pF Series available
Drive Level	激励电平	10uW(300uW Max)
Frequency Tolerance	频率偏差	±10ppm~±30 ppm (at 25°C)
Motional Resistance	谐振电阻	80 Ω max
Frequency Stability	频率稳定性	±10ppm, ±20ppm
Operating Temp. Range	工作温度范围	-20~+70°C, -40~+85°C
Storage Temp. Range	储存温度范围	-55~+125°C

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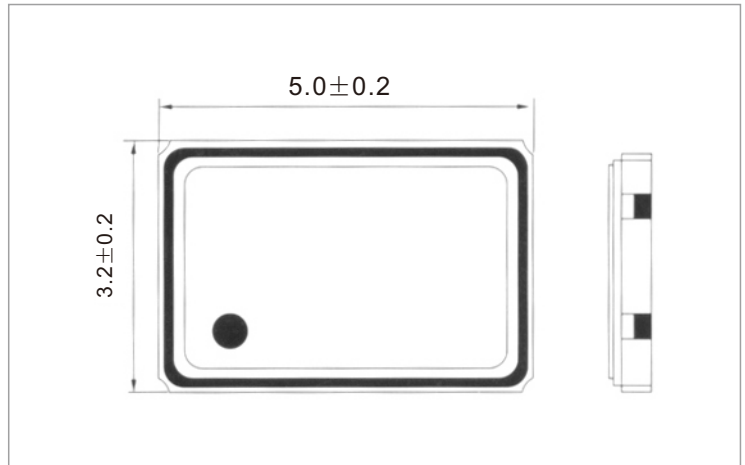
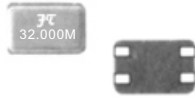
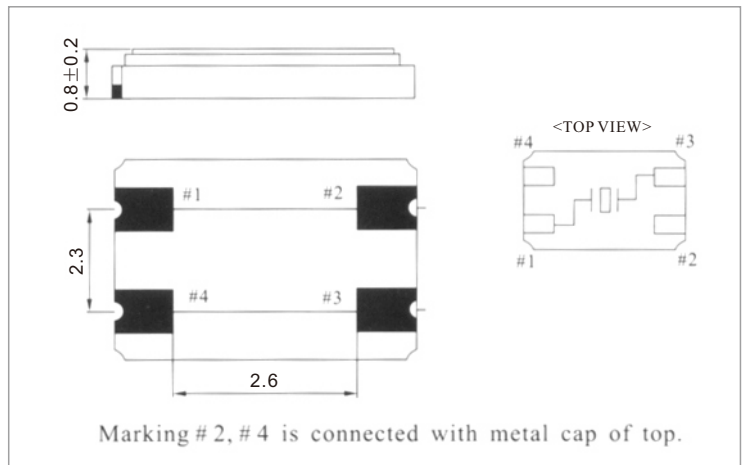
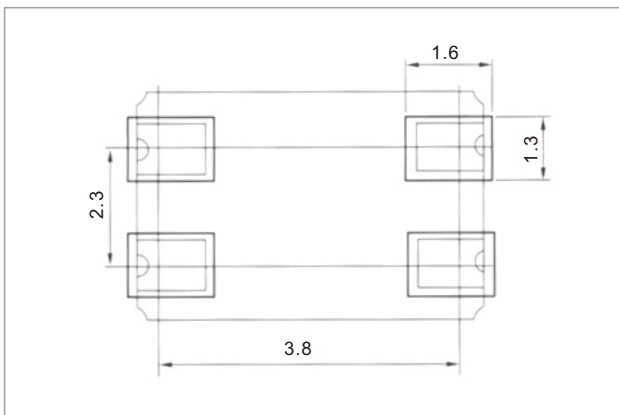
QUARTZ CRYSTAL RESONATOR
石英晶体谐振器
FTX421S TYPE
DIMENSIONS (Unit: mm) 外形尺寸

LAND PATTERN LAYOUT(EXAMPLE)

PART NUMBER GUIDE 部件号示例
*e.g. FTX24.000M20SM4S-20/20B (*SM4S=4.0×2.5 SMD S-SEAM TYPE)*

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Frequency Stability 温度频差	Operating temperature Range 工作温度
FT	X	24.000M	20	SM4S	20	20	B

PARAMETERS 技术参数

PARAMETERS	参数	SPECIFICATION 规格
Frequency Range	频率范围	12MHz / 13MHz / 16MHz / 26MHz Std, 12~50MHz
Operation Mode	振动模式	Fundamental
Load Capacitance	负载电容	9pF Std. 6 to 32pF Series available
Drive Level	激励电平	10uW(300uW Max)
Frequency Tolerance	频率偏差	±10ppm~±30 ppm (at 25°C)
Motional Resistance	谐振电阻	60 Ω max
Frequency Stability	频率稳定性	±10, ±15, ±20(Unit : ppm)
Operating Temp. Range	工作温度范围	-20~+70°C, -40~+85°C
Storage Temp. Range	储存温度范围	-55~+125°C

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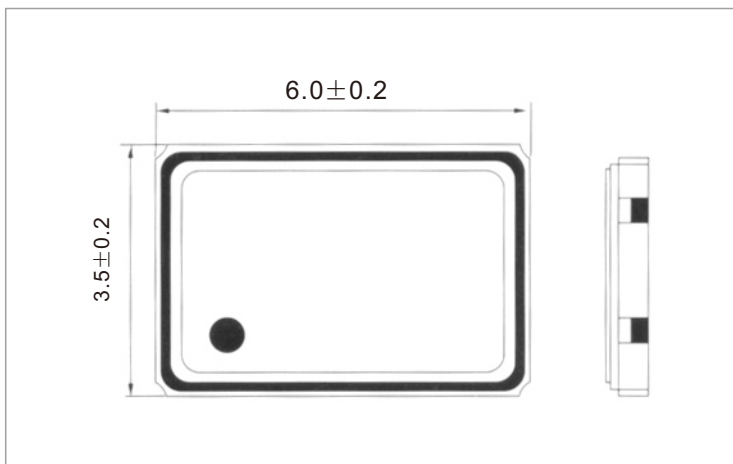
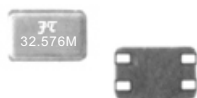
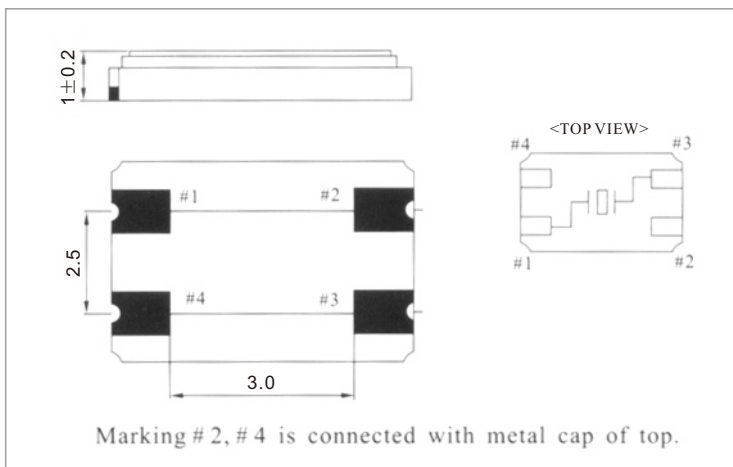
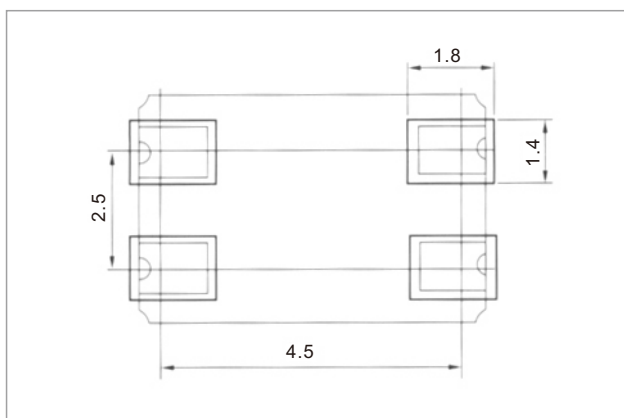
QUARTZ CRYSTAL RESONATOR
石英晶体谐振器
FTX531S TYPE
DIMENSIONS (Unit: mm) 外形尺寸

LAND PATTERN LAYOUT(EXAMPLE)

PART NUMBER GUIDE 部件号示例
*e.g. FTX24.000M20SM5S-20/20B (*SM5S=5.0×3.2 SMD S-SEAM TYPE)*

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Frequency Stability 温度频差	Operating temperature Range 工作温度
FT	X	24.000M	20	SM5S	20	20	B

PARAMETERS 技术参数

PARAMETERS	参数	SPECIFICATION 规格	
Frequency Range	频率范围	10~60MHz	40~60MHz
Operation Mode	振动模式	Fundamental	3rd Overtone
Load Capacitance	负载电容	8 to 32pF Series available	8 to 32pF Series available
Drive Level	激励电平	10uW(300uW Max)	10uW(300uW Max)
Frequency Tolerance	频率偏差	±10ppm~±30ppm (at 25°C)	±10ppm~±30ppm (at 25°C)
Motional Resistance	谐振电阻	80 Ω max(10-12MHz) 50 Ω max(12~48MHz)	80 Ω max
Frequency Stability	频率稳定性	±10, ±15, ±20(Unit : ppm)	±10, ±15, ±20(Unit : ppm)
Operating Temp. Range	工作温度范围	-20°C~+70°C -40°C~+85°C	-20~+70°C, -40~+85°C
Storage Temp. Range	储存温度范围	-55°C~+125°C	-55~+125°C

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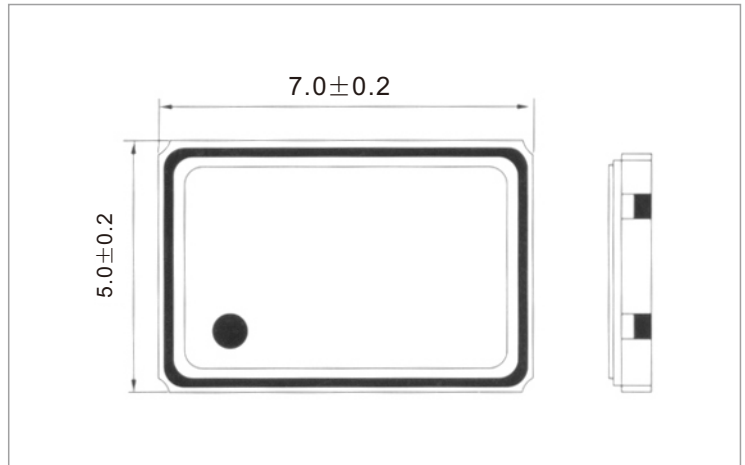
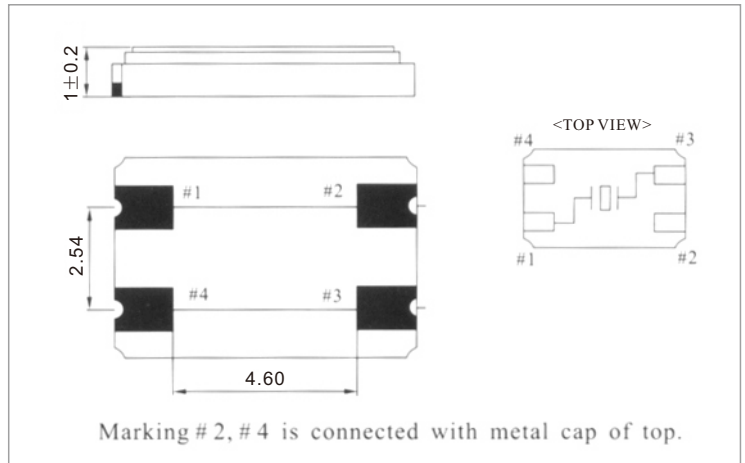
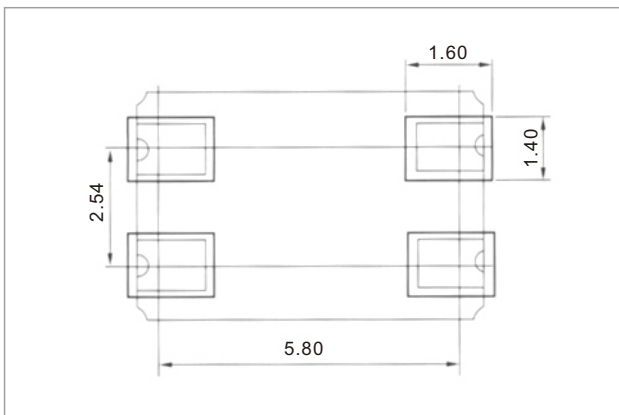
QUARTZ CRYSTAL RESONATOR
石英晶体谐振器
FTX631S TYPE
DIMENSIONS (Unit: mm) 外形尺寸

LAND PATTERN LAYOUT (EXAMPLE)

PART NUMBER GUIDE 部件号示例
*e.g. FTX24.000M20SM6S-20/20B (*SM6S=6.0x3.5 SMD S-SEAM TYPE)*

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Frequency Stability 温度频差	Operating temperature Range 工作温度
FT	X	24.000M	20	SM6S	20	20	B

PARAMETERS 技术参数

PARAMETERS	参数	SPECIFICATION 规格	
Frequency Range	频率范围	8MHz~48MHz	40MHz~80MHz
Operation Mode	振动模式	Fundamental	3rd Overtone
Load Capacitance	负载电容	8 to 32pF Series available	8 to 32pF Series available
Drive Level	激励电平	10uW(300uW Max)	10uW(300uW Max)
Frequency Tolerance	频率偏差	±10ppm~±30 ppm (at 25°C)	±10ppm~±30 ppm (at 25°C)
Motional Resistance	谐振电阻	60 Ω max(10-12MHz), 50 Ω max(12~40MHz)	70 Ω max
Frequency Stability	频率稳定性	±10, ±15, ±20(Unit : ppm)	±10, ±15, ±20(Unit : ppm)
Operating Temp. Range	工作温度范围	-20°C~+70°C -40°C~+85°C	-20~+70°C, -40~+85°C
Storage Temp. Range	储存温度范围	-55°C~+125°C	-55~+125°C

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QUARTZ CRYSTAL RESONATOR
石英晶体谐振器
FTX751S TYPE
DIMENSIONS (Unit: mm) 外形尺寸

LAND PATTERN LAYOUT (EXAMPLE)

PART NUMBER GUIDE 部件号示例

e.g. FTX24.000M20SM7S-20/20B (*SM7S=7.0×5.0 SMD S-SEAM TYPE)

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Frequency Stability 温度频差	Operating temperature Range 工作温度
FT	X	24.000M	20	SM7S	20	20	B

PARAMETERS 技术参数

PARAMETERS	参数	SPECIFICATION 规格	
Frequency Range	频率范围	6MHz~48MHz	40MHz~80MHz
Operation Mode	振动模式	Fundamental	3rd Overtone
Load Capacitance	负载电容	8 to 32pF Series available	8 to 32pF Series available
Drive Level	激励电平	10uW(300uW Max)	10uW(500uW Max)
Frequency Tolerance	频率偏差	±10ppm~±30 ppm (at 25°C)	±10ppm~±30 ppm (at 25°C)
Motional Resistance	谐振电阻	50 Ω max	70 Ω max
Frequency Stability	频率稳定性	±10, ±15, ±20(Unit : ppm)	±10, ±15, ±20(Unit : ppm)
Operating Temp. Range	工作温度范围	20°C ~+70°C	-20~+70°C, -40~+85°C
Storage Temp. Range	储存温度范围	-40°C ~+85°C	-55~+125°C

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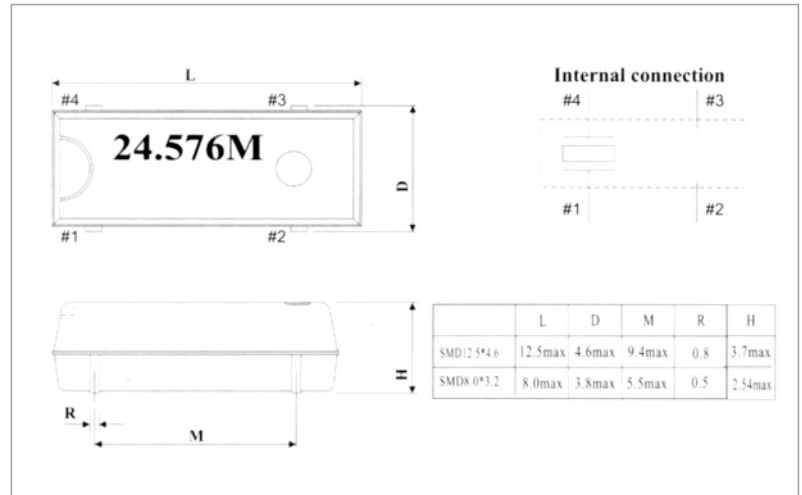
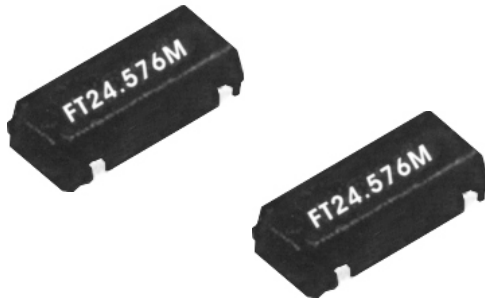


QUARTZ CRYSTAL RESONATOR

石英晶体谐振器

SMD12.5×4.6

DIMENSIONS (Unit: mm) 外形尺寸



© NOTICE: Do not connect #2 and #3 to external device.

PART NUMBER GUIDE 部件号示例 e.g. FTX24.000M20SM12-20/20B (*SM12=SMD12.5x4.6)

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Frequency Stability 温度频差	Operating temperature Range 工作温度
FT	X	24.000M	20	SM12	20	20	B

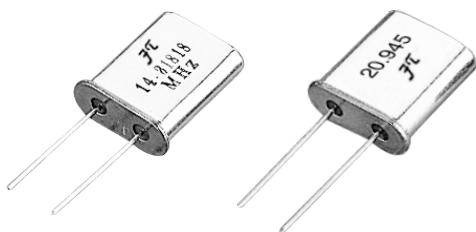
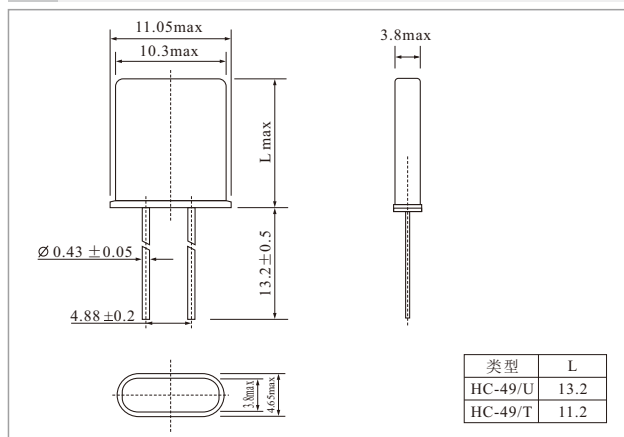
PARAMETERS 技术参数

ITEM	SYMBOL	SPECIFICATIONS	REMARKS
Nominal Frequency 标称频率	f	3.579~27MHz	Stored as bare product after unpacking
Temperature Range 温度范围	Storage Temp. 储存温度	T _{STG}	-55°C to +125°C
	Operating Temp. 工作温度	T _{OPR}	-10~+60°C to -40~+85°C
Maximum Drive Level 测试激励电平	GL	100 μW max	
Frequency Tolerance(Standard) 调整频差	Δ f/f	±10ppm~ ±50ppm	Ta=+25°C DL=1.0 μW
Load Capacitance 负载电容	C _L	20pF Std. 8 to 35pF series available	Please specify
Series Resistance 谐振电阻	R ₁	50 Ω ~200 Ω	
Shunt Capacitance 静态电容	C ₀	5.0pF max	
Insulation Resistance 绝缘电阻	IR	500M Ω min	
Aging 老化率	Fa	±5×10 ⁻⁶ / year max	Ta=+25°C ±3°C(First Year)

© Metal may be exposed on the top of this product. This won't affect any quality, reliability or electrical spec.

Series Resistance 谐振电阻

Frequency(MHz)	频率范围	3.5≤f<4	4≤f<6	6≤f<10	10≤f<27
Series Resistance(Ω)	谐振电阻	200 Ω	150 Ω	100 Ω	50 Ω

QUARTZ CRYSTAL RESONATOR
石英晶体谐振器
HC-49U/HC-49T DIP TYPE

DIMENSIONS (Unit: mm) 外形尺寸

PART NUMBER GUIDE 部件号示例 e.g. FTX14.318M20U-30/30A (*U=HC-49U T=HC-49T)

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Frequency Stability 温度频差	Operating temperature Range 工作温度
FT	X	14.318M	20	U	30	30	A

1.PARAMETERS 技术参数

PARAMETER	参 数	SPECIFICATION 规格
Frequency Range	频率范围 (MHz)	1.8MHz~200MHz
Operation Mode	振动模式	See Table 2 见表2
Load capacitance C_L	负载电容 (pF)	20pF Std. 8 to 35pF series available
Frequency Tolerance F_L	调整频差 (ppm)	± 30 ppm@25°C Std. (± 10 ppm~ ± 100 ppm available)
Temperature Tolerance T_L	温度频差 (ppm)	± 30 ppm Std. (See Table 3 见表3)
Operating Temperature T_o	工作温度 (°C)	-20°C to +70°C Std. (See Table 3 见表3)
Storage Temperature S_T	储存温度 (°C)	-55°C to +125°C
Motional Resistance R_s	谐振电阻 (Ω)	See Table 2 见表2
Shunt Capacitance C_o	静态电容 (pF)	7pF max
Drive Level D_L	激励电平 (mW)	0.01mW~1mW
Insulation Resistance I_R	绝缘电阻 (M Ω)	500(DC500 \pm 10V) min
Aging@25°C	老化率 (ppm/y)	± 5 ppm max

© All specifications subject change without notice. 规格变化，恕不另行通知。

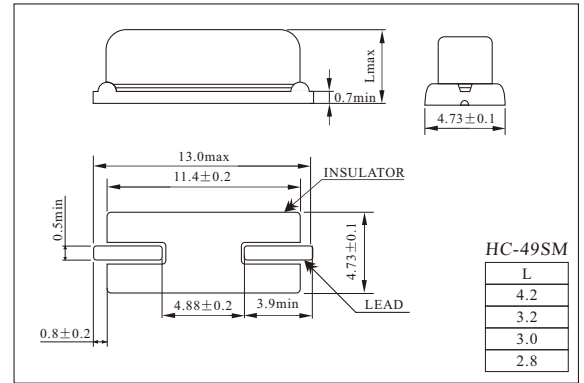
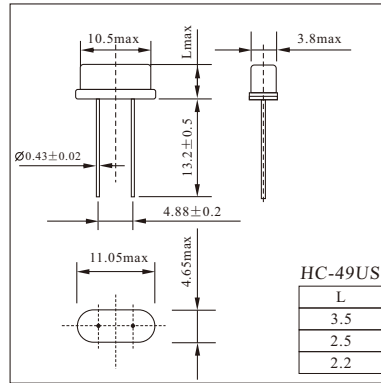
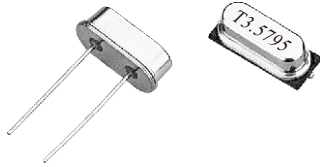
2. OPERATION MODE AND RS 振动模式与谐振电阻

FREQUENCY	TYPE	MODE	HC-49T (Ω max)	HC-49U (Ω max)
1.8MHz~2.0MHz		FUND		600
2.0MHz~2.4MHz		FUND		450
2.4MHz~3.0MHz		FUND		350
3.0MHz~3.5MHz		FUND		150
3.5MHz~4.0MHz		FUND	120	90
4.0MHz~7.0MHz		FUND	90	70
7.0MHz~10MHz		FUND	50	50
10MHz~15MHz		FUND	45	35
15MHz~20MHz		FUND	25	25
20MHz~25MHz		FUND/3 rd OVERTONE	25/60	25/50
25MHz~30MHz		FUND/3 rd OVERTONE	25/40	25/40
30MHz~100MHz		3 rd OVERTONE	40	40
60MHz~120MHz		5 th OVERTONE	100	100
120MHz~200MHz		7 th OVERTONE	150	150
20MHz~40MHz		BT FUND	40	40

3. FREQUENCY-TEMPERATURE TOLERANCE 温度频差

● Recommended 推荐使用 ○ Available 可用

Cutting 切型	Temp. Range	Tolerance(ppm)					
		± 5	± 10	± 15	± 20	± 30	± 50
AT	0°C~+50°C	○	○	○	○	○	○
	-10°C~+60°C		○	○	●	○	○
	-20°C~+70°C			○	○	●	○
	-30°C~+80°C				○	○	●
	-40°C~+85°C						○
BT	Within a range of $\pm 80 \sim \pm 120$ ppm BT 切温度频差一般为 $\pm 80 \sim \pm 120$ ppm						

QUARTZ CRYSTAL RESONATOR
石英晶体谐振器
HC-49US/HC-49SM DIP/SMD TYPE
DIMENSIONS (Unit:mm) 外形尺寸

PART NUMBER GUIDE 部件号示例
*e.g. FTX24.000M20S-20/20B (*S=HC-49US SM=HC-49SMD)*

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Frequency Stability 温度频差	Operating temperature Range 工作温度
FT	X	24.000M	20	S	20	30	B

1.PARAMETERS 技术参数

PARAMETER	参 数	SPECIFICATION 规格
Frequency Range	频率范围 (MHz)	3.0MHz~100.0MHz
Operation Mode	振动模式	See Table 2 见表2
Load capacitance C_L	负载电容 (pF)	20pF Std. 8 to 35pF series available
Frequency Tolerance F_L	调整频差 (ppm)	$\pm 30\text{ppm}@25^\circ\text{C}$ Std. ($\pm 5\text{ppm}\sim\pm 100\text{ppm}$ available)
Temperature Tolerance T_L	温度频差 (ppm)	$\pm 30\text{ppm}$ Std. (See Table 3 见表3)
Operating Temperature T_o	工作温度 ($^\circ\text{C}$)	-20°C to $+70^\circ\text{C}$ Std. (See Table 3 见表3)
Storage Temperature S_T	储存温度 ($^\circ\text{C}$)	-55°C to $+125^\circ\text{C}$
Motional Resistance R_s	谐振电阻 (Ω)	See Table 2 见表2
Shunt Capacitance C_o	静态电容 (pF)	7pF max
Drive Level D_L	激励电平 (mW)	0.01mW~1mW
Insulation Resistance I_R	绝缘电阻 ($M\Omega$)	500(DC500 \pm 10V) min
Aging@25 $^\circ\text{C}$	老化率 (ppm/y)	$\pm 5\text{ppm}$ max

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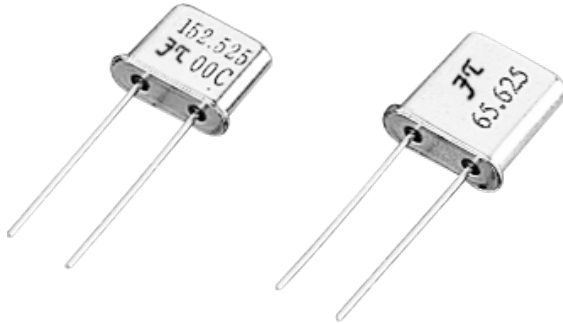
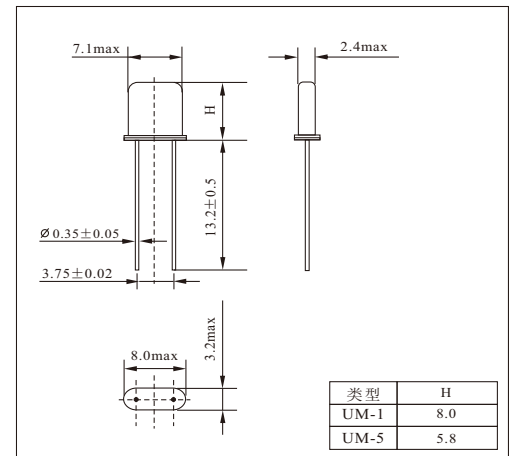
2. OPERATION MODE AND RS 振动模式与谐振电阻

FREQUENCY	TYPE	MODE	HC-49U/S (Ω max)
3.0MHz~3.5MHz		FUND	300
3.5MHz~3.8MHz		FUND	150
3.8MHz~4.1MHz		FUND	120
4.1MHz~5.0MHz		FUND	100
5.0MHz~6.0MHz		FUND	80
6.0MHz~8.0MHz		FUND	70
8.0MHz~10.0MHz		FUND	60
10.0MHz~12.0MHz		FUND	50
12.0MHz~28.0MHz		FUND	40
28.0MHz~33.5MHz		FUND	50
26.0MHz~100.0MHz		3 rd OVERTONE	100
20.0MHz~40.0MHz		BT Found	40

3. FREQUENCY-TEMPERATURE TOLERANCE 温度频差

● Recommended 推荐使用 ○ Available 可用

Cutting 切型	Temp. Range	Tolerance(ppm)					
		± 5	± 10	± 15	± 20	± 30	± 50
AT	0 $^\circ\text{C}$ ~+50 $^\circ\text{C}$	○	○	○	○	○	○
	-10 $^\circ\text{C}$ ~+60 $^\circ\text{C}$		○	○	○	●	○
	-20 $^\circ\text{C}$ ~+70 $^\circ\text{C}$			○	○	○	●
	-30 $^\circ\text{C}$ ~+80 $^\circ\text{C}$				○	○	○
	-40 $^\circ\text{C}$ ~+85 $^\circ\text{C}$						○
BT	Freq. vs temp. for cutting within a range of $\pm 80\text{ppm}\sim\pm 120\text{ppm}$ BT 切温度频差一般为 $\pm 80\text{ppm}\sim\pm 120\text{ppm}$						

QUARTZ CRYSTAL RESONATOR
石英晶体谐振器
UM-1/UM-5 DIP TYPE

DIMENSIONS (Unit:mm) 外形尺寸

PART NUMBER GUIDE 部件号示例 e.g. FTX12.000M20U1-10/5B (*U1=UM-1 U5=UM-5)

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Frequency Stability 温度频差	Operating temperature Range 工作温度
FT	X	12.000M	20	U1	10	5	B

1.PARAMETERS 技术参数

PARAMETER	参 数	SPECIFICATION 规格
Frequency Range	频率范围 (MHz)	8.0MHz~200.0MHz
Operation Mode	振动模式	See Table 2 见表2
Load capacitance C_L	负载电容 (pF)	20pF Std. 6 to 35pF series available
Frequency Tolerance F_L	调整频差 (ppm)	$\pm 10\text{ppm}@25^\circ\text{C}$ Std. ($\pm 5\text{ppm}\sim\pm 100\text{ppm}$ available)
Temperature Tolerance T_L	温度频差 (ppm)	$\pm 10\text{ppm}$ Std. (See Table 3 见表3)
Operating Temperature T_o	工作温度 ($^\circ\text{C}$)	-20°C to $+70^\circ\text{C}$ Std. (See Table 3 见表3)
Storage Temperature S_T	储存温度 ($^\circ\text{C}$)	-55°C to $+125^\circ\text{C}$
Motional Resistance R_s	谐振电阻 (Ω)	See Table 2 见表2
Shunt Capacitance C_o	静态电容 (pF)	7pF max
Drive Level D_L	激励电平 (mW)	0.01mW~1mW
Insulation Resistance I_R	绝缘电阻 (M Ω)	500(DC500 \pm 10V) min
Aging@25 $^\circ\text{C}$	老化率 (ppm/y)	$\pm 3\text{ppm}$ max

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2. OPERATION MODE AND RS 振动模式与谐振电阻

FREQUENCY	TYPE	MODE	UM-1 (Ω_{max})	UM-5 (Ω_{max})
10MHz~15MHz		Fund	40	
15MHz~20MHz		Fund	30	40
20MHz~30MHz		Fund	25	35
30MHz~105MHz		3 rd Overtone	45	45
60MHz~150MHz		5 th Overtone	100	100
150MHz~200MHz		7 th Overtone	150	150

3. FREQUENCY-TEMPERATURE TOLERANCE 温度频差

- Recommended 推荐使用
- Available 可用

Cutting 切型	Temp. Range	Tolerance (ppm)				
		± 5.0	± 10	± 15	± 20	± 30
AT	0 $^\circ\text{C}$ ~+50 $^\circ\text{C}$	○	○	○	○	○
	-10 $^\circ\text{C}$ ~+60 $^\circ\text{C}$		●	○	○	○
	-20 $^\circ\text{C}$ ~+70 $^\circ\text{C}$			○	●	○
	-30 $^\circ\text{C}$ ~+80 $^\circ\text{C}$				○	●
	-40 $^\circ\text{C}$ ~+85 $^\circ\text{C}$					○

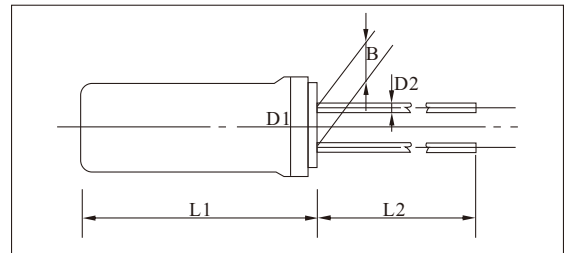
QUARTZ CRYSTAL RESONATOR

石英晶体谐振器

AT26/AT38/AT39/AT310 DIP TYPE



DIMENSIONS (Unit: mm) 外形尺寸



外型	L1	L2	D1	D2	B
AT26(Φ2×6)	6.3	8.0	Φ2.1	Φ0.2	0.7
AT38(Φ3×8)	8.3	10.0	Φ3.1	Φ0.3	0.8
AT39(Φ3×9)	9.3	10.0	Φ3.1	Φ0.3	1.1
AT310(Φ3×10)	10.3	10.0	Φ3.1	Φ0.3	1.1

PART NUMBER GUIDE 部件号示例

e.g. FTX12.000M20A8-30/30B (*A6=AT26 A8=AT38 A9=AT39 A10=AT310)

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Frequency Stability 温度频差	Operating temperature Range 工作温度
FT	X	12.000M	20	A8	30	30	B

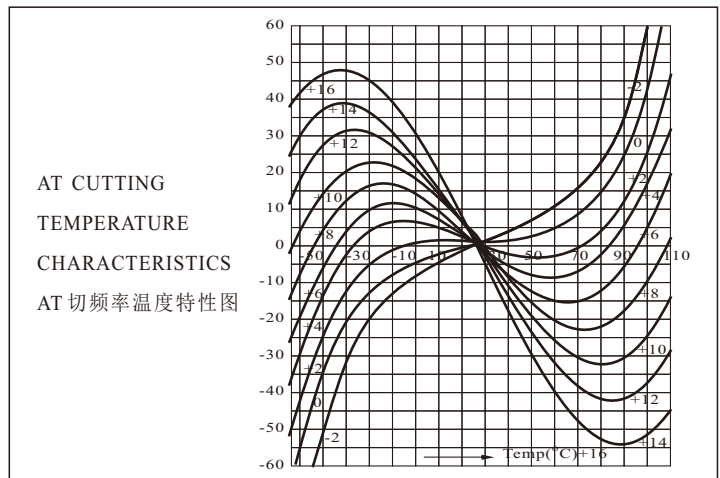
1. PARAMETERS 技术参数

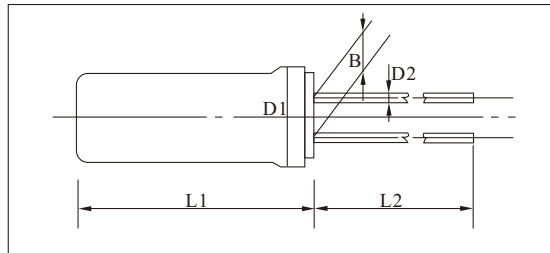
PARAMETER	参数	SPECIFICATION	规格
Frequency Range	频率范围 (MHz)	3.579MHz ~ 70MHz	
Operation Mode	振动模式	See Table 2 见表2	
Load Capacitance C_L	负载电容 (pF)	20pF std. 8 to 35pF series available	
Frequency Tolerance F_L	调整频差 (ppm)	±10ppm ~ 50ppm	
Temperature Tolerance T_L	温度频差 (ppm)	±50ppm Std.	
Operating Temperature O_T	工作温度 (°C)	-10°C to +60°C Std. (See P4 Table 3 见第四页表3)	
Storage Temperature S_T	储存温度 (°C)	-55°C ~ 125°C	
Motional Resistance R_s	谐振电阻 (Ω)	See Table 2 见表2	
Shunt Capacitance C_0	静态电容 (pF)	7pF max	
Drive Level D_L	激励电平 (mW)	0.01mW ~ 1mW	
Insulation Resistance I_R	绝缘电阻 (MΩ)	500(DC50±10V)min	
Aging@25°C	老化率 (ppm/y)	±5ppm max	

All specifications subject change without notice. 规格变化, 如不另行通知

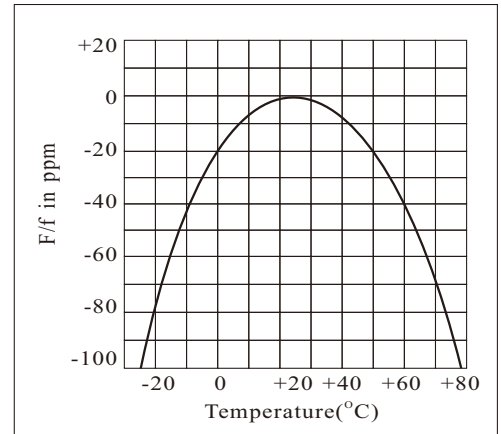
2. OPERATION MODE AND RS 振动模式与谐振电阻

TYPE	MODE	RS (Ωmax)
FREQUENCY		
3.579MHz~3.699MHz	FUND	200
3.700MHz~3.999MHz	FUND	180
4.000MHz~4.099MHz	FUND	150
4.100MHz~4.999MHz	FUND	120
5.000MHz~5.999MHz	FUND	100
7.000MHz~9.999MHz	FUND	80
10.000MHz~11.999MHz	FUND	70
12.000MHz~13.999MHz	FUND	60
14.000MHz~15.999MHz	FUND	50
16.000MHz~30.000MHz	FUND	40
27.000MHz~60.000MHz	3 rd OVERTONE	100



QUARTZ CRYSTAL RESONATOR
石英晶体谐振器
DT38/DT26/DT15 DIP TYPE
⊕ DIMENSIONS (Unit: mm) 外形尺寸


L1	L2	D1	D2	B
6.0 max	6.5 min	∅2.0 max	∅0.25	0.7
8.0 max	9.0 min	∅3.1 max	∅0.32	0.8
6.0 max	4.0 min	∅2.0 max	∅0.2	0.7
5.0 max	4.0 min	∅1.5 max	∅0.2	0.5
4.6 max	4.0 min	∅1.2 max	∅0.15	0.3

⊕ TEMPERATURE CHARACTERISTICS

⊕ PART NUMBER GUIDE 部件号示例
*e.g. FTX32.768K12.5D8-10B (*D6=DT26 D8=DT38)*

FT	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Operating temperature Range 工作温度
	X	32.768K	12.5	D8	10	B

⊕ PARAMETERS 技术参数

ITEM	SYMBOL	SPECIFICATIONS	REMRKS
Nominal Frequency 标称频率	f	32.000KHz to 120.000KHz 192KHz	Please refer to frequency list below
Temperature Range 温度范围	Storage Temp. 储存温度	T _{STG}	-40°C to +85°C
	Operating Temp. 工作温度	T _{OPR}	-20°C to +70°C
Maximum Drive Level 测试激励电平	GL	1.0 μW max	
Frequency Tolerance (Standard) 调整频差	Δf/f	±5ppm to ±50ppm	Ta=+25°C DL=0.1 μW
Temperature Coefficient (Frequency) 二次温度曲线系数	a	-0.04×10 ⁻⁶ /°C ² max	
Load Capacitance 负载电容	C _L	12.5pF Std. 6pF to ∞	Please specify
Series Resistance 谐振电阻	R _i	32KHz≤f<38KHz: 50K Ω max 38KHz≤f<50KHz: 30K Ω max 50KHz≤f<74KHz: 25K Ω max 74KHz≤f≤100KHz: 22K Ω max 100KHz<f≤120KHz: 15K Ω max 192KHz: 10K Ω max	
Motional Capacitance 动态电容	C ₁	3.0fF max	
Shunt Capacitance 静态电容	C ₀	1.5pF max	
Insulation Resistance 绝缘电阻	IR	500M Ω min	
Aging 老化率	Fa	±5×10 ⁻⁶ /year max	Ta=+25°C ±3°C (First Year)

⊕ FREQUENCY EXAMPLE (Frequency Unit: MHz / C_L Value Unit: pF)

Type	∅3×8 ∅2×6												∅1.5×5				
Freq.	26.6667	32.7680	36.8640	38.4000	44.7340	48.0000	75.0000	77.5030	76.8000	96.0000	153.6000	307.2000	38.4000	50.0000	76.8000	77.5030	192.0000
C _L	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Value	10.0	10.6	13.5	10.0	10.0	15.0	6.5	10.0	10.0	6.0	8.4	11.0	11.0	11.0	9.0	11.0	11.0

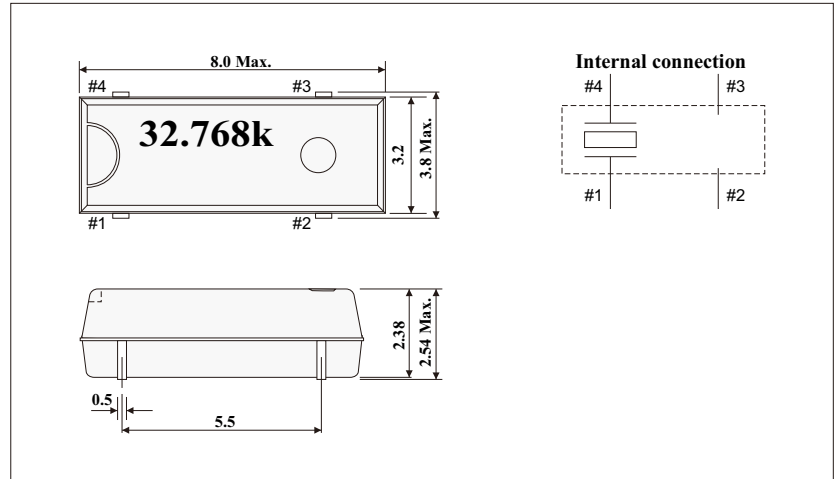
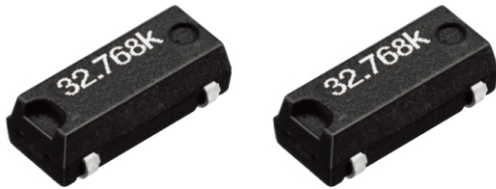


QUARTZ CRYSTAL RESONATOR

石英晶体谐振器

SMD8.0×3.8

DIMENSIONS (Unit: mm) 外形尺寸



© NOTICE: Do not connect #2 and #3 to external device.

PART NUMBER GUIDE 部件号示例

e.g. FTX32.768K12.5SM8-20D (*SM8=SMD8×3.8)

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Operating temperature Range 工作温度
FT	X	32.768K	12.5	SM8	20	D

PARAMETERS 技术参数

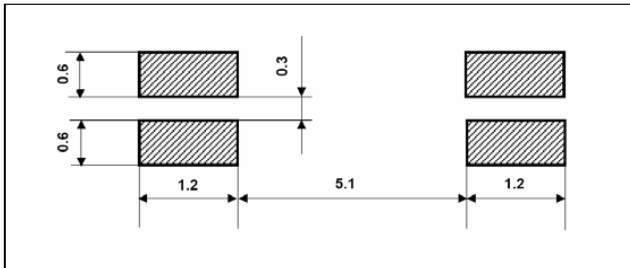
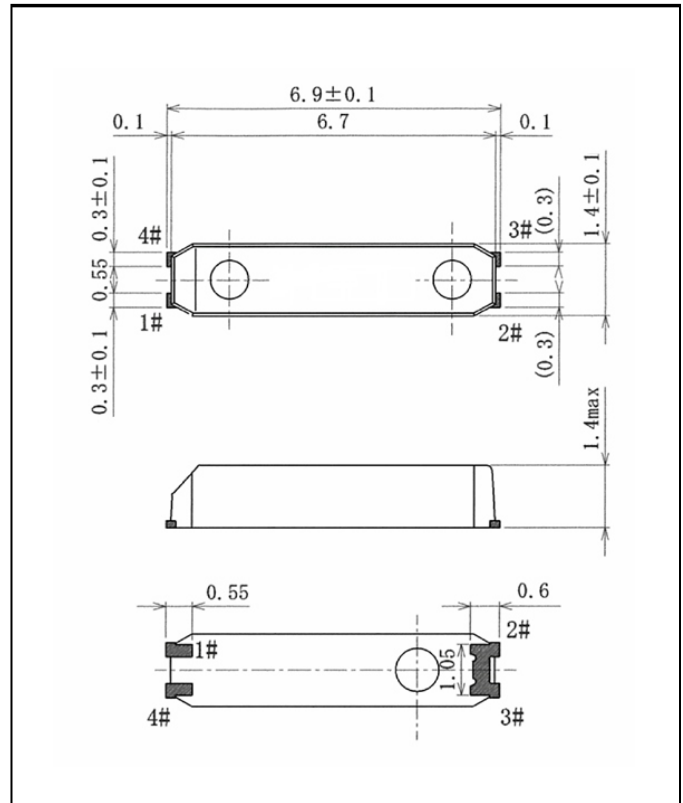
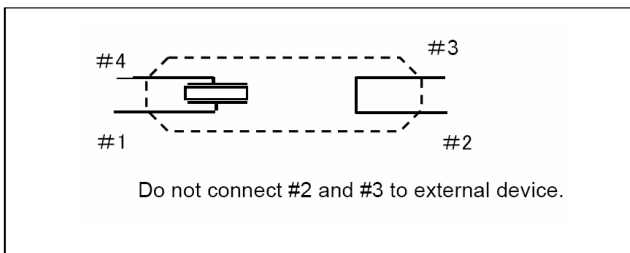
ITEM	SYMBOL	SPECIFICATIONS		REMRKS
Nominal Frequency 标称频率	f	32.768KHz	20.000KHz to 165.000KHz	Stored as bare product after unpacking
Temperature Range 温度范围	Storage Temp. 储存温度	-55°C ~ +125°C		
	Operating Temp. 工作温度	-40 ~ +85°C		
Maximum Drive Level 测试激励电平	GL	1.0 μW max		
Frequency Tolerance (Standard) 调整频差	Δf/f	±10ppm, ±20ppm	±20ppm, ±30ppm	Ta=+25°C DL=0.1 μW
Temperature Coefficient (Frequency) 二次温度曲线系数	a	-0.04×10 ⁻⁶ /°C ² max		
Load Capacitance 负载电容	C _L	12.5pF Std. 6pF to ∞		Please specify
Series Resistance 谐振电阻	R ₁	50K Ω max	55K Ω to 10K Ω	
Motional Capacitance 动态电容	C ₁	1.8fF Typ.	4.0fF to 0.6fF	
Shunt Capacitance 静态电容	C ₀	1.9pF Typ.	1.9pF to 0.6pF	
Insulation Resistance 绝缘电阻	IR	500M Ω min		
Aging 年化率	Fa	±3×10 ⁻⁶ /year max	±5×10 ⁻⁶ /year max	Ta=+25°C ±3°C (FirstYear)

© Metal may be exposed on the top of this product. This won't affect any quality, reliability or electrical spec.

Series Resistance 谐振电阻

Frequency(KHz)	频率范围	20≤f<30	30≤f<40	40≤f<60	60≤f<70	70≤f<120	120≤f<165
Series Resistance(Ω)	谐振电阻	55K Ω max	45K Ω max	20K Ω max	15K Ω max	12K Ω max	10K Ω max

QUARTZ CRYSTAL RESONATOR
石英晶体谐振器
SMD7×1.5 TUNING FORK TYPE (MC-146)
DIMENSIONS (Unit: mm) 外形尺寸

LAND PATTERN LAYOUT (EXAMPLE)

LEAD CONNECTION

PART NUMBER GUIDE 部件号示例

e.g. FTX32.768K12.5SM7-20D (*SM7=SMD7×1.5)

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Operating temperature Range 工作温度
FT	X	32.768K	12.5	SM7	20	D

PARAMETERS 技术参数

PARAMETERS	参数	SPECIFICATION 规格
Frequency Range	频率范围	32.768KHz
Loading Capacitance	负载电容	7pF、9pF、12.5pF
Drive Level	激励电平	1.0 μ W Max.
Frequency Tolerance	频率偏差	±20ppm Typ. ±10ppm available
Equivalent Resistance	谐振电阻	65K Ω Max.
Temperature Coefficient	温度系数	-0.04×10 ⁻⁶ /°C ² Max.
Shunt Capacitance	静态电容	0.8pF Typ.
Aging	老化率	±3ppm / year Max.
Operating Temp. Range:	工作温度范围	-40 ~ +85°C
Storage Temp. Range:	储存温度范围	-55 ~ +125°C

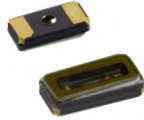
© All specification subject change without notice. 规格变化, 恕不另行通知。

QUARTZ CRYSTAL RESONATOR

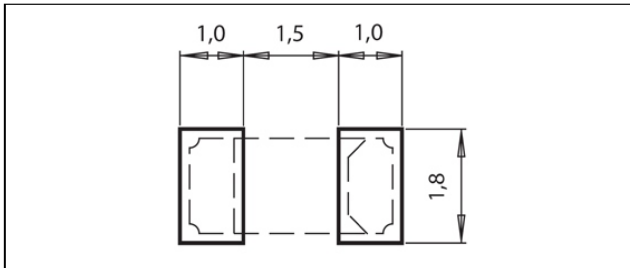
石英晶体谐振器

SMD3.2×1.5 TUNING FORK TYPE (FC-135)

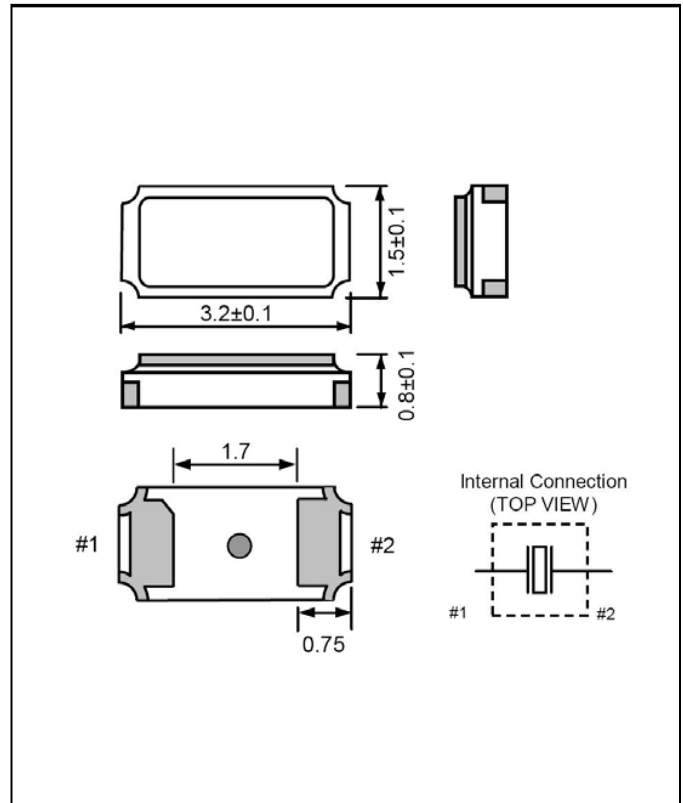
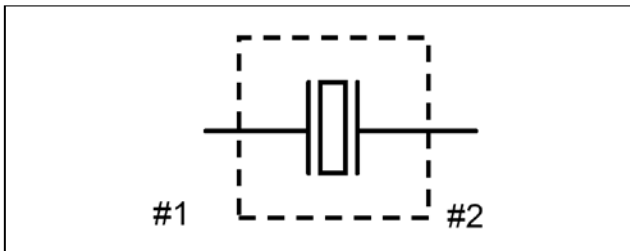
DIMENSIONS (Unit: mm) 外形尺寸



LAND PATTERN LAYOUT (EXAMPLE)



LEAD CONNECTION



PART NUMBER GUIDE 部件号示例

e.g. FTX32.768K12.5SM3-20D (*SM3=SMD3.2×1.5)

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 常温频差	Operating temperature Range 工作温度
FT	X	32.768K	12.5	SM3	20	D

PARAMETERS 技术参数

PARAMETERS	参数	SPECIFICATION 规格
Frequency Range	频率范围	32.768KHz
Loading Capacitance	负载电容	7pF、9pF、12.5pF
Drive Level	激励电平	0.5 μ W Max.
Frequency Tolerance	频率偏差	±20ppm
Equivalent Resistance	谐振电阻	70K Ω Max.
Temperature Coefficient	温度系数	-0.04 × 10 ⁻⁶ /°C ² Max.
Shunt Capacitance	静态电容	1.0pF Typ.
Aging	老化率	±3ppm / year Max.
Operating Temp. Range:	工作温度范围	-40 ~ +85°C
Storage Temp. Range:	储存温度范围	-55 ~ +125°C

© All specification subject change without notice. 规格变化, 恕不另行通知。

QUARTZ CRYSTAL RESONATOR

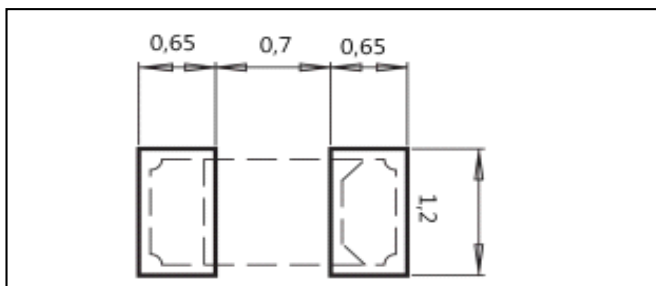
石英晶体谐振器

SMD2.0×1.2 TUNING FORK TYPE

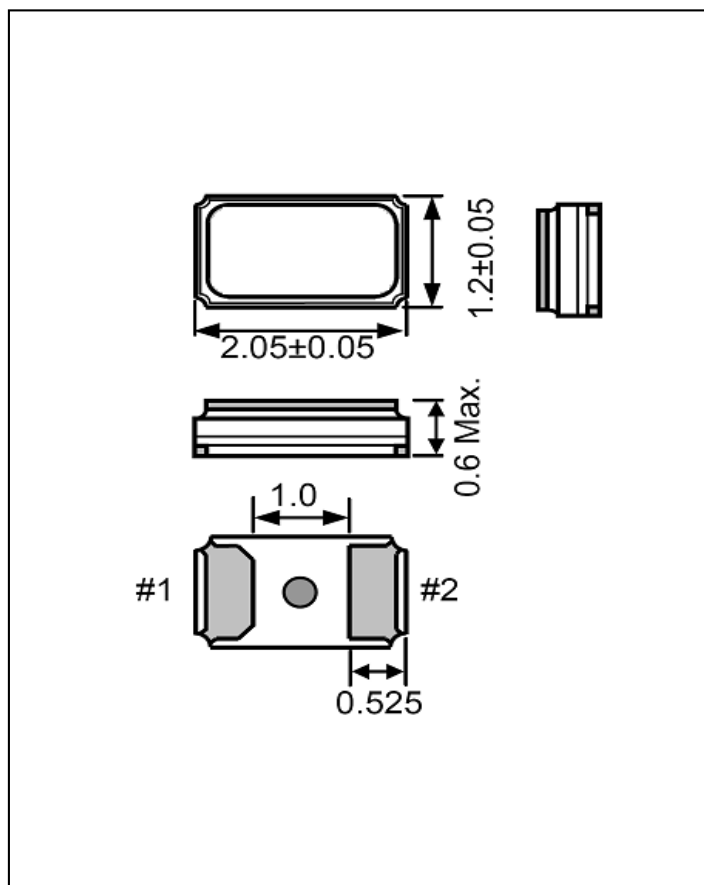
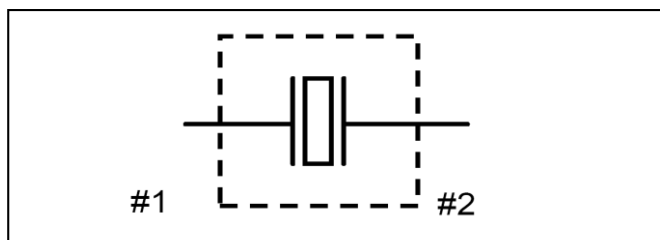
★ DIMENSIONS (Unit: mm) 外形尺寸



★ LAND PATTERN LAYOUT (EXAMPLE)



★ LEAD CONNECTION



★ PART NUMBER GUIDE 部件号示例 e.g. *FTX32.768K12.5SM2A-20D(*SM2A=2.0*1.2SMD TYPE)*

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 频率偏差	Operating Temp. Range 工作温度范围
FT	X	32.768K	12.5	SM2A	20	D

★ PARAMETERS 技术参数

PARAMETERS	参数	SPECIFICATION 规格
Frequency Range	频率范围	32.768KHz
Loading Capacitance	负载电容	7pF、9pF、12.5pF
Drive Level	激励电平	0.5 μ W Max.
Frequency Tolerance	频率偏差	±20ppm
Equivalent Resistance	谐振电阻	90K Ω Max.
Temperature Coefficient	温度系数	-0.04 × 10 ⁻⁶ /°C ² Max.
Shunt Capacitance	静态电容	1.3pF Typ.
Aging	老化率	±3ppm / year Max.
Operating Temp. Range:	工作温度范围	-40 ~ +85 °C
Storage Temp. Range:	储存温度范围	-55 ~ +125 °C

⊙ All specification subject change without notice. 规格变化，恕不另行通知。

QUARTZ CRYSTAL RESONATOR

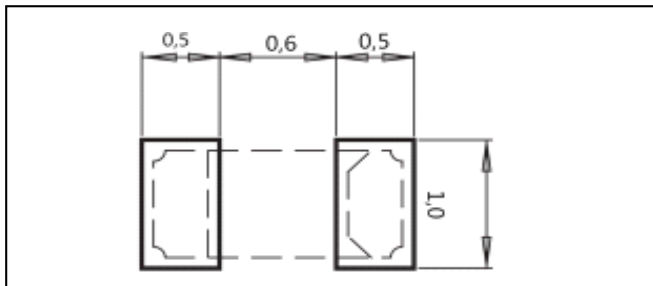
石英晶体谐振器

SMD1.6×1.0 TUNING FORK TYPE

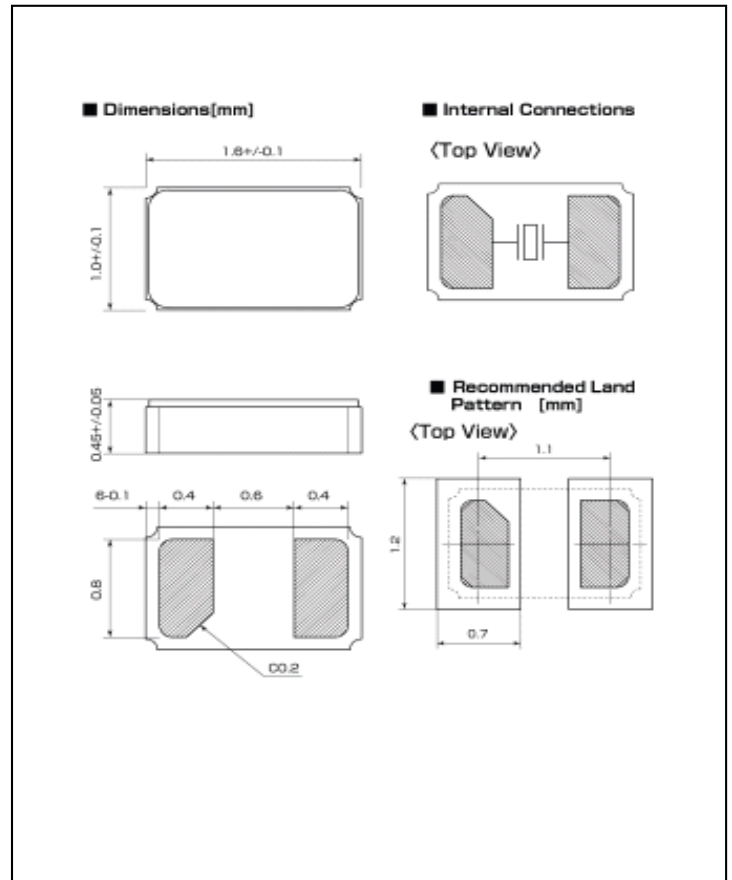
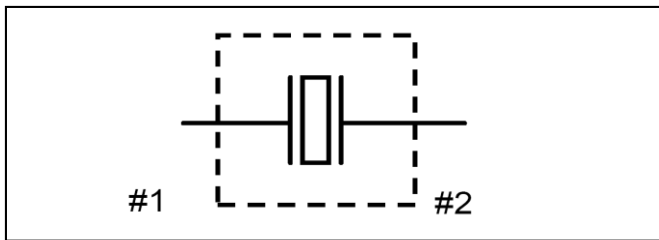
★ DIMENSIONS (Unit: mm) 外形尺寸



★ LAND PATTERN LAYOUT (EXAMPLE)



★ LEAD CONNECTION



★ PART NUMBER GUIDE 部件号示例 e.g. FTX32.768K12.5SM1-20D (*SM1=1.6*1.0 SMD TYPE)

	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率	Load Capacitance 负载电容	Package 盒型	Frequency Tolerance 频率偏差	Operating Temp. Range 工作温度范围
FT	X	32.768K	12.5	SM1	20	D

★ PARAMETERS 技术参数

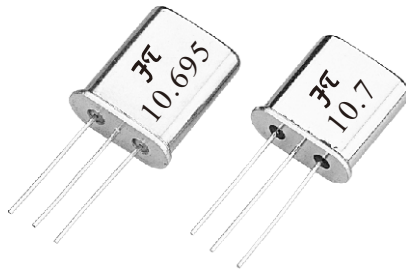
PARAMETERS	参数	SPECIFICATION 规格
Frequency Range	频率范围	32.768KHz
Loading Capacitance	负载电容	7pF、9pF、12.5pF
Drive Level	激励电平	0.5 μ W Max.
Frequency Tolerance	频率偏差	±20ppm
Equivalent Resistance	谐振电阻	90K Ω Max.
Temperature Coefficient	温度系数	-0.04 × 10 ⁻⁶ /°C ² Max.
Shunt Capacitance	静态电容	1.2pF Typ.
Aging	年老化率	±3ppm / year Max.
Operating Temp. Range:	工作温度范围	-40 ~ +85 °C
Storage Temp. Range:	储存温度范围	-55 ~ +125 °C

⊙ All specification subject change without notice. 规格变化，恕不另行通知。

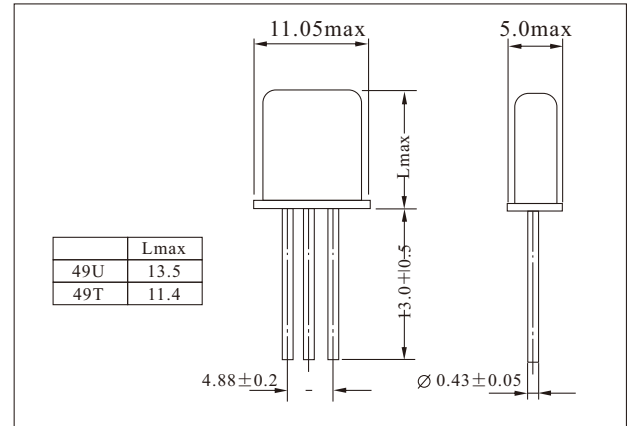
MONOLITHIC CRYSTAL FILTER

单片晶体滤波器

HC-49U/HC-49T DIP TYPE

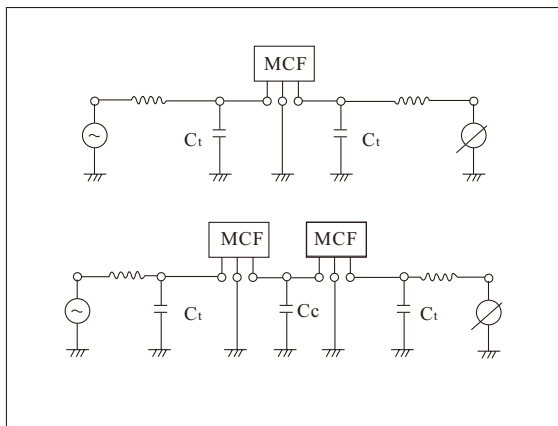


DIMENSIONS(mm)外形尺寸

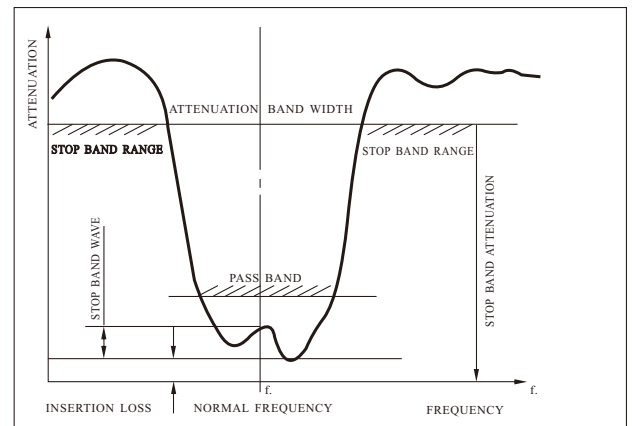


Model 型号	Nominal Frequency 标称频率 MHz	Pass Band Width 通常宽度 KHz/dB	Stop Band Width 阻带宽度 KHz/dB	Ripple 带内波动 dB	Insertion Loss 插入损耗 dB	Terminal Impedance 终端阻抗 Rt//Ct[Ω/Pf]	Operating Temp.Range 工作温度 °C	Mode of oscillator 振动模式	Pole 极点
FT10L07A	10.695	±3.75/3	±20/20	0.5	2.0	1800//5	-20~70°C	Fund	2
FT10L15A	10.695	±7.5/3	±25/18	0.5	2.0	3000//2	-20~70°C	Fund	2
FT10L20A	10.695	±10/3	±35/18	0.5	2.0	3000//2	-20~70°C	Fund	2
FT10M07A1	10.7	±3.75/3	±18/20	0.5	2.0	1800//5	-20~70°C	Fund	2
FT10M07A2	10.7	±3.75/3	±20/20	0.5	2.0	1800//5	-20~70°C	Fund	2
FT10M12A	10.7	±6.00/3	±20/18	0.5	2.0	3000//3	-20~70°C	Fund	2
FT10M15A	10.7	±7.5/3	±25/18	0.5	2.0	3000//2	-20~70°C	Fund	2
FT10M20A	10.7	±10/3	±35/18	0.5	2.0	3000//2	-20~70°C	Fund	2
FT10M30A	10.7	±15/3	±50/18	0.5	2.0	5500//-1	-20~70°C	Fund	2
FT10M07B1	10.7	±3.75/3	±14/40	1.0	2.5	1800//4	-20~70°C	Fund	4
FT10M07B2	10.7	±3.75/3	±15/40	1.0	2.5	1500//4	-20~70°C	Fund	4
FT10M12B	10.7	±6.00/3	±20/40	1.0	2.5	2800//1	-20~70°C	Fund	4
FT10M15B1	10.7	±7.50/3	±25/40	1.0	2.5	3000//1	-20~70°C	Fund	4
FT10M15B2	10.7	±7.50/3	±25/40	1.0	2.5	3000//1	-20~70°C	Fund	4
FT10M15B3	10.7	±7.50/3	±27/40	1.5	2.5	3000//2	-20~70°C	Fund	4
FT10M20B	10.7	±10/3	±34/40	2.0	2.5	3000//2	-20~70°C	Fund	4
FT10M30B	10.7	±15/3	±50/40	1.0	2.5	5500//-1	-20~70°C	Fund	4

TEST CIRCUIT 测量线路



PASS BAND FILTER SPEC-DRAWING

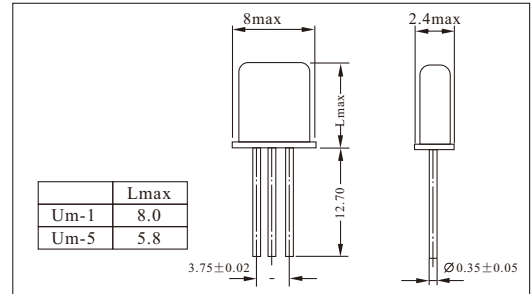
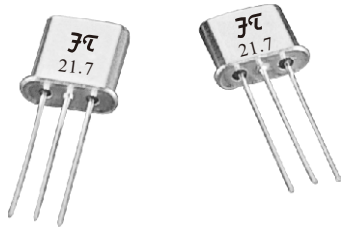


MONOLITHIC CRYSTAL FILTER

单片晶体滤波器

UM-1/UM-5 DIP TYPE

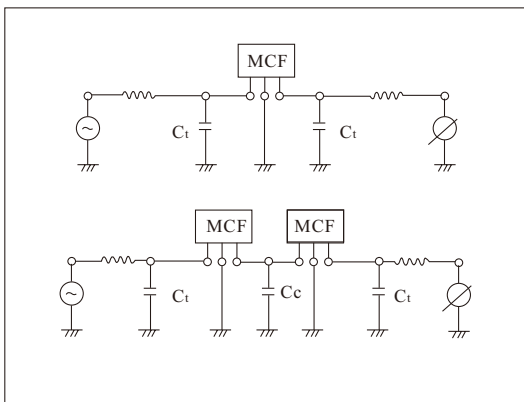
DIMENSIONS(mm)外形尺寸



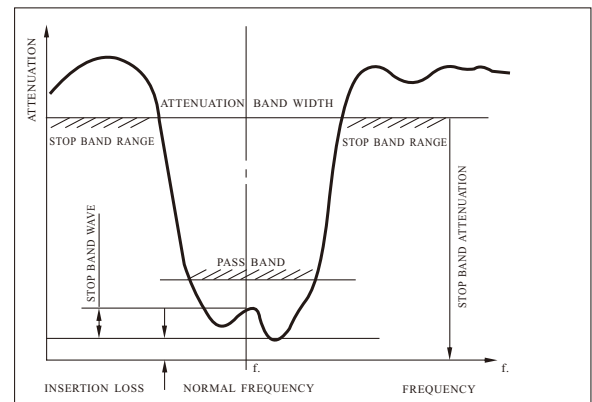
UM-1/UM-5 2POLE

Model 型号	Nominal Frequency 标称频率 Mhz	Pass Band Width 通带宽度 KHz/dB	Stop Band Width 阻带宽度 KHz/dB	Ripple 带内波动 dB	Insertion Loss 插入损耗 dB	Terminal Impedance 终端阻抗 Rt//Ct[Ω//pF]	Operating Temp. Range 工作温度范围 °C	Mode of oscillator 振动模式	Pole 极点
FT21M07A	21.400	±3.75/3	±14/18	0.5	1.5	850//7	-20 ~ 70°C	Fund	2
FT21M09A	21.400	±4.50/3	±12.5/14	0.5	1.5	850//7	-20 ~ 70°C	Fund	2
FT21M12A	21.400	±6.00/3	±20/15	0.5	1.5	1200//2.5	-20 ~ 70°C	Fund	2
FT21M15A1	21.400	±7.50/3	±25/18	0.5	1.5	1500//3	-20 ~ 70°C	Fund	2
FT21M15A2	21.400	±7.50/3	±30/18	0.5	2.0	1500//3	-20 ~ 70°C	Fund	2
FT21M15A3	21.400	±7.50/3	±30/18	1.0	2.0	1500//2.0	-20 ~ 70°C	Fund	2
FT21M20A	21.400	±10.0/3	±25/10	0.5	1.5	1800//1.5	-20 ~ 70°C	Fund	2
FT21M30A	21.400	±15.0/3	±45/15	0.5	1.5	3000//0.5	-20 ~ 70°C	Fund	2
FT21P07A	21.600	±3.75/3	±14/18	0.5	1.5	850//5	-20 ~ 70°C	Fund	2
FT21P12A	21.600	±6.00/3	±20/15	0.5	1.5	1200//2.5	-20 ~ 70°C	Fund	2
FT21P15A	21.600	±7.50/3	±25/18	0.5	1.5	1500//3	-20 ~ 70°C	Fund	2
FT21T07A1	21.700	±3.75/3	±14/18	0.5	1.5	850//5	-20 ~ 70°C	Fund	2
FT21T07A2	21.700	±3.75/3	±15/18	0.5	1.5	850//6	-20 ~ 70°C	Fund	2
FT21T09A	21.700	±4.50/3	±12.5/14	0.5	1.5	1500//4	-20 ~ 70°C	Fund	2
FT21T12A	21.700	±6.00/3	±20/15	0.5	1.5	1200//2.5	-20 ~ 70°C	Fund	2
FT21T15A	21.700	±7.50/3	±25/18	0.5	1.5	1500//3	-20 ~ 70°C	Fund	2
FT21T20A	21.700	±10.0/3	±25/10	0.5	1.5	1800//1.5	-20 ~ 70°C	Fund	2
FT21T30A	21.700	±15.0/3	±45/15	0.5	1.5	3000//0.5	-20 ~ 70°C	Fund	2
FT21S07A	21.750	±3.75/3	±25/18	0.5	1.5	1500//3	-20 ~ 70°C	Fund	2
FT23M07A	23.050	±3.75/3	±12.5/16	0.5	1.5	1600//5	-20 ~ 70°C	Fund	2
FT23M15A	23.050	±7.50/3	±25/18	0.5	1.5	1500//3	-20 ~ 70°C	Fund	2
FT30M15A	30.875	±7.50/3	±25/15	0.5	1.5	800//6	-20 ~ 70°C	Fund	2
FT45M07A	45.000	±3.5/3	±12.5/10	0.5	1.5	510//5.5	-20 ~ 70°C	Fund	2
FT45M15A	45.000	±7.5/3	±25/14	0.5	1.5	550//3	-20 ~ 70°C	Fund	2
FT45M30A	45.000	±15/3	±50/10	0.5	1.5	510//5.5	-20 ~ 70°C	Fund	2

TEST CIRCUIT 测量线路



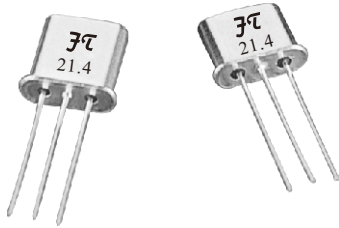
PASS BAND FILTER SPEC-DRAWING



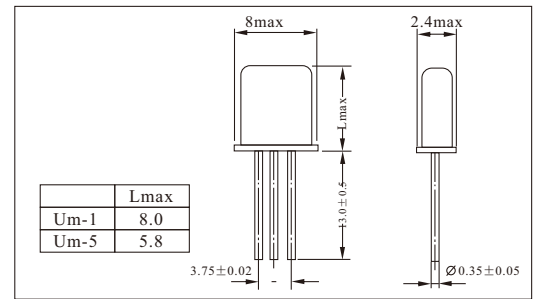
MONOLITHIC CRYSTAL FILTER

单片晶体滤波器

UM-1/UM-5 DIP TYPE



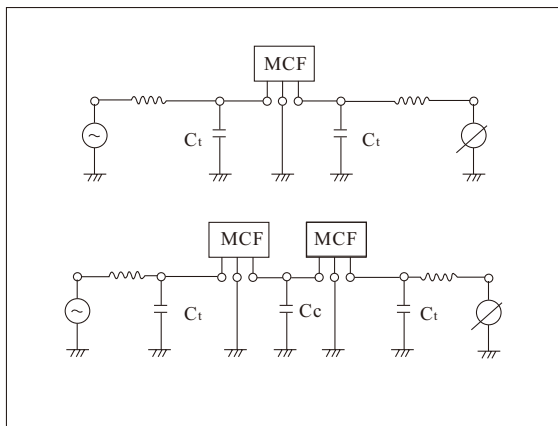
DIMENSIONS(mm)外形尺寸



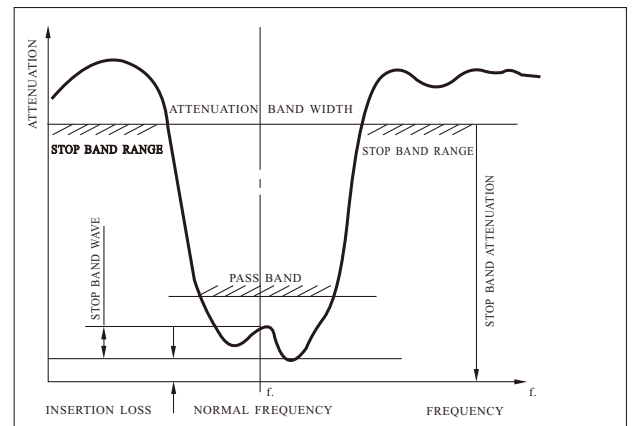
UM-1/UM-5 4POLE

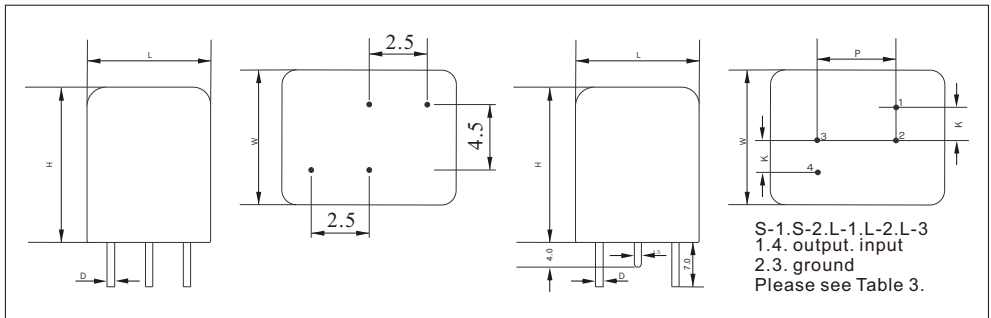
Model 型号	Nominal Frequency 标称频率 Mhz	Pass Band Width 通带宽度 KHz/dB	Stop Band Width 阻带宽度 KHz/dB	Ripple 带内波动 dB	Insrtion Loss 插入损耗 dB	Terminal Impedance 终端阻抗 Rt//Ct[Ω//pF]	Operating Temp. Range 工作温度范围 °C	Mode of oscillator 振动模式	Pole 极点
FT21M07B	21.400	±3.75/3	±14/40	1.0	2.0	850//5	-20 ~ 70°C	Fund	4
FT21M08B	21.400	±4.00/3	±16/40	1.0	2.0	1000//4	-20 ~ 70°C	Fund	4
FT21M12B	21.400	±6.00/3	±20/40	1.0	2.0	1200//2.5	-20 ~ 70°C	Fund	4
FT21M15B	21.400	±7.50/3	±25/40	1.0	2.0	1500//2	-20 ~ 70°C	Fund	4
FT21M15B2	21.400	±7.50/3	±30/40	1.0	2.0	1500//2	-20 ~ 70°C	Fund	4
FT21M15B3	21.400	±7.50/3	±30/40	1.5	3.0	1500//1	-20 ~ 70°C	Fund	4
FT21M30B	21.400	±15.0/3	±50/40	1.0	2.0	3300//0.5	-20 ~ 70°C	Fund	4
FT21P07B	21.600	±3.75/3	±14/40	1.0	2.0	850//5	-20 ~ 70°C	Fund	4
FT21P12B	21.600	±6.00/3	±20/40	1.0	2.0	1200//2.5	-20 ~ 70°C	Fund	4
FT21P15B	21.600	±7.50/3	±25/40	1.0	2.0	1500//2	-20 ~ 70°C	Fund	4
FT21T07B	21.700	±3.75/3	±14/40	1.0	2.0	850//5	-20 ~ 70°C	Fund	4
FT21T12B	21.700	±6.00/3	±20/40	1.0	2.0	1200//2.5	-20 ~ 70°C	Fund	4
FT21T15B	21.700	±7.5/3	±25/40	1.0	2.0	1500//2	-20 ~ 70°C	Fund	4
FT21T30B	21.700	±15/3	±50/40	1.0	2.0	3300//0.5	-20 ~ 70°C	Fund	4
FT30M15B	30.875	±7.5/3	±25/40	1.0	2.5	800//4	-20 ~ 70°C	Fund	4
FT45M15B	45.000	±7.5/3	±25/40	1.0	2.5	650//3	-20 ~ 70°C	Fund	4
FT45M30B	45.000	±15/3	±40/30	1.0	2.5	800//1.5	-20 ~ 70°C	Fund	4

TEST CIRCUIT 测量线路



PASS BAND FILTER SPEC-DRAWING

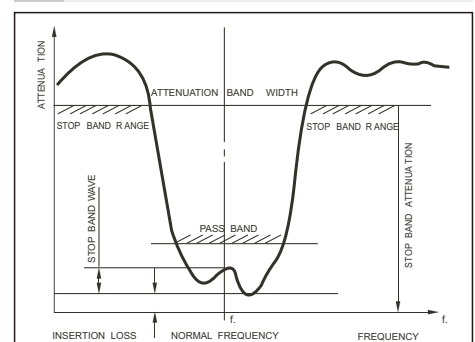


MONOLITHIC CRYSTAL FILTER
单片晶体滤波器
DIMENSIONS(Unit: mm) 外形尺寸

1. PARAMETERS 技术参数

Model 型号	Nominal Frequency 标称频率 MHz	Pole 极点	Pass Band Width 通带宽度 KHz/dB	Stop Band Width 阻带宽度 KHz/dB		Ripple 波动 dB	Insertion Loss 插损 dB	Guaranted Attenuation 带外衰减 KHz/dB	Terminal Impedance Rt//Ct(Ω//pF) 终端阻抗	Type 外型
FT21M07C	21.4	6	±3.75/3	±8.75/45	±12.5/65	2.0	3.0	(+12.5~+300)/65	850//5	S-1
FT21M07D	21.4	8	±3.75/3	±9.0/65	±12.5/90	2.0	4.0	(+12.5~+300)/90	850//5	S-2
FT21M07E	21.4	10	±3.75/3	±8.75/75	±10.5/90	2.0	4.5	(+12.5~+300)/90	850//5	S-2
FT21M12C	21.4	6	±6.00/3	±14/45	±20/65	2.0	3.0	(+20~+300)/65	1.2K//2.5	S-1
FT21M12D	21.4	8	±6.00/3	±14/65	±20/90	2.0	4.0	(+20~+300)/90	1.2K//2.5	S-2
FT21M15C	21.4	6	±3.75/3	±17.5/45	±25/65	2.0	2.5	(+25~+300)/65	1.5K//2.0	S-1
FT21M15D	21.4	8	±3.75/3	±17.5/65	±25/90	2.0	3.0	(+25~+300)/90	1.5K//2.0	S-2
FT21M15E	21.4	10	±3.75/3	±17.5/75	±20/90	2.0	4.0	(+18~+300)/90	1.5K//2.0	S-2
FT21M30C	21.4	6	±15/3	±3.5/45	±50/65	2.0	2.5	(+50~+300)/65	2.2K//0.5	S-1
FT21M20D	21.4	8	±10/3	±25/80	±30/90	2.0	4.0	(+30~+300)/90	1.8K//0.5	S-2
FT10M07C	10.7	6	±3.75/3	±8.75/45	±12.5/65	2.0	3.5	(+12.5~+300)/65	1.8K//3.5	L-1
FT10M07D	10.7	8	±3.75/3	±8.75/65	±12.5/90	2.0	4.0	(+12.5~+300)/90	1.8K//3.5	L-2
FT10M15C	10.7	6	±7.5/3	±17.5/45	±25/65	2.0	3.0	(+25~+300)/65	3K//1.5	L-1
FT10M15D	10.7	8	±7.5/3	±17.5/70	±25/90	2.0	4.0	(+25~+300)/90	3K//1.5	L-2
FT10M15E	10.7	10	±7.5/3	±15/75	±20/90	2.0	4.5	(+20~+300)/90	3K//1.5	L-3
FT10M30C	10.7	6	±15/3	±45/65		2.0	3.0	(+45~+300)/60	5.5K//1.0	L-1

2. DIMENSIONS CODE (Unit: mm)

Type	L	W	H	P	K	D
S-1	11.0	8.5	11.5	7.4	2.0	0.3
S-2	13.4	8.5	11.5	9.8	2.0	0.3
L-1	15.0	12.0	15.0	9.0	2.5	0.43
L-2	18.5	12.0	15.0	13.4	2.5	0.43
L-3	23.0	12.0	15.0	17.8	2.5	0.43
L-4	12.0	9.5	16.5			0.43

3. PASS BAND FILTER SPEC-DRAWING


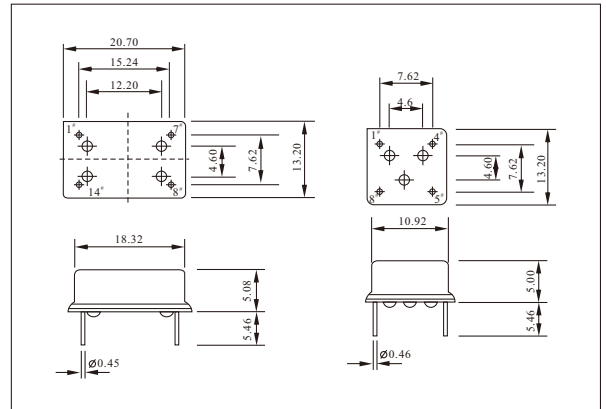
CLOCK OSCILLATOR

钟控振荡器

14PIN / 8PIN 全尺寸/半尺寸



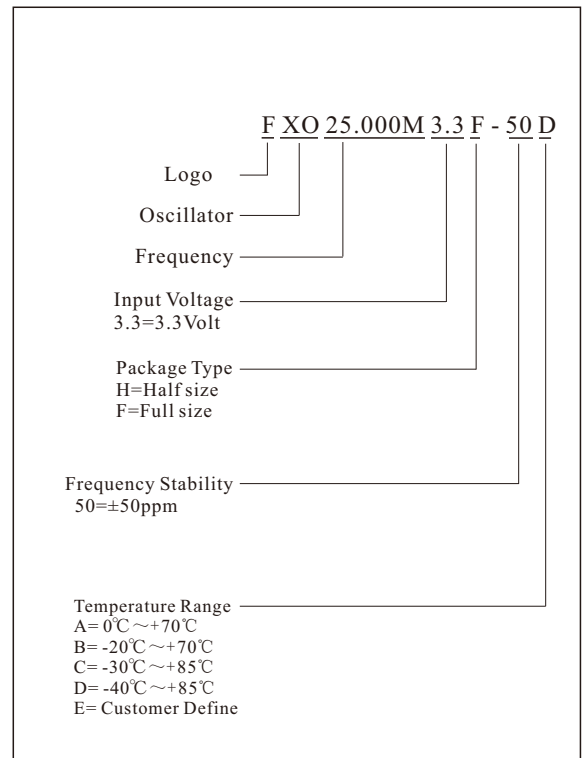
DIMENSIONS(Unit:mm) 外形尺寸



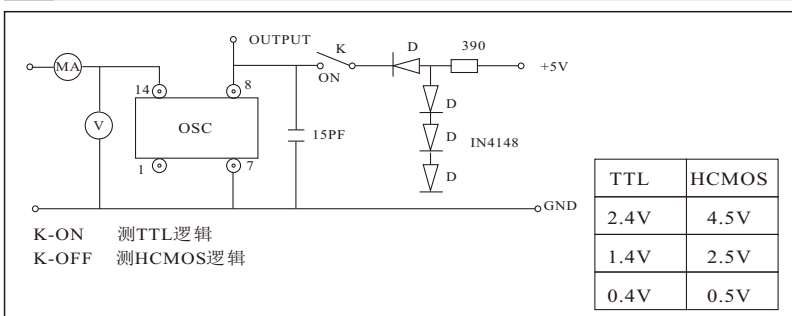
PARAMETERS 技术参数

Output 输出逻辑	TTL	HCMOS	TTL/HCMOS
Frequency Range 频率范围	32KHz~155MHz	32KHz~80MHz	32KHz~155MHz
Frequency Reliability 频率稳定度	±25ppm, ±50ppm std., ±100ppm		
Storage Temperature Range 储存温度范围	-40°C~+85°C		
Operating Temperature Range 工作温度范围	0°C~+70°C, -40°C~+85°C		
Input Voltage 输入电压	5.0 ± 0.5 V, 3.3 ± 0.3V		
Max Input Current 最大输入电流	30mA (0.5~23.99MHz)	20mA (0.5~23.99MHz)	20mA (0.5~23.99MHz)
	40mA (24~49.99MHz)	40mA (24~80MHz)	40mA (24~80MHz)
	60mA (50~140MHz)		
Rate 占空比	60/40% or 40/60%(1.4V)	60/40% or 40/60%(1/2V _{DD})	60/40% or 40/60%(1/2V _{DD})
Time Rise & Fall 上升时间和下降时间	15nS (0.5~8.99MHz)	10nS (0.5~23.99MHz)	10nS (0.5~23.99MHz)
	10nS (9~31.99MHz)	6nS (24~80MHz)	6nS (24~80MHz)
Lower Potentiometer 低电平	0.4V (0.5~31.99MHz)	0.5V(10%V _{DD})max	0.5V(10%V _{DD})max
	0.5V (32~140MHz)max		
Higher Potentiometer 高电平	2.4V	4.5V(90%V _{DD})min	4.5V(90%V _{DD})min
Output Resistance 输出负载	1~10TTL		

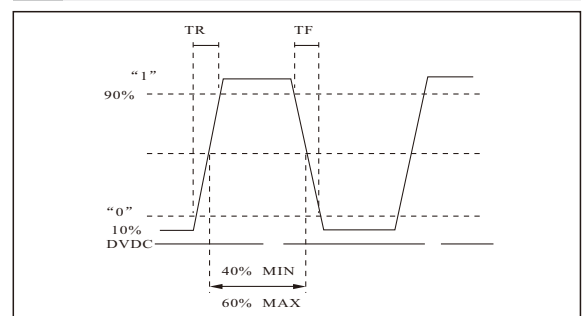
PART NUMBER GUIDE 部件号示例



TEST CIRCUIT 测试原理图



OUTPUT WAVE 输出波形图

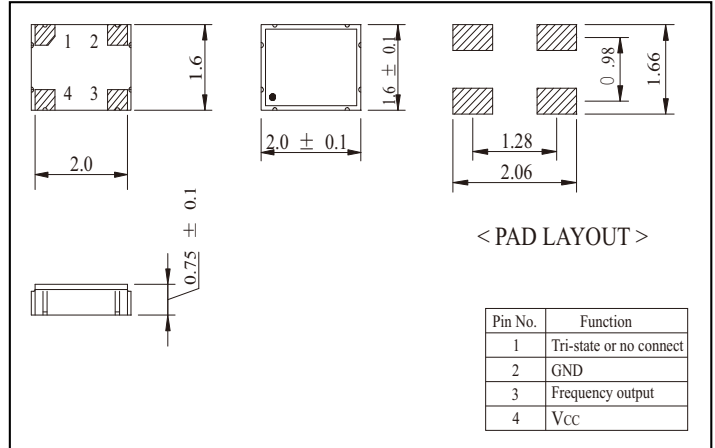
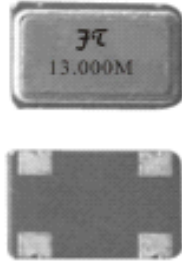


CLOCK OSCILLATOR

晶体振荡器

FXO211S TYPE

★ DIMENSIONS (Unit: mm) 外形尺寸



★ PARAMETERS 技术参数

★ PART NUMBER GUIDE 部件号示例

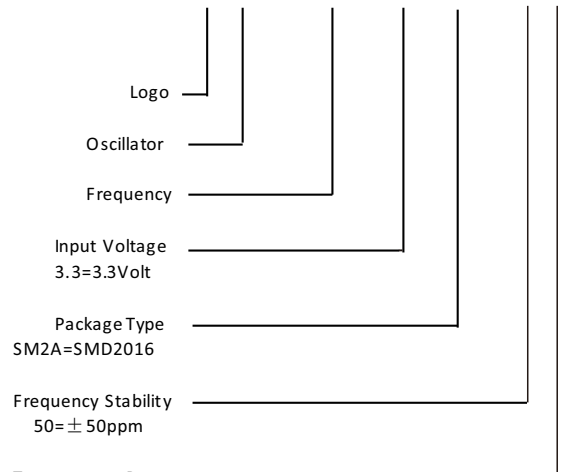
ELECTRONIC SPECIFICATIONS

Frequency Range 频率范围	2.000MHz~50.000MHz, 32.768KHz		
Frequency Stability 频率稳定度	±25ppm ±50ppm ±100ppm		
Operating Temp. Range 工作温度	-10~+70°C to -40~+85°C or Specity		
Storage Temp. Range 储存温度范围	-55~+125°C		
Input voltage 输入电压	+1.8Vdc±5%	+2.5Vdc±5%	+3.3Vdc±5%
Input Current 输入电流	10mA Max	20mA Max	20mA Max
Symmetry 占空比	60/40% or 40/60% (Typical)		
Rise & Fall Time 上升/下降时间	5ns Max	7ns Max	7ns Max
Start up time 起振时间	10ms Max		
Fan out 输出负载	15PF (Typical)		
Aging (at 25°C)	+3ppm/Year Max		

ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

Shock 抗冲击性能	MIL-STD-883E, Method 2002, Condition B
Vibration 抗振性能	MIL-STD-883E, Method 2007, Condition A
Solderability 焊接性能	MIL-STD-883E, Method 2003
Seal Integrity 密封性能	MIL-STD-883E, Method 1014, Condition C&A2
Thermal Shock 温度冲击	MIL-STD-883E, Method 1011, Condition B
Marking 标记	MIL-STD-202F, Method 2015

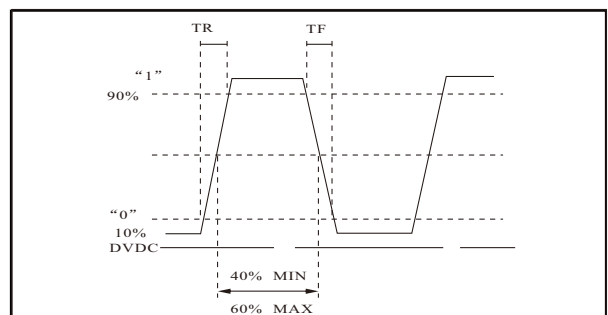
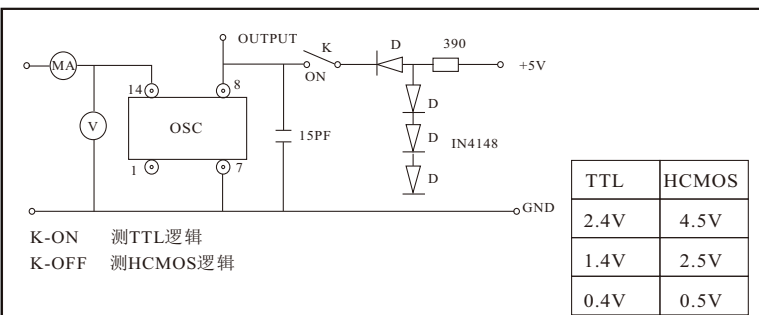
F XO 25.000M 3.3 SM2A - 50 D



Temperature Range
A=0°C~+70°C
B=-20°C~+70°C
C=-30°C~+85°C
D=-40°C~+85°C
E=Customer Define

TEST CIRCUIT 测试原理图

★ WAVE FORM 波形图

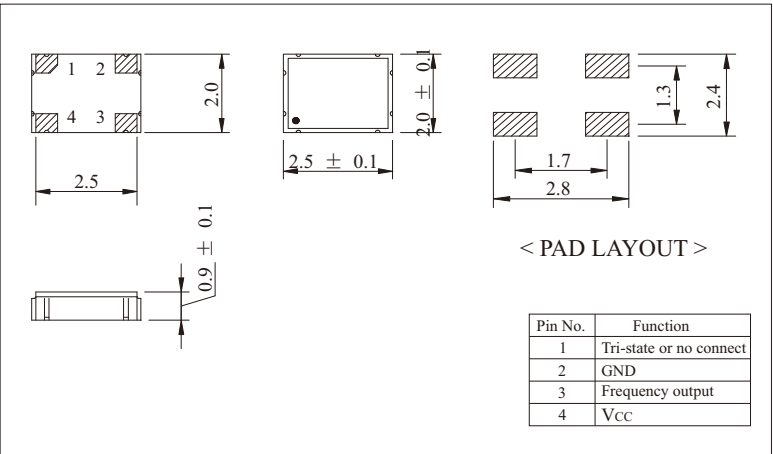


CLOCK OSCILLATOR

晶体振荡器

FXO221S TYPE

DIMENSIONS(Unit:mm) 外形尺寸

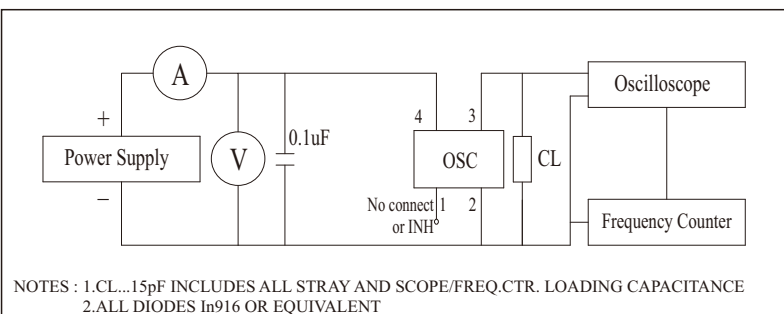


PARAMETERS 技术参数

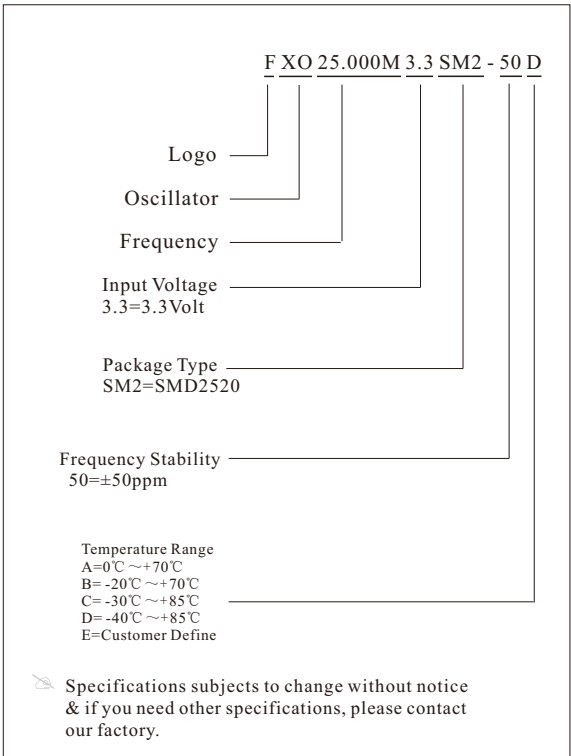
ELECTRICAL SPECIFICATIONS			
Frequency Range 频率范围	2.000MHz ~ 50.000MHz, 32.768KHz		
Frequency Stability 频率稳定度	±25ppm ±50ppm std. ±100ppm		
Operating Temp. Range 工作温度范围	-10 ~ +70°C to -40 ~ +85°C or Specify		
Storage Temp. Range 储存温度范围	-55 ~ +125°C		
Input voltage 输入电压	+1.8Vdc ± 5%	+2.5Vdc ± 5%	+3.3Vdc ± 5%
Input Current 输入电流	10mA Max.	20mA Max.	20mA Max.
Symmetry 占空比	60/40% or 40/60% (Typical)		
Rise&Fall Time 上升/下降时间	5ns Max.	7ns Max.	7ns Max.
Start up time 起振时间	10ms Max.		
Fan out 输出负载	15pF (Typical)		
Aging (at 25°C) 老化率	±3ppm/Year Max.		

ENVIRONMENTAL & MECHANICAL SPECIFICATIONS	
Shock 抗冲击性能	MIL-STD-883E, Method 2002, Condition B
Vibration 抗振性能	MIL-STD-883E, Method 2007, Condition A
Solderability 焊接性能	MIL-STD-883E, Method 2003
Seal Integrity 密封性能	MIL-STD-883E, Method 1014, Condition C&A2
Thermal Shock 温度冲击	MIL-STD-883E, Method 1011, Condition B
Marking 标记	MIL-STD-202F, Method 215

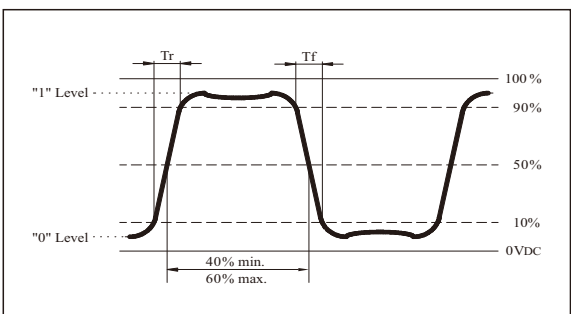
TEST CIRCUIT 测试原理图



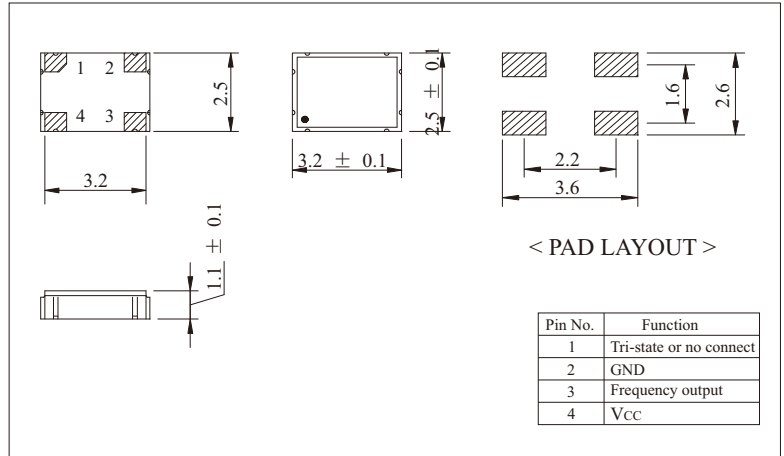
PART NUMBER GUIDE 部件号示例



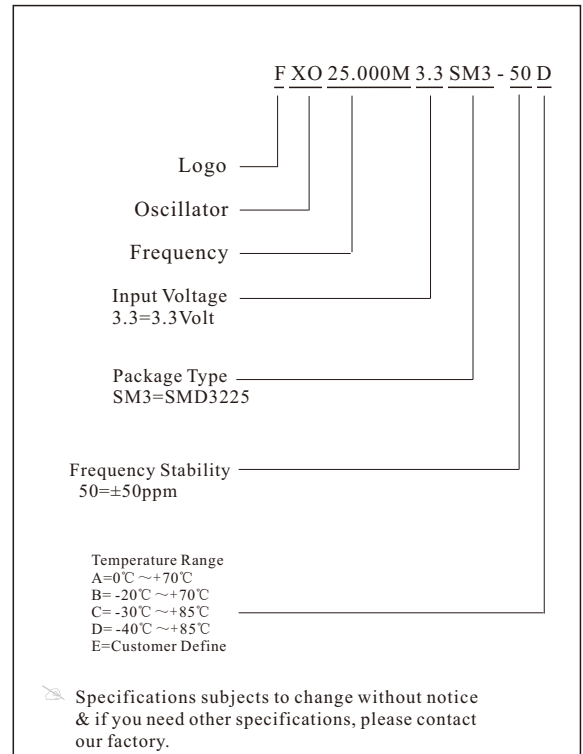
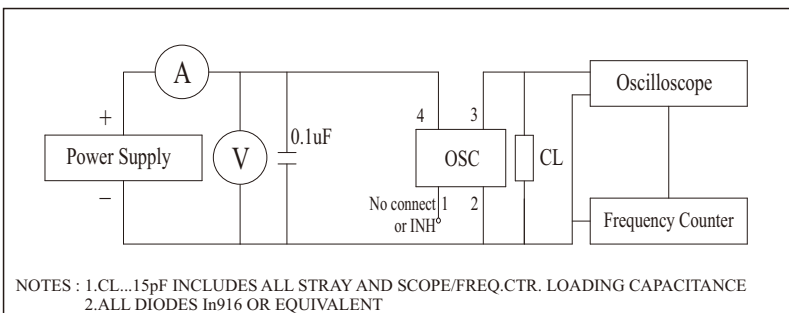
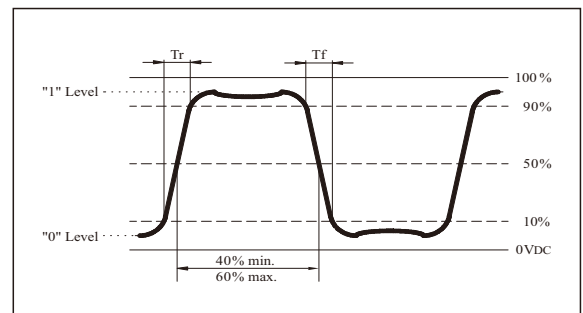
WAVE FORM 波形图



CLOCK OSCILLATOR
晶体振荡器
FXO321S TYPE

DIMENSIONS(Unit:mm) 外形尺寸

PARAMETERS 技术参数

ELECTRICAL SPECIFICATIONS			
Frequency Range 频率范围	1.000MHz ~ 80.000MHz, 32.768KHz		
Frequency Stability 频率稳定度	±25ppm ±50ppm std. ±100ppm		
Operating Temp. Range 工作温度范围	-10 ~ +70°C to -40 ~ +85°C or Specify		
Storage Temp. Range 储存温度范围	-55 ~ +125°C		
Input voltage 输入电压	+1.8Vdc ± 5%	+2.5Vdc ± 5%	+3.3Vdc ± 5%
Input Current 输入电流	15mA Max.	20mA Max.	20mA Max.
Symmetry 占空比	60/40% or 40/60% (Typical)		
Rise&Fall Time 上升/下降时间	7ns Max.	5ns Max.	5ns Max.
Start up time 起振时间	10ms Max.		
Fan out 输出负载	15pF (Typical)		
Aging (at 25°C) 年老化率	±3ppm/Year Max.		
ENVIRONMENTAL & MECHANICAL SPECIFICATIONS			
Shock 抗冲击性能	MIL-STD-883E, Method 2002, Condition B		
Vibration 抗振动性能	MIL-STD-883E, Method 2007, Condition A		
Solderability 焊接性能	MIL-STD-883E, Method 2003		
Seal Integrity 密封性能	MIL-STD-883E, Method 1014, Condition C&A2		
Thermal Shock 温度冲击	MIL-STD-883E, Method 1011, Condition B		
Marking 标记	MIL-STD-202F, Method 215		

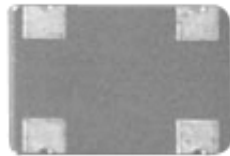
PART NUMBER GUIDE 部件号示例

TEST CIRCUIT 测试原理图

WAVE FORM 波形图


CLOCK OSCILLATOR

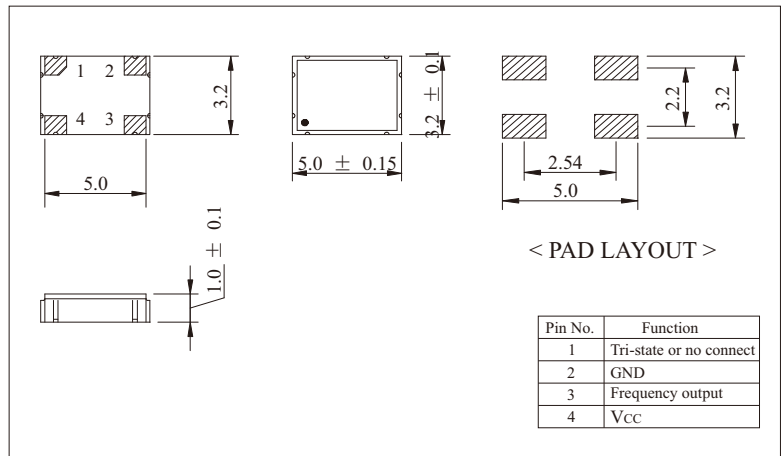
晶体振荡器

FXO531S TYPE

Low Height
High Speed CMOS
Notebook/PDA
CCD Applications



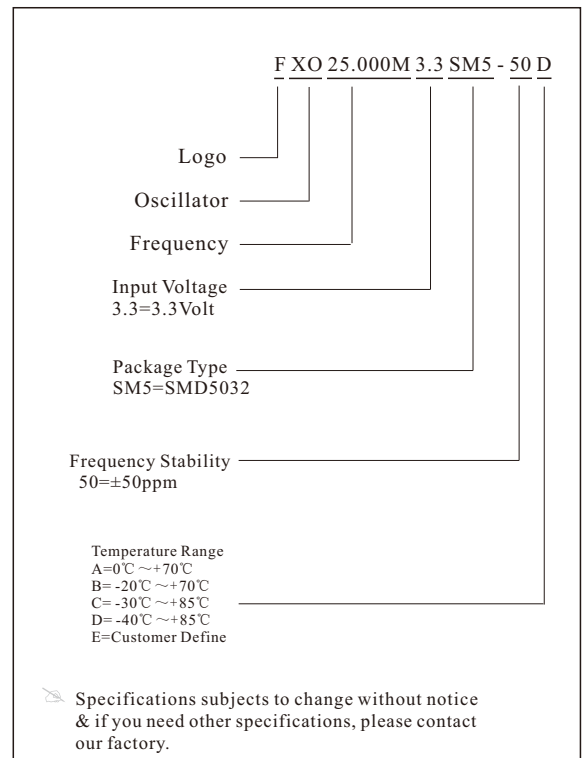
DIMENSIONS(Unit:mm) 外形尺寸



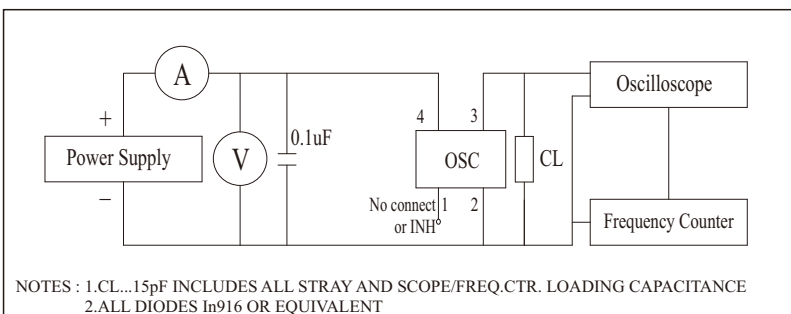
PARAMETERS 技术参数

ELECTRICAL SPECIFICATIONS	
Frequency Range 频率范围	0.700MHz ~ 66.666MHz, 32.768KHz
Frequency Stability 频率稳定度	±25ppm ±50ppm std. ±100ppm
	Inclusive of operating temperature range
Operating Temperature Range 工作温度	-10~+70°C to -40~+85°C
Storage Temperature Range 储存温度	-40°C~+85°C
Input Voltage 输入电压	+5Vdc ±0.5V +3.3Vdc ±0.3V
Input Current 输入电流	60mA max 35mA max
0/1 Level 0/1 电平	+0.5V max/+4.5V min +0.4V max/+3.0V min
Symmetry 占空比	60/40% or 40/60% (Typical)
Rise & Fall time 上升时间/下降时间	10nS max(1.000MHz ~ 9.999MHz) 5nS max(10.000MHz ~ 125.000MHz)
Start up time 起振时间	15mS max(1.000MHz ~ 9.999MHz) 10mS max(10.000MHz ~ 125.000MHz)
Fan out 输出负载	1TTL~10TTL or 15pF~50pF
Aging (at 25 °C) 老化率	±3ppm / Year max
ENVIRONMENTAL & MECHANICAL SPECIFICATIONS	
Shock 抗冲击性能	MIL-STD-883C, Method 2002, Condition B
Vibration 抗振性能	MIL-STD-883C, Method 2007, Condition A
Solderability 焊接性能	MIL-STD-883C, Method 2003
Seal Integrity 密封性能	MIL-STD-883C, Method 1014, Condition C & A2
Marking 标记	MIL-STD-202F, Method 215

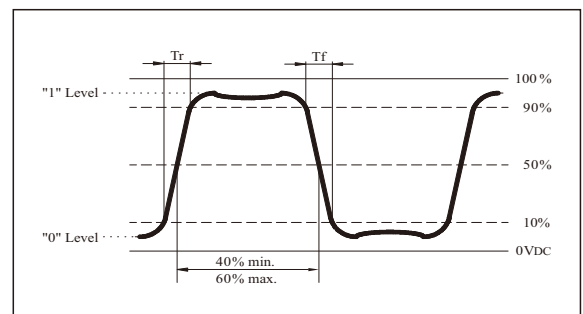
PART NUMBER GUIDE 部件号示例



TEST CIRCUIT 测试原理图



WAVE FORM 波形图

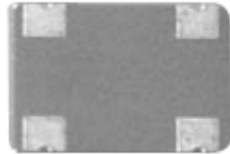


CLOCK OSCILLATOR

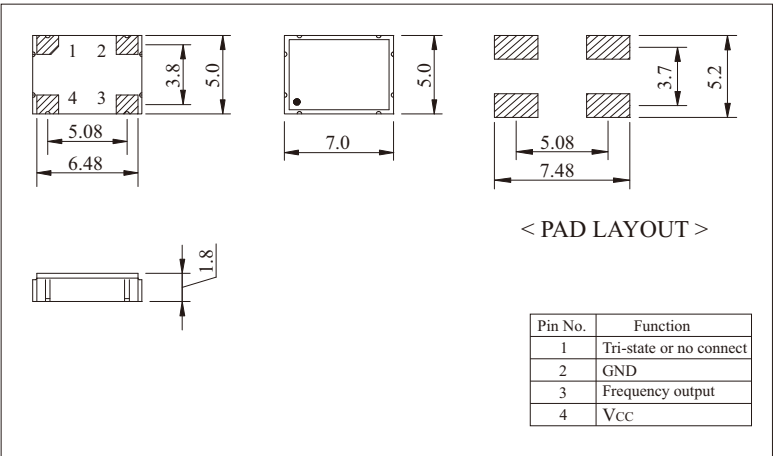
晶体振荡器

FXO751S TYPE

Low Height
High Speed CMOS
Notebook/PDA
CCD Applications



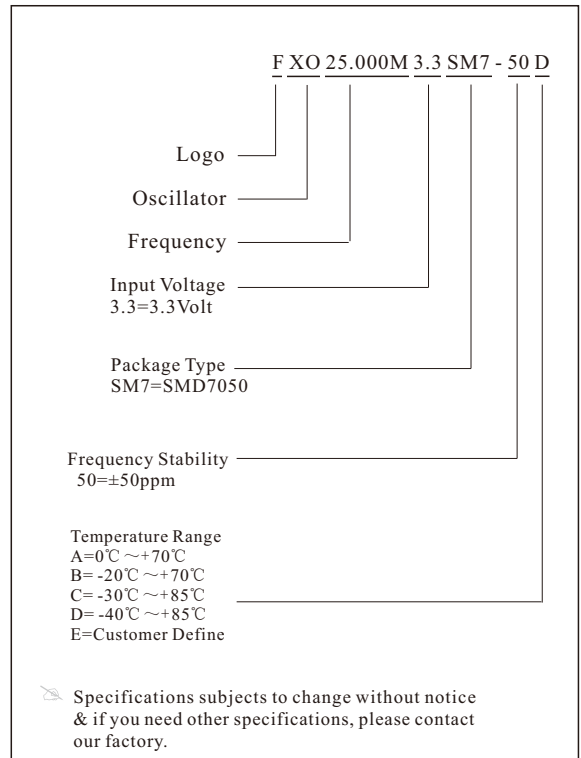
DIMENSIONS(Unit:mm) 外形尺寸



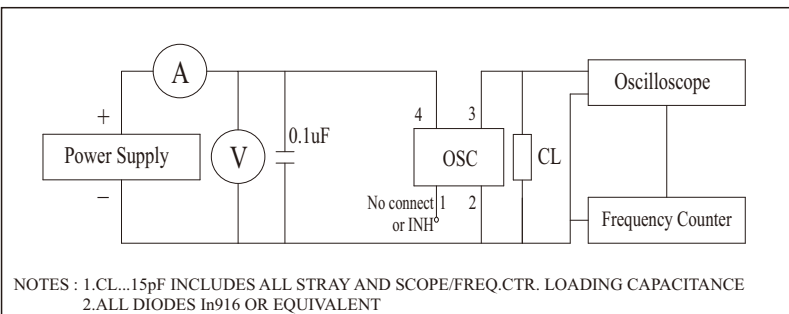
PARAMETERS 技术参数

ELECTRICAL SPECIFICATIONS	
Frequency Range 频率范围	1.000MHz ~ 125.000MHz , 32.768KHz
Frequency Stability 频率稳定度	±25ppm
	±50ppm std. ±100ppm Inclusive of operating temperature range
Operating Temperature Range 工作温度	-10~+70°C to -40~+85°C
Storage Temperature Range 储存温度	-40°C~+85°C
Input Voltage 输入电压	+5Vdc ±0.5V +3.3Vdc ±0.3V
Input Current 输入电流	60mA max 35mA max
0/1 Level 0/1 电平	+0.5V max/+4.5V min +0.4V max/+3.0V min
Symmetry 占空比	60/40% or 40/60% (Typical)
Rise & Fall time 上升时间/下降时间	10nS max(1.000MHz ~ 9.999MHz) 5nS max(10.000MHz ~ 125.000MHz)
Start up time 起振时间	15mS max(1.000MHz ~ 9.999MHz) 10mS max(10.000MHz ~ 125.000MHz)
Fan out 输出负载	1TTL~10TTL or 15pF~50pF
Aging (at 25 °C) 老化率	±3ppm / Year max
ENVIRONMENTAL & MECHANICAL SPECIFICATIONS	
Shock 抗冲击性能	MIL-STD-883C, Method 2002, Condition B
Vibration 抗振性能	MIL-STD-883C, Method 2007, Condition A
Solderability 焊接性能	MIL-STD-883C, Method 2003
Seal Integrity 密封性能	MIL-STD-883C, Method 1014, Condition C & A2
Marking 标记	MIL-STD-202F, Method 215

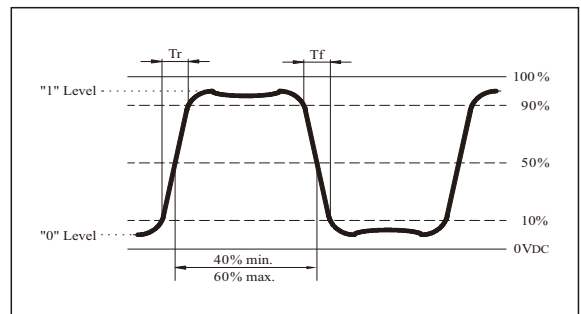
PART NUMBER GUIDE 部件号示例



TEST CIRCUIT 测试原理图



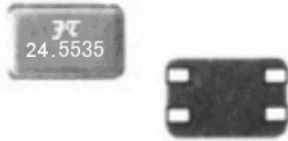
WAVE FORM 波形图



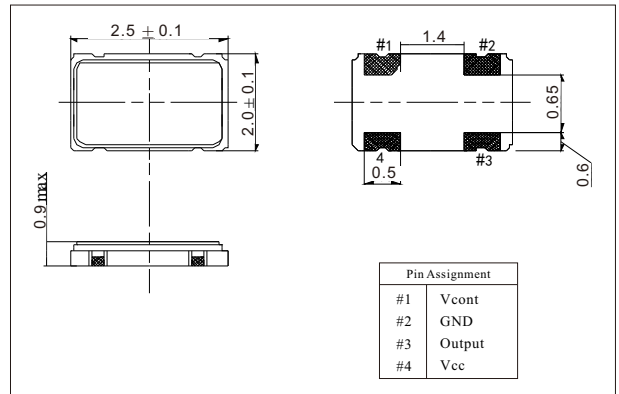
TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR(TCXO)

温度补偿晶体振荡器

FTO221S TYPE



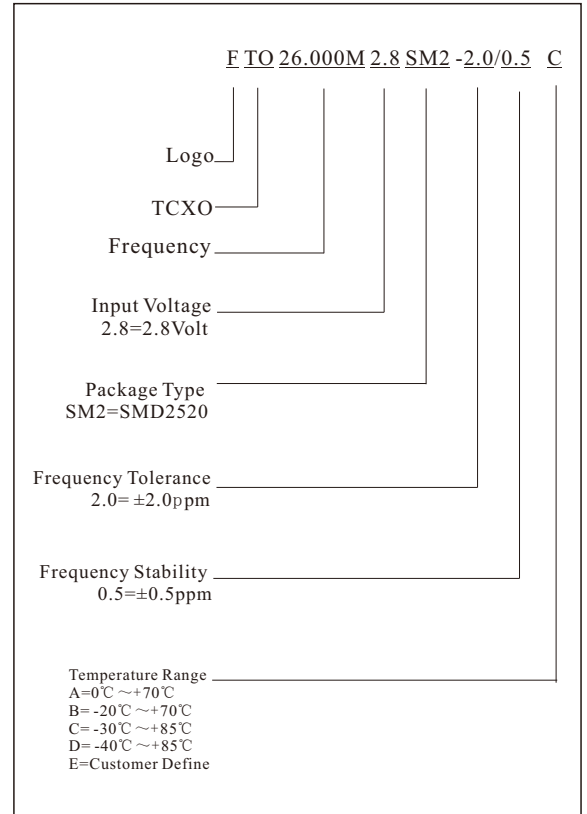
DIMENSIONS(Unit:mm) 外形尺寸



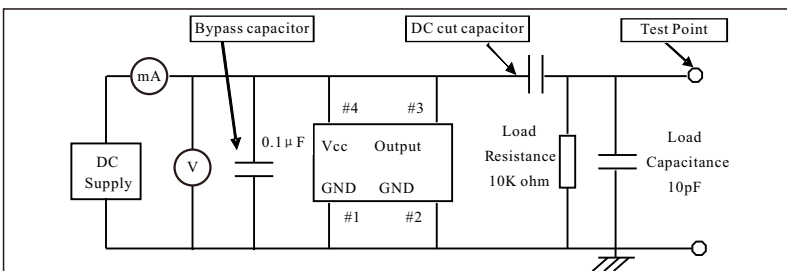
PARAMETERS 技术参数

PARAMETER	参数	SPECIFICATION 规格	CONDITION 条件
Frequency Range	频率范围	13/19.2/26MHz Typ 10.000~48.000MHz	
Supply voltage	工作电压	1.8~3.7V	
Output Waveform	输出波形	Clipped Sine Wave	
Output Level	输出幅度	0.8Vp-p	
Input Current	输入电流	1.5mA Max	
Operating Temp.Range	工作温度范围	-30~+85 °C Typ.	
Storage Temp.Range	储存温度范围	-55~+125 °C	
Frequency Stability	频率稳定度		
vs. Temperature	vs. 温度	±0.5ppm~±2.5ppm	Reference to the mid Point between min. And max, frequency
vs. Supply Voltage	vs. 工作电压	±0.1ppm Max	Vcc ±5%
vs. Load	vs. 负载	±0.2ppm Max	10KO//10F±10%
vs. Aging	vs.老化	±0.1ppm Max	1* Year
Frequency Tolerance	频率偏差	±2.0ppm Max	25 °C, After Reflow
Frequency Slope		±0.1ppm/°C	-20 ~+70 °C
Phase Noise	相位噪声		
		-105 dBc/Hz Max	100Hz offset
		-125 dBc/Hz Max	1KHz offset
		-140 dBc/Hz Max	10KHz offset
		-150 dBc/Hz Max	100KHz offset

PART NUMBER GUIDE 部件号示例



TEST CIRCUIT 测试原理图

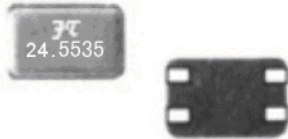


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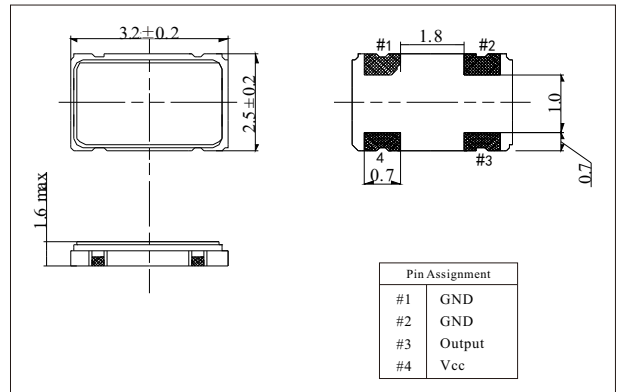
TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR(TCXO) FOR GPS

GPS用温补晶体振荡器

FTO321S TYPE



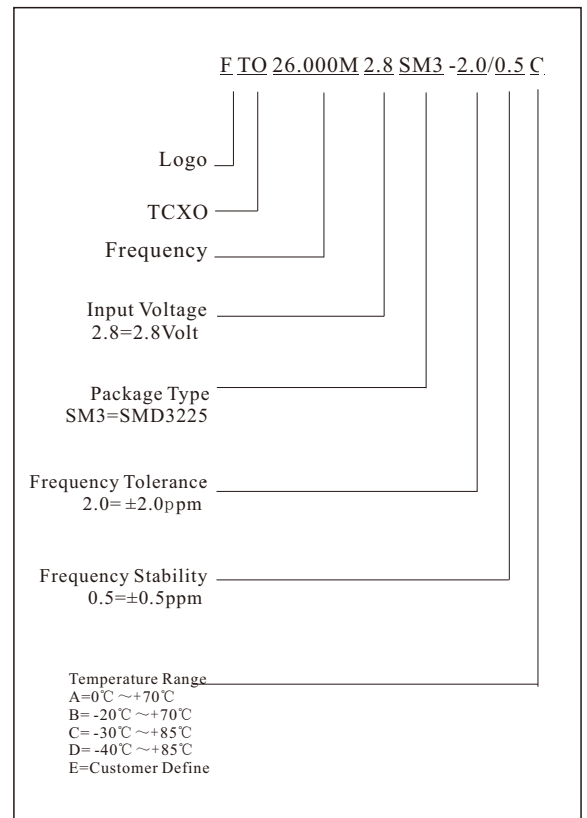
DIMENSIONS(Unit:mm) 外形尺寸



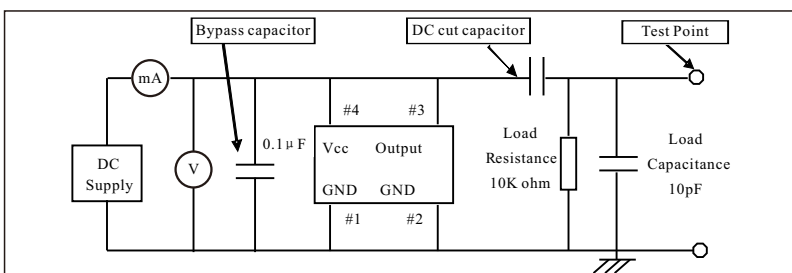
PARAMETERS 技术参数

PARAMETER	参数	SPECIFICATION规格	CONDITION条件
Frequency Range	频率范围	16.3676MHz /16.369MHz 24.5535MHz /26.000MHz	
Supply Voltage	工作电压	1.8~3.7V	
Output Waveform	输出波形	Clipped Sine Wave	
Output Level	输出幅度	0.8 Vp-p	
Input Current	输入电流	1.5 mA Max -	
Operating Temp. Range	工作温度范围	-30~+85°C -	
Storage Temp. Range	储存温度范围	-40~125°C	
Frequency Stability	频率稳定度		
vs. Temperature	vs.温度	±0.5ppm Max	Referenced to the mid point between min. And max. frequency
Vs. Supply Voltage	vs.工作电压	±0.1ppm Max	Vcc±5%
vs. Load	vs.负载	±0.2ppm Max	10KΩ//10pF±10%
vs. Aging	vs.老化	±1.0ppm Max	1 Year
Frequency Tolerance	频率偏差	±2.0ppm Max	25°C, After Reflow
Frequency Slope		±0.1ppm/°C	-20~+70°C
Phase Noise	相位噪声		
		-80 dBc/Hz Max	10 Hz offset
		-105 dBc/Hz Max	100 Hz
		-125 dBc/Hz Max	1K Hz offset
		-140 dBc/Hz Max	10K Hz offset
		-150 dBc/Hz Max	100K Hz

PART NUMBER GUIDE 部件号示例



TEST CIRCUIT 测试原理图

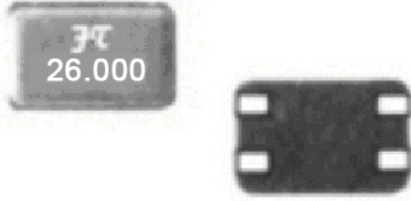


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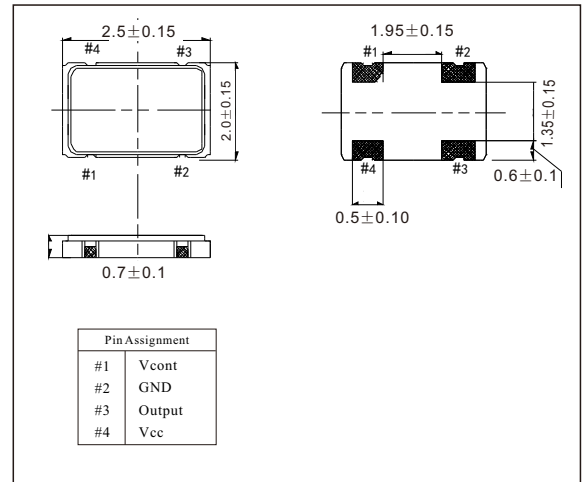
VCTCXO FOR MOBILE PHONE

手机用压控温补晶体振荡器

FVTO221S



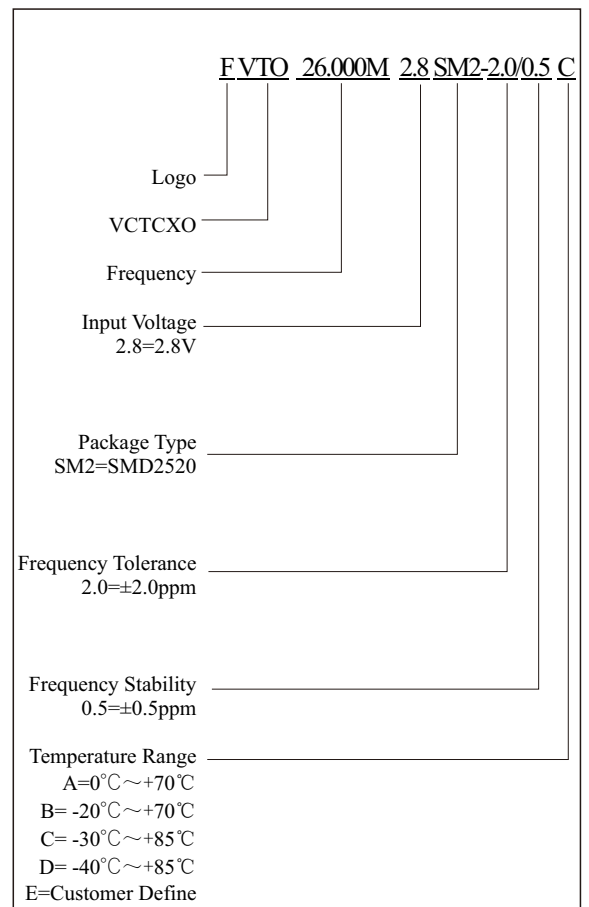
DIMENSIONS(Unit:mm) 外形尺寸



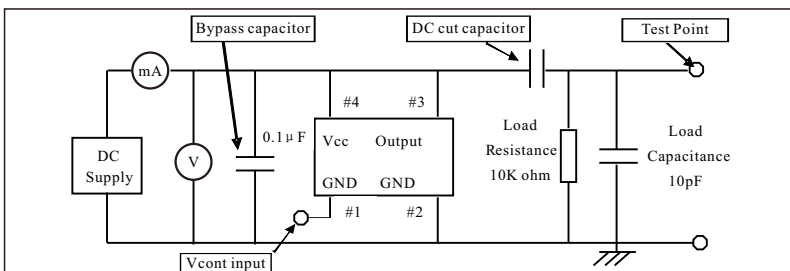
PARAMETERS 技术参数

PARAMETER	参数	SPECIFICATION规格	CONDITION条件
Frequency Range	频率范围	13MHz /19.2MHz/ 26MHz	
Supply Voltage	工作电压	1.8~3.7V	
Control Voltage	控制电压	0~Vcc	
Output Waveform	输出波形	Clipped Sine Wave	
Output Level	输出幅度	0.8 Vp-p	
Input Current	输入电流	1.5 mA Max	
Operating Temp. Range	工作温度范围	-30~+85°C	
Storage Temp. Range	储存温度范围	-40~+85°C	
Frequency Adjustment	频率调节	+9~+15ppm -15~-9ppm	Referenced to Vcont=1.4V Vcont+1.0V Vcont-1.0V
Frequency Tolerance	频率偏差	±2.0ppm Max	25°C, After Reflow
Frequency Stability	频率稳定度		
vs. Temperature	vs.温度	±2.5ppm Max	Referenced to the mid point between min. and max. frequency
Vs. Supply Voltage	vs.工作电压	±0.3ppm Max	Vcc±5%
vs. Load	vs.负载	±0.2ppm Max	10K Ω //10pF ±10%
vs. Aging	vs.老化	±1.0ppm Max	1 Year
Start-up Time	起振时间	4 msec Max	<±2.5ppm
Phase Noise	相位噪声		
		-110 dBc/Hz Max	100 Hz offset
		-135 dBc/Hz Max	1K Hz offset

PART NUMBER GUIDE 部件号示例



TEST CIRCUIT 测试原理图

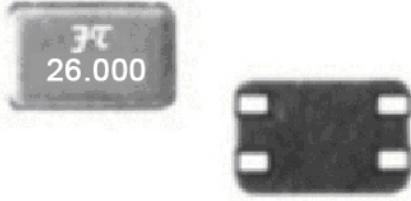


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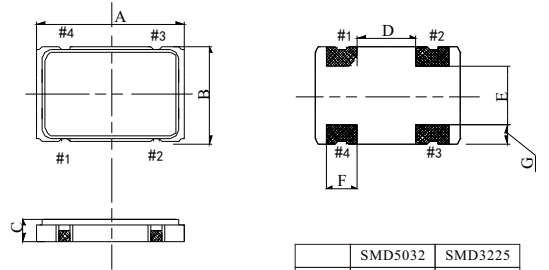
VCTCXO FOR MOBILE PHONE

手机用压控温补晶体振荡器

FVTO321S/FVTO531S TYPE



DIMENSIONS(Unit:mm) 外形尺寸



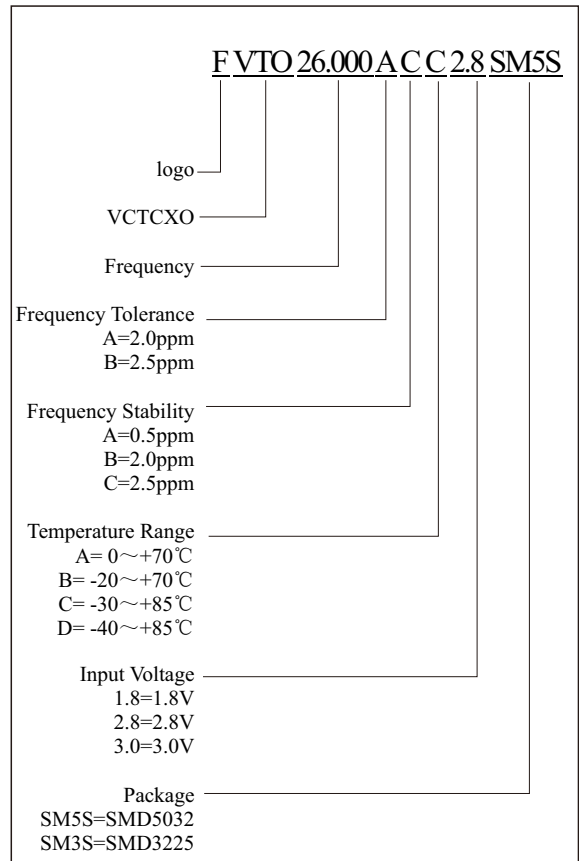
	SMD5032	SMD3225
A	5.0±0.2	3.2±0.2
B	3.2±0.2	2.5±0.2
C	1.5 max	1.2 max
D	3.2	1.8
E	1.7	1.0
F	0.9	0.65
G	0.75	0.6

Pin Assignment	
#1	Vcont
#2	GND
#3	Output
#4	Vcc

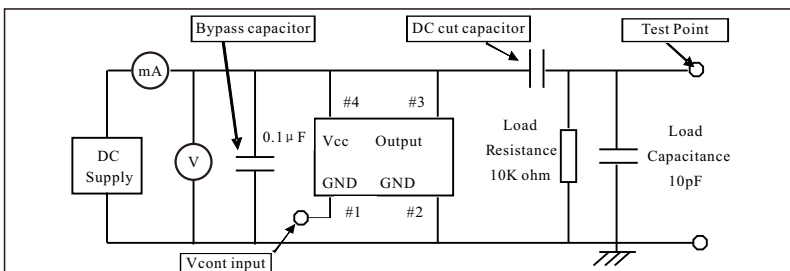
PARAMETERS 技术参数

PARAMETER	参数	SPECIFICATION规格	CONDITION条件
Frequency Range	频率范围	13MHz /19.2MHz/ 26MHz	
Supply Voltage	工作电压	1.8~3.3V	
Control Voltage	控制电压	0~Vcc	
Output Waveform	输出波形	Clipped Sine Wave	
Output Level	输出幅度	0.8 Vp-p	
Input Current	输入电流	1.5 mA Max	
Operating Temp. Range	工作温度范围	-30~+85°C	
Storage Temp. Range	储存温度范围	-40~+85°C	
Frequency Adjustment	频率调节	+9~+15ppm -15~-9ppm	Referenced to Vcont=1.4V Vcont+1.0V Vcont-1.0V
Frequency Tolerance	频率偏差	±2.0ppm Max	25°C, After Reflow
Frequency Stability	频率稳定度		
vs. Temperature	vs.温度	±2.5ppm Max	Referenced to the mid point between min. and max. frequency
Vs. Supply Voltage	vs.工作电压	±0.3ppm Max	Vcc±5%
vs. Load	vs.负载	±0.2ppm Max	10K Ω //10pF ±10%
vs. Aging	vs.老化	±1.0ppm Max	1 Year
Start Up Time	起振时间	3.0 msec Max	<±2.5ppm
Phase Noise	相位噪声		
		-110 dBc/Hz Max	100 Hz offset
		-135 dBc/Hz Max	1K Hz offset

PART NUMBER GUIDE 部件号示例



TEST CIRCUIT 测试原理图



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