



SMD QUARTZ CRYSTAL RESONATOR

石英晶体谐振器



2 Pad SMD Crystal 11.5×4.8 mm HC-49SMD

- Package Height 4.2 mm max, 2.8~4.2 mm available
- Reflow soldering temperature: 260°C max
- highly stable and reliable crystal unit with a metallic package
- Taped Version Standard

RoHS
2002/95/EC

RoHS compliant

★ PARAMETERS

技术参数

PARAMETERS	参数	SPECIFICATION 规格
Frequency Range	频率范围	3.5 ~ 100MHz
Operation Mode	振动模式	(3.5 ~ 40MHz) Fundamental (27 ~ 100MHz) 3rd /5rd Overtone
Loading Capacitance	负载电容	20pF Std. 8 to 33pF, 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)
Equivalent Resistance	谐振电阻	See Below
Frequency Stability	频率稳定性	±2.5ppm ~ ±50ppm
Operating Temp. Range:	工作温度范围	0 ~ +50°C to -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。

★ FREQUENCY STABILITY VS. TEMPERATURE

频率温度特性

★ ESR (SERIES RESISTANCE RS)

Operation Temperature Range	Frequency Stability					
	±2.5ppm	±5ppm	±10ppm	±20ppm	±30ppm	±50ppm
0°C ~ +50°C	○	○	○	●	○	○
-10°C ~ +60°C		○	○	●	○	○
-20°C ~ +70°C			○	○	●	○
-40°C ~ +85°C				○	○	●

● standard ○ available

Frequency	Vibration Mode	ESR
3.5-3.999MHz	AT CUT/FUND.	150Ω(MAX)
4.000-4.499MHz	AT CUT/FUND.	120Ω(MAX)
4.500-5.999MHz	AT CUT/FUND.	100Ω(MAX)
6.000-7.999MHz	AT CUT/FUND.	80Ω(MAX)
8.000-9.999MHz	AT CUT/FUND.	60Ω(MAX)
10.000-11.999MHz	AT CUT/FUND.	50Ω(MAX)
12.000-13.999MHz	AT CUT/FUND.	40Ω(MAX)
14.000-40.000MHz	AT CUT/FUND.	30Ω(MAX)
27.000-100MHz	AT 3rd /OT	100Ω(MAX)

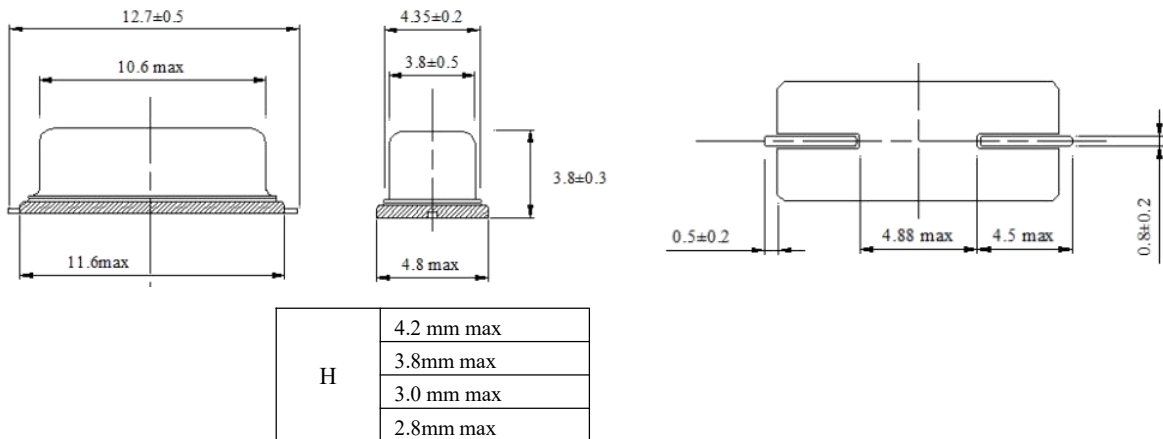
★ PART NUMBER GUIDE 部件号示例

e.g. FTX16.000M20SM-30/30B (*SM=HC-49/SMD TYPE)

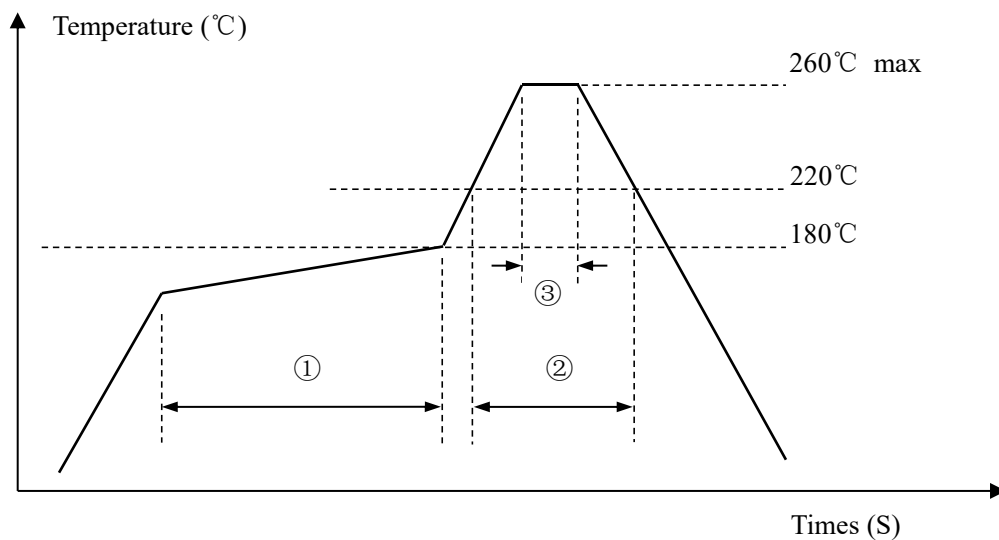
Logo	Quartz Crystal Resonator 石英晶体谐振器	Frequency 频率 Hz	Load Capacitance 负载电容 pF	Package 盒型	Frequency Tolerance 常温频差 ppm	Frequency Stability 温度频差 ppm	Operating Temp. Range 工作温度
FT	X	16.000M	20	SM	30	30	B

Definition	Description
Operating Temperature Range	A: -10~+60℃
	B: -20~+70℃
	C: -30~+80℃
	D: -40~+85℃
	E: Customer specified

★ DIMENSIONS& LAND PATTERN LAYOUT (Unit: mm) 外形尺寸



★ REFLOW SOLDERING PROFILE 回流焊特性



Pb free reflow A	①	Preheat	160~180℃	120sec. max
	②	Primary heat	220℃	60sec. max
	③	Peak	260℃	10sec. max.