



应达利电子股份有限公司
INTERQUIP ELECTRONICS (SHENZHEN) CO., LTD.

频率元器件生产商

MANUFACTURER OF
FREQUENCY CONTROL DEVICES



COMPANY PROFILE

企业简介

应达利电子集团于1995年在深圳成立，是一家集专业研发、生产和销售高精度石英晶体谐振器、石英晶体振荡器等频率元器件、生产设备于一体的综合性高新技术企业。生产的频率元器件包含自主材料封装谐振器SMCM系列、热敏晶体、32.768KHz低频音叉晶体、温补钟振TCXO、压控钟振VCXO、LVDS/LVPECL/CMOS输出振荡器、超低相噪振荡器、可编程振荡器等，产品可广泛应用于5G、智能家居、智能穿戴、消费电子、汽车电子（符合AEC-Q200）、通讯产业、医疗电子、安防行业、工业设备、仪器仪表等行业。

公司总部位于深圳宝安，在深汕特别合作区拥有高度自动化生产基地，工厂总面积超过40,000m²，设有全智能监控的高规格无尘净化车间，是少数具备自主材料开发和制造能力的厂商之一。公司配置材料实验室、可靠性测试实验室以满足不同市场对材料的要求。应达利年产能超过10亿颗频率控制元件，晶振尺寸小至1.2X1.0mm，大至5.0X3.2mm，频率范围32.768KHz~200MH，可达0.5ppm高精度。产品远销欧洲、北美、亚太等地区，销售办事处遍布北京、重庆、苏州、福州、深圳、香港、台湾。

公司目前已通过ISO 9001、IATF 16949、ISO 14001等质量、环境管理体系认证，拥有超53项发明专利和实用新型专利，并获有“深圳市高新技术企业”、“国家高新技术企业”、“最佳质量奖”、“广东著名商标”、“全国科技创新质量管理先进单位”、“中国电子元件百强企业”等奖项，且连续多年被广大客户授予“优秀供应商”的荣誉称号。

Established in 1995, Interquip Electronics is a comprehensive high-tech enterprise in R&D, manufacturing and marketing high precision Quartz Crystal Resonators (including self-developed material SMCM series, Thermistor Crystals and 32.768KHz Tuning Fork Crystals) and Oscillators (including TCXO, VCXO, LVDS/LVPECL output waveform SPXO, Ultra-low phase noise Oscillators, Programmable Oscillators etc.). The frequency components produced can be widely applied in 5G, Smart Home, Wearables, Consumer Electronics, Automotive Electronics (conforms to AEC-Q200), Communication Industry, Telemedicine, Security Applications, Industrial Equipment, Instruments and other industries.

Headquartered in Baoan, Shenzhen, Interquip owns highly automated Production Bases of a total area of over 40,000m² in Shanshan Special Cooperation Zone. Factories are equipped with high-spec Cleanrooms with full intelligent monitoring. Interquip is one of the few manufacturers with independent material development and manufacturing capabilities. The company configures material laboratories and reliability test laboratories to meet the requirements of different markets for materials. The size of crystal resonators and oscillators ranges from 1.2 x 1.0mm to 5.0 X 3.2mm package, frequency available from 32.768KHz to 200MHz. With an annual production capacity of more than one billion frequency control components, Interquip has its crystal products exported to Europe, North America, Asia Pacific and other regions. Interquip has sales offices in Beijing, Chongqing, Suzhou, Fuzhou, Shenzhen, Hong Kong, and Taiwan.

Interquip has obtained the system certifications of ISO 9001, IATF 16949, and ISO 14001 etc., and acquired more than 53 invention patents and utility model patents, and the awards of "Shenzhen High-tech Enterprise", "National High-tech Industry", "Best Quality Award", "Guangdong Famous Trademark", "National Advanced Unit of Scientific and Technological Innovation and Quality Management", "China's Top 100 Enterprises of Electronic Components" and so on. Interquip has been granted as "Excellent Supplier" by many customers for years.





R & D DEPARTMENT

研发部门



新产品开发部

New Product Development Dept.

- 研发高精度(± 10 ppm)、超小型(1210, 1612封装)、高可靠性(符合AEC-Q200或其他特定要求)的晶振产品。
- 透过经验丰富的专业研发团队, 可根据客户需求、行业应用提供定制化规格参数。
- 专业的FAE团队, 熟悉主流行业的平台方案, 能迅速提供电路和晶振的配对服务, 节省客户对频率元器件选型的时间。



设备开发/改进部

Equipment Development/Improvement Dept.

- 自主研发生产设备, 加快我司提产速度, 降低对进口设备的依赖。
- 根据生产实际情况自研设备, 提升产线的自动化覆盖程度, 减少人为出错和提升产品质量表现。
- 通过自研设备降低了设备投入成本, 让产品价格更具竞争力。



物料开发部

Material Development Dept.

- 创新物料, 属于少数拥有自主封装材料的企业, 为客户提供更高竞争力的产品选择。
- 坚持自主研发关键物料, 打破日本材料供应商的垄断局面, 减少因物料断供导致的交期不稳定性。



物料实验室

Material Laboratory

- 对现有材料进行深层次分析以提高效能。
- 为客户提供电路匹配和测试服务。
- 自控物料, 最大化降低成本, 从源头控制来料合格率, 保证产品质量。



- Develop high-precision (± 10 ppm), ultra-miniature (1210, 1612 package), and high reliability (conform to AEC-Q200 or other specific requirements) crystal products.
- Through experienced professional R&D team, customized specifications can be fulfilled according to customer needs and industry applications.
- Professional FAE team, familiar with the platform solutions of the mainstream industry, can quickly provide matching services for circuits and crystals, saving customers time for frequency component selection.



- Independent R&D of production equipment, speed up the production expansion of our company and reduce dependence on imported equipment.
- Self-develop equipment according to actual production conditions, improve the automation coverage of production lines, reduce human error and improve product quality performance.
- Reduce equipment investment costs through self-developing equipment, making product prices more competitive.



- Innovative materials, as one of the rare companies with independent packaging materials, to provide customers with more competitive product selection.
- Adhere to independent R&D of key materials, to break the monopoly of Japanese material suppliers, and reduce the instability of delivery due to material supply shortage.



- In-depth analysis of existing materials to improve performance.
- Provide circuit matching and testing services for customers.
- Self-control materials, maximizing cost reduction, controlling incoming material yield from source to ensure product quality.





石英晶体谐振器

产品分类	产品型号	详情页页码	封装尺寸 (mm)	产品应用领域																其它																
				消费电子				通讯应用				车载应用				工业应用					安防应用				医疗应用											
				穿戴设备	手机	个人计算机	计算机接口设备	机顶盒	家电	玩具	SONETT / SDH	FTTx	无线终端	小型基站	WiFi / BLE	FRS / 无线电	车联网	汽车多媒体	动力总成		域控制器	导航系统	TSPMS	PKE / RKE	AADAS	自动读表系统	工业自动化	POS / 税控机	RFD / NFC	传感器及发射器	计量设备	DVR / NVR	摄像头	会议系统	楼宇安防	穿戴式医疗
	THR-1612	05	1.6*1.2*0.7	✓																																✓
	THR-2016	06	2.05*1.65*0.8	✓																																✓
	THR-2520	07	2.55*2.05*1.0	✓																																✓
	SMHF-49B/THHF-49S	08								✓																										
	SMCM-2016H	09	2.0*1.6*0.7	✓						✓																										✓
	SMCM-3225H	10	3.2*2.5*0.8	✓						✓																										✓
	SMCM-5032H	11	5.0*3.2*1.1	✓						✓																										
	SMAC-7050H	12	7.0*5.0*1.2	✓						✓																										
	SMAC-1045H	13	10.0*4.5*1.4	✓						✓																										
	SMCE-1210	14	1.2*1.0*0.3	✓						✓																										✓
	SMCE-1612	15	1.6*1.2*0.4	✓						✓																										✓
	SMCE-2016	16	2.05*1.65*0.55	✓						✓																										✓
	SMCE-2520	17	2.5*2.0*0.6	✓						✓																										✓
	SMCE-3225	18	3.2*2.5*0.8	✓						✓																										✓
	SMCE-5032	19	5.0*3.2*0.8	✓						✓																										✓
	SMCE-6035*	20	6.0*3.5*1.0	✓						✓																										✓
	SMCE-7050*	21	7.0*5.0*1.0	✓						✓																										✓
	SMLF-1610	22	1.6*1.0*0.5	✓						✓																										✓
	SMLF-2012	23	2.0*1.2*0.6	✓						✓																										✓
	SMLF-3215	24	3.2*1.5*0.9	✓						✓																										✓

备注: *NPRND

石英晶体振荡器

产品分类	产品型号	详情页页码	封装尺寸 (mm)	产品应用领域																																					
				消费电子			通讯应用				车载应用				工业应用				安防应用		医疗应用	其它																			
				穿戴设备	手机	个人计算机	计算机接口设备	机顶盒	家电	玩具	SONETT / SDH	FTTx	无线终端	小型基站	WiFi / BLE	FRS / 无线电	车联网	汽车多媒体	动力总成	域控制器	导航系统	TPMS	PKE / RKE	ADAS	自动读表系统	工业自动化	POS / 税控机	Rfid / NFC	传感器及发射器	计量设备	DVR / NVR	摄像头	会议系统	楼宇安防	穿戴式医疗	个人监护	院级设备	芯片 / 集成电路			
石英晶体振荡器	VC800 Series	25	3.2*2.5*1.2					✓			✓		✓	✓		✓															✓										
	TC950 Series	26	2.0*1.6*0.9	✓								✓				✓					✓															✓				✓	
	TC900 Series	27	2.5*2.0*0.9	✓								✓				✓					✓																✓			✓	
	TC800 Series	28	3.2*2.5*1.0									✓				✓					✓																			✓	
	463-E Series <small>NEW</small>	29	3.2*2.5*1.1									✓				✓					✓																		✓		
	463-F Series <small>NEW</small>	30	3.2*2.5*1.1									✓				✓					✓																		✓		
	168-B Series	31	2.0*1.6*0.9	✓									✓																							✓				✓	
	165-B Series	32	2.5*2.0*1.0	✓								✓																									✓			✓	
	163-B Series	33	3.2*2.5*1.2	✓								✓																									✓			✓	
	163-E Series	34	3.2*2.5*1.1									✓																												✓	
	163-F Series	35	3.2*2.5*1.1									✓																												✓	
	160-B Series	36	5.0*3.2*1.3									✓																										✓		✓	
	149-B Series	37	7.0*5.0*1.4									✓																											✓	✓	
	149-E Series *	38	7.0*5.0*1.8									✓																												✓	✓
	149-F Series *	39	7.0*5.0*1.8									✓																												✓	✓
	168-P Series	40	2.0*1.6*0.9	✓					✓			✓																										✓		✓	
	163-P Series	41	3.2*2.5*1.2	✓					✓			✓																												✓	✓

备注: *NRND



Quartz Crystal Resonators

Product Category	Item Number	Page	Dimension (mm)	Product Applications																																							
				Consumer Electronics					Networking					Automotive					Industrial				Security		Medical		Other																
				Wearable Device	Mobile Phone	PC	Computer Peripherals	STB	Home Appliance	Toy & Gadgets	SONET/SDH	FTTx	Wireless LAN	Small Cell	WiFi/BLE	FRS/Radio	IoV	Car Multimedia	Powertrain	Domain Controller	Navigation System	TPMS	PKE/RKE	ADAS	AMR/AMI	Industrial Automation	POS & Payment	RFID/NFC	Sensor & Transmitter	Test & Measurement	DVR/NVR	IPC / CCD	Conference Equipment	Intelligent Buildings	Wearable Health	Personal care	Hospital Equipment	SoC / SiP					
	THR-1612	05	1.6*1.2*0.7	✓	✓					✓																													✓				
	THR-2016	06	2.05*1.65*0.8	✓																																					✓		
	THR-2520	07	2.55*2.05*1.0	✓																																					✓		
	SMHF-49B/THHF-49S	08						✓																																			
	SMCM-2016H	09	2.0*1.6*0.7	✓	✓	✓	✓	✓	✓	✓																															✓		
	SMCM-3225H	10	3.2*2.5*0.8	✓	✓	✓	✓	✓	✓	✓																																✓	
	SMCM-5032H	11	5.0*3.2*1.1		✓	✓	✓	✓	✓	✓																																	
	SMAC-7050H	12	7.0*5.0*1.45		✓	✓	✓	✓	✓	✓																																	
	SMAC-1045H	13	10.0*4.5*1.4		✓	✓	✓	✓	✓	✓																																	
	SMCE-1210	14	1.2*1.0*0.3	✓									✓																													✓	
	SMCE-1612	15	1.6*1.2*0.4	✓									✓																													✓	
	SMCE-2016	16	2.05*1.65*0.55	✓	✓	✓	✓	✓	✓	✓			✓																													✓	
	SMCE-2520	17	2.5*2.0*0.6	✓	✓	✓	✓	✓	✓	✓			✓																													✓	
	SMCE-3225	18	3.2*2.5*0.8	✓	✓	✓	✓	✓	✓	✓			✓																													✓	
	SMCE-5032	19	5.0*3.2*0.8		✓	✓	✓	✓	✓	✓			✓																													✓	
	SMCE-6035 *	20	6.0*3.5*1.0										✓																													✓	
	SMCE-7050 *	21	7.0*5.0*1.0										✓																													✓	
	SMLF-1610	22	1.6*1.0*0.5	✓	✓	✓	✓	✓	✓	✓																																✓	
	SMLF-2012	23	2.0*1.2*0.6	✓	✓	✓	✓	✓	✓	✓																																✓	
	SMLF-3215	24	3.2*1.5*0.9	✓	✓	✓	✓	✓	✓	✓																																✓	

Remark: *NRND

目录 CONTENTS

企业简介 / COMPANY PROFILE	01-02
研发部门 / R & D DEPARTMENT	03-04

石英晶体谐振器 / QUARTZ CRYSTAL RESONATORS	05-24
---	-------

表贴缝焊式陶瓷封装带热敏电阻石英晶体谐振器 SMD Seam Welded Quartz Crystal Resonators with Built-in Thermistor

THR-1612 ^{New}	05
THR-2016	06
THR-2520	07

AT切石英晶体谐振器 AT-CUT Quartz Crystal Resonators

SMHF-49B/THHF-49S HC-49S series	08
---------------------------------------	----

表贴陶瓷金属石英晶体谐振器 SMD Ceramic to Metal Quartz Crystal Resonators

SMCM-2016H	09
SMCM-3225H	10
SMCM-5032H	11

表贴全陶瓷石英晶体谐振器 SMD All Ceramic Quartz Crystal Resonators

SMAC-7050H	12
SMAC-1045H	13

表贴缝焊式陶瓷封装石英晶体谐振器 SMD Seam Welded Quartz Crystal Resonators

SMCE-1210	14
SMCE-1612	15
SMCE-2016	16
SMCE-2520	17
SMCE-3225	18
SMCE-5032	19
SMCE-6035	20
SMCE-7050	21

表贴音叉晶体谐振器 SMD Tuning Fork Crystal Resonators

SMLF-1610	22
SMLF-2012	23
SMLF-3215	24

石英晶体振荡器 / QUARTZ CRYSTAL OSCILLATORS 25-41

表贴压控石英晶体振荡器 SMD Voltage Controlled Quartz Crystal Oscillators

VCXO 3225 (VC800 SERIES) 25

表贴温度补偿石英晶体振荡器 SMD Temperature Compensated Quartz Crystal Oscillators

TCXO 2016 (TC950 SERIES) 26

TCXO 2520 (TC900 SERIES) 27

TCXO 3225 (TC800 SERIES) 28

超低相噪石英晶体振荡器 Ultra-Low Phase Noise Quartz Crystal Oscillators

SPXO 3225 (463-E SERIES) LVPECL Output ^{New} 29

SPXO 3225 (463-F SERIES) LVDS Output ^{New} 30

表贴石英晶体振荡器 SMD Ceramic Enclosure Quartz Crystal Oscillators

SPXO 2016 (168-B SERIES) 31

SPXO 2520 (165-B SERIES) 32

SPXO 3225 (163-B SERIES) 33

SPXO 3225 (163-E SERIES) LVPECL Output 34

SPXO 3225 (163-F SERIES) LVDS Output 35

SPXO 5032 (160-B SERIES) 36

SPXO 7050 (149-B SERIES) 37

SPXO 7050 (149-E SERIES) LVPECL Output 38

SPXO 7050 (149-F SERIES) LVDS Output 39

可编程表贴石英晶体振荡器 Programmable SMD Ceramic Enclosure Quartz Crystal Oscillators

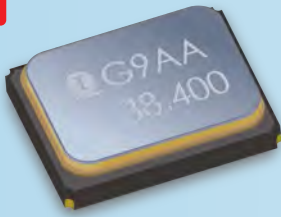
SPXO 2016 (168-P SERIES) 40

SPXO 3225 (163-P SERIES) 41



THR-1612

New



FEATURES

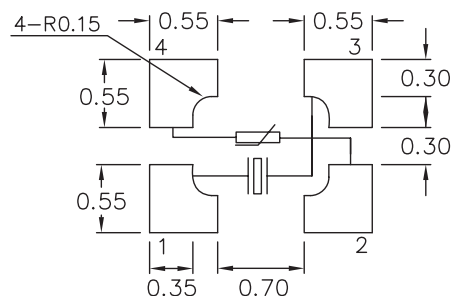
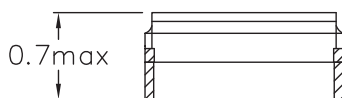
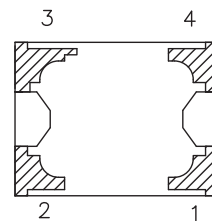
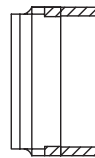
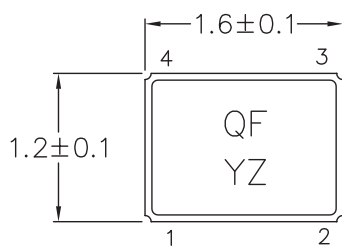
- Surface mount ceramic enclosures
- Ultra-miniature size
- Excellent temperature tracking
- Designed for mobile communication
- RoHS Compliant and Pb Free

Electrical Specifications

Parameters	Symbol	Specifications	
Nominal Frequency Range 标称频率范围	f_0	26 MHz~ 76.8 MHz	
Frequency Tolerance, Ta=25°C ± 3°C 常温频率偏差	$\Delta f/f$	±10ppm	
Load Capacitance 负载电容	C_L	7pF, 9pF or specify	
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	±10ppm or specify	
Operating Temperature Range 工作温度	T_{OPR}	-30°C ~ +85°C, -40°C ~ +85°C	
Storage Temperature Range 储存温度	T_{STG}	-55°C ~ +125°C	
Drive Level 激励功率	DL	100μW Max.	
Shunt Capacitance 静态电容	C_0	2pF Max.	
Equivalent Series Resistance (ESR) 串联谐振阻抗	ESR	80Ω	60Ω
Aging 老化率	Δf_A	±1ppm/Year	
Oscillation Mode 振动模式	OT	Fundamental	
Thermistor Resistance 热敏电阻阻值		100 KΩ±1%	
Thermistor B-Constant 热敏电阻B常数		4250K±1%	

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



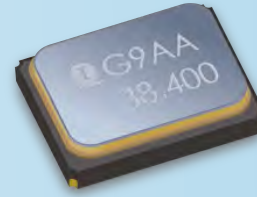
PIN	Connection
1	XTAL
2	GND Thermistor
3	XTAL
4	Thermistor

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

THR-2016

FEATURES

- Surface mount ceramic enclosures
- Ultra-miniature size
- Excellent temperature tracking
- Designed for mobile communication
- RoHS Compliant and Pb Free

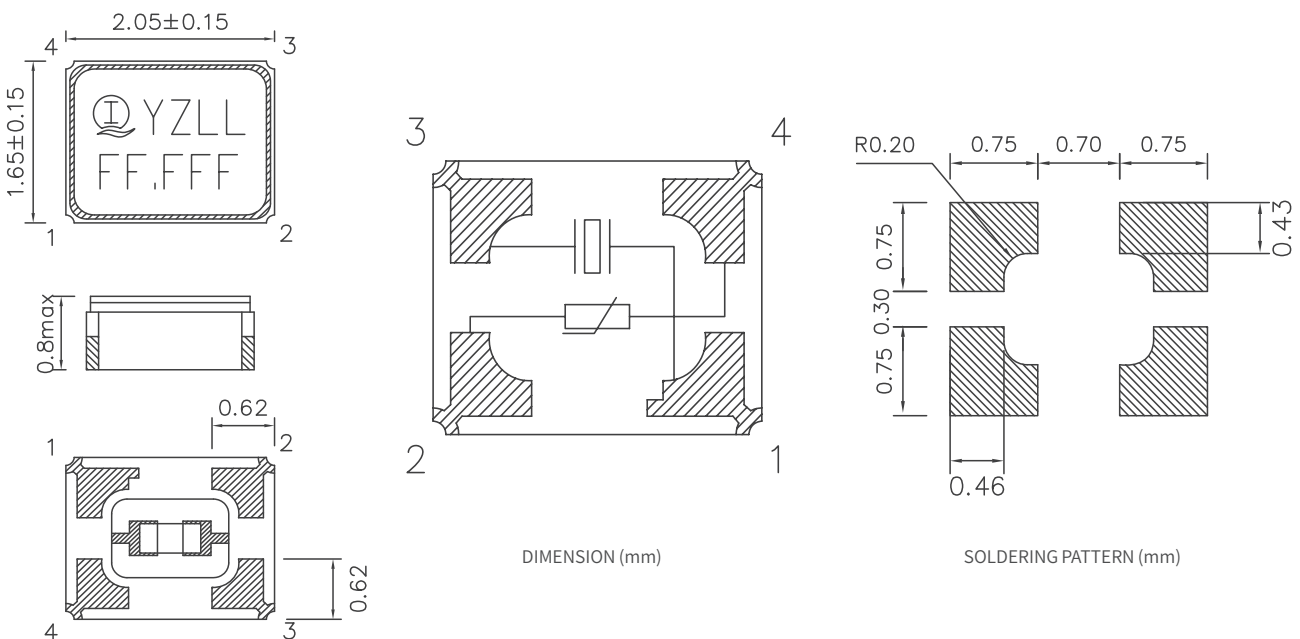


Electrical Specifications

Parameters	Symbol	Specifications	
Nominal Frequency Range 标称频率范围	f_0	16 MHz~ 96 MHz	
Frequency Tolerance, Ta=25°C ± 3°C 常温频率偏差	$\Delta f/f$	±10ppm	
Load Capacitance 负载电容	C_L	7pF, 9pF or specify	
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	±10ppm or specify	
Operating Temperature Range 工作温度	T_{OPR}	-30°C~ +85°C, -40°C~ +85°C	
Storage Temperature Range 储存温度	T_{STG}	-55°C~ +125°C	
Drive Level 激励功率	DL	100µW Max.	
Shunt Capacitance 静态电容	C_0	2pF Max.	
Equivalent Series Resistance (ESR) 串联谐振阻抗	ESR	80Ω	60Ω
Aging 老化率	Δf_A	±1ppm/Year	
Oscillation Mode 振动模式	OT	Fundamental	
Thermistor Resistance 热敏电阻阻值		100 KΩ±1%	
Thermistor B-Constant 热敏电阻B常数		4250K±1%	

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



THR-2520



FEATURES

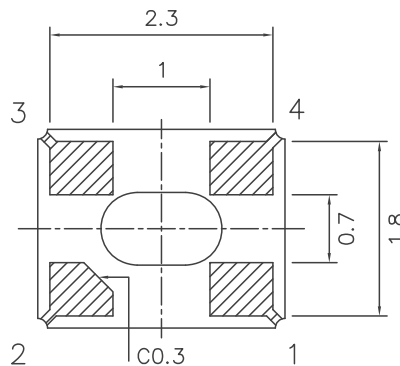
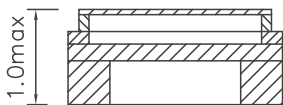
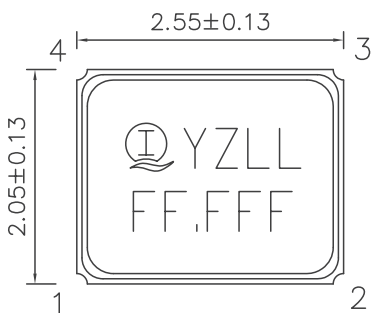
- Surface mount ceramic enclosures
- Miniature size
- Excellent temperature tracking
- Designed for mobile communication
- RoHS Compliant and Pb Free

Electrical Specifications

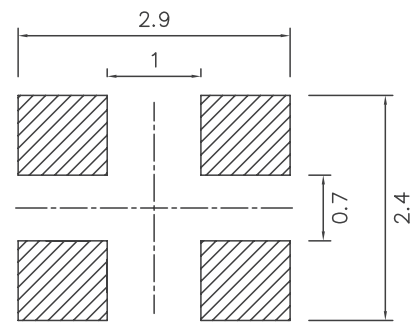
Parameters	Symbol	Specifications	
Nominal Frequency Range 标称频率范围	f_0	16 MHz~ 96 MHz	
Frequency Tolerance, Ta=25°C ± 3°C 常温频率偏差	$\Delta f/f$	±10ppm	
Load Capacitance 负载电容	C_L	7pF, 9pF or specify	
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	±10ppm or specify	
Operating Temperature Range 工作温度	T_{OPR}	-30°C ~ +85°C, -40°C ~ +85°C	
Storage Temperature Range 储存温度	T_{STG}	-55°C ~ +125°C	
Drive Level 激励功率	DL	100μW Max.	
Shunt Capacitance 静态电容	C_0	2pF Max.	
Equivalent Series Resistance (ESR) 串联谐振阻抗	ESR	80Ω	60Ω
Aging 老化率	Δf_A	±1ppm/Year	
Oscillation Mode 振动模式	OT	Fundamental	
Thermistor Resistance 热敏电阻阻值		100 KΩ±1%	
Thermistor B-Constant 热敏电阻B常数		4250K±1%	

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



DIMENSION (mm)



SOLDERING PATTERN (mm)

SMHF-49B/THHF-49S | HC-49S series

FEATURES

- AT-cut crystal performance
- Wide frequency range
- Standard and moderate precision available
- Low profile package



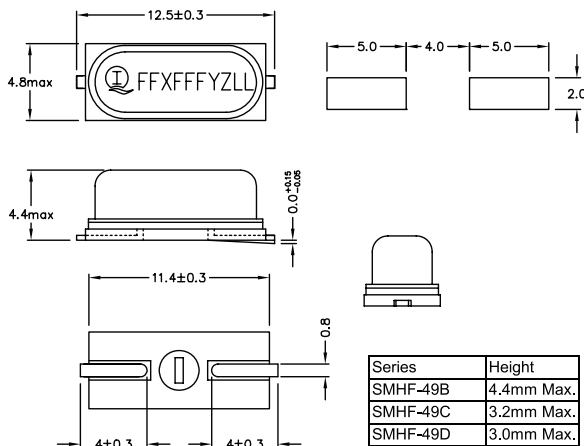
Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	3.5MHz ~ 40.0MHz (Fundamental) 30.0MHz ~ 80.0MHz (3rd Overtone)
Frequency Tolerance, Ta=25°C ± 3°C 常温频率偏差	$\Delta f/f$	±10ppm, ±30ppm
Load Capacitance 负载电容	C_L	18pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	±10ppm, ±30ppm
Operating Temperature Range 工作温度	T_{OPR}	-20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range 储存温度	T_{STG}	-55°C ~ +125°C
Drive Level 激励功率	DL	0.1mW (1mW Max.)
Shunt Capacitance 静态电容	C_0	7pF Max.
Insulation Resistance 绝缘电阻	IR	500MΩ Min.
Aging 老化率	Δf_A	±5ppm/Year

Equivalent Series Resistance (ESR) 串联谐振阻抗						
Frequency Range	$3.5 < f_0 \leq 4.5$	$4.5 < f_0 \leq 6$	$6 < f_0 \leq 8$	$8 < f_0 \leq 12$	$12 < f_0 \leq 15$	$15 < f_0 \leq 18$
ESR	120Ω Max.	90Ω Max.	70Ω Max.	60Ω Max.	40Ω Max.	30Ω Max.
Frequency Range	$18 < f_0 \leq 40$	$30 < f_0 \leq 35$ (3.0.T)	$35 < f_0 \leq 40$ (3.0.T)	$40 < f_0 \leq 80$ (3.0.T)		
ESR	25Ω Max.	100Ω Max.	80Ω Max.	70Ω Max.		

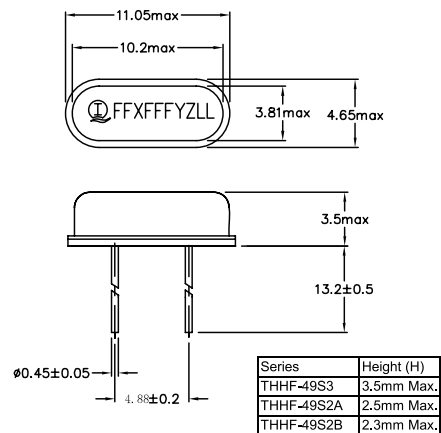
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions

SMHF-49B



THHF-49S





SMCM-2016H



FEATURES

- Ceramic epoxy sealed SMD package
- Ultra-light weight and ultra-miniature size
- Wide frequency range
- Best cost-performance option
- RoHS Compliant and Pb Free

Electrical Specifications

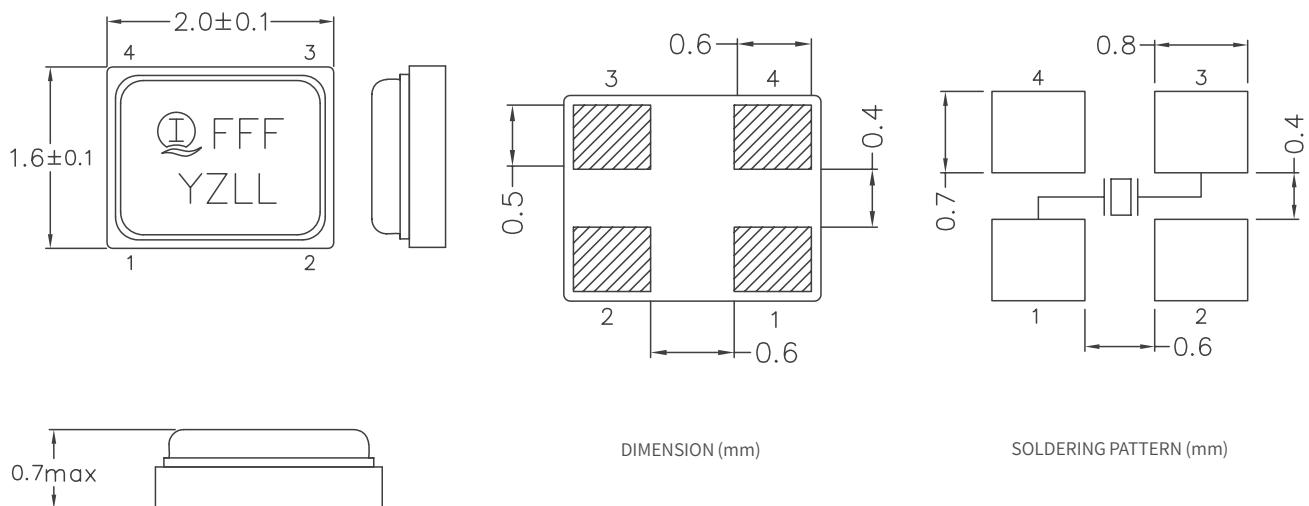
Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	16.0MHz ~ 54.0MHz
Frequency Tolerance, $T_a=25^\circ\text{C} \pm 3^\circ\text{C}$ 常温频率偏差	$\Delta f/f$	$\pm 10\text{ppm}$, $\pm 20\text{ppm}$
Load Capacitance 负载电容	C_L	6pF to 12pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	$\pm 20\text{ppm}$, $\pm 30\text{ppm}$ or specify
Operating Temperature Range 工作温度	T_{OPR}	$-20^\circ\text{C} \sim +70^\circ\text{C}$, $-20^\circ\text{C} \sim +85^\circ\text{C}$ or specify
Storage Temperature Range 储存温度	T_{STG}	$-55^\circ\text{C} \sim +125^\circ\text{C}$
Drive Level 激励功率	DL	50 μW Typ.
Shunt Capacitance 静态电容	C_0	2pF Max.
Insulation Resistance 绝缘电阻	IR	500M Ω Min.
Aging 老化率	Δf_A	$\pm 3\text{ppm/Year}$ Max.

Equivalent Series Resistance (ESR) 串联谐振阻抗

Frequency Range	$16 < f_0 \leq 20$	$20 < f_0 \leq 23$	$23 < f_0 \leq 32$	$32 < f_0 \leq 54$
ESR	250 Ω Max.	150 Ω Max.	100 Ω Max.	80 Ω Max.

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

SMCM-3225H

FEATURES

- Ceramic epoxy sealed SMD package
- Small size
- Wide frequency range
- Best cost-performance option
- RoHS Compliant and Pb Free



Electrical Specifications

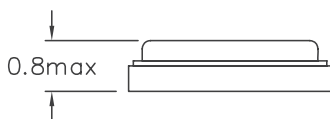
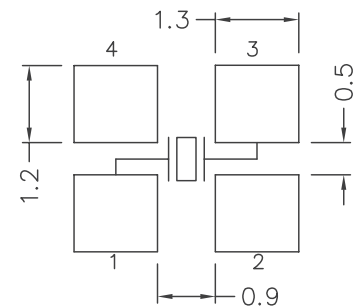
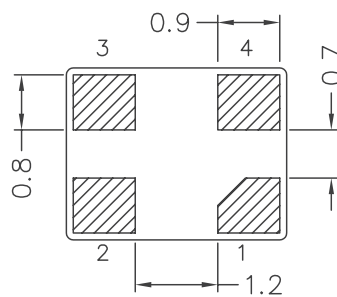
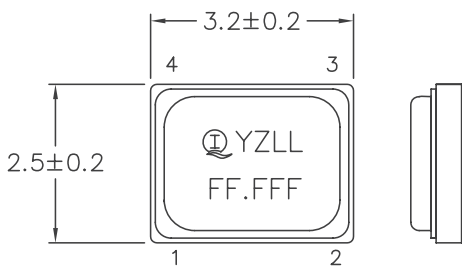
Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	12.0MHz ~ 54.0MHz
Frequency Tolerance, $T_a=25^\circ\text{C} \pm 3^\circ\text{C}$ 常温频率偏差	$\Delta f/f$	$\pm 10\text{ppm}$, $\pm 20\text{ppm}$
Load Capacitance 负载电容	C_L	10pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	$\pm 10\text{ppm}$, $\pm 20\text{ppm}$ or specify
Operating Temperature Range 工作温度	T_{OPR}	$-20^\circ\text{C} \sim +70^\circ\text{C}$, $-20^\circ\text{C} \sim +85^\circ\text{C}$ or specify
Storage Temperature Range 储存温度	T_{STG}	$-55^\circ\text{C} \sim +125^\circ\text{C}$
Drive Level 激励功率	DL	100 μW Typ.
Shunt Capacitance 静态电容	C_0	2pF Max.
Insulation Resistance 绝缘电阻	IR	500M Ω Min.
Aging 老化率	Δf_A	$\pm 3\text{ppm/Year}$ Max.

Equivalent Series Resistance (ESR) 串联谐振阻抗

Frequency Range	$12 < f_0 \leq 20$	$20 < f_0 \leq 23$	$23 < f_0 \leq 32$	$32 < f_0 \leq 54$
ESR	120 Ω Max.	80 Ω Max.	50 Ω Max.	40 Ω Max.

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



DIMENSION (mm)

SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



SMCM-5032H



FEATURES

- Ceramic epoxy sealed SMD package
- Wide frequency range
- 2 / 4 pads version available
- Best cost-performance option
- RoHS Compliant and Pb Free

Electrical Specifications

Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	8.0MHz ~ 32.0MHz
Frequency Tolerance, Ta=25°C ± 3°C 常温频率偏差	$\Delta f/f$	±20ppm, ±30ppm
Load Capacitance 负载电容	C_L	18pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	±20ppm, ±30ppm or specify
Operating Temperature Range 工作温度	T_{OPR}	-20°C ~ +70°C, -20°C ~ +85°C or specify
Storage Temperature Range 储存温度	T_{STG}	-55°C ~ +125°C
Drive Level 激励功率	DL	100µW Typ.
Shunt Capacitance 静态电容	C_0	7pF Max.
Insulation Resistance 绝缘电阻	IR	500MΩ Min.
Aging 老化率	Δf_A	±3ppm/Year Max.

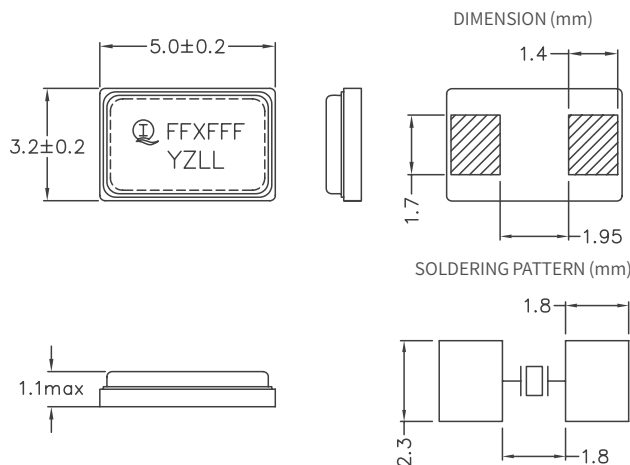
Equivalent Series Resistance (ESR) 串联谐振阻抗

Frequency Range	$8 < f_0 \leq 10$	$10 < f_0 \leq 12$	$12 < f_0 \leq 16$	$16 < f_0 \leq 32$
ESR	100Ω Max.	80Ω Max.	60Ω Max.	30Ω Max.

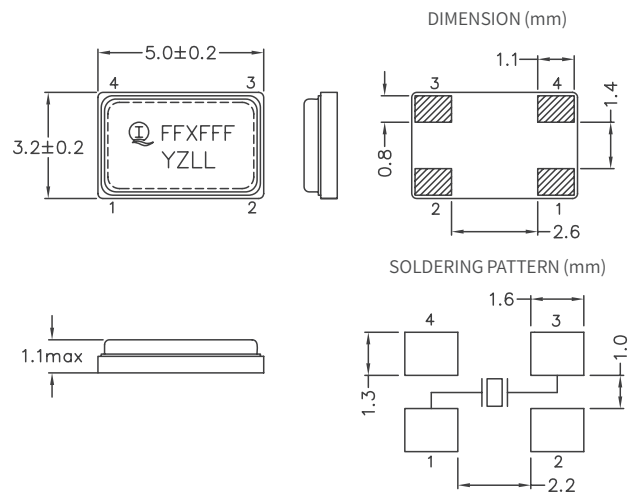
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions

SMCM - 5032H (2 pads)



SMCM - 5032H (4pads)



All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

SMAC-7050H

FEATURES

- All ceramic epoxy sealed SMD package
- 2/4 pads version available
- Self-Material supply
- RoHS Compliant and Pb Free



Electrical Specifications

Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	6.0MHz ~ 28.224MHz
Frequency Tolerance, Ta=25°C ± 3°C 常温频率偏差	$\Delta f/f$	±20ppm, ±30ppm
Load Capacitance 负载电容	C_L	18pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	±20ppm, ±30ppm or specify
Operating Temperature Range 工作温度	T_{OPR}	-20°C ~ +70°C, -20°C ~ +85°C or specify
Storage Temperature Range 储存温度	T_{STG}	-55°C ~ +125°C
Drive Level 激励功率	DL	100µW Typ.
Shunt Capacitance 静态电容	C_0	7pF Max.
Insulation Resistance 绝缘电阻	IR	500MΩ Min.
Aging 老化率	Δf_A	±5ppm/Year Max.

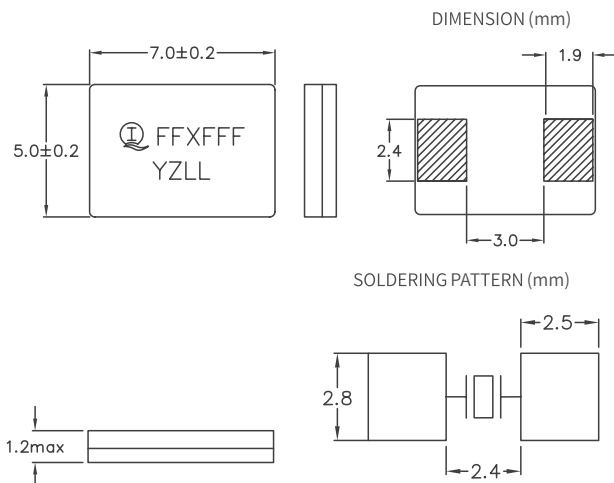
Equivalent Series Resistance (ESR) 串联谐振阻抗

Frequency Range	$6 < f_0 \leq 8$	$8 < f_0 \leq 12$	$12 < f_0 \leq 25$
ESR	80Ω Max.	60Ω Max.	50Ω Max.

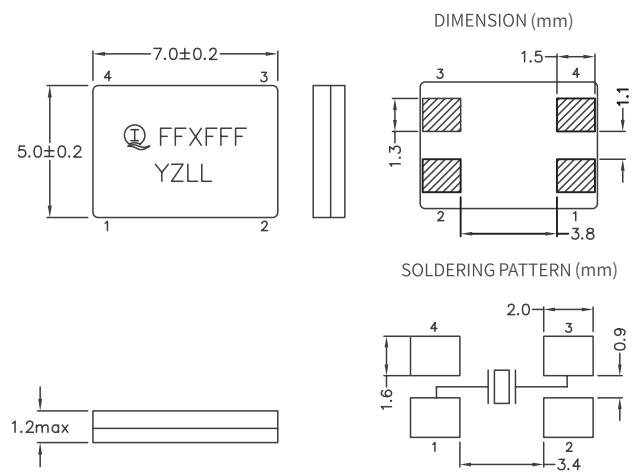
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions

SMAC - 7050H (2 pads)



SMAC - 7050H (4 pads)



All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



SMAC-1045H



FEATURES

- All ceramic epoxy sealed SMD package
- 2/4 pads version available
- Smallest and thinnest package for low frequency
- RoHS Compliant and Pb Free

Electrical Specifications

Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	3.5MHz ~ 8.0MHz
Frequency Tolerance, Ta=25°C ± 3°C 常温频率偏差	$\Delta f/f$	±20ppm, ±30ppm
Load Capacitance 负载电容	C_L	18pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	±20ppm, ±30ppm or specify
Operating Temperature Range 工作温度	T_{OPR}	-20°C ~ +70°C, -20°C ~ +85°C or specify
Storage Temperature Range 储存温度	T_{STG}	-55°C ~ +125°C
Drive Level 激励功率	DL	100µW Typ.
Shunt Capacitance 静态电容	C_0	7pF Max.
Insulation Resistance 绝缘电阻	IR	500MΩ Min.
Aging 老化率	Δf_A	±5ppm/Year Max.

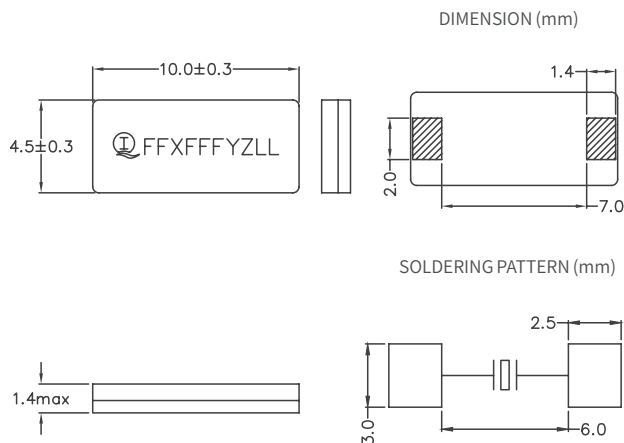
Equivalent Series Resistance (ESR) 串联谐振阻抗

Frequency Range	$3.5 < f_0 \leq 6.0$ MHz	$6.0 < f_0 \leq 8.0$ MHz
ESR	120Ω Max.	80Ω Max.

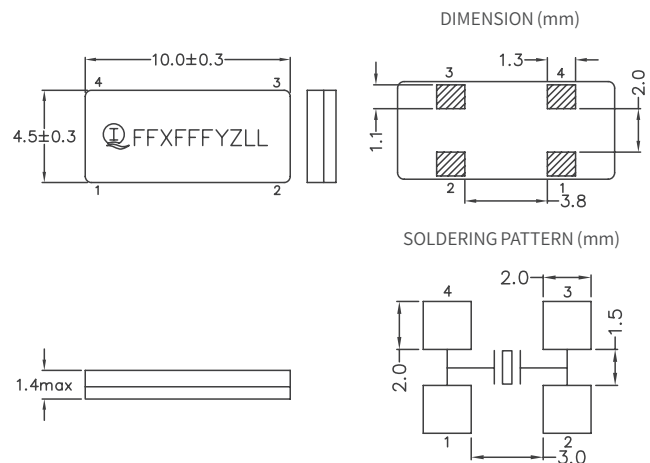
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions

SMAC - 1045H (2 pads)



SMAC - 1045H (4 pads)

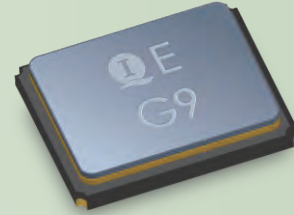


All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

SMCE-1210

FEATURES

- Surface mount ceramic enclosures
- High reliability seam welded package
- Ultra-light weight and ultra-miniature size
- Wide frequency range
- RoHS Compliant and Pb Free

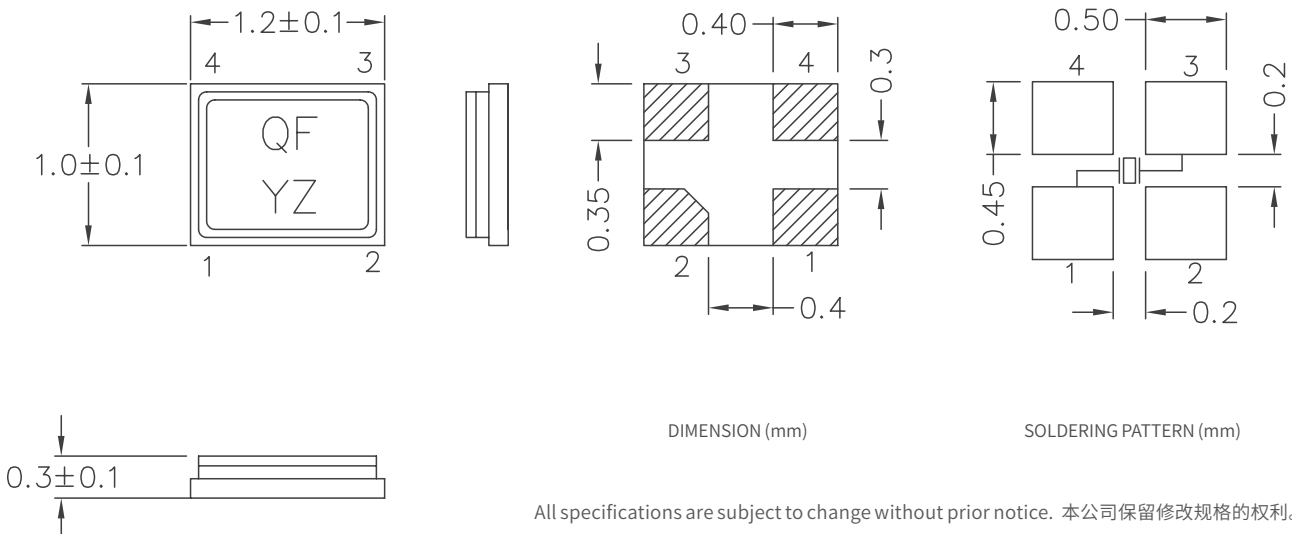


Electrical Specifications		
Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	24.0MHz ~ 100.0MHz
Frequency Tolerance, Ta=25°C ± 3°C 常温频率偏差	$\Delta f/f$	±10ppm, ±20ppm
Load Capacitance 负载电容	C_L	6pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	±10ppm, ±20ppm or specify
Operating Temperature Range 工作温度	T_{OPR}	-20°C ~ +70°C, -40°C ~ +85°C or specify
Storage Temperature Range 储存温度	T_{STG}	-55°C ~ +125°C
Drive Level 激励功率	DL	10µW Typ.
Shunt Capacitance 静态电容	C_0	2pF Max.
Insulation Resistance 绝缘电阻	IR	500MΩ Min.
Aging 老化率	Δf_A	±3ppm/Year Max.

Equivalent Series Resistance (ESR) 串联谐振阻抗		
Frequency Range	$24 < f_0 \leq 30$	$30 < f_0 \leq 60$
ESR	180Ω Max.	120Ω Max.

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

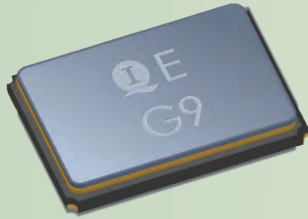
Dimensions



All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



SMCE-1612



FEATURES

- Surface mount ceramic enclosures
- High reliability seam welded package
- Ultra-light weight and ultra-miniature size
- Wide frequency range
- RoHS Compliant and Pb Free

Electrical Specifications

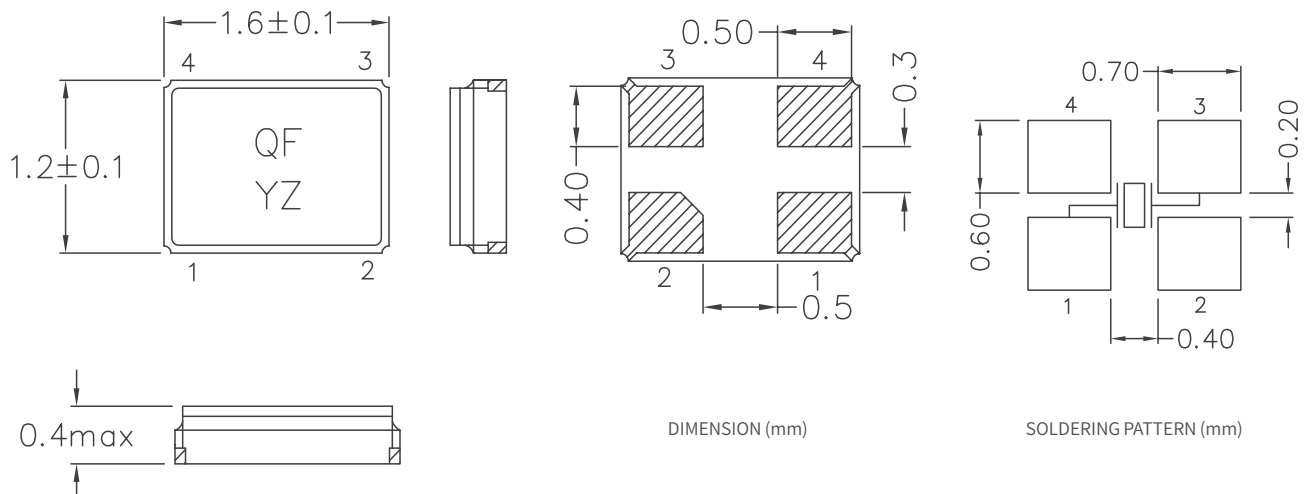
Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	24.0MHz ~ 100.0MHz
Frequency Tolerance, $T_a=25^\circ\text{C} \pm 3^\circ\text{C}$ 常温频率偏差	$\Delta f/f$	$\pm 10\text{ppm}, \pm 20\text{ppm}$
Load Capacitance 负载电容	C_L	6pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	$\pm 10\text{ppm}, \pm 20\text{ppm}$ or specify
Operating Temperature Range 工作温度	T_{OPR}	$-20^\circ\text{C} \sim +70^\circ\text{C}, -40^\circ\text{C} \sim +85^\circ\text{C}, -40^\circ\text{C} \sim +125^\circ\text{C}$ or specify
Storage Temperature Range 储存温度	T_{STG}	$-55^\circ\text{C} \sim +125^\circ\text{C}$
Drive Level 激励功率	DL	50 μW Typ.
Shunt Capacitance 静态电容	C_0	2pF Max.
Insulation Resistance 绝缘电阻	IR	500M Ω Min.
Aging 老化率	Δf_A	$\pm 3\text{ppm/Year}$ Max.

Equivalent Series Resistance (ESR) 串联谐振阻抗

Frequency Range	$24 < f_0 \leq 30$	$30 < f_0 \leq 60$
ESR	150 Ω Max.	100 Ω Max.

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

SMCE-2016

FEATURES

- Surface mount ceramic enclosures
- High reliability seam welded package
- Ultra-light weight and ultra-miniature size
- Conforms to AEC-Q200 (Optional)
- Wide frequency range
- RoHS Compliant and Pb Free

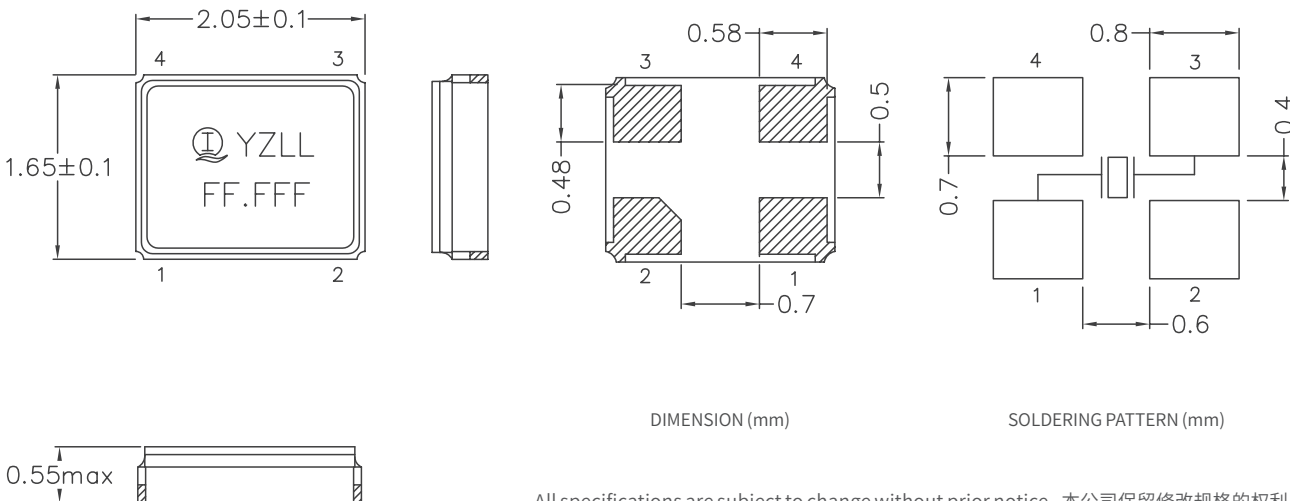


Electrical Specifications		
Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	16.0MHz ~ 96.0MHz
Frequency Tolerance, Ta=25°C ± 3°C 常温频率偏差	$\Delta f/f$	±10ppm, ±20ppm
Load Capacitance 负载电容	C_L	10pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	±10ppm, ±20ppm, ±50ppm or specify
Operating Temperature Range 工作温度	T_{OPR}	-20°C ~ +70°C, -40°C ~ +85°C, -40°C ~ +125°C or specify
Storage Temperature Range 储存温度	T_{STG}	-55°C ~ +125°C
Drive Level 激励功率	DL	50µW Typ.
Shunt Capacitance 静态电容	C_0	2pF Max.
Insulation Resistance 绝缘电阻	IR	500MΩ Min.
Aging 老化率	Δf_A	±3ppm/Year Max.

Equivalent Series Resistance (ESR) 串联谐振阻抗				
Frequency Range	$16 < f_0 \leq 20$	$20 < f_0 \leq 24$	$24 < f_0 \leq 32$	$32 < f_0 \leq 60$
ESR	200Ω Max.	150Ω Max.	100Ω Max.	80Ω Max.

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

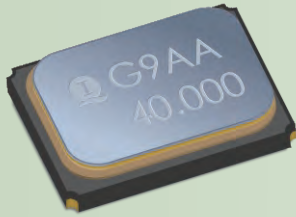
Dimensions



All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



SMCE-2520



FEATURES

- Surface mount ceramic enclosures
- High reliability seam welded package
- Conforms to AEC-Q200 (Optional)
- Wide frequency range
- RoHS Compliant and Pb Free

Electrical Specifications

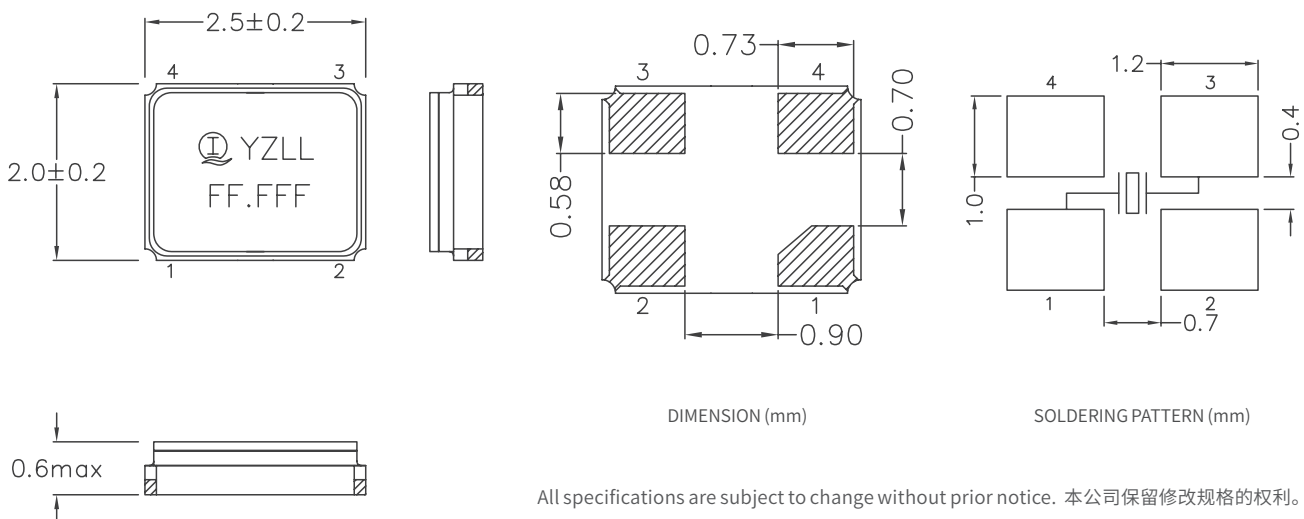
Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	12.0MHz ~ 125.0MHz
Frequency Tolerance, $T_a=25^\circ\text{C} \pm 3^\circ\text{C}$ 常温频率偏差	$\Delta f/f$	$\pm 10\text{ppm}$, $\pm 20\text{ppm}$
Load Capacitance 负载电容	C_L	10pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	$\pm 10\text{ppm}$, $\pm 20\text{ppm}$, $\pm 50\text{ppm}$ or specify
Operating Temperature Range 工作温度	T_{OPR}	$-20^\circ\text{C} \sim +70^\circ\text{C}$, $-40^\circ\text{C} \sim +85^\circ\text{C}$, $-40^\circ\text{C} \sim +125^\circ\text{C}$ or specify
Storage Temperature Range 储存温度	T_{STG}	$-55^\circ\text{C} \sim +125^\circ\text{C}$
Drive Level 激励功率	DL	100 μW Typ.
Shunt Capacitance 静态电容	C_0	2pF Max.
Insulation Resistance 绝缘电阻	IR	500M Ω Min.
Aging 老化率	Δf_A	$\pm 3\text{ppm/Year}$ Max.

Equivalent Series Resistance (ESR) 串联谐振阻抗

Frequency Range	$12 < f_0 \leq 16$	$16 < f_0 \leq 23$	$24 < f_0 \leq 60$	$60 < f_0 \leq 125$
ESR	120 Ω Max.	100 Ω Max.	60 Ω Max.	80~100 Ω Max.

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

SMCE-3225

FEATURES

- Surface mount ceramic enclosures
- High reliability seam welded package
- Conforms to AEC-Q200 (Optional)
- Wide frequency range
- RoHS Compliant and Pb Free



Electrical Specifications

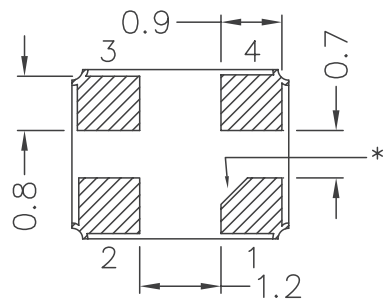
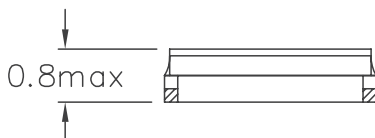
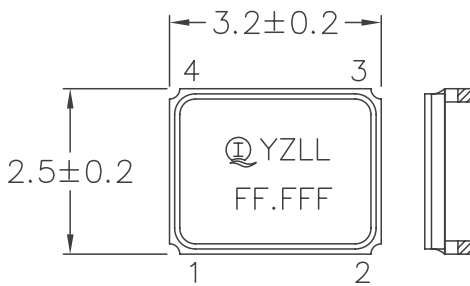
Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	8MHz ~ 156.25MHz
Frequency Tolerance, $T_a=25^\circ\text{C} \pm 3^\circ\text{C}$ 常温频率偏差	$\Delta f/f$	$\pm 10\text{ppm}, \pm 20\text{ppm}$
Load Capacitance 负载电容	C_L	10pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	$\pm 10\text{ppm}, \pm 20\text{ppm}, \pm 50\text{ppm}$ or specify
Operating Temperature Range 工作温度	T_{OPR}	$-20^\circ\text{C} \sim +70^\circ\text{C}, -40^\circ\text{C} \sim +85^\circ\text{C}, -40^\circ\text{C} \sim +125^\circ\text{C}$ or specify
Storage Temperature Range 储存温度	T_{STG}	$-55^\circ\text{C} \sim +125^\circ\text{C}$
Drive Level 激励功率	DL	100 μW Typ.
Shunt Capacitance 静态电容	C_0	2pF Max.
Insulation Resistance 绝缘电阻	IR	500M Ω Min.
Aging 老化率	Δf_A	$\pm 3\text{ppm/Year}$ Max.

Equivalent Series Resistance (ESR) 串联谐振阻抗

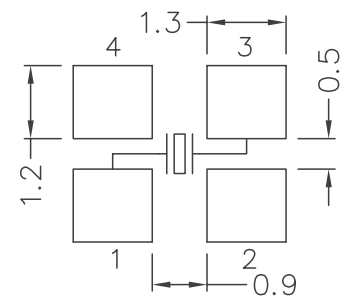
Frequency Range	$10 \leq f_0 < 12$	$12 \leq f_0 \leq 16$	$16 < f_0 \leq 20$	$20 < f_0 \leq 40$	$40 < f_0 \leq 60$	$60 < f_0 \leq 156.25$
ESR	350 Ω Max.	100 Ω Max.	80 Ω Max.	40 Ω Max.	30 Ω Max.	80~100 Ω Max.

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



DIMENSION (mm)

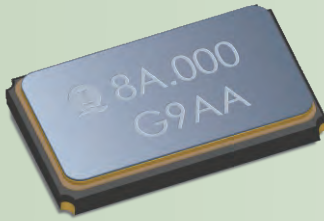


SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



SMCE-5032



FEATURES

- Surface mount ceramic enclosures
- High reliability seam welded package
- Conforms to AEC-Q200 (Optional)
- Wide frequency range
- RoHS Compliant and Pb Free

Electrical Specifications

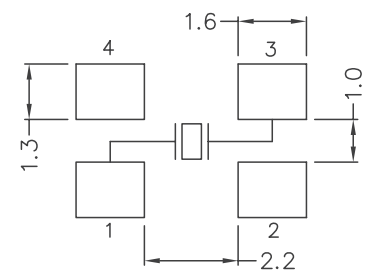
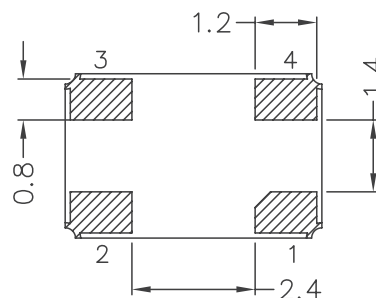
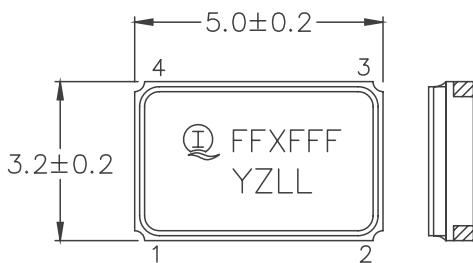
Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	8.0MHz ~ 156.25MHz
Frequency Tolerance, Ta=25°C ± 3°C 常温频率偏差	$\Delta f/f$	±10ppm, ±20ppm
Load Capacitance 负载电容	C_L	18pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	±10ppm, ±20ppm, ±50ppm or specify
Operating Temperature Range 工作温度	T_{OPR}	-20°C ~ +70°C, -40°C ~ +85°C, -40°C ~ +125°C or specify
Storage Temperature Range 储存温度	T_{STG}	-55°C ~ +125°C
Drive Level 激励功率	DL	100µW Typ.
Shunt Capacitance 静态电容	C_0	7pF Max.
Insulation Resistance 绝缘电阻	IR	500MΩ Min.
Aging 老化率	Δf_A	±3ppm/Year Max.

Equivalent Series Resistance (ESR) 串联谐振阻抗

Frequency Range	$8 < f_0 \leq 16$	$16 < f_0 \leq 25$	$25 < f_0 \leq 30$	$30 < f_0 \leq 54$	$54 < f_0 \leq 156.25$
ESR	80Ω Max.	50Ω Max.	40Ω Max.	35Ω Max.	80~100Ω Max.

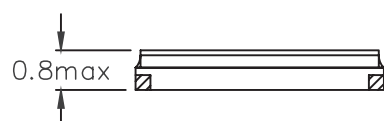
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



DIMENSION (mm)

SOLDERING PATTERN (mm)

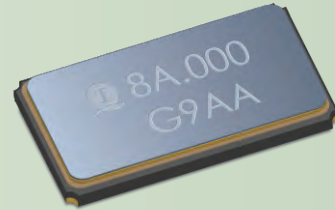


All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

SMCE-6035

FEATURES

- Surface mount ceramic enclosures
- High reliability seam welded package
- Conforms to AEC-Q200 (Optional)
- Wide frequency range
- RoHS Compliant and Pb Free



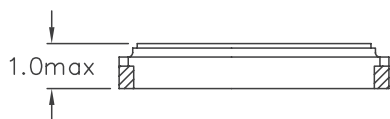
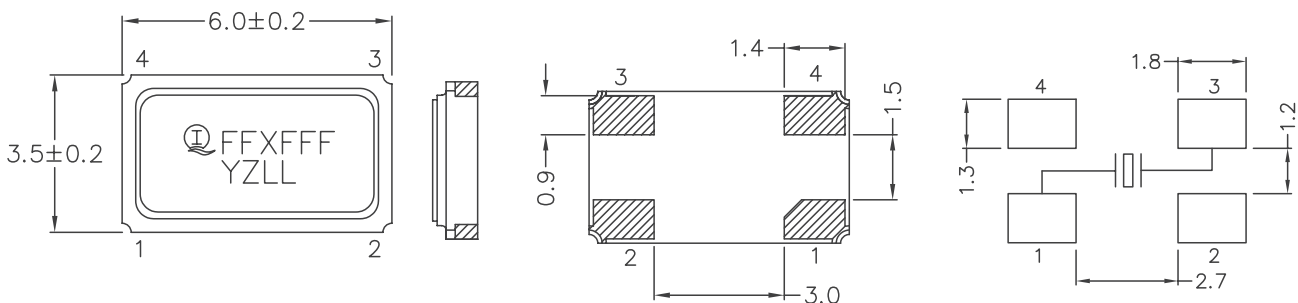
*NRND

Electrical Specifications		
Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	8.0MHz ~ 50.0MHz (Fundamental) 40.0MHz ~ 80.0MHz (3.O.T)
Frequency Tolerance, Ta=25°C ± 3°C 常温频率偏差	$\Delta f/f$	±10ppm, ±30ppm
Load Capacitance 负载电容	C_L	18pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	±10ppm, ±20ppm, ±50ppm or specify
Operating Temperature Range 工作温度	T_{OPR}	-20°C ~ +70°C, -40°C ~ +85°C, -40°C ~ +125°C or specify
Storage Temperature Range 储存温度	T_{STG}	-55°C ~ +125°C
Drive Level 激励功率	DL	100µW Typ.
Shunt Capacitance 静态电容	C_0	7pF Max.
Insulation Resistance 绝缘电阻	IR	500MΩ Min.
Aging 老化率	Δf_A	±3ppm/Year Max.

Equivalent Series Resistance (ESR) 串联谐振阻抗						
Frequency Range	$8 < f_0 \leq 12$	$12 < f_0 \leq 16$	$16 < f_0 \leq 25$	$25 < f_0 \leq 30$	$30 < f_0 \leq 50$	$40 < f_0 \leq 80$ (3.O.T)
ESR	80Ω Max.	60Ω Max.	50Ω Max.	35Ω Max.	25Ω Max.	80~100Ω Max.

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



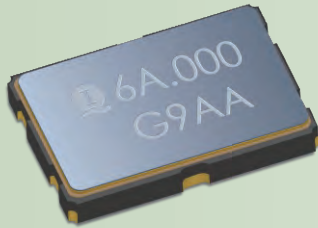
DIMENSION (mm)

SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



SMCE-7050



*NRND

FEATURES

- Surface mount ceramic enclosures
- High reliability seam welded package
- Conforms to AEC-Q200 (Optional)
- Wide frequency range
- RoHS Compliant and Pb Free

Electrical Specifications

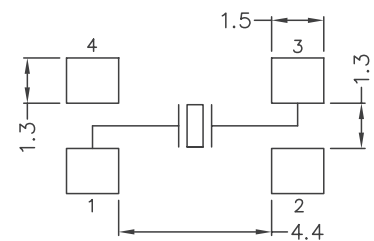
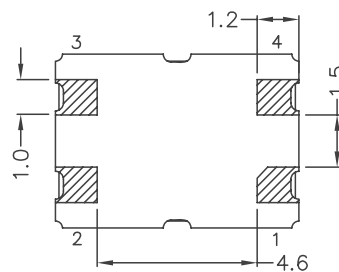
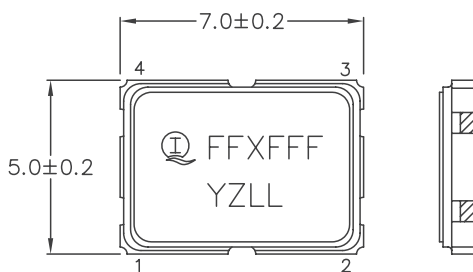
Parameters	Symbol	Specifications
Nominal Frequency Range 标称频率范围	f_0	6.0MHz ~ 156.25MHz
Frequency Tolerance, $T_a=25^\circ\text{C} \pm 3^\circ\text{C}$ 常温频率偏差	$\Delta f/f$	$\pm 10\text{ppm}, \pm 20\text{ppm}$
Load Capacitance 负载电容	C_L	18pF or specify
Frequency Tolerance over Operating Temperature Range 频率温度特性	$\Delta f/f$	$\pm 10\text{ppm}, \pm 20\text{ppm}, \pm 50\text{ppm}$ or specify
Operating Temperature Range 工作温度	T_{OPR}	$-20^\circ\text{C} \sim +70^\circ\text{C}, -40^\circ\text{C} \sim +85^\circ\text{C}, -40^\circ\text{C} \sim +125^\circ\text{C}$ or specify
Storage Temperature Range 储存温度	T_{STG}	$-55^\circ\text{C} \sim +125^\circ\text{C}$
Drive Level 激励功率	DL	100 μW Typ.
Shunt Capacitance 静态电容	C_0	7pF Max.
Insulation Resistance 绝缘电阻	IR	500M Ω Min.
Aging 老化率	Δf_A	$\pm 3\text{ppm/Year}$ Max.

Equivalent Series Resistance (ESR) 串联谐振阻抗

Frequency Range	$6 < f_0 \leq 8$	$8 < f_0 \leq 16$	$16 < f_0 \leq 30$	$30 < f_0 \leq 40$	$40 < f_0 \leq 156.25$
ESR	100 Ω Max.	80 Ω Max.	50 Ω Max.	100 Ω Max.	80~100 Ω Max.

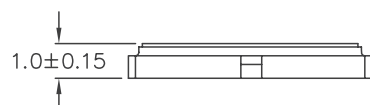
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



DIMENSION (mm)

SOLDERING PATTERN (mm)

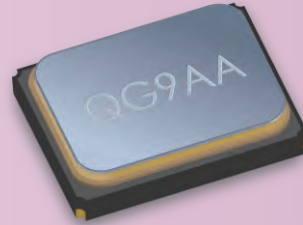


All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

SMLF-1610

FEATURES

- Ultra-miniature size
- Surface Mount with Ceramic Package
- Reflow solderable
- Suitable for IoT and wearable devices
- RoHS Compliant and Pb Free

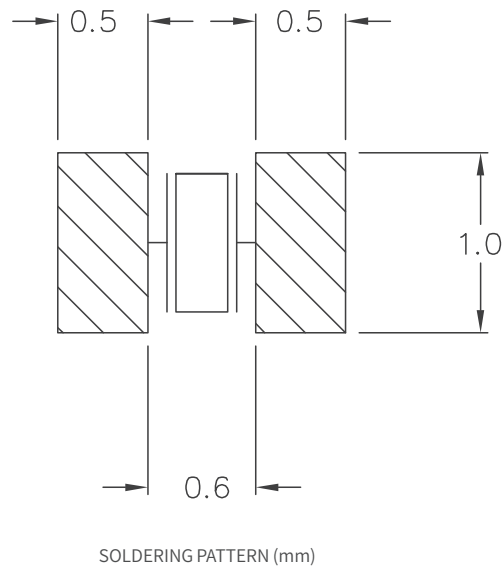
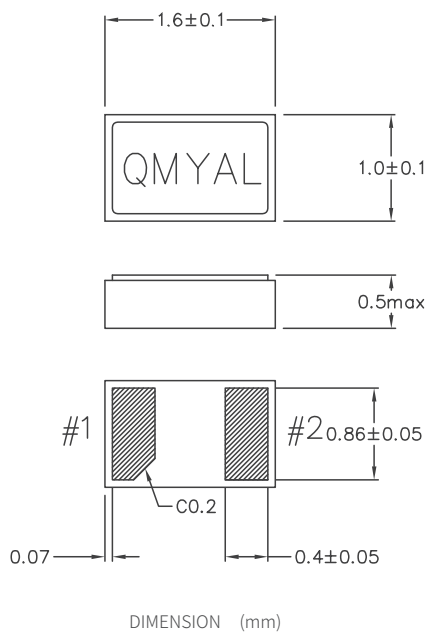


Electrical Specifications

Parameters	Symbol	Specifications
Nominal Frequency 标称频率	f_0	32.768KHz
Frequency Tolerance, $T_a=25^\circ\text{C} \pm 3^\circ\text{C}$ 常温频率偏差	$\Delta f/f$	$\pm 20\text{ppm}$
Load Capacitance 负载电容	C_L	12.5pF or specify
Temperature Coefficient 温度系数	$\Delta f/f$	$-0.034 \pm 0.006\text{ppm}/^\circ\text{C}^2$
Operating Temperature Range 工作温度范围	T_{OPR}	$-20^\circ\text{C} \sim +70^\circ\text{C}, -40^\circ\text{C} \sim +85^\circ\text{C}$
Storage Temperature Range 储存温度范围	T_{STG}	$-55^\circ\text{C} \sim +125^\circ\text{C}$
Drive Level 激励功率	DL	0.5 μW Max.
Equivalent Series Resistance (ESR) 串联谐振阻抗	R_1	90K Ω Max.
Insulation Resistance 绝缘阻抗	IR	500M Ω Min.
Aging 老化率	Δf_A	$\pm 5\text{ppm}/\text{Year}$ Max.

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

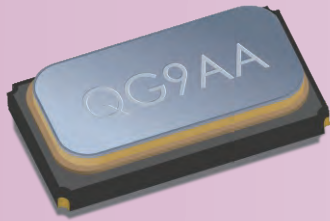
Dimensions



All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



SMLF-2012



FEATURES

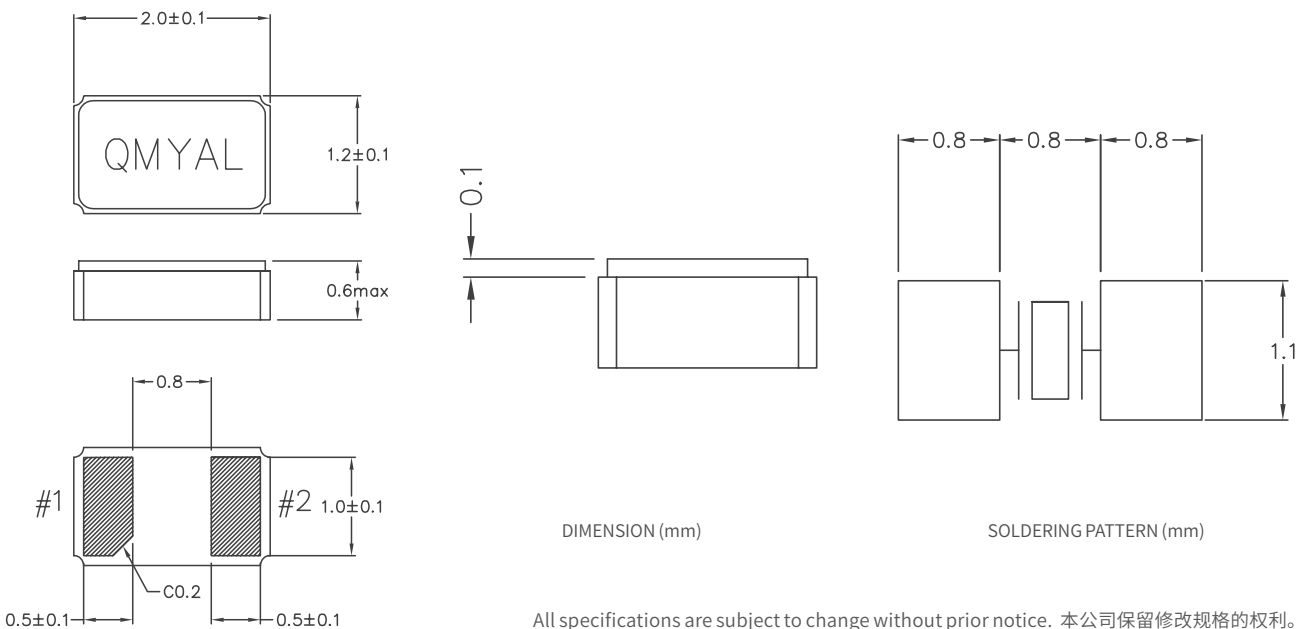
- Miniature size
- Surface Mount with Ceramic Package
- Reflow solderable
- Suitable for IoT and wearable devices
- RoHS Compliant and Pb Free

Electrical Specifications

Parameters	Symbol	Specifications
Nominal Frequency 标称频率	f_0	32.768KHz
Frequency Tolerance, Ta=25°C ± 3°C 常温频率偏差	$\Delta f/f$	±20ppm
Load Capacitance 负载电容	C_L	12.5pF or specify
Temperature Coefficient 温度系数	$\Delta f/f$	-0.034 ± 0.006ppm/°C ²
Operating Temperature Range 工作温度范围	T_{OPR}	-20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range 储存温度范围	T_{STG}	-55°C ~ +125°C
Drive Level 激励功率	DL	0.5μW Max.
Equivalent Series Resistance (ESR) 串联谐振阻抗	R_1	90KΩ Max.
Insulation Resistance 绝缘阻抗	IR	500MΩ Min.
Aging 老化率	Δf_A	±5ppm/Year Max.

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

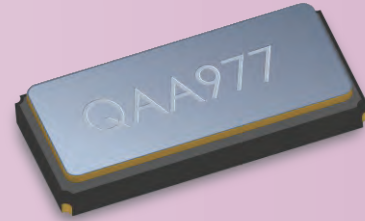
Dimensions



SMLF-3215

FEATURES

- Small size
- Surface Mount with Ceramic Package
- Reflow solderable
- Suitable for IoT and wearable devices
- RoHS Compliant and Pb Free

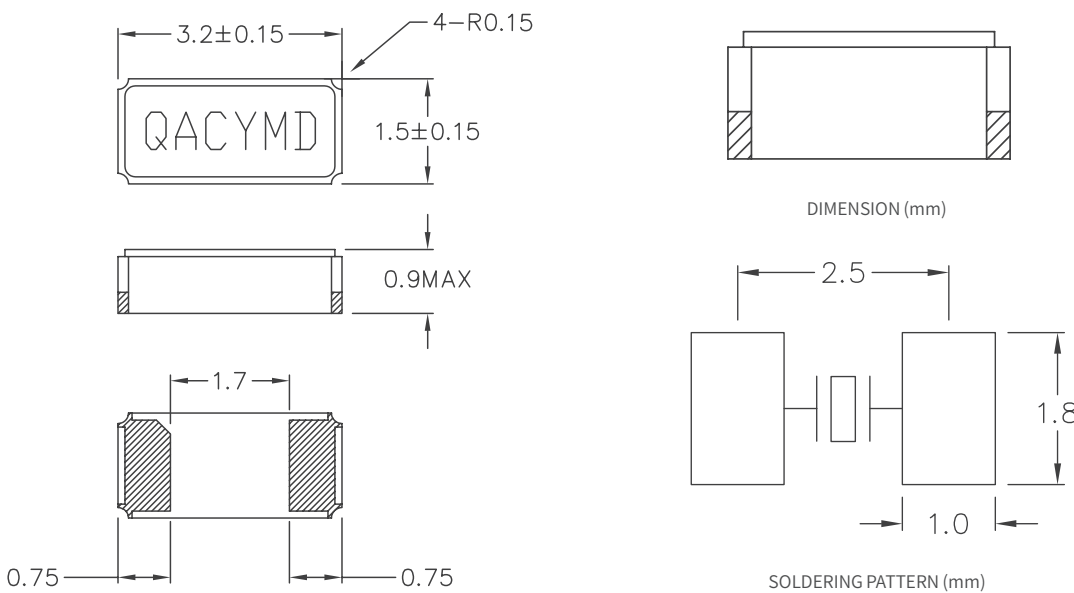


Electrical Specifications

Parameters	Symbol	Specifications
Nominal Frequency 标称频率	f_0	32.768KHz
Frequency Tolerance, Ta=25°C ± 3°C 常温频率偏差	$\Delta f/f$	±20ppm
Load Capacitance 负载电容	C_L	12.5pF or specify
Temperature Coefficient 温度系数	$\Delta f/f$	-0.034±0.006ppm/°C2
Operating Temperature Range 工作温度范围	T_{OPR}	-20°C ~ +70°C, -40°C ~ +85°C
Storage Temperature Range 储存温度范围	T_{STG}	-55°C ~ +125°C
Drive Level 激励功率	DL	0.5μW Max.
Equivalent Series Resistance (ESR) 串联谐振阻抗	R_1	70KΩ Max.
Insulation Resistance 绝缘阻抗	IR	500MΩ Min.
Aging 老化率	Δf_A	±5ppm/Year Max.

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



VCXO 3225 (VC800 SERIES)



FEATURES

- Small size
- 6 Pads enclosure available
- Wide pulling range
- Pick and place assembly
- High reliability seam welded package
- RoHS Compliant and Pb Free

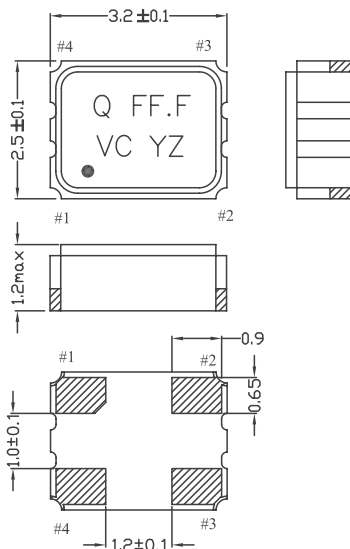
Electrical Specifications

Parameters		Specifications	
Output Waveform 输出波型		CMOS	
Frequency Range 频率范围		2.0MHz ~ 66.0MHz	
Supply Voltage Range (Vdd) 工作电压范围		2.8V	3.3V
Overall Frequency Stability 总频率偏差		±25ppm, ±50ppm or specify	
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C	
Current Consumption (Idd) 消耗电流		10mA Typ.	
Rise & Fall Time 上/下沿时间		5ns Typ.	
Output Symmetry 输出对称性		45% ~ 55%	
Output Voltage 输出电压	V _{OH}	90% VDD	
	V _{OL}	10% VDD	
Output Load 输出负载		15pF	
Control Voltage Range 控制电压范围		1.4V ± 1.4V	1.65V ± 1.65V
Absolute Pulling Range 绝对牵引范围		±100ppm or specify	
Modulation Bandwidth (BW) 调制带宽		20KHz Typ.	
Start-up Time 起动时间		10ms Max.	
Storage Temperature Range 储存温度范围		-55°C ~ +125°C	

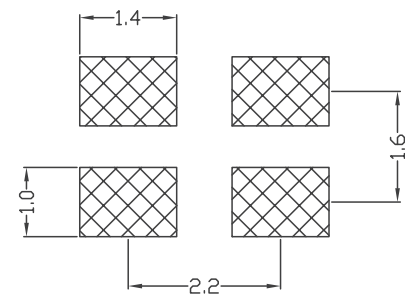
** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging.
包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差。

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



PIN	CONNECTION
1	VCON
2	GROUND
3	OUTPUT
4	VDD



DIMENSION (mm)

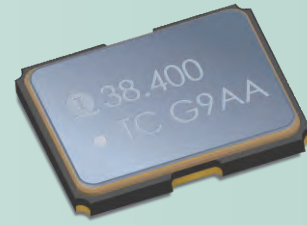
SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

TCXO 2016 (TC950 SERIES)

FEATURES

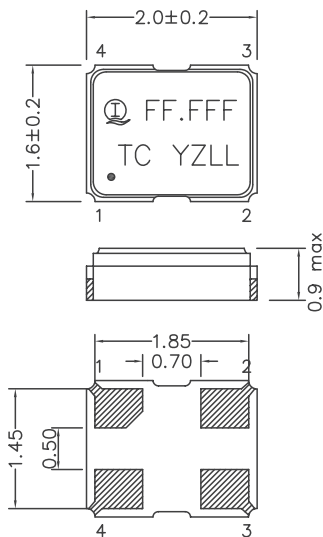
- Ultra-miniature size
- High reliability seam welded package
- Pick and place assembly
- Voltage Control applicable
- Low supply voltage version available
- RoHS Compliant and Pb Free



Electrical Specifications		Specifications
Parameters		
Output Waveform 输出波型		Clipped Sine
Frequency Range 频率范围		9.5MHz ~ 70MHz
Supply Voltage Range (Vdd) 工作电压范围		1.8V ~ 3.3V
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C
Frequency Stability 频率偏差		
vs. Room Temp. (25°C ± 3°C) 相对常温		±1.0ppm, ±2.0ppm
vs. Operating Temp. 相对工作温度		±0.5ppm, ±1.0ppm, ±2.0ppm
vs. Voltage Change (±5%) 相对电压变化		±0.2ppm Max.
vs. Load Change (±5%) 相对负载变化		±0.2ppm Max.
vs. Aging (First Year) 相对首年老化率		±1ppm
Current Consumption (Idd) 消耗电流		2mA Max.
Output Voltage 输出电压	Vp-p	0.8V Min.
Output Load 输出负载		10kΩ // 10pF
Pullability 牵引范围 (for VCTCXO)		±9 ~ ±15ppm Typ.
Control Voltage Range 控制电压范围 (for VCTCXO)		0.90V ± 0.60V, 1.4V ± 1V
Phase Noise @ 1kHz Offset		-130dBc/Hz Typ.
Start-up Time 起动时间		3ms Max.
Storage Temperature Range 储存温度范围		-40°C ~ +85°C

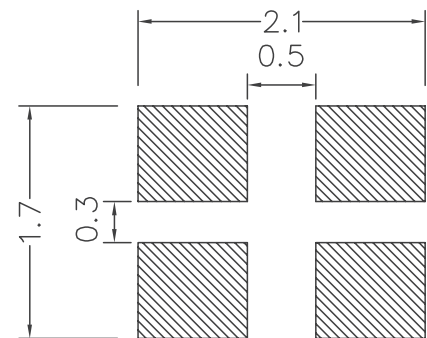
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



PIN CONNECTION

P/N	FUNCTION
1	VC or Ground
2	Ground
3	Output
4	VDD



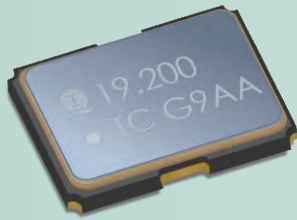
DIMENSION (mm)

SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



TCXO 2520 (TC900 SERIES)



FEATURES

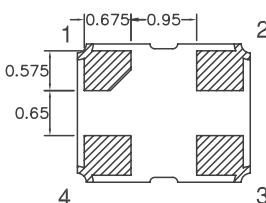
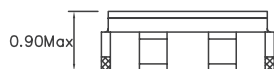
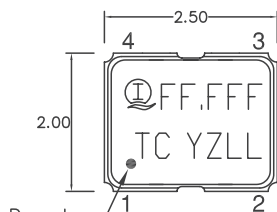
- Miniature size
- High reliability seam welded package
- Pick and place assembly
- Voltage Control applicable
- Low supply voltage version available
- RoHS Compliant and Pb Free

Electrical Specifications

Parameters	Specifications
Output Waveform 输出波形	Clipped Sine
Frequency Range 频率范围	9.5MHz ~ 70MHz
Supply Voltage Range (Vdd) 工作电压范围	1.8V ~ 3.3V
Operating Temperature Range 工作温度范围	-20°C ~ +70°C, -40°C ~ +85°C
Frequency Stability 频率偏差	
vs. Room Temp. (25°C ± 3°C) 相对常温	±1.0ppm, ±1.5ppm, ±2.0ppm
vs. Operating Temp. 相对工作温度	±0.5ppm, ±1.0ppm, ±1.5ppm, ±2.0ppm
vs. Voltage Change (±5%) 相对电压变化	±0.2ppm Max.
vs. Load Change (±5%) 相对负载变化	±0.2ppm Max.
vs. Aging (First Year) 相对首年老化率	±1ppm
Current Consumption (Idd) 消耗电流	2mA Max.
Output Voltage 输出电压	Vp-p
	0.8V Min.
Output Load 输出负载	10k Ω // 10pF
Pullability 牵引范围 (for VCTCXO)	±9 ~ ±15ppm Typ.
Control Voltage Range 控制电压范围 (for VCTCXO)	0.90V ± 0.60V, 1.4V ± 1V
Phase Noise @ 1kHz Offset	-130dBc/Hz Typ.
Start-up Time 起动时间	3ms Max.
Storage Temperature Range 储存温度范围	-40°C ~ +85°C

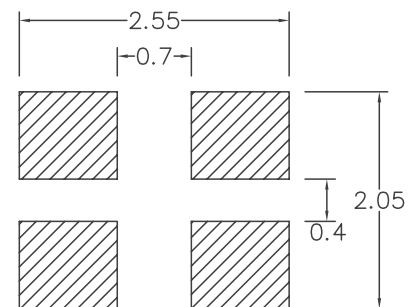
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



PIN CONNECTION

P/N	FUNCTION
1	Ground Recommended
2	Ground
3	Output
4	Vcc



DIMENSION (mm)

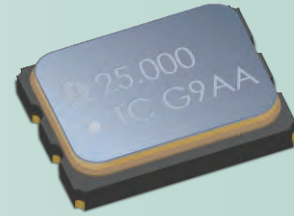
SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

TCXO 3225 (TC800 SERIES)

FEATURES

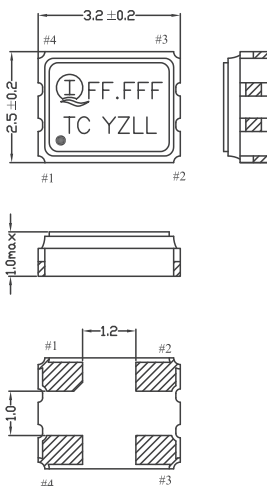
- Small size
- High reliability seam welded package
- Pick and place assembly
- Voltage Control applicable
- Low supply voltage version available
- RoHS Compliant and Pb Free



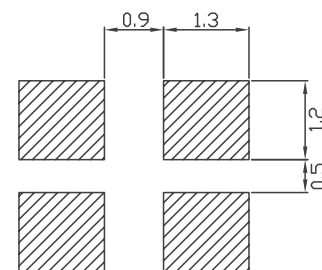
Electrical Specifications		Parameters	Specifications
		Output Waveform 输出波型	Clipped Sine
		Frequency Range 频率范围	9.5MHz ~ 66MHz
		Supply Voltage Range (Vdd) 工作电压范围	1.8V ~ 3.3V
		Operating Temperature Range 工作温度范围	-20°C ~ +70°C, -40°C ~ +85°C
		Frequency Stability 频率偏差	
		vs. Room Temp. (25°C ± 3°C) 相对常温	±1.0ppm, ±2.0ppm
		vs. Operating Temp. 相对工作温度	±0.5ppm, ±1.0ppm, ±2.0ppm
		vs. Voltage Change (±5%) 相对电压变化	±0.2ppm Max.
		vs. Load Change (±5%) 相对负载变化	±0.2ppm Max.
		vs. Aging (First Year) 相对首年老化率	±1ppm
		Current Consumption (Idd) 消耗电流	2mA Max.
		Output Voltage 输出电压	Vp-p
			0.8V Min.
		Output Load 输出负载	10kΩ // 10pF
		Pullability 牵引范围 (for VCTCXO)	±9~±15ppm Typ.
		Control Voltage Range 控制电压范围 (for VCTCXO)	0.90V±0.60V, 1.4V±1V
		Phase Noise @ 1kHz Offset	-130dBc/Hz Typ.
		Start-up Time 起动时间	3ms Max.
		Storage Temperature Range 储存温度范围	-40°C ~ +85°C

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



PIN	CONNECTION
#1	N.C
#2	GROUND
#3	OUTPUT
#4	VDD



DIMENSION (mm)

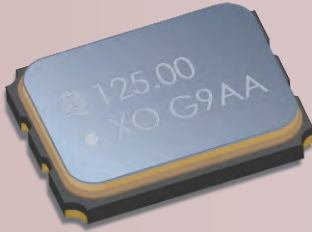
SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



SPXO 3225 (463-E SERIES) LVPECL Output

New



FEATURES

- Small size LVPECL output
- Ultra low integrated phase jitter 12kHz to 20MHz
- Typical phase jitter 57fs @ 156.25MHz
- RoHS Compliant and Pb Free

Applications

- 40Gbit/100Gbit Ethernet, MAN, SONET, Fiber Channel, Test Instrumentation

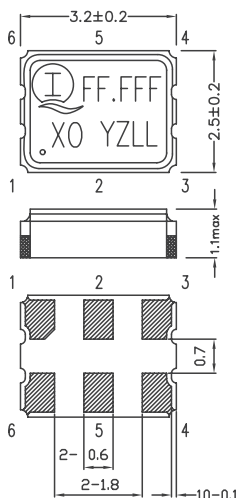
Electrical Specifications

Parameters		Specifications
Output Waveform 输出波型		LVPECL
Frequency Range 频率范围		20MHz ~ 200MHz
Supply Voltage Range(Vdd) 工作电压范围		2.5V ~ 3.3V
Overall Frequency Stability 总频率偏差		±50ppm or specify
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C
Current Consumption (Idd) 消耗电流		80mA Max.
Rise & Fall Time 上/下沿时间		1ns Max.
Output Symmetry 输出对称性		45% ~ 55%
Output Voltage 输出电压	V _{OH}	Vdd-1.025V Min. Vdd-0.88V Max.
	V _{OL}	Vdd-1.81V Min. Vdd-1.62V Max.
Output Load 输出负载		50Ω to Vdd-2.0V
Start-up Time 启动时间		10ms Max.
Storage Temperature Range 储存温度范围		-55°C ~ +125°C
Phase Noise 相位噪声		
@VDD = 3.3V 156.25MHz	offset 10KHZ	Typ.: -145 dBc/Hz
	offset 100KHZ	Typ.: -150 dBc/Hz
	offset 1MHZ	Typ.: -155 dBc/Hz
Phase Jitter (12KHZ~20MHz) 相位抖动		0.1 pSec @ 155MHz

** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging. 包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差。

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

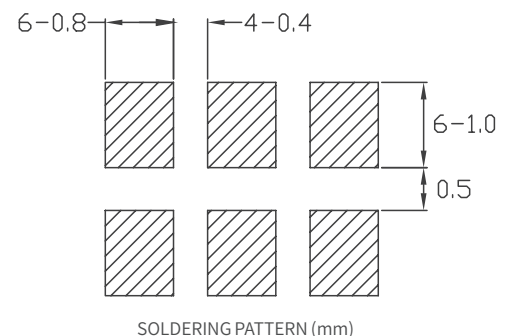
Dimensions



PIN CONNECTION

P/N	4631 LVPECL
1	Enable/Disable
2	N/C
3	GND
4	OUT
5	OUTN
6	VDD

DIMENSION (mm)



SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

SPXO 3225 (463-F SERIES) LVDS Output

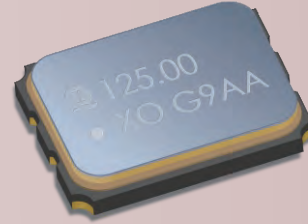
FEATURES

- Small size LVDS output
- Ultra low integrated phase jitter 12kHz to 20MHz
- Typical phase jitter 57fs @ 156.25MHz
- RoHS Compliant and Pb Free

Applications

- 40Gbit/100Gbit Ethernet, MAN, SONET, Fiber Channel, Test Instrumentation

New

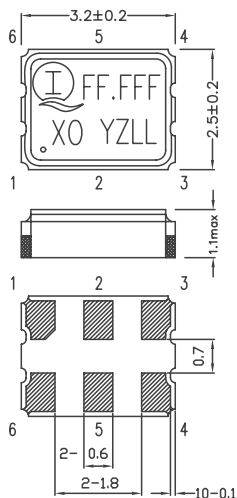


Electrical Specifications		Specifications
Parameters		
Output Waveform 输出波形		LVDS
Frequency Range 频率范围		20MHz ~ 200MHz
Supply Voltage Range(Vdd) 工作电压范围		1.8V, 2.5V ~ 3.3V
Overall Frequency Stability 总频率偏差		±50ppm or specify
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C
Current Consumption (Idd) 消耗电流		50mA Max.
Rise & Fall Time 上/下沿时间		1ns Max.
Output Symmetry 输出对称性		45% ~ 55%
Output Voltage 输出电压	V _{OH}	1.43V typ. 1.6V max
	V _{OL}	1.1V typ. 0.9V min
Output Load 输出负载		100Ω Between OUT and OUTN
Start-up Time 起动时间		10ms Max.
Storage Temperature Range 储存温度范围		-55°C ~ +125°C
Phase Noise 相位噪声		
@VDD = 3.3V 156.25MHz	offset 10KHZ	Typ.: -145 dBc/Hz
	offset 100KHZ	Typ.: -150 dBc/Hz
	offset 1MHZ	Typ.: -155 dBc/Hz
Phase Jitter (12KHz~20MHz) 相位抖动		0.1 pSec @ 155MHz

** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging. 包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差。

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

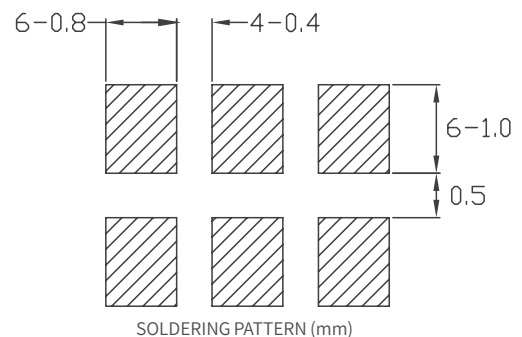
Dimensions



PIN CONNECTION

P/N	4631
1	Enable/Disable
2	N/C
3	GND
4	OUT
5	OUTN
6	VDD

DIMENSION (mm)



SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



SPXO 2016 (168-B SERIES)



FEATURES

- Ultra-miniature size
- Low phase noise version available
- Suitable for wearable and handheld devices
- RoHS Compliant and Pb Free

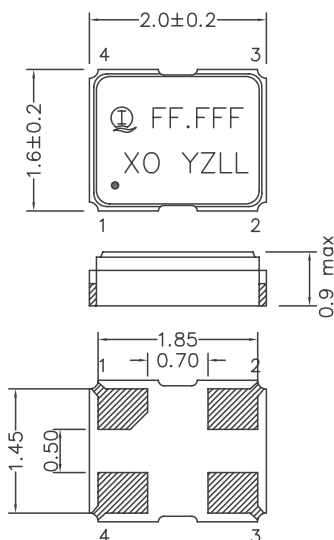
Electrical Specifications

Parameters		Specifications		
Output Waveform 输出波形		CMOS		
Frequency Range 频率范围		32.768KHz	1MHz ~ 80MHz	80MHz ~ 160MHz
Supply Voltage Range (Vdd) 工作电压范围		1.0V ~ 3.3V		
Overall Frequency Stability 总频率偏差		±25ppm, ±30ppm, ±50ppm or specify		
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C, -40°C ~ +125°C		
Current Consumption (Idd) 消耗电流		100uA Max.	10mA Max.	
Rise & Fall Time 上/下沿时间		20ns Max.	8ns Max.	3ns Max.
Output Symmetry 输出对称性		45% ~ 55%		
Output Voltage 输出电压	V _{OH}	90% VDD		
	V _{OL}	10% VDD		
Output Load 输出负载		15pF		
Start-up Time 起动时间		10ms Max.		
Storage Temperature Range 储存温度范围		-55°C ~ +125°C		

** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging.
包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差。

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

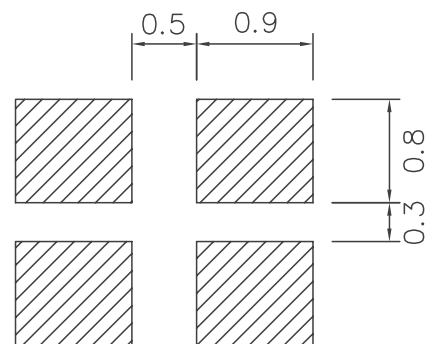
Dimensions



PIN CONNECTION

P/N	1681
1	Enable/Disable
2	GND
3	Output
4	VDD

DIMENSION (mm)



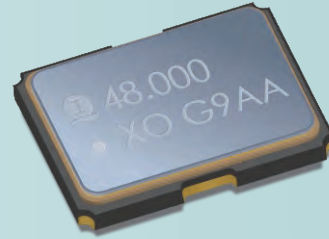
SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

SPXO 2520 (165-B SERIES)

FEATURES

- Miniature size
- Low phase noise version available
- Suitable for wearable and handheld devices
- RoHS Compliant and Pb Free

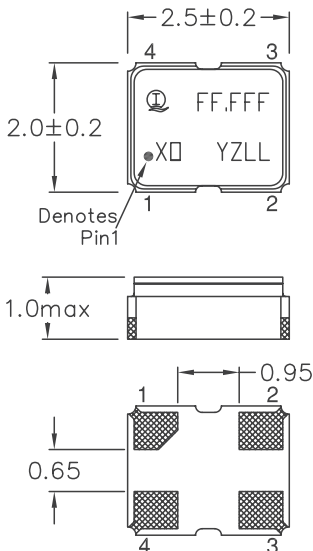


Electrical Specifications

Parameters		Specifications		
Output Waveform 输出波型		CMOS		
Frequency Range 频率范围		32.768KHz	1MHz ~ 80MHz	80MHz ~ 160MHz
Supply Voltage Range (Vdd) 工作电压范围		1.0V ~ 5V		
Overall Frequency Stability 总频率偏差		±25ppm, ±30ppm, ±50ppm or specify		
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C, -40°C ~ +125°C		
Current Consumption (Idd) 消耗电流		100uA Max.	10mA Max.	
Rise & Fall Time 上/下沿时间		20ns Max.	8ns Max.	3ns Max.
Output Symmetry 输出对称性		45% ~ 55%		
Output Voltage 输出电压	V _{OH}	90% VDD		
	V _{OL}	10% VDD		
Output Load 输出负载		15pF		
Start-up Time 起动时间		10ms Max.		
Storage Temperature Range 储存温度范围		-55°C ~ +125°C		

** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging.
包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差。
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

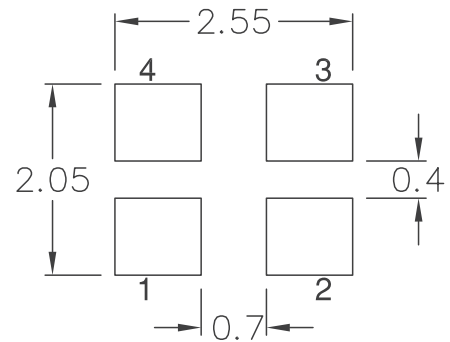
Dimensions



PIN CONNECTION

P/N	1651
1	Enable/Disable
2	GND
3	Output
4	VDD

DIMENSION (mm)

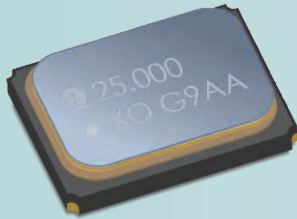


SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



SPXO 3225 (163-B SERIES)



FEATURES

- Small size
- Low phase noise version available
- Low current consumption version available
- Conforms to AEC-Q100 (Optional)
- RoHS Compliant and Pb Free

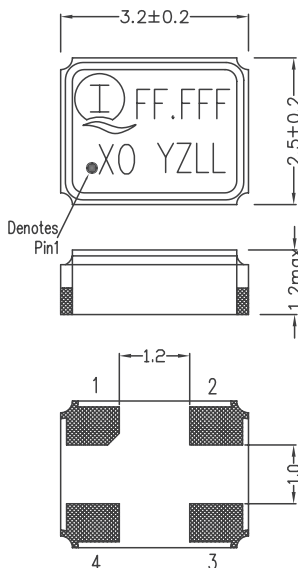
Electrical Specifications

Parameters		Specifications		
Output Waveform 输出波形		CMOS		
Frequency Range 频率范围		32.768KHz	1MHz ~ 50MHz	50MHz ~ 160MHz
Supply Voltage Range (Vdd) 工作电压范围		1.0V ~ 5V		
Overall Frequency Stability 总频率偏差		±25ppm, ±30ppm, ±50ppm or specify		
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C, -40°C ~ +125°C		
Current Consumption (Idd) 消耗电流		100uA Max.	10mA Max.	
Rise & Fall Time 上/下沿时间		20ns Max.	8ns Max.	3ns Max.
Output Symmetry 输出对称性		45% ~ 55%		
Output Voltage 输出电压	V _{OH}	90% VDD		
	V _{OL}	10% VDD		
Output Load 输出负载		15pF		
Start-up Time 起动时间		10ms Max.		
Storage Temperature Range 储存温度范围		-55°C ~ +125°C		

** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging.
包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差。

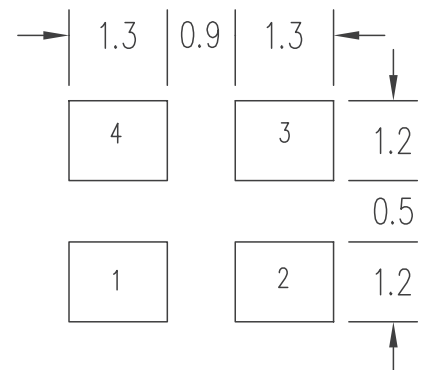
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



PIN CONNECTION

P/N	1631
1	Enable/Disable
2	GND
3	Output
4	VDD



DIMENSION (mm)

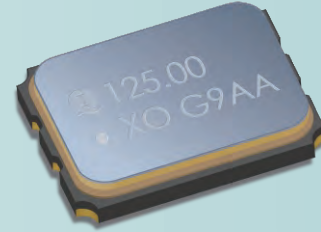
SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

SPXO 3225 (163-E SERIES) LVPECL Output

FEATURES

- Small size
- Excellent low phase noise and jitter
- Suitable for 5G Network terminal
- High Reliability and stability
- RoHS Compliant and Pb Free



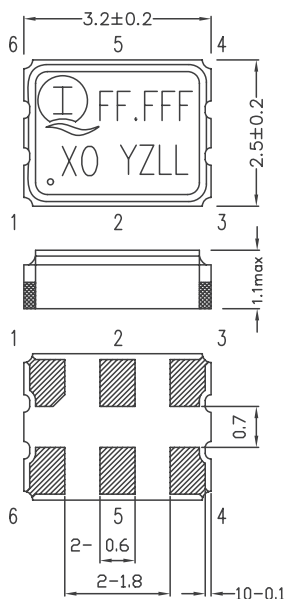
Electrical Specifications

Parameters		Specifications
Output Waveform 输出波形		LVPECL
Frequency Range 频率范围		20MHz ~ 200MHz
Supply Voltage Range (Vdd) 工作电压范围		2.5V ~ 3.3V
Overall Frequency Stability 总频率偏差		±50ppm or specify
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C
Current Consumption (Idd) 消耗电流		80mA Max.
Rise & Fall Time 上/下沿时间		1ns Max.
Output Symmetry 输出对称性		45% ~ 55%
Output Voltage 输出电压	V _{OH}	Vdd-1.025V Min. Vdd-0.88V Max.
	V _{OL}	Vdd-1.81V Min. Vdd-1.62V Max.
Output Load 输出负载		50Ω to Vdd-2.0V
Start-up Time 起动时间		10ms Max.
Storage Temperature Range 储存温度范围		-55°C ~ +125°C
Phase Jitter (12KHz~20MHz) 相位抖动		1 pSec @ 155MHz

** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging.
包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差。

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

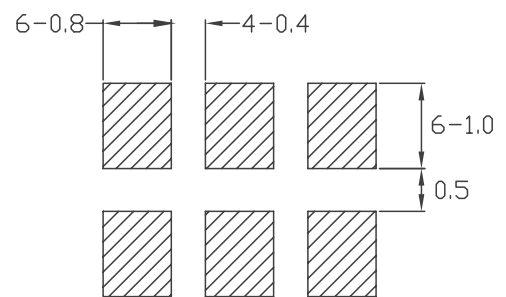
Dimensions



PIN CONNECTION

P/N	1631 LVPECL
1	Enable/Disable
2	N/C
3	GND
4	OUT
5	OUTN
6	VDD

DIMENSION (mm)

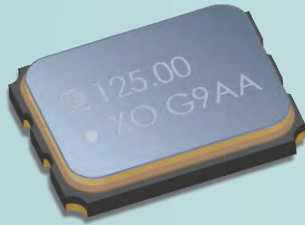


SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



SPXO 3225 (163-F SERIES) LVDS Output



FEATURES

- Small size
- Excellent low phase noise and jitter
- Suitable for 5G Network terminal
- High Reliability and stability
- RoHS Compliant and Pb Free

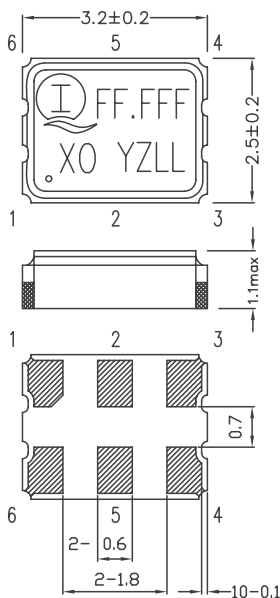
Electrical Specifications

Parameters		Specifications
Output Waveform 输出波型		LVDS
Frequency Range 频率范围		20MHz ~ 200MHz
Supply Voltage Range (Vdd) 工作电压范围		1.8V, 2.5V ~ 3.3V
Overall Frequency Stability 总频率偏差		±50ppm or specify
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C
Current Consumption (Idd) 消耗电流		50mA Max.
Rise & Fall Time 上/下沿时间		1ns Max.
Output Symmetry 输出对称性		45% ~ 55%
Output Voltage 输出电压	V _{OH}	1.43V typ. 1.6V max
	V _{OL}	1.1V typ. 0.9V min
Output Load 输出负载		100Ω Between OUT and OUTN
Start-up Time 起动时间		10ms Max.
Storage Temperature Range 储存温度范围		-55°C ~ +125°C
Phase Jitter (12KHz~20MHz) 相位抖动		1 pSec @ 155MHz

** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging.
包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差。

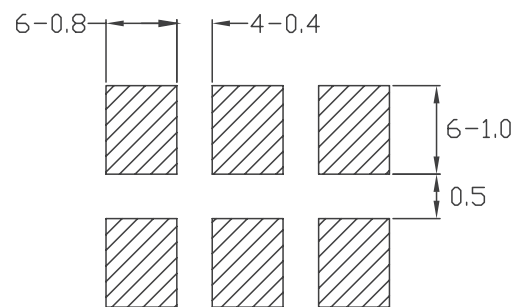
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

Dimensions



PIN CONNECTION

P/N	1631
1	Enable/Disable
2	N/C
3	GND
4	OUT
5	OUTN
6	VDD



DIMENSION (mm)

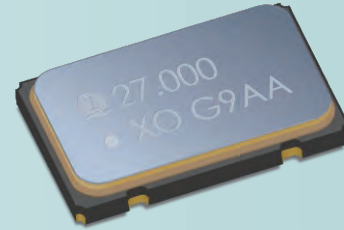
SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

SPXO 5032 (160-B SERIES)

FEATURES

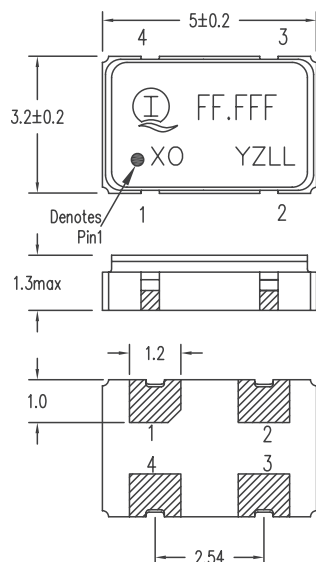
- High reliability seam welded package
- Low phase noise version available
- Low current consumption version available
- Conforms to AEC-Q100 (Optional)
- RoHS Compliant and Pb Free



Electrical Specifications		Specifications		
Parameters		Specifications		
Output Waveform 输出波型		CMOS		
Frequency Range 频率范围		32.768KHz	1MHz ~ 50MHz	50MHz ~ 160MHz
Supply Voltage Range (Vdd) 工作电压范围		1.0V ~ 5V		
Overall Frequency Stability 总频率偏差		±25ppm, ±30ppm, ±50ppm or specify		
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C, -40°C ~ +125°C		
Current Consumption (Idd) 消耗电流		100uA Max.	10mA Max.	
Rise & Fall Time 上/下沿时间		20ns Max.	8ns Max.	3ns Max.
Output Symmetry 输出对称性		45% ~ 55%		
Output Voltage 输出电压	V _{OH}	90% VDD		
	V _{OL}	10% VDD		
Output Load 输出负载		15pF		
Start-up Time 起动时间		10ms Max.		
Storage Temperature Range 储存温度范围		-55°C ~ +125°C		

** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging.
包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差。
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

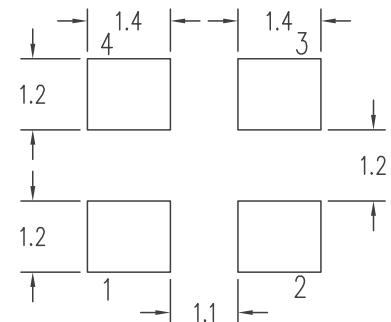
Dimensions



PIN CONNECTION

P/N	1601
1	Enable/Disable
2	GND
3	Output
4	VDD

DIMENSION (mm)

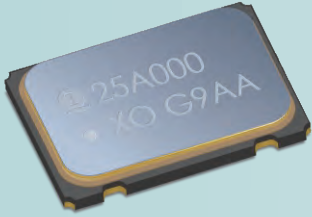


SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



SPXO 7050 (149-B SERIES)



FEATURES

- High reliability seam welded package
- Low phase noise version available
- Low current consumption version available
- Conforms to AEC-Q100 (Optional)
- RoHS Compliant and Pb Free

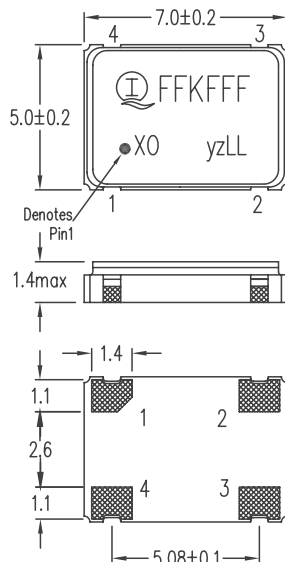
Electrical Specifications

Parameters		Specifications		
Output Waveform 输出波形		CMOS		
Frequency Range 频率范围		32.768KHz	1MHz ~ 50MHz	50MHz ~ 160MHz
Supply Voltage Range (Vdd) 工作电压范围		1.0V ~ 5V		
Overall Frequency Stability 总频率偏差		±25ppm, ±30ppm, ±50ppm or specify		
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C, -40°C ~ +125°C		
Current Consumption (Idd) 消耗电流		100uA Max.	10mA Max.	
Rise & Fall Time 上/下沿时间		20ns Max.	8ns Max.	3ns Max.
Output Symmetry 输出对称性		45% ~ 55%		
Output Voltage 输出电压	V _{OH}	90% VDD		
	V _{OL}	10% VDD		
Output Load 输出负载		15pF		
Start-up Time 起启动时间		10ms Max.		
Storage Temperature Range 储存温度范围		-55°C ~ +125°C		

** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging.
包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差。

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

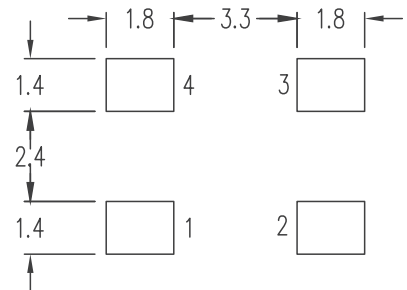
Dimensions



PIN CONNECTION

P/N	1491
1	Enable/Disable
2	GND
3	Output
4	VDD

DIMENSION (mm)



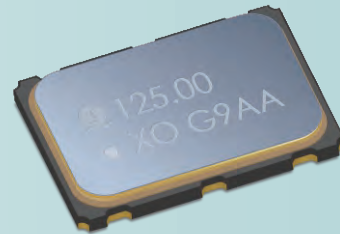
SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

SPXO 7050 (149-E SERIES) LVPECL Output

FEATURES

- High reliability seam welded package
- Excellent low phase noise and jitter
- Suitable for 5G Network terminal
- High Reliability and stability
- RoHS Compliant and Pb Free



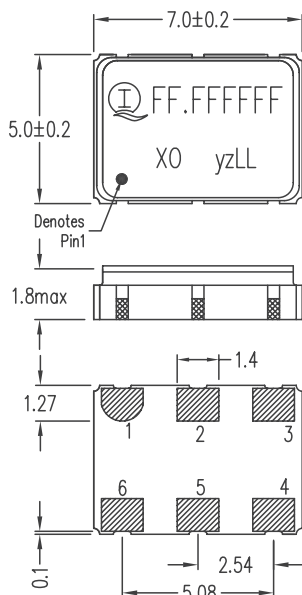
*NRND

Electrical Specifications

Parameters		Specifications
Output Waveform 输出波型		LVPECL
Frequency Range 频率范围		20MHz ~ 200MHz
Supply Voltage Range (Vdd) 工作电压范围		2.5V ~ 3.3V
Overall Frequency Stability 总频率偏差		±50ppm or specify
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C
Current Consumption (Idd) 消耗电流		80mA Max.
Rise & Fall Time 上/下沿时间		1ns Max.
Output Symmetry 输出对称性		45% ~ 55%
Output Voltage 输出电压	V _{OH}	Vdd-1.025V Min. Vdd-0.88V Max.
	V _{OL}	Vdd-1.81V Min. Vdd-1.62V Max.
Output Load 输出负载		50Ω to Vdd-2.0V
Start-up Time 起动时间		10ms Max.
Storage Temperature Range 储存温度范围		-55°C ~ +125°C
Phase Jitter (12KHz~20MHz) 相位抖动		1 pSec @ 155MHz

** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging.
包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差。
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

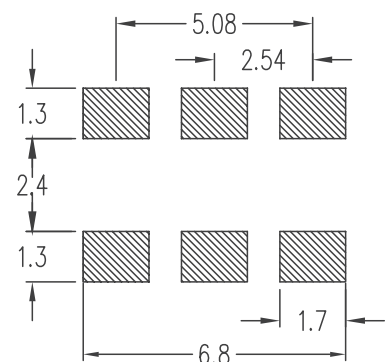
Dimensions



PIN CONNECTION

P/N	1491
1	Enable/Disable
2	NC
3	GND
4	Output
5	Output
6	VDD

DIMENSION (mm)



SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



SPXO 7050 (149-F SERIES) LVDS Output



*NRND

FEATURES

- High reliability seam welded package
- Excellent low phase noise and jitter
- Suitable for 5G Network terminal
- High Reliability and stability
- RoHS Compliant and Pb Free

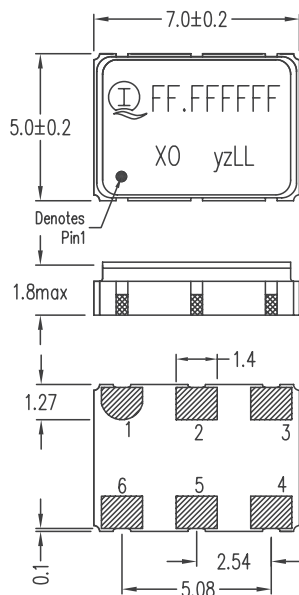
Electrical Specifications

Parameters	Specifications	
Output Waveform 输出波形	LVDS	
Frequency Range 频率范围	20MHz ~ 200MHz	
Supply Voltage Range (Vdd) 工作电压范围	1.8V, 2.5V ~ 3.3V	
Overall Frequency Stability 总频率偏差	±50ppm or specify	
Operating Temperature Range 工作温度范围	-20°C ~ +70°C, -40°C ~ +85°C	
Current Consumption (Idd) 消耗电流	50mA Max.	
Rise & Fall Time 上/下沿时间	1ns Max.	
Output Symmetry 输出对称性	45% ~ 55%	
Output Voltage 输出电压	V _{OH}	1.43V typ. 1.6V max
	V _{OL}	1.1V typ. 0.9V min
Output Load 输出负载	100Ω Between OUT and OUTN	
Start-up Time 起动时间	10ms Max.	
Storage Temperature Range 储存温度范围	-55°C ~ +125°C	
Phase Jitter (12KHz~20MHz) 相位抖动	1 pSec @ 155MHz	

** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging.
包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差。

Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

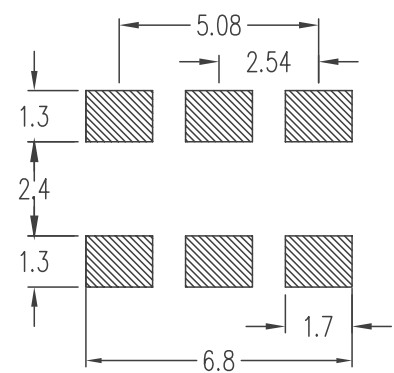
Dimensions



PIN CONNECTION

P/N	1491
1	Enable/Disable
2	NC
3	GND
4	Output
5	Output
6	VDD

DIMENSION (mm)



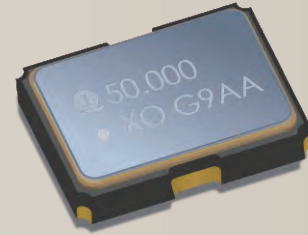
SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。

SPXO 2016 (168-P SERIES)

FEATURES

- Ultra Miniature size
- Wide Frequency Range
- High precision application
- Short lead time and high flexibility
- RoHS Compliant and Pb Free

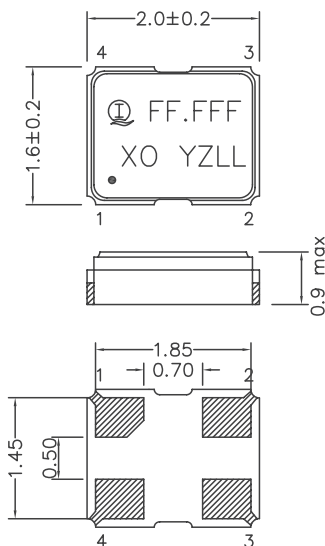


Electrical Specifications

Parameters		Specifications
Output Waveform 输出波型		CMOS
Frequency Range 频率范围		1MHz ~ 200MHz
Supply Voltage Range (Vdd) 工作电压范围		1.8V ~ 3.3V
Overall Frequency Stability 总频率偏差		±25ppm, ±30ppm or specify
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C
Current Consumption (Idd) 消耗电流		20mA Typ.
Rise & Fall Time 上/下沿时间		1.5ns Typ.
Output Symmetry 输出对称性		45% ~ 55%
Output Voltage 输出电压	V _{OH}	90% VDD
	V _{OL}	10% VDD
Output Load 输出负载		15pF
Start-up Time 起动时间		10ms Max.
Storage Temperature Range 储存温度范围		-55°C ~ +125°C

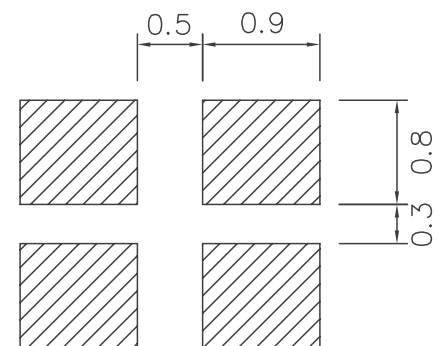
** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging. 包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差. Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系.

Dimensions



P/N	1681
1	Enable/Disable
2	GND
3	Output
4	VDD

DIMENSION (mm)

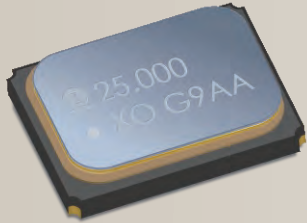


SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利.



SPXO 3225 (163-P SERIES)



FEATURES

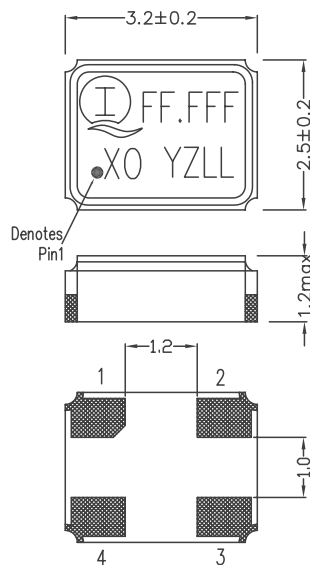
- Small size
- Wide Frequency Range
- High precision application
- Short lead time and high flexibility
- RoHS Compliant and Pb Free

Electrical Specifications

Parameters		Specifications
Output Waveform 输出波型		CMOS
Frequency Range 频率范围		1MHz ~ 200MHz
Supply Voltage Range (Vdd) 工作电压范围		1.8V ~ 3.3V
Overall Frequency Stability 总频率偏差		±25ppm, ±30ppm or specify
Operating Temperature Range 工作温度范围		-20°C ~ +70°C, -40°C ~ +85°C
Current Consumption (Idd) 消耗电流		20mA Typ.
Rise & Fall Time 上/下沿时间		1.5ns Typ.
Output Symmetry 输出对称性		45% ~ 55%
Output Voltage 输出电压	V _{OH}	90% VDD
	V _{OL}	10% VDD
Output Load 输出负载		15pF
Start-up Time 起动时间		10ms Max.
Storage Temperature Range 储存温度范围		-55°C ~ +125°C

** Inclusive of initial frequency tolerance at 25°C, operating temperature range, supply voltage change, load variation and 1st year aging.
包括在常温频率偏差, 工作温度范围的频率偏差, 首年老化率, 工作电压及负载变化造成的频率偏差。
Please consult our sales representatives for other specifications. 如对其他规格查询, 请与我司销售人员联系。

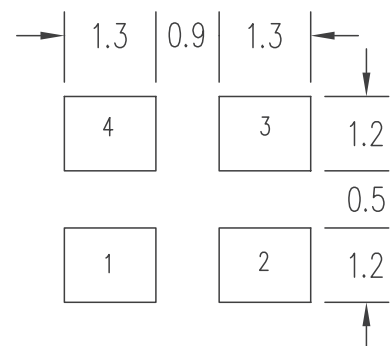
Dimensions



PIN CONNECTION

P/N	1631
1	Enable/Disable
2	GND
3	Output
4	VDD

DIMENSION (mm)



SOLDERING PATTERN (mm)

All specifications are subject to change without prior notice. 本公司保留修改规格的权利。



📍 总部 / HEADQUARTER

深圳市宝安区西乡街道中熙ECO国际1504-1508
Room 1504-1508, Zhongxi ECO International Building,
Xixiang, Baoan District, Shenzhen, 518102
T: (86) 755 2912 8386
F: (86) 755 2912 8486
E: marketing@interquip.com
W: www.interquip.com

📍 厂房地址 / FACTORIES ADDRESSES

深汕厂房 Shenshan factory
深圳市深汕特别合作区鹅埠镇创新大道南侧、边溪河东侧应达利科技园
East of Bianxi River, South of Innovative Avenue, EBU Town,
Shenshan Special Cooperation Zone, Shenzhen, Guangdong, China, 518200

📍 中国业务办事处 / CHINA MAINLAND SALES OFFICES

中国总业务办事处 Head of China sales offices
深圳市宝安区西乡街道中熙ECO国际1504-1508
Room 1504-1508, Zhongxi ECO International Building, Xixiang,
Baoan District, Shenzhen, 518102
T: (86) 755 2912 8386
F: (86) 755 2912 8486
E: marketing@interquip.com

苏州分部 Suzhou sales office
苏州市虎丘区塔园路233号津西新天地2幢1606室
Room 1606, Block 2, Jinxixintiandi, 233 Tayuan Road,
Huqiu District, Suzhou, China
T: (86) 512 6698 5856
E: marketing@interquip.com

福州分部 Fuzhou sales office
福州市晋安区招贤路8号盛天现代城13栋902单元
Unit 902, Building 13, Shengtian Modern City, No.8
Zhaoxian Road, Jin' an District, Fuzhou, China
T: (86) 138 2338 8461
E: marketing@interquip.com

重庆分部 Chongqing sales office
重庆两江新区人和街道康景路169号C1-3-7-2
C1-3-7-2, No.169 Kangjing Road, Renhe Avenue, Liangjiang
New District, Chongqing, China
T: (86) 138 2335 5647
E: marketing@interquip.com

📍 境外业务办事处 / OVERSEAS SALES OFFICES

境外总办事处 Head of Overseas sales offices
香港新界火炭禾寮坑路2-16号安盛工业大厦9字楼A室
Flat A, 9th Floor, On Shing Industrial Building, 2-16 Wo Liu
Hang Road, Fotan, N.T, Hong Kong SAR.
T: (852) 2413 5515
F: (852) 2413 7053
E: marketing@interquip.com

台湾分部 Taiwan office
台北市内湖区内湖路一段360巷8号8楼808室
Rm 808, 8/F., No.8, Lane 360, Neihu Rd One.,
Neihu Dist., Taipei City 114, Taiwan
T: (886) 2 6601 3677
E: marketing@interquip.com



www.interquip.com



Wechat



LinkedIn



Twitter