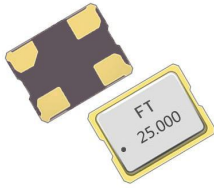


**SMD QUARTZ CRYSTAL OSCILLATOR**
**4 Pad Version 2.0×1.6 mm**


- ±20 ppm type available
- Excellent Reliability Performance
- EMI shielding possible by grounded lid
- Reflow soldering temperature: 260°C max
- Ceramic Seam Weld package



RoHS compliant

**★ PARAMETERS**

PARAMETERS	SPECIFICATION
Frequency Range	4~54MHz, 32.768KHz
Supply voltage	1.8V、2.5V、2.8V、3.3V
Input Current	See Below
Frequency Stability Overall	±20ppm~±50ppm
Operating Temp. Range	-10~+60°C to -40~+85°C, (-40~+125°C available)
Storage Temp. Range	-55~+125°C
Output Load	HCMOS 15pF
Symmetry	45% ~ 55% typ. (40% ~ 60% max.) at 0.5×V <sub>DD</sub>
Start-up time	10mS max
Enable/ Disable Function	E/D

○ All specification subject change without notice.

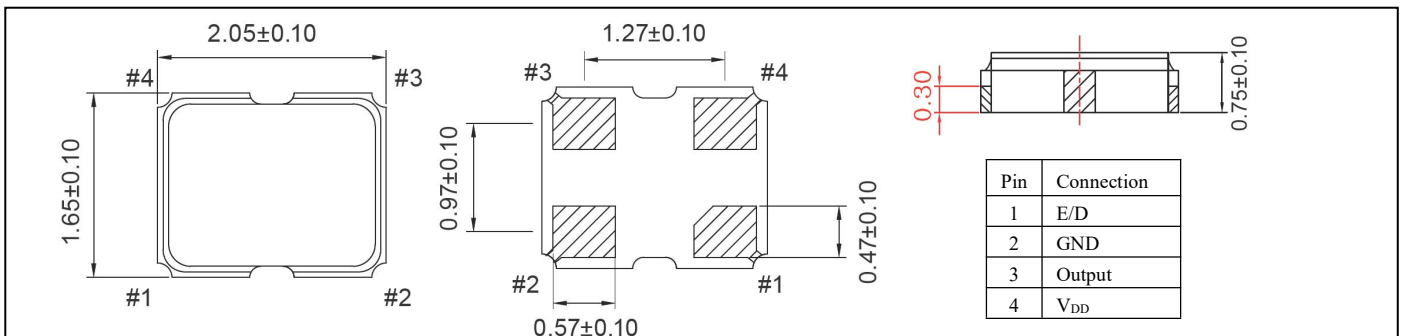
**★ FREQUENCY STABILITY VS. TEMPERATURE**

Operation Temperature Range	Frequency Stability			
	±20ppm	±25ppm	±30ppm	±50ppm
-10°C~+60°C	○	●	○	○
-20°C~+70°C	○	○	●	○
-40°C~+85°C	○	○	○	●

● standard ○ available

**★ Rise & Fall TIME MAX.**

Frequency	Rise & Fall Time	V <sub>DD</sub>	Rise & Fall Time	V <sub>DD</sub>
1.5~9.9 MHz	4nS max	3.3V	5nS max	1.8V
10.0~19.9 MHz	4nS max		5nS max	
20.0~31.9 MHz	3nS max		4nS max	
32.0~50 MHz	3nS max		4nS max	

**★ DIMENSIONS& LAND PATTERN LAYOUT (Unit: mm)**

**★ PART NUMBER GUIDE**

e.g. FXO12.000M3.3SM2A-50D (\*SM2A=2.0×1.6 SMD TYPE)

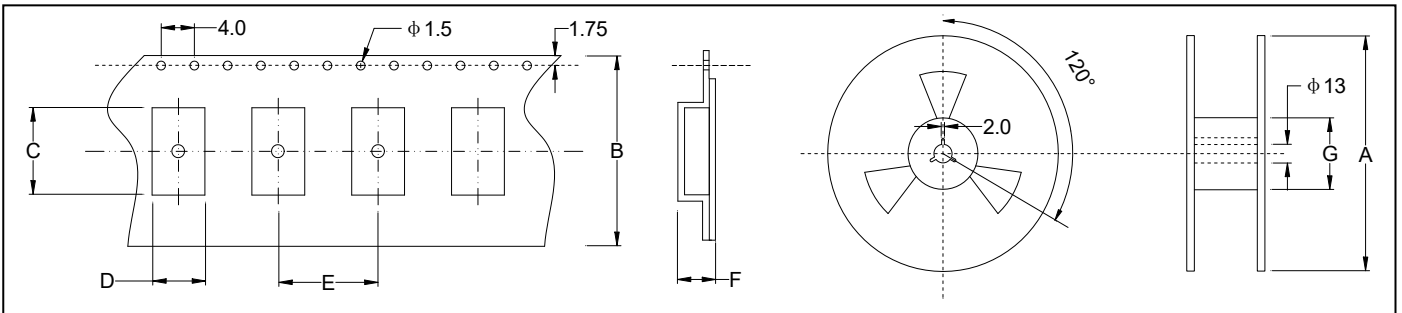
Logo	Quartz Crystal Oscillator	Frequency Hz	Supply voltage V <sub>DD</sub>	Package	Frequency Stability ppm	Operating Temp. Range
F	XO	12.000M	3.3	SM2A	50	D

Definition	Description	
Operating Temperature Range	<b>A:</b> -10~+60°C	<b>B:</b> -20~+70°C
	<b>C:</b> -30~+80°C	<b>D:</b> -40~+85°C
	<b>E:</b> -30~+105°C	<b>F:</b> -40~+105°C
	<b>G:</b> -40~+125°C	<b>S:</b> Customer specified

★ INPUT CURRENT

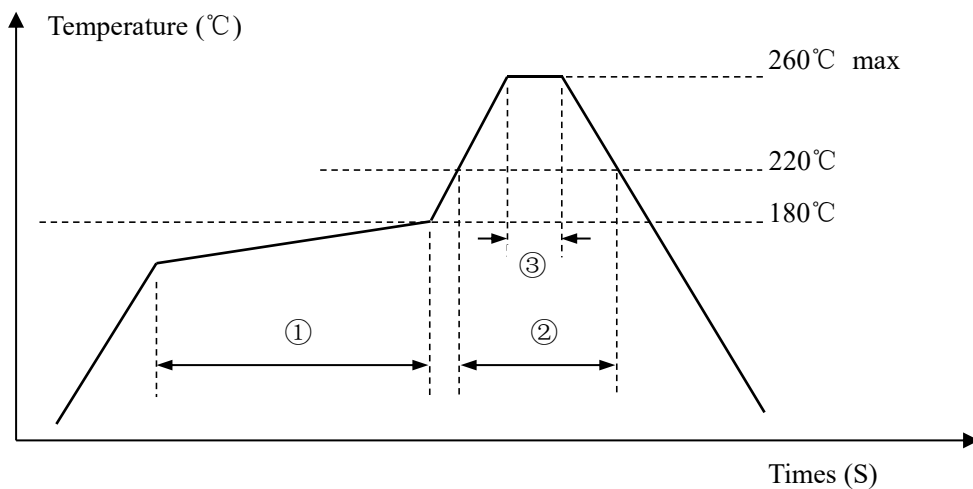
V <sub>DD</sub> =3.3V		V <sub>DD</sub> =2.5V		V <sub>DD</sub> =1.8V	
1.5 ~ 9.9 MHz	7 mA	1.5 ~ 9.9 MHz	6 mA	1.5 ~ 9.9 MHz	4 mA
10.0 ~ 19.9 MHz	7 mA	10.0 ~ 19.9 MHz	6 mA	10.0 ~ 19.9 MHz	4 mA
20.0 ~ 31.9 MHz	10 mA	20.0 ~ 31.9 MHz	8 mA	20.0 ~ 31.9 MHz	5 mA
32.0 ~ 50.0 MHz	15 mA	32.0 ~ 50.0 MHz	10 mA	32.0 ~ 50.0 MHz	7 mA

★ TAPING SPECIFICATION (Unit: mm)



	A	B	C	D	E	F	G
OSC-SMD2016	180±2.0	8.0±0.3	2.25±0.10	1.85±0.10	4.0±0.1	0.95±0.1	60.5±1.0
3000 pcs per reel							

★ REFLOW SOLDERING PROFILE



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