

7CQ Series 7.0 x 5.0 mm SMD Crystal Oscillator

7 : 7.0×5.0×1.3 mm | SMD7050-4P

CQ : Programmable Crystal Oscillator [Q-MEMS]

Feature

- PLL technology to enable setting any output frequency
- CMOS compatible logic levels
- Tri-state function available
- Supply voltage range : 1.62V ~ 3.63V(Compatible with 1.8V, 2.5V, 3.3V)
- RoHS Compliant / Pb Free

Applications

- Wireless Devices
- Internet of Things (IoT) devices
- Ethernet/Gigabit Ethernet
- Audio, Video, Gaming products
- Micro base station



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	1.000		200.000	MHz	
Operating Temperature	T_use	-20		+70	°C	
		-40		+85	°C	
Storage Temperature Range	T_stg	-55		+125	°C	
Supply Voltage	Vdd	1.62	1.8/2.5/3.3	3.63	V	
Output Load	L_CMOS		15		pF	
Current Consumption	Icc			40	mA	
Duty Cycle	SYM	45		55	%	50 % Vdd level, L_CMOS ≤ 15 pF
Rise / Fall Time	T _R / T _F			5	nS	10% Vdd to 90% Level
Start-up Time	T_str			10	mS	To 90% of Final Amplitude
High output voltage	VoH	0.9Vdd			V	
Low output voltage	VoL			0.1Vdd	V	
Enable Voltage High(Logic 1)	ViH	0.7Vdd			V	Output will be disable if OE is Logic 0 Output will be enable if OE is Logic 1 or open
Enable Voltage Low(Logic 0)	ViL			0.3Vdd	V	
RMS Phase Jitter	T _{RPJ}			1	pSec	Integrated 12KHz to 20MHz
Aging	f_age			3	ppm	1st. Year at 25°C

Frequency Stability & Operating Temperature Range

Temp. \ FT	±20ppm	±25ppm	±30ppm	±50ppm
-20°C to +70°C	△	★	★	★
-40°C to +85°C		△	★	★

★: Available △: Conditional

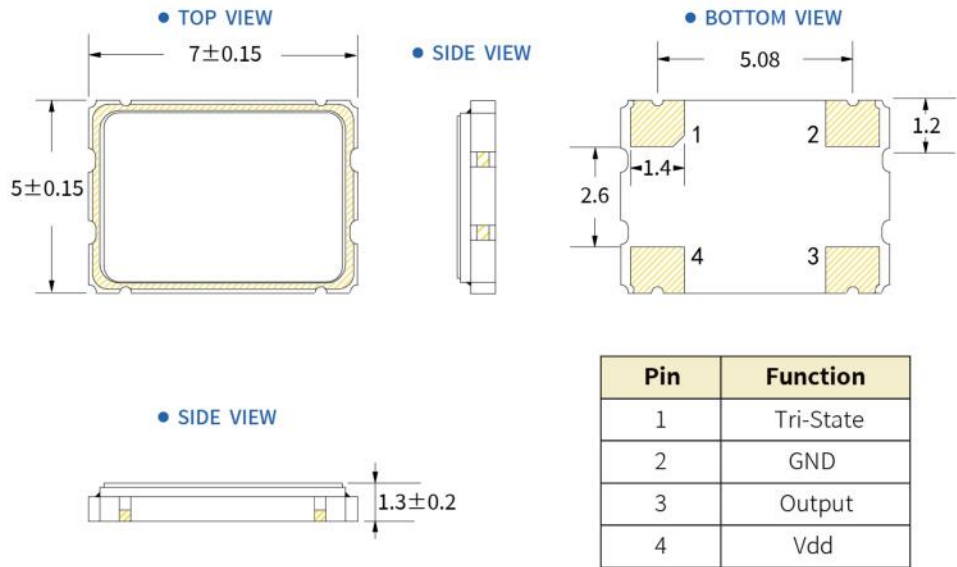
All condition: Include 25°C tolerance, operating temperature range , input voltage change, aging, load change.

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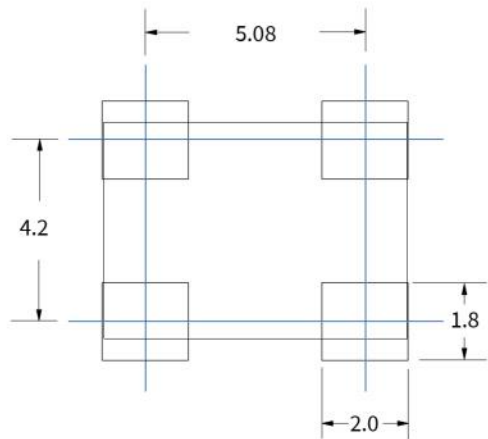
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Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



Options and Part Identification : Example SXQP7M1.000B20F30TNN

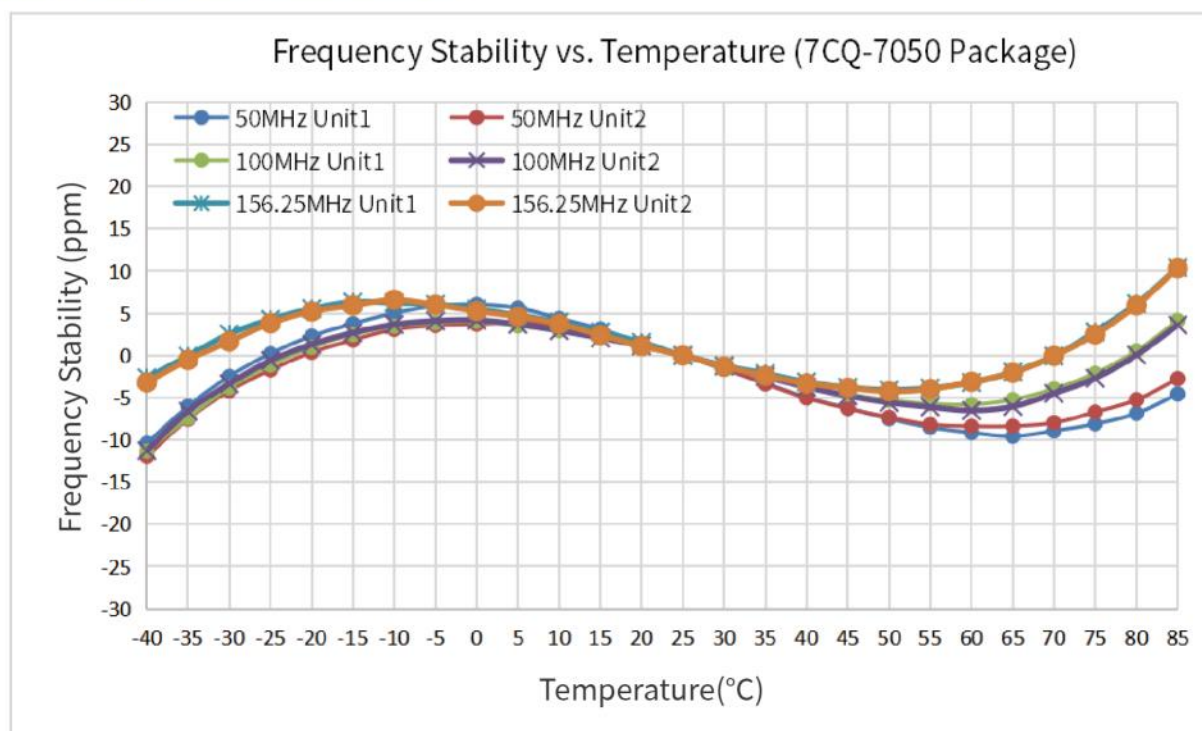
Company	Technology	Ceramic Package	Frequency Code [MHz]	Supply Voltage	Frequency Tolerance	Operating Temperature	Frequency Drift	Output	Current Consumption	Phase Noise	
SX	QP	7M	X.XXX	B	20	F	30	T	N	N	
↓		↓		↓		↓		↓		↓	
Code Company		Frequency		Code Frequency Tolerance		Code Frequency Drift		Code Current		Code Phase Noise	
SX SCTF		1.000		10 ±10ppm		15 ±15ppm		N Standard		N Standard	
↓		13.560		20 ±20ppm		20 ±20ppm		↓		↓	
Code Technology		19.200		Code Voltage		30 ±30ppm		Code Output		Code Phase Noise	
QP Q-MEMS		37.125		D 1.8V		Code Operating Temperature		T CMOS		N Standard	
↓		↓		H 2.5V		E -20°C ~ +70°C		↓		↓	
Code Ceramic Package		5M 5.0×3.2×1.2mm		B 3.3V		F -40°C ~ +85°C		↓		↓	
7M 7.0×5.0×1.3mm		↓		A 5.0V		↓		↓		↓	
5M 5.0×3.2×1.2mm		2M 2.5×2.0×0.81mm		↓		↓		↓		↓	
3M 3.2×2.5×0.95mm		1M 2.0×1.6×0.75mm		↓		↓		↓		↓	
2M 2.5×2.0×0.81mm		↓		↓		↓		↓		↓	
1M 2.0×1.6×0.75mm		↓		↓		↓		↓		↓	
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Frequency Temperature Characteristics

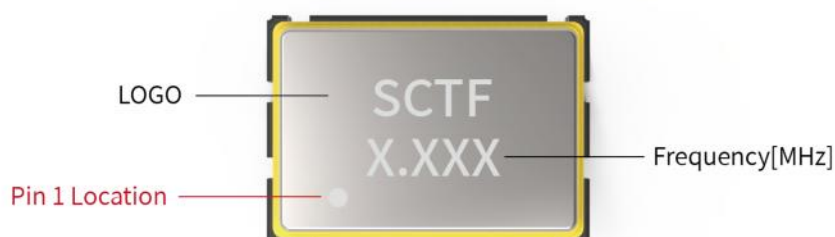


Product Structure&Marking Information

• Product Structure



• Marking Information

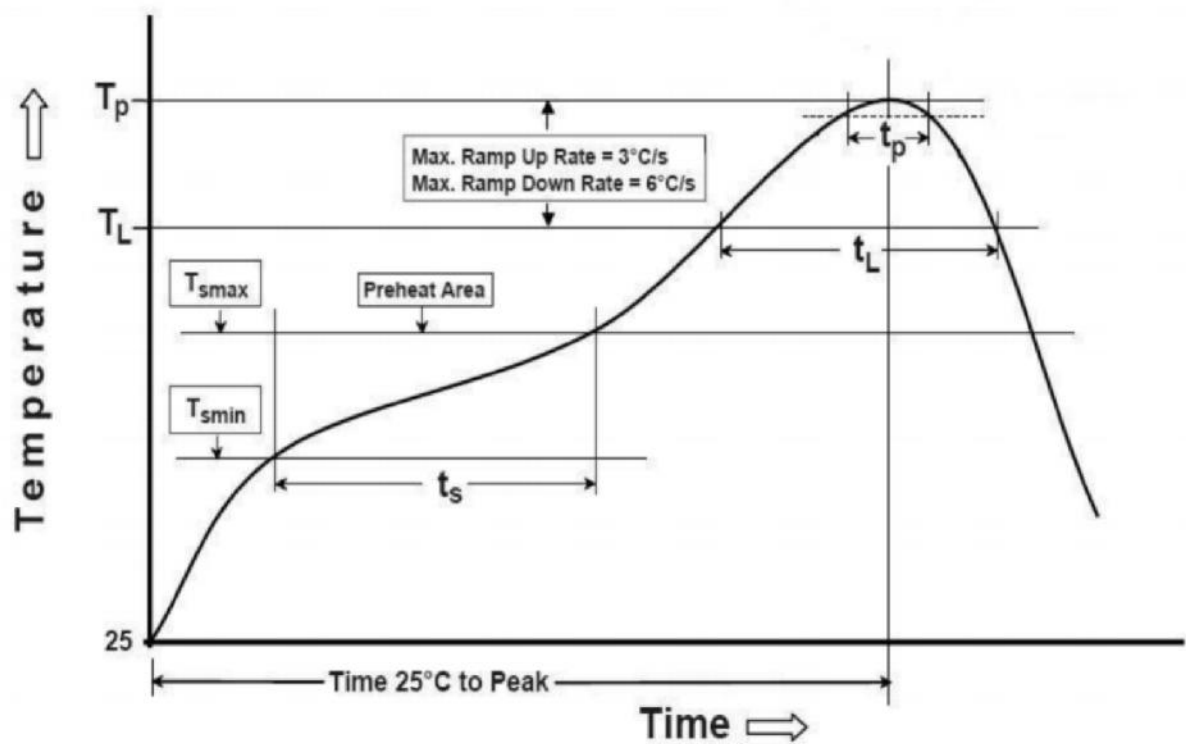


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Suggested Reflow Profile



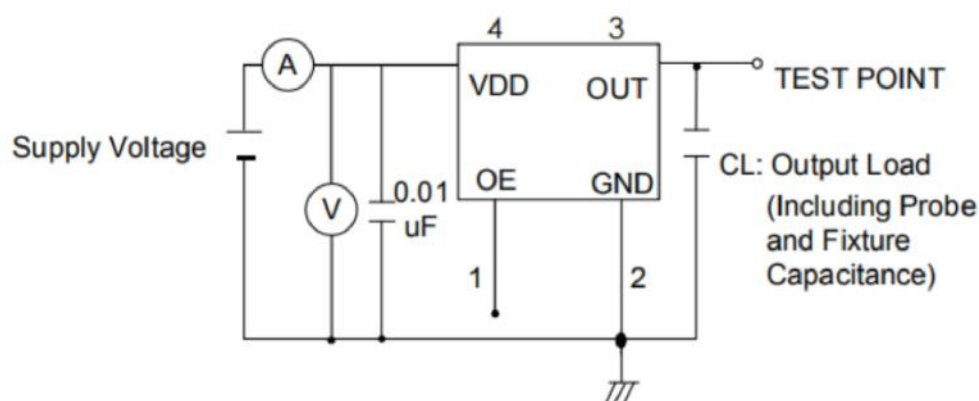
Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak ● Temperature Min (Ts min) ● Temperature Max (Ts max) ● Time (Ts min to Ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Ramp - up rate (TL to Tp)	3°C/ second max.	3°C/ second max.
Time maintained above ● Liquidous temperature (TL) ● Time (tL) maintained above TL	183°C 60-150 seconds	217°C 60-150 seconds
Peak package body temperature (Tp)	235°C	260°C
Time within 5° C of the specified classification temperature (Tp)	20 seconds	30 seconds
Ramp - down rate (Tp to TL)	6°C/ second max.	6°C/ second max.
Time 25° C to peak temperature	6 minutes max.	8 minutes max.
Suggest reflow times	2 Times max.	

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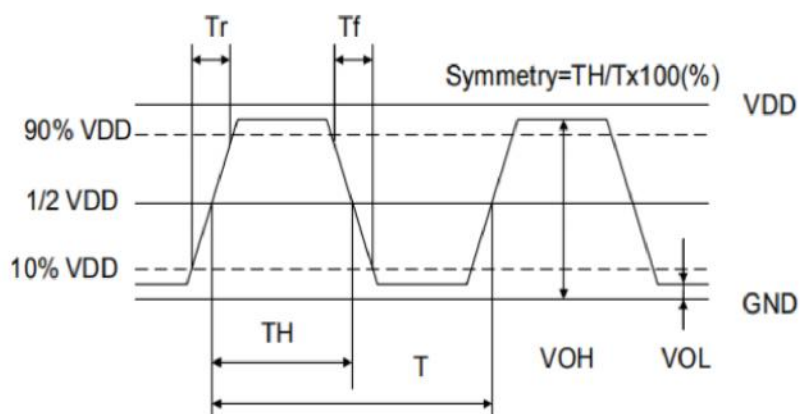
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Testing Circuit



※ Notes: PIN 1 connected to Vdd or floating, the product is working properly; connected to GND, stops working.

Waveform Conditions



Waveform measurement system should have a min. bandwidth of 5 times the frequency being tested.

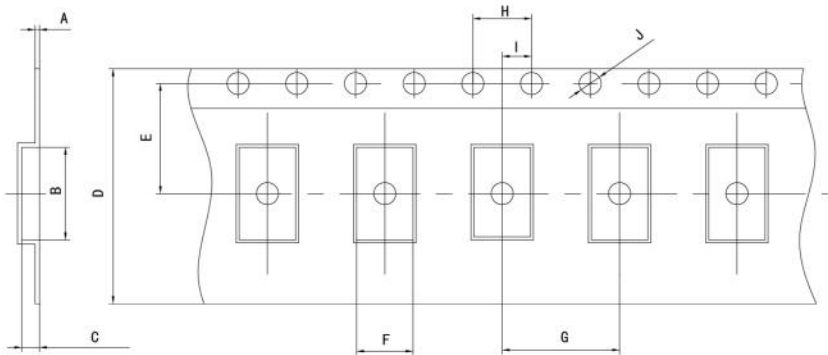
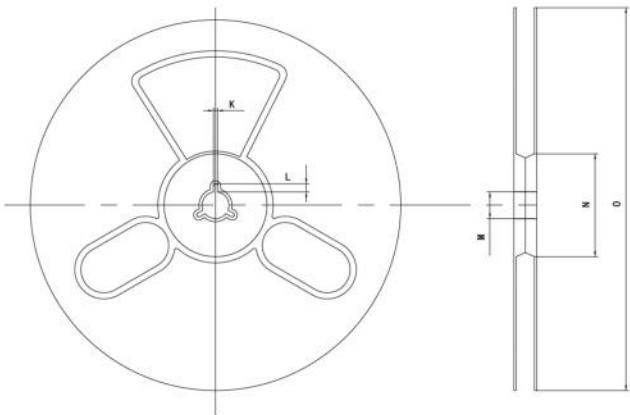
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Packaging Information

T=Tape and reel (3,000pcs/reel)



Pocket Tape Dimensions(mm)

Series	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
7CQ	0.3±0.05	7.6±0.1	2.0±0.1	16±0.3	7.5±0.1	5.4±0.1	8.0±0.1	4.0±0.1	2.0±0.1	φ1.5±0.1	2.0±0.2	4.0±1.0	φ13±0.5	φ60±1	φ180±1

Common Frequencies – MHz

7CQ Series				
100.000	104.000	106.250	108.000	114.000
114.285	120.000	122.880	123.520	125.000
128.000	133.000	133.330	133.333	133.3333
133.333333	135.000	148.350	148.500	150.000
155.520	156.250	159.375	160.000	166.000
166.6667	175.000	184.320	187.500	190.000
200.000				