

CRYSTAL OSCILLATOR



SERIES 2N, SEAM SEALED CERAMIC 2.5X2.0MM SURFACE MOUNT PACKAGE

深圳市晶科鑫实业有限公司

Shenzhen Crystal Technology Industrial Co., Ltd

APPROVAL SHEET

CUSTOMER P/N:	
TYPE:	SMD CRYSTAL
DESCRIPTION:	SMD2520 OSC 12.000MHZ 1.8V LVCMOS -40~85℃
P N/ SJK:	2N12000G18YC
ENVIRONMENTAL:	☒ RoHS ☒ REACH ☒ HF ☐ PAHS ☐ other
REVISION:	A1 2017-5-10
MSL:	Levels 1

SIGNATURE					
SUPPLIER			CUSTOMER		
Issue	Check	Approve	QA	Check	Approve
SJK	18682088994 (Mr. Huang)		Signature		
FAE_EMAIL	sjk-fae@q-crystal.com		Date		
Date			Approve: ☐ accept ☐ unaccepted		
Note:					



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1. ELECTRICAL SPECIFICATIONS

Standard atmospheric conditions

Unless otherwise specified, the standard range of atmospheric conditions for making measurement and tests are as follow:

Ambient temperature : $25 \pm 5^{\circ}\text{C}$

Relative humidity : 40%~70%

If there is any doubt about the results, measurement shall be made within the following limits:

Ambient temperature : $25 \pm 3^{\circ}\text{C}$

Relative humidity : 40%~70%

Measure equipment

Electrical characteristics measured by MD 37WX-05M or equivalent.

Crystal cutting type

The crystal is using AT CUT (thickness shear mode).

	Parameters		SYM	Electrical Spec.				Notes
				MIN	TYPE	MAX	UNITS	
1	Nominal Frequency			12.000000				MHZ
2	Frequency Stability	AT 25°C		± 10				PPM
		Over Operating Temperature range		± 20				PPM
3	Operating Temperature		Topr	-40	25	85	°C	
4	Storage Temperature		Tstg	-55	~	125	°C	
5	Supply Voltage		VDD	1.8 / $\pm 10\%$				V
6	Input Current		Icc			5	mA	
7	Enable Control			Yes				Pad1
8	Output Load : CMOS		CL	15				pF
9	Output Voltage High		VoH	90% Vdd			V	
10	Output Voltage Low		VoL			10% Vdd	V	
11	Rise Time		Tr			5	ns	10%→ 90%VDD Level
12	Fall Time		Tf			5	ns	90%→ 10%VDD Level
13	Symmetry (Duty ratio)		TH/T	45	~	55	%	
14	Start-up Time		Tosc			10	ms	
15	Enable Voltage High		Vhi	70% Vdd			V	
16	Disable Voltage Low		Vlo			30% Vdd	V	
17	Aging			± 3				ppm/yr.
18	Output Disable Delay Time		T off			150	us	1st. Year at 25°C

Tel: 0755-88352810-837(Mr.huang) Fax: 0755-88353718 <http://www.q-crystal.com>

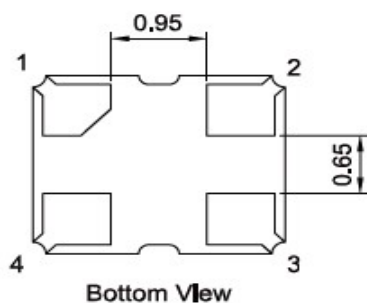
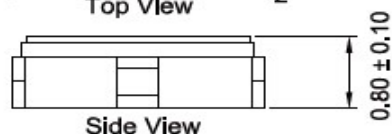
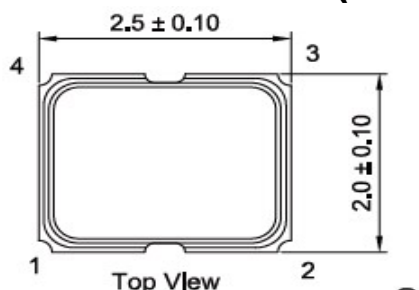
ADD: Room 1204~1206,Building 3C, TianAn Cloud Park Phase 1,Bantian, Longgang District, Shenzhen

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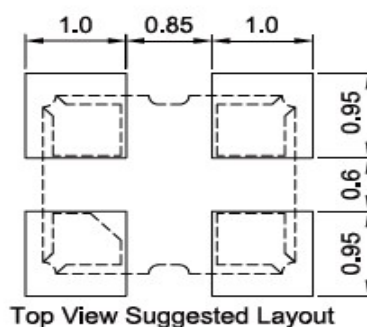
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19	Output Enable Delay Time	T on			150	us	
20	Phase Jitter (12KHZ~20MHZ)			0.5	1.0	ps	

2. DIMENSIONS (Units :mm)



PAD FUNCTION:
 1: ENABLE CONTROL
 2: GND
 3: OUT
 4: VDD



3. MARKING

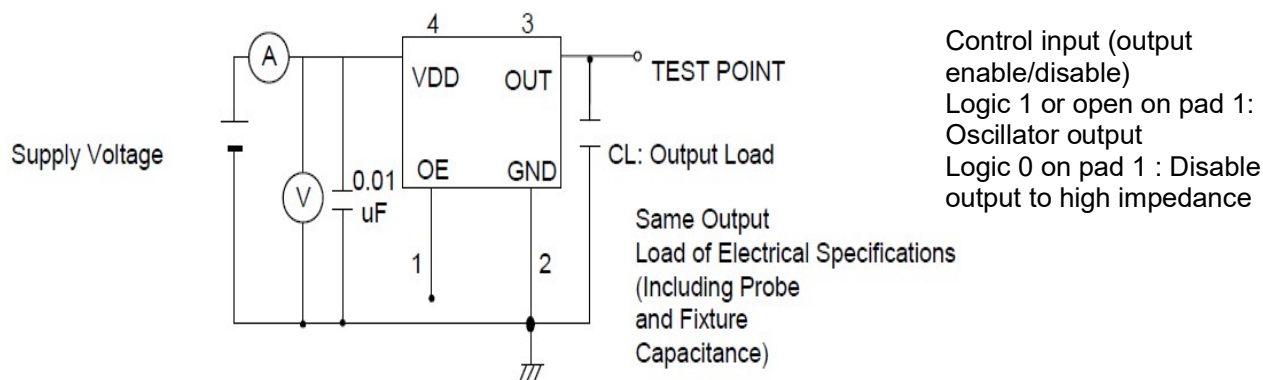


4. TEST CIRCUIT

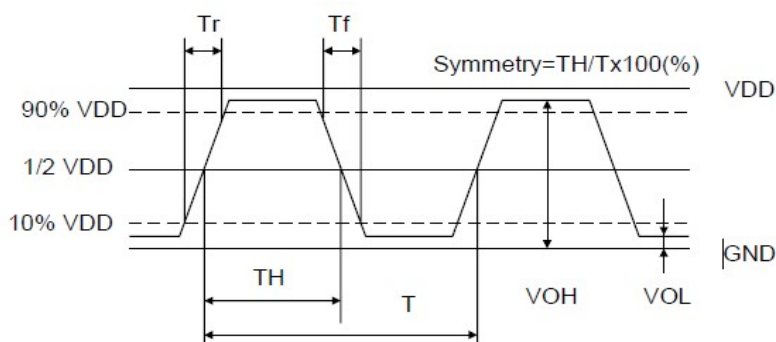
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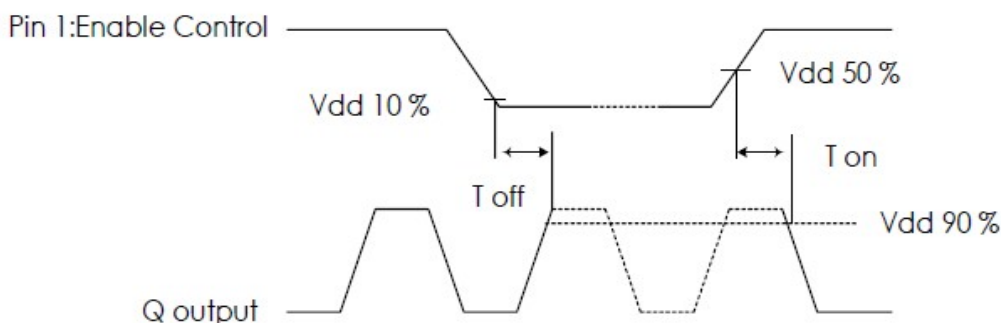


5. WAVEFORM CONDITIONS



6. OUTPUT ENABLE / DISABLE DELAY

The following figure shows the oscillator timing during normal operation . Note that when the device is in standby, the oscillator stops. When standby is released, the oscillator starts and stable oscillator output occurs after a short delay

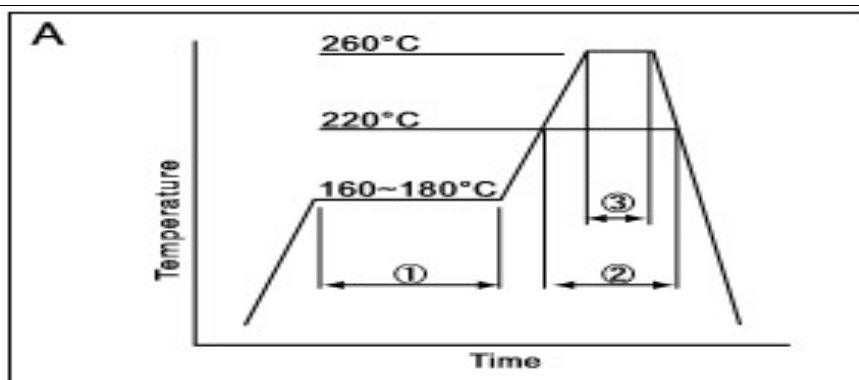


7. SUGGESTED REFLOW PROFILE

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

Total time : 200 sec. Max / Solder melting point :220 °C

8. RELIABILITY TEST SPECIFICATION

1.Mechanical Endurance

No.	Test Item	Test Methods	REF. DOC
1	Drop Test	75 cm height,3 times on concrete floor .	JIS C6701
2	Mechanical Shock	Device are shocked to half sine wave (1000 G) three mutually perpendicular axes each 3 times. 0.5m sec. duration time	MIL-STD-202F
3	Vibration	Frequency range 10 ~ 2000 Hz Amplitude 1.52 mm/20G Sweep time 20 minutes Perpendicular axes each test time 4 Hrs (Total test time 12 Hrs)	MIL-STD-883E
4	Gross Leak	Standard Sample For Automatic Gross Leak Detector, Test Pressure: 2kg / cm ²	MIL-STD-883E
5	Fine Leak	Helium Bomging 4.5 kgf / cm ² for 2 Hrs	
6	Solderability	Temperature 245 °C ± 5°C Immersing depth 0.5 mm minimum Immersion time 5 ± 1 seconds Flux Rosin resin methyl alcohol solvent (1 : 4)	MIL-STD-883E

2.Environmental Endurance

No.	Test Item	Test Methods	REF. DOC
1	Resistance To Soldering Heat	Pre-heat temperature 125 °C Pre-heat time 60 ~ 120 sec. Test temperature 260 ± 5 °C Test time 10 ± 1 sec.	MIL-STD-202F
2	High Temp. Storage	+ 125 °C ± 3 °C for 1000 ± 12 Hrs	MIL-STD-883E
3	Low Temp. Storage	- 40 °C ± 3 °C for 1000 ± 12 Hrs	

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4	Thermal Shock	Total 100 cycles of the following temperature cycle 125±3 °C 25 °C -55±3 °C 1 cycle 10 min 10 min 10 min max	MIL-STD-883E
5	Pressure Cooker Storage	121 ± 3°C , RH100% , 2 bar , 240 Hrs	JIS C6701
6	High Temp & Humidity	85°C ± 3°C, RH 85% , 1000 Hrs	JIS C5023
备注			