CERAMIC SMD TYPE

SCO-21

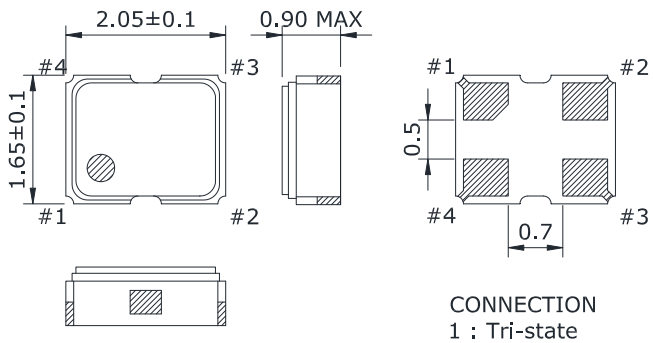
- Seam Seal
- External Dimensions : 2.0 × 1.6 mm
- 1.8V, 2.5 V, 3.3 V Operating Supply Voltage Range
- High Stability with AT-Cut crystal
- CMOS Output
- Tri-state Function Available

■ ELECTRICAL SPECIFICATIONS

ITEM	Value	Remarks
Output Logic Type	CMOS	CMOS XO
Frequency Range*	20.000 MHz to 50.000 MHz	
Supply Voltage(V_{DD})	1.8 V_{DC} ± 5 %, 2.5 V_{DC} ± 5 %, 3.3 V_{DC} ± 10 %	
Operating Temperature Range	0 to +70 ℃, -20 to +70 ℃, -40 to +85 ℃	
Storage Temperature Range	-55 to +125 ℃	
Frequency Stability	±20 ppm, ±25 ppm, ±50 ppm, ±100 ppm Max.	Over Operating Temperature range
Input Current	10 mA(1.8 V, 2.5 V), 25 mA(3.3 V) Max.	
Output Voltage Logic High(V_{OH})	90 % of V_{DD} Min.	
Output Voltage Logic Low(V_{OL})	10 % of V_{DD} Max.	
Rise / Fall Time	5 ns Max.	Measured over 10 % to 90 % of waveform
Duty Cycle	45 to 55 %, 40 to 60 %	Measured at 50 % of waveform
Start-up Time	10 ms Max.	
Output Load Condition(CMOS)	15 pF Max.	
Output Enable Function (V_{IH} and V_{IL})	70 % of V_{DD} Min. to Enable Output 30 % of V_{DD} Max. to Disable Output	High Impedance
RMS Phase Jitter	1 ps Max.	BW : 12 kHz to 20 MHz
Frequency Aging	±5 ppm Max.	25 ℃, First year

* Please contact us about developed standard frequencies

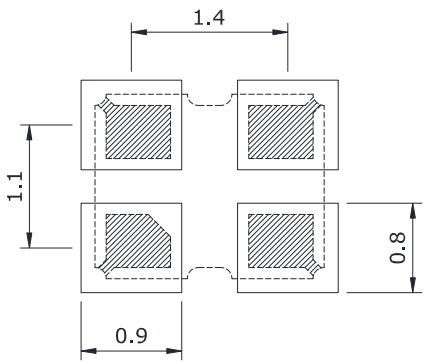
■ MECHANICAL DIMENSIONS (mm)



CONNECTION
1 : Tri-state
2 : GND
3 : OUTPUT
4: V_{DD}

■ LAND PATTERN (mm)

<Top View>



■ PART NUMBERING GUIDE

SCO – 21 33 50 B D S R – 27.000M

SUPPLY VOLTAGE(V_{DD})
33 : 3.3 V, 25 : 2.5 V, 18 : 1.8 V

FREQUENCY STABILITY
20 : ±20 ppm, 25 : ±25 ppm
50 : ±50 ppm, BLANK : ±100 ppm

OPERATING TEMPERATURE RANGE
A : -40 to 85 ℃, B : -20 to 70 ℃
BLANK : 0 to 70 ℃

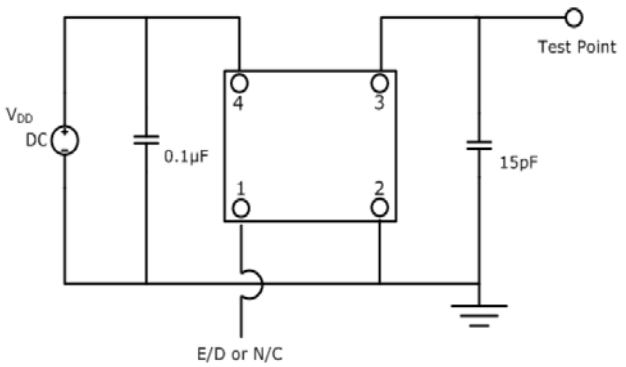
DUTY CYCLE
D : 45/55, E : 40/60

FREQUENCY
M : MHz

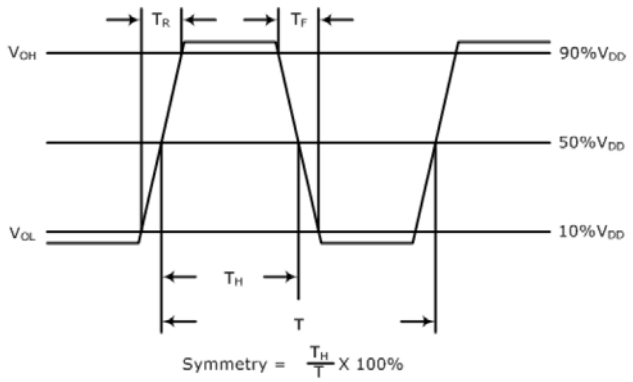
PACKAGE OPTION
R : TAPE AND REEL
BLANK : BULK

PIN 1 CONNECTION
S : TRI-STATE, E/D
BLANK : NO CONNECTION

■ TEST CIRCUIT (CMOS)



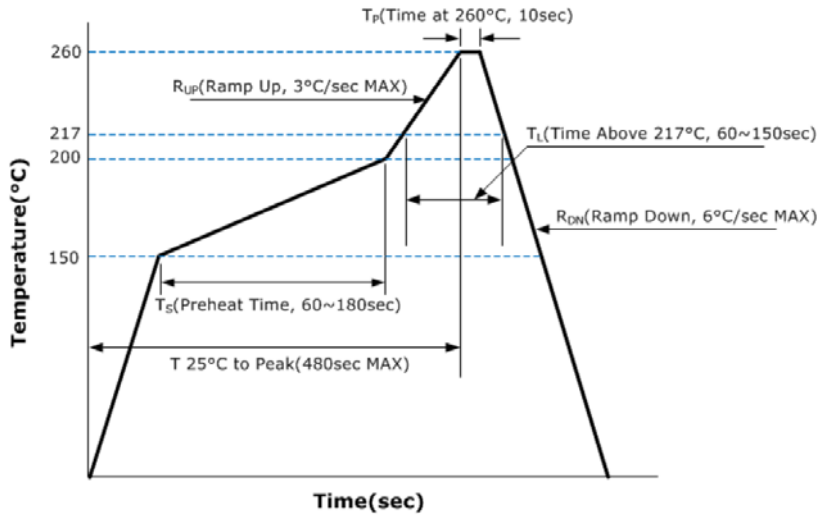
■ WAVEFORM (CMOS)



■ ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

Temperature Cycling	MIL-STD-883, Method 1010, Condition B
Fine Leak Test	MIL-STD-883, Method 1014, Condition A
Gross Leak Test	MIL-STD-883, Method 1014, Condition C
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Vibration	MIL-STD-883, Method 2007, Condition A
Moisture Resistance	MIL-STD-883, Method 1004
Moisture Sensitivity	J-STD-020, MSL 1
Resistance to Soldering Heat	MIL-STD-202, Method 210, Condition K
Solderability	MIL-STD-883, Method 2003

■ REFLOW PROFILE



■ MARKING GUIDE

LINE 1 : XX.XX

LINE 2 : ●S Y WW

Sunny

Year

Week

Frequency in MHz

■ TAPE AND REEL DIMENSIONS