

# CERAMIC SMD TYPE

## 18 kHz to 20 kHz (SCO-53)

- 18.000 kHz to 20.000 kHz in 0.1 kHz steps
- High Stability with AT-Cut crystal
- External Dimensions : 5.0 × 3.2 mm
- 1.8 V to 3.3 V Operating Supply Voltage Range
- CMOS Output
- Tri-state Function Available



### ELECTRICAL SPECIFICATIONS

ITEM	Value	Remarks
Output Logic Type	CMOS	CMOS XO
Frequency Range*	18.000 kHz to 20.000 kHz	
Supply Voltage(V <sub>DD</sub> )	1.8 V <sub>DC</sub> ±5 %, 2.5 V <sub>DC</sub> ±5 %, 3.3 V <sub>DC</sub> ±5 %	
Operating Temperature Range	0 to +70 °C, -20 to +70 °C, -40 to +85 °C	
Storage Temperature Range	-55 to +125 °C	
Frequency Stability	±20 ppm, ±25 ppm, ±50 ppm, ±100 ppm Max.	Over operating temperature range
Input Current	5 mA Max.	
Output Voltage Logic High(V <sub>OH</sub> )	90 % of V <sub>DD</sub> Min.	
Output Voltage Logic Low(V <sub>OL</sub> )	10 % of V <sub>DD</sub> Max.	
Rise / Fall Time	100 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 <sub>IH</sub> and V <sub>IL</sub> )	70 % of V <sub>DD</sub> Min. to Enable Output 30 % of V <sub>DD</sub> Max. to Disable Output	High Impedance
Frequency Aging	±5 ppm Max.	25°C, First year

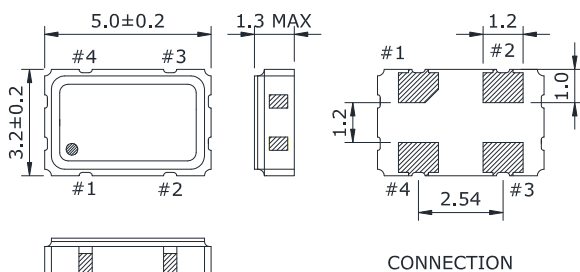
\* Please contact us about developed standard frequencies

### MECHANICAL DIMENSIONS (mm)

(mm)

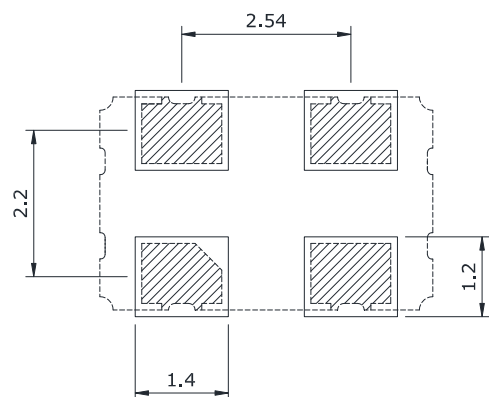
### LAND PATTERN (mm)

(mm)



CONNECTION  
1 : Tri-state  
2 : GND  
3 : OUTPUT  
4: V<sub>DD</sub>

<Top View>



**PART NUMBERING GUIDE**

SCO - 53 33 50 B D S R - 20.000K

**SUPPLY VOLTAGE(V<sub>DD</sub>)**  
 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 °C, B : -20 to 70 °C  
 BLANK : 0 to 70 °C

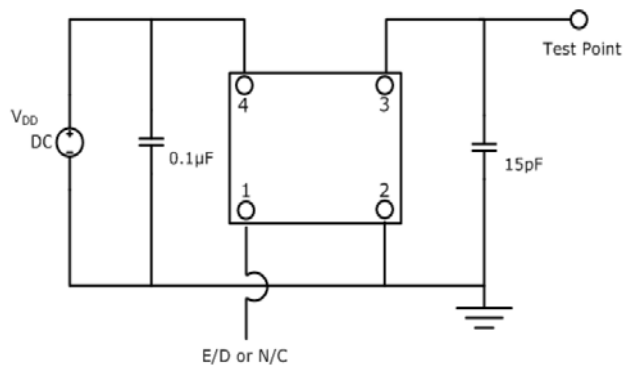
**DUTY CYCLE**  
 D : 45/55, E : 40/60

**FREQUENCY**  
 K : kHz

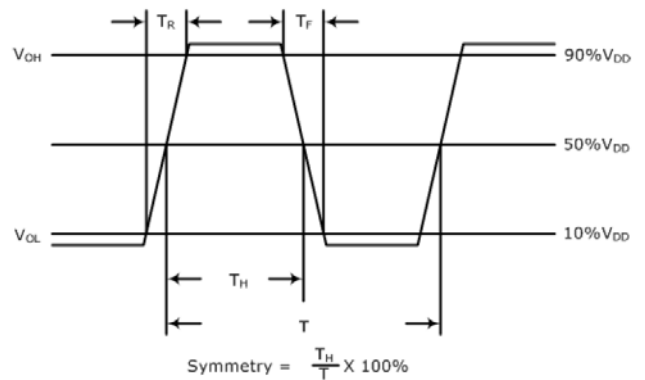
**PACKAGE OPTION**  
 R : TAPE AND REEL  
 BLANK : BULK

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

**TEST CIRCUIT (CMOS)**



**WAVEFORM (CMOS)**

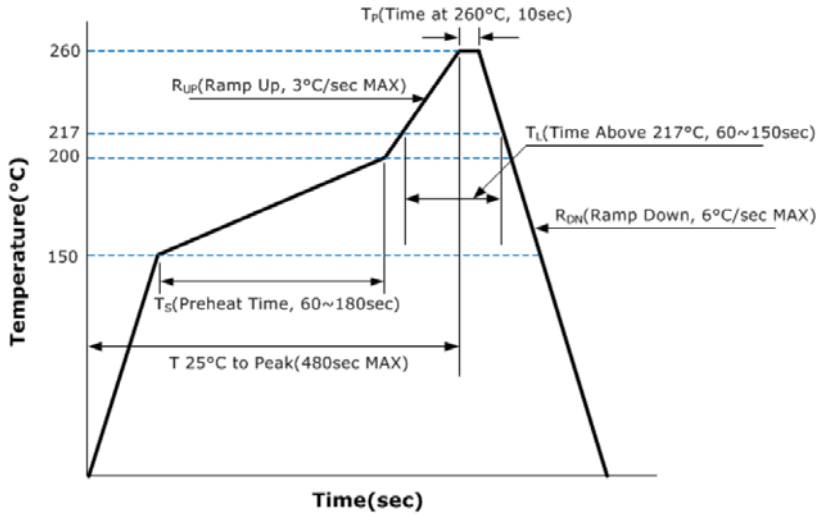


**ENVIRONMENTAL & MECHANICAL SPECIFICATIONS**

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



Frequency

LINE 1 : XX.XXX K

LINE 2 : ● S Y WW

Sunny

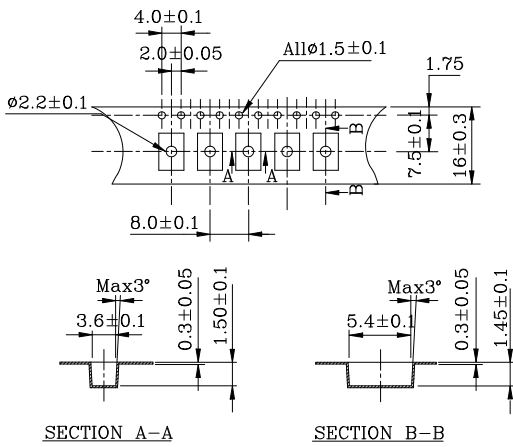
Year

Week

KHz

TAPE AND REEL DIMENSIONS

MAT'L : P.S  
 COLOR : WHITE&BLACK  
 REFERENCE R=0.2



MAT'L : P.S  
 COLOR : WHITE&BLACK

