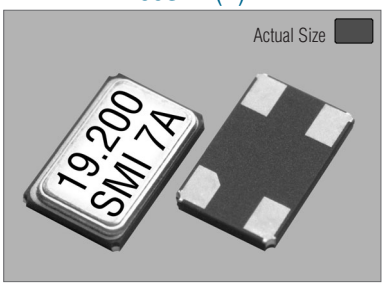
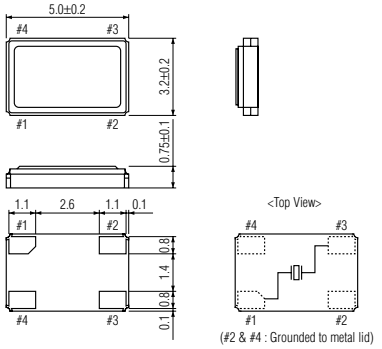
Quartz Crystal Units

53SMX(B) CUSTOM-DESIGNED HIGH SPEC SMD CRYSTALS

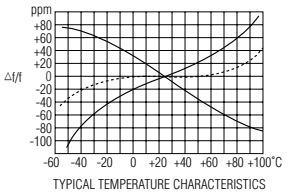
53SMX(B)



53SMX(B)

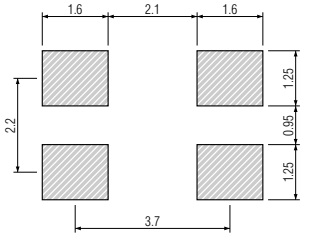


AT-CUT

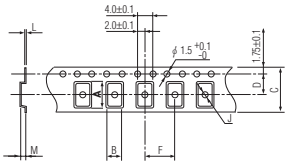


TYPICAL TEMPERATURE CHARACTERISTICS

SOLDERING PATTERN



TAPE SPECIFICATIONS



A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
5.4	3.5	12.0	5.5	8.0	1.6	0.25	1.0	330 (180)	3000pcs (1000pcs)

SPECIFICATIONS

1. Package type ..... 53SMX(B)
2. Frequency range ..... 10.000 MHz to 270.000 MHz
3. Frequency tolerance ..... O : ±10 ppm at +25°C ±3°C
   Q : ±15 ppm at +25°C ±3°C
   R : ±20 ppm at +25°C ±3°C
4. Temperature stability (referred to +25°C) ..... See table below

Ope. Temp. Range \ Stability	PPM									
	±3.0 (FF)	±5.0 (JJ)	±7.5 (LL)	±10 (OO)	±15 (QQ)	±20 (RR)	±30 (TT)	±50 (XX)	±100 (CCI)	±150 (GGI)
0～+45℃ (edd)	○	○	○	○	○	○	○	○	○	○
0～+50℃ (eee)	○	○	○	○	○	○	○	○	○	○
0～+60℃ (egg)	○	○	○	○	○	○	○	○	○	○
0～+70℃ (eii)		○	○	○	○	○	○	○	○	○
−10～+50℃ (gee)		○	○	○	○	○	○	○	○	○
−10～+60℃ (ggg)		○	○	○	○	○	○	○	○	○
−10～+70℃ (gii)		○	○	○	○	○	○	○	○	○
−10～+75℃ (gjj)			○	○	○	○	○	○	○	○
−20～+70℃ (iii)			○	○	○	○	○	○	○	○
−20～+75℃ (ijj)				○	○	○	○	○	○	○
−30～+75℃ (kii)				○	○	○	○	○	○	○
−30～+80℃ (kkk)				○	○	○	○	○	○	○
−30～+85℃ (kll)				○	○	○	○	○	○	○
−35～+80℃ (lkk)					○	○	○	○	○	○
−40～+85℃ (mll)					○	○	○	○	○	○
−40～+90℃ (mmm)					○	○	○	○	○	○
−40～+105℃ (mpp)					○	○	○	○	○	○
−40～+125℃ (mtt)							○	○	○	○

○: Available (The extremes depend on actual frequencies.)

5. Equivalent series resistance (ESR) ..... 120 Ω max. (10.000 MHz)
   80 Ω max. (12.000 MHz to 16.000 MHz)
   60 Ω max. (16.000 MHz to 20.000 MHz)
   40 Ω max. (20.000 MHz to 70.000 MHz)
   100 Ω max. (50.000 MHz to 180.000 MHz)
   160 Ω max. (170.000 MHz to 270.000 MHz)
6. Shunt capacitance (Co) ..... 5 pF max.
7. Drive level (P) ..... 100 μW max. (10 μW for testing)
8. Aging ..... ±2 ppm max. at +25°C ±3°C for first year
9. Cut/Oscillation mode ..... AT−Cut/Fundamental (10.000 MHz to 70.000 MHz)
   AT−Cut/3rd overtone (50.000 MHz to 180.000 MHz)
   AT−Cut/5th overtone (170.000 MHz to 270.000 MHz)
10. Reflow condition ..... 10 seconds max. at +250°C ±10°C

PART NUMBERING GUIDE

13.000MHz 53SMX(B) O / OO / kkk / 10

- Frequency
- Package type
- Frequency tolerance
- Load capacitance (CL)
- Operating temperature range
- Temperature stability

EXAMPLE

SMI PART NO.	Frequency	Package	Frequency tolerance
13.000 MHz 53SMX(B) O/OO/kkk/10	13.000 MHz	53SMX(B)	O = ±10 ppm
15.360 MHz 53SMX(B) Q/LL/ggg/9	15.360 MHz	53SMX(B)	Q = ±15 ppm

Temperature stability	Operating temperature range	Load capacitance
OO = ±10 ppm	kkk = −30°C to +80°C	CL = 10 pF
LL = ±7.5 ppm	ggg = −10°C to +60°C	CL = 9 pF

PACKAGE DATA

Item \ Package	53SMX(B)
Lid	Metal
Base	Ceramic
Sealing	Seam
Terminal	Tungsten (metalized)
Terminal plating	Gold / Nickel (surface) / (under)
RoHS	Compliant (Pb-free)