

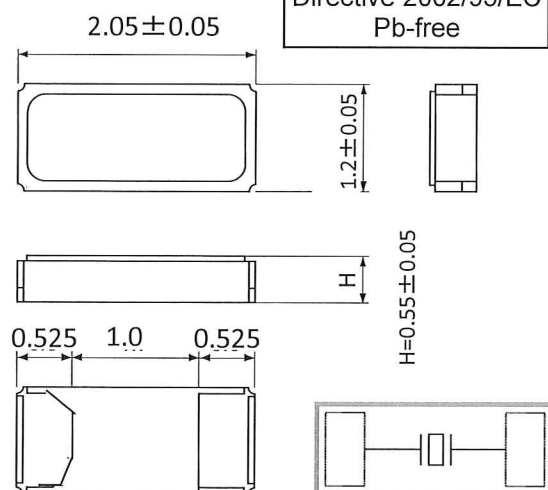
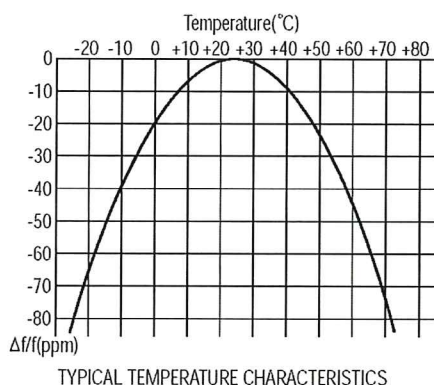
TITLE

CRYSTAL SPECIFICATIONS

DATE

Apr. 28, 2017

1. Part No. : 212M327B-HT
2. Nominal frequency (F) : 32.768 kHz
3. Package type : 212SMX
4. Frequency tolerance (df/F) : ± 20 ppm ($\pm 0.002\%$) at $+25^{\circ}\text{C} \pm 3^{\circ}\text{C}$
5. Load capacitance (CL) : $12.5\text{pF} \pm 1.0\text{pF}$
6. Series resistance (Rs) : 120 k ohms max.
7. Drive level (P) : $0.1\mu\text{W}$, Typical ($0.5\mu\text{W}$ max.)
8. Quality factor (Q) : 10000, Typical
9. Turnover temperature (TT) : $+25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
10. Parabolic curvature constant (K) : $-0.034\text{ ppm}/^{\circ}\text{C}^2$, Typical ($-0.04\text{ppm}/^{\circ}\text{C}^2$ max.)
11. Shunt capacitance (C0) : 1.3 pF, Typical (1.6pF max.)
12. Capacitance ratio (C0/C1) : 260, Typical
13. Motional capacitance (C1) : 0.005 pF, Typical
14. Aging (df/F) : First year : $\pm 3\text{ppm}$ max. at $+25^{\circ}\text{C} \pm 3^{\circ}\text{C}$
15. Operating temperature range (TO) : -40°C to $+125^{\circ}\text{C}$
16. Storage temperature range (TS) : -40°C to $+125^{\circ}\text{C}$
17. Insulation resistance: 500M ohms at 100V DC
18. Reflow soldering condition : 10 seconds at $+260^{\circ}\text{C} \pm 10^{\circ}\text{C}$ (2 times max)
19. Shock (df/F) : ± 5 ppm max.
20. Vibration (df/F) : ± 5 ppm max.
21. Crystal test equipment : 140B (Saunders, U. S. A)
22. Outline dimentions : See below



Supporting documents

Data Sheet No.	Contents
SX-6392A	Test data at room and over temperatures
SX-6401A	Tape specifications
SX-6402A	Reel specifications
SX-6265A	Marking format

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SMI

ITEM.

QUARTZ CRYSTAL UNITS 212SMX-HT

No.

SX-6313C

TITLE

CRYSTAL SPECIFICATIONS

DATE

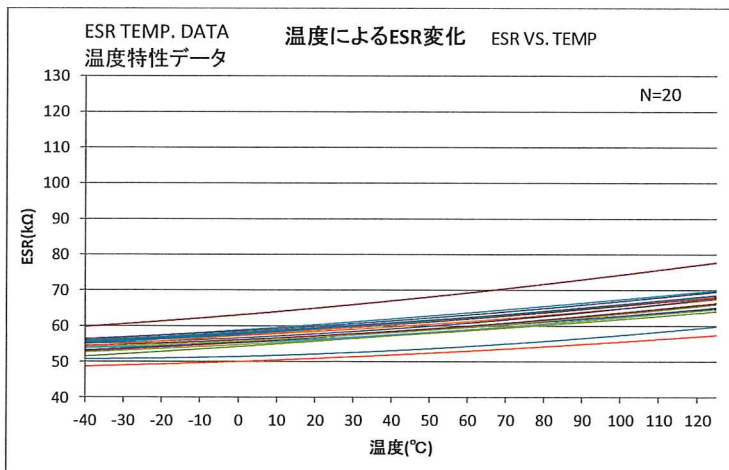
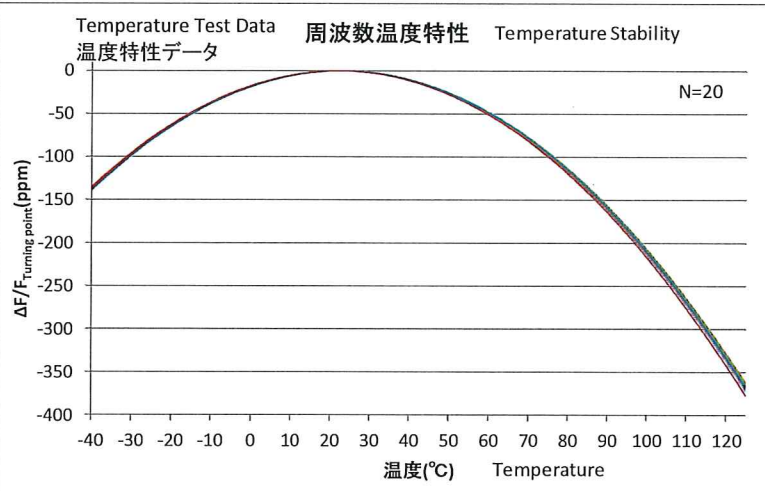
Apr. 3, 2017

2012 32.768kHz TEST DATA AT ROOM & OVER-TEMP

Test Data at room temperature

常温の特性データ

Serial No.	Frequency in kHz	Frequency tolerance (ppm)	ESR (k Ω)	C0 (pF)	C1 (fF)	L1 (H)	Insu.Res.
1	32.767963	-1.1	52.7	1.10	5.21	4528.5	-
2	32.767895	-3.2	46.8	1.09	5.22	4525.6	-
3	32.767873	-3.9	57.1	1.09	5.16	4576.6	-
4	32.767798	-6.2	49.1	1.09	5.18	4557.9	-
5	32.768036	1.1	49.8	1.09	5.12	4613	-
6	32.768084	2.6	56.0	1.10	5.22	4524.1	-
7	32.768329	10.0	48.6	1.10	5.12	4609	-
8	32.767987	-0.4	54.3	1.09	5.16	4571.3	-
9	32.767815	-5.6	47.2	1.08	5.13	4601.7	-
10	32.768053	1.6	48.8	1.09	5.21	4531.3	-
11	32.767836	-5.0	50.8	1.08	5.14	4590.5	-
12	32.768127	3.9	47.7	1.09	5.18	4555.6	-
13	32.768206	6.3	55.3	1.10	5.23	4508.8	-
14	32.767962	-1.2	64.9	1.08	5.10	4632.4	-
15	32.767920	-2.4	62.6	1.09	5.22	4521.9	-
16	32.768109	3.3	56.9	1.09	5.19	4543.5	-
17	32.768232	7.1	53.9	1.09	5.16	4569.8	-
18	32.767927	-2.2	60.8	1.08	5.14	4591.3	-
19	32.767928	-2.2	52.2	1.09	5.15	4585.1	-
20	32.768041	1.3	47.4	1.09	5.21	4533.1	-
---	周波数 等価抵抗	CL 負荷容量 12.5pF 直列			DL 励振レベル 0.1 μ W DL 励振レベル 0.1 μ W		



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ITEM.

QUARTZ CRYSTAL UNITS 212SMX-HT

No.

SX-6392A

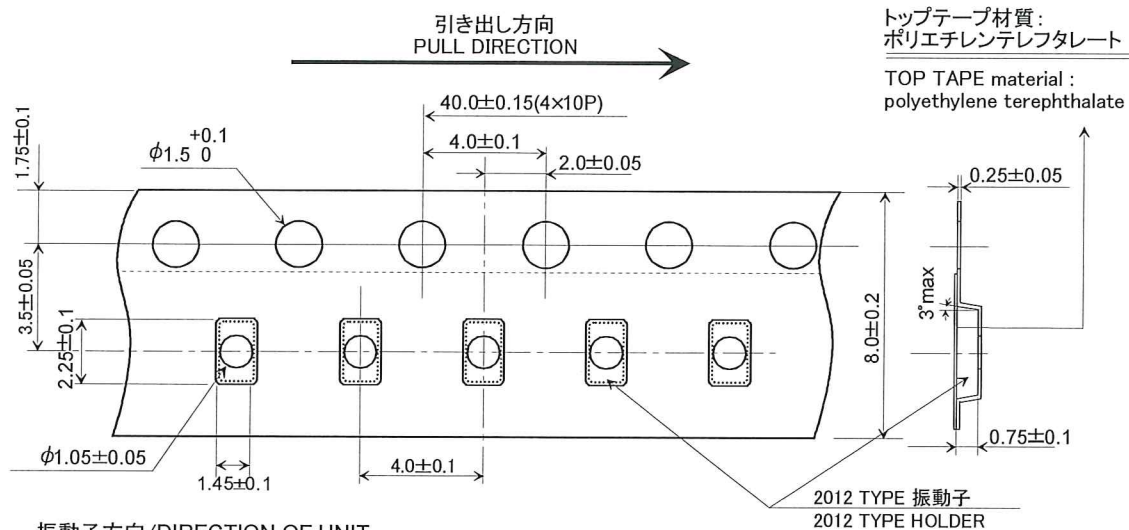
TITLE

OUTLINE DRAWING

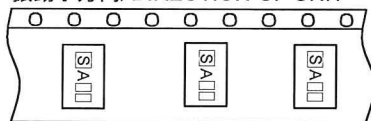
DATE

June 5, 2017

TAPE SPECIFICATIONS

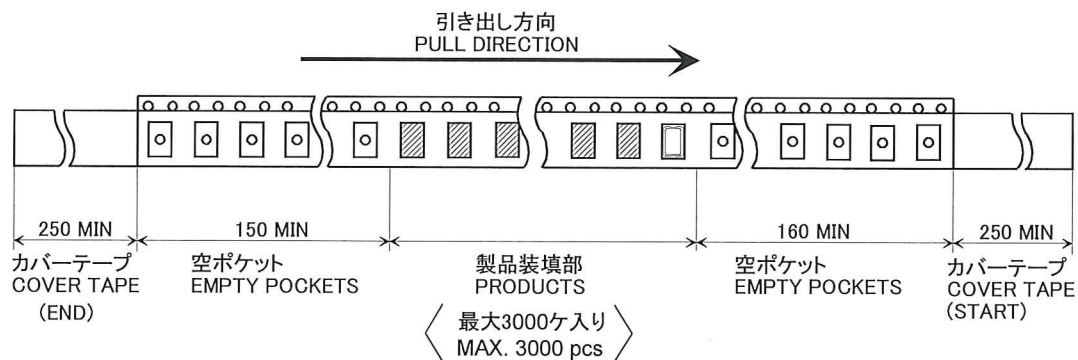


振動子方向/DIRECTION OF UNIT



テーピング図 材質:導電性PS

TAPING material: Conductive PS



mm

ISSUED

CHECKED

APPROVAL



A. Ishiyama



竹内

Kazuto



三浦

SMI

ITEM.

TAPE SPECIFICATIONS FOR 212SMX

No.

SX-6401A

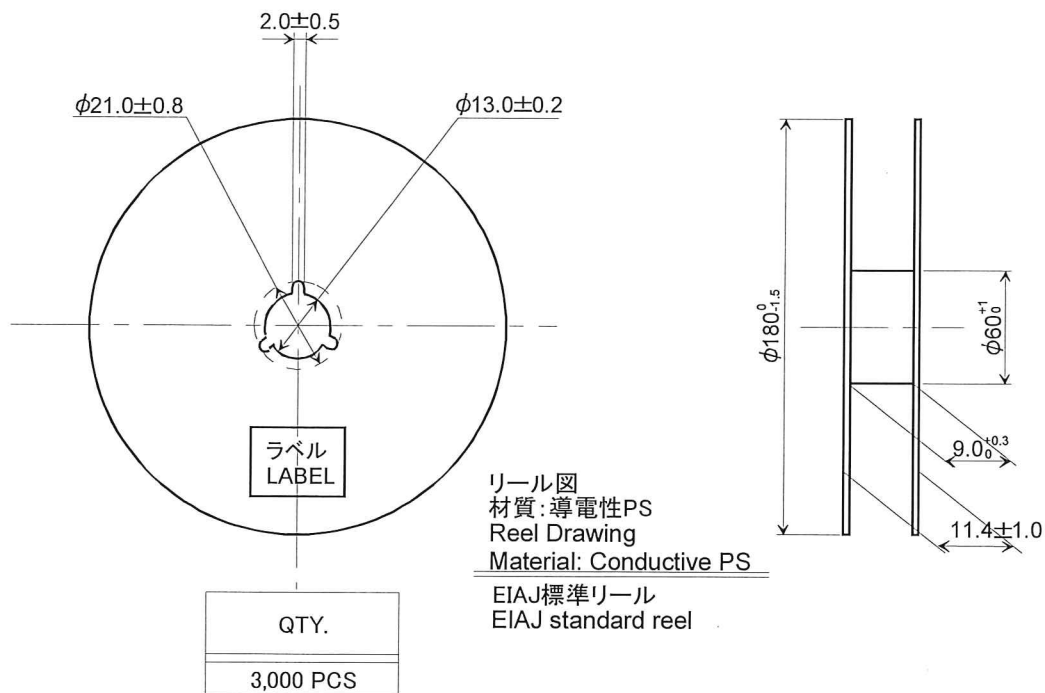
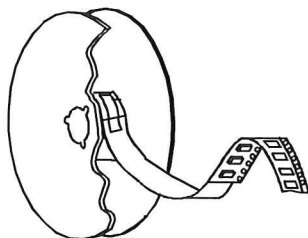
TITLE

OUTLINE DRAWING

DATE

June 5, 2017

REEL SPECIFICATIONS

リール巻き始め
Begin

Start

リール巻き終わり
Close

End

mm

ISSUED

CHECKED

APPROVAL



A. Ishiyama



Kazuto



三浦

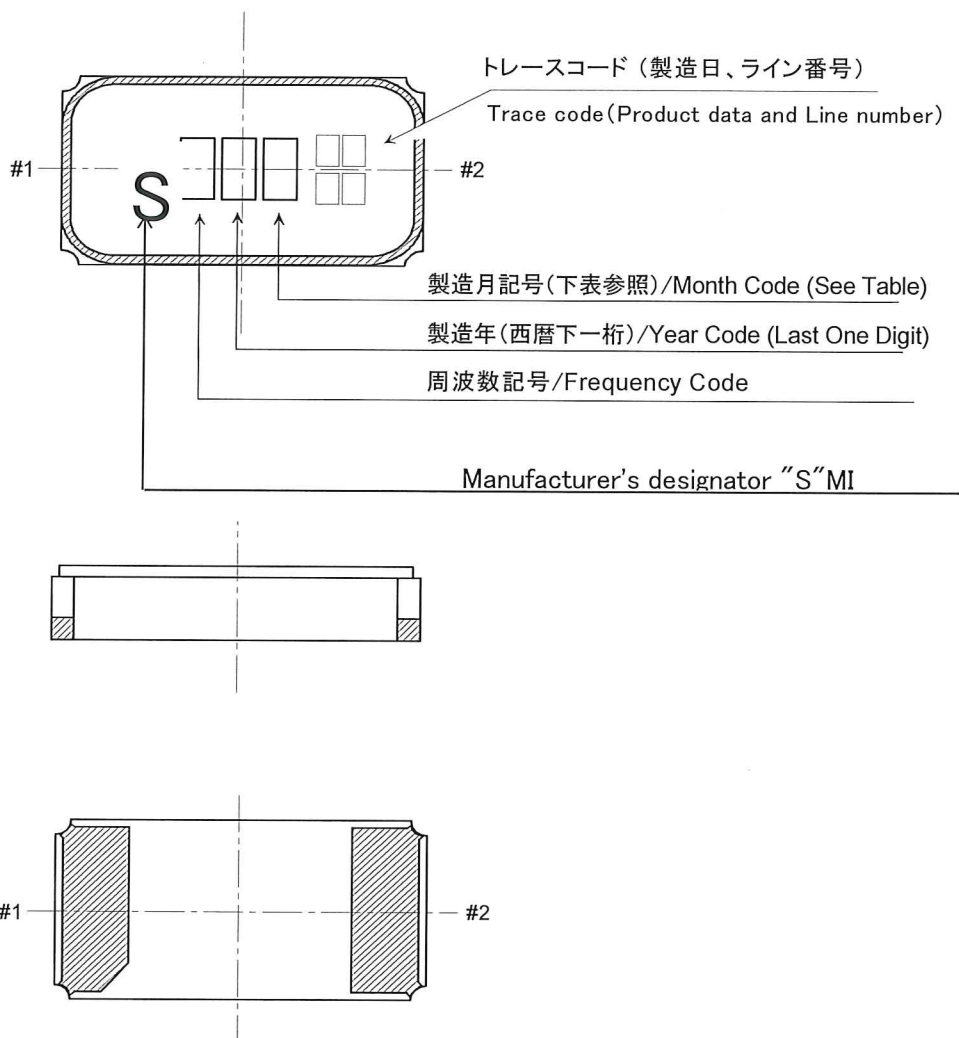
SMI

ITEM.

REEL SPECIFICATIONS FOR 212SMX

No.

SX-6402A



NOTE

1. 製造月記号 / Month Code

月 Month	1 Jan.	2 Feb.	3 Mar.	4 Apr.	5 May.	6 June.	7 July.	8 Aug.	9 Sep.	10 Oct.	11 Nov.	12 Dec.
月記号 Month Code	1	2	3	4	5	6	7	8	9	X	Y	Z

2. 周波数記号

A : 32.768 kHz

3. 表示方法 / Marking Method

レーザートリミングとする。 / Marking Method Laster Triming