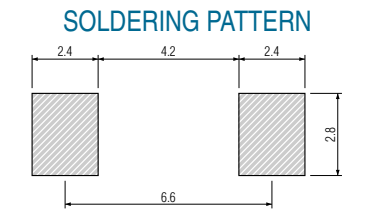
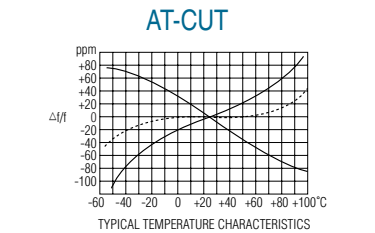
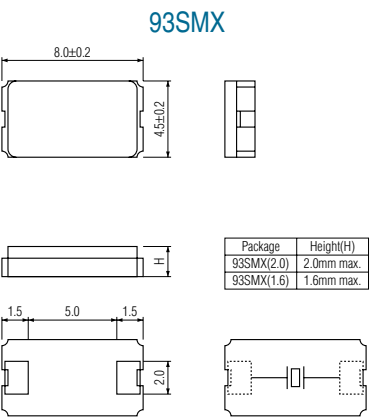
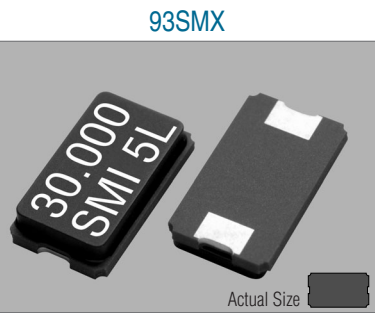


Quartz Crystal Units

SMI

93SMX

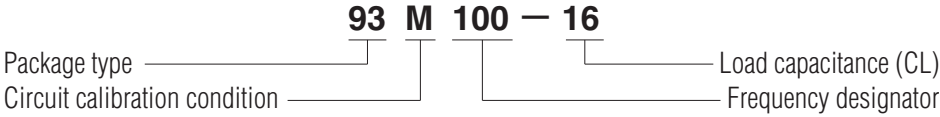
STANDARD SMD CRYSTALS



STANDARD SPECIFICATIONS

- 1. Package type 93SMX
- 2. Frequency range 4.000 MHz to 50.000 MHz
- 3. Frequency tolerance ± 50 ppm at $+25^{\circ}\text{C} \pm 3^{\circ}\text{C}$
- 4. Temperature stability (referred to $+25^{\circ}\text{C}$) ± 50 ppm over -20°C to $+70^{\circ}\text{C}$
- 5. Load capacitance (CL) 16 pF, Typical
- 6. Shunt capacitance (Co) 5 pF max.
- 7. Drive level (P) 100 μW max. (10 μW for testing)
- 8. Aging ± 5 ppm max. at $+25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ per year
- 9. Cut/Oscillation mode AT-Cut/Fundamental
- 10. Reflow condition 10 seconds max. at $+250^{\circ}\text{C} \pm 10^{\circ}\text{C}$

PART NUMBERING GUIDE



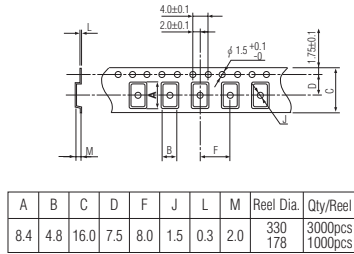
EXAMPLE

SMI PART NO.	Package	Circuit Calibration Condition	Frequency
93M100-16	93 = 93SMX	M = Parallel resonance CL = 16 pF	100 = 10.000 MHz
93S360	93 = 93SMX	S = Series resonance	360 = 36.000 MHz

PACKAGE DATA

Item	Package	93SMX
Lid		Ceramic
Base		Ceramic
Sealing		Glass
Terminal		Tungsten (metalized)
Terminal plating		Gold / Nickel (surface) / (under)
RoHS		Compliant

TAPE SPECIFICATIONS



93SMX STANDARD FREQUENCIES

FREQUENCY MHz	FREQUENCY DESIGNATOR	MAX EQUIVALENT SERIES RESISTANCE OHMS(Ω) ESR	FREQUENCY MHz	FREQUENCY DESIGNATOR	MAX EQUIVALENT SERIES RESISTANCE OHMS(Ω) ESR	FREQUENCY MHz	FREQUENCY DESIGNATOR	MAX EQUIVALENT SERIES RESISTANCE OHMS(Ω) ESR
4.000000	040	300	15.968000	1596	50	23.040000	2304	50
5.000000	050	300	15.974400	1597	50	24.000000	2400	50
7.200000	072	300	15.992000	1599	50	24.000100	240001	50
8.000000	080	200	16.000000	1600	50	24.545400	2454	50
9.510000	0951	200	16.069900	1606	50	24.557200	2455	50
9.843750	0984	200	16.110000	1611	50	24.576000	2457	50
9.845310	09845	200	16.128000	1612	50	24.858900	2485	50
9.859380	0985	200	16.384000	1638	50	25.000000	2500	50
9.861820	09861	200	16.500000	1650	50	25.804800	2580	50
9.864380	09864	200	16.647300	1664	50	26.800000	2680	50
9.874380	0987	200	16.656000	1665	50	26.973100	2697	50
10.000000	1000	100	16.667000	1666	50	26.980000	2698	50
10.000500	100005	100	16.670000	1667	50	27.000000	2700	50
10.178000	1017	100	16.777200	1677	50	27.120000	2712	50
10.250000	1025	100	16.900000	1690	50	27.500000	2750	50
10.260000	1026	100	16.920000	1692	50	27.700000	2770	50
11.000000	1100	100	16.934400	1693	50	27.870000	2787	50
11.059200	1105	100	17.177600	1717	50	28.000000	2800	50
11.150000	1115	100	17.262700	1726	50	28.125000	2812	50
11.250000	1125	100	17.664000	1766	50	28.224000	2822	50
11.289600	1128	100	17.734475	1773	50	28.244000	2824	50
11.298000	1129	100	18.000000	1800	50	28.350000	2835	50
11.894400	11894	100	18.105600	1810	50	28.375000	2837	50
11.895100	11895	100	18.300000	1830	50	28.496100	2849	50
11.980800	1198	100	18.355000	1835	50	28.500000	2850	50
11.995200	1199	100	18.425200	1842	50	28.604900	2860	50
12.000000	1200	80	18.432000	1843	50	28.625000	2862	50
12.288000	1228	80	18.437500	18437	50	28.636363	2863	50
12.500000	1250	80	18.544000	1854	50	28.724000	2872	50
12.580000	1258	80	19.000000	1900	50	28.900000	2890	50
13.000000	1300	50	19.069929	1906	50	29.000000	2900	50
13.083600	1308	50	19.138600	1913	50	29.491200	2949	50
13.125000	1312	50	19.170000	1917	50	29.498900	294989	50
13.225000	13225	50	19.176000	19176	50	29.700000	2970	50
13.225600	132256	50	19.200000	1920	50	30.000000	3000	50
13.333300	133333	50	19.247000	1924	50	30.720000	3072	50
13.400000	1340	50	19.260000	1926	50	31.000000	3100	50
13.500000	1350	50	19.390000	1939	50	31.104000	31104	50
13.560000	1356	50	19.500000	1950	50	31.400000	3140	50
13.567200	13567	50	19.660800	1966	50	31.948800	31948	50
13.568800	13568	50	19.670000	1967	50	31.987500	3198	50
13.570300	1357	50	19.687500	19687	50	32.000000	3200	50
13.574000	13574	50	19.800000	1980	50	32.223200	3222	50
13.575600	13575	50	19.968000	1996	50	32.720000	3272	50
13.577000	13577	50	19.990000	1999	50	32.768000	32768	50
13.577400	135774	50	19.993700	19993	50	33.000000	3300	50
13.577500	135775	50	20.000000	2000	50	33.145300	3314	50
13.580000	1358	50	20.250000	2025	50	33.333333	3333	50
13.580600	135806	50	20.480000	2048	50	33.528000	3352	50
13.585500	13585	50	20.499800	2049	50	33.868800	3386	50
13.750000	1375	50	20.500000	2050	50	34.560000	3456	50
13.824000	1382	50	20.736000	2073	50	35.468800	354688	50
13.912800	1391	50	20.945000	2094	50	35.637500	3563	50
14.000000	1400	50	21.000000	2100	50	35.795500	3579	50
14.187500	1418	50	21.047200	2104	50	36.000000	3600	50
14.237500	1423	50	21.120000	2112	50	36.818200	3681	50
14.250000	1425	50	21.213000	2121	50	36.864000	3686	50
14.284800	1428	50	21.250000	2125	50	38.000000	3800	50
14.318180	1431	50	21.544400	2154	50	40.000000	4000	50
14.721000	1472	50	21.667000	2166	50	40.190000	4019	50
14.745600	1474	50	22.118400	2211	50	40.320000	4032	50
14.750000	1475	50	22.450000	2245	50	40.500000	4050	50
15.000000	1500	50	22.579200	2257	50	40.737600	4073	50
15.954500	1595	50	23.000000	2300	50			