

Miniature, 3.3V, Surface Mount, Tristate HCMOS Oscillators

SM992 • SM993

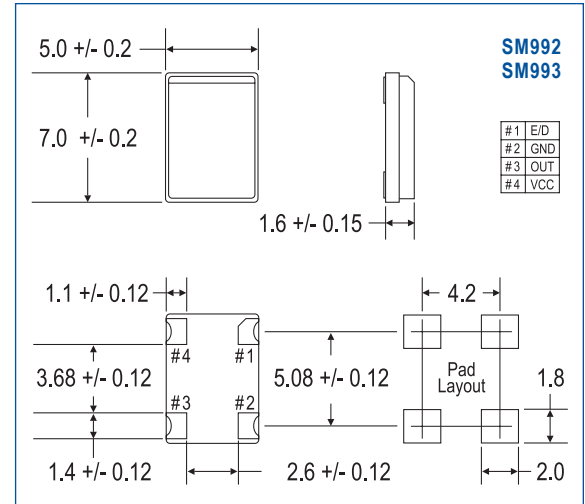
Monitor Products' SM992 and SM993 surface mount oscillators are presented in highly reliable packages that can be reflow soldered at 260°C for 10 seconds, and are available in convenient tape and reel packaging.

APPLICATIONS

- PDAs
- ATM
- PCMCIA
- Laptops
- Controller Boards
- Wireless RF
- Networking
- Disk & Tape Drives
- Cameras

FEATURES

- Low profile (1.6mm)
- TTL/CMOS compatible
- Hermetically-sealed, ceramic package
- Tristate enable/disable
- Reflow solderable at 260°C for 10 secs
- 16mm tape & reel (500 pcs/reel)



Units = mm

ELECTRICAL SPECIFICATIONS

	SM992	SM993
Frequency Range	1.8432 ~ 125.0 MHz*	1.8432 ~ 66.667 MHz*
Supply Voltage	3.3 VDC ± 0.3 V	3.3 VDC ± 0.3 V
Load Capacitance	15 pF	30 pF
Input Current (MHz = mA max)	1.8432 ~ 20.0 = 8 20.1 ~ 50.0 = 12 50.1 & up = 15	1.8432 ~ 30.0 = 10 30.1 ~ 35.0 = 15 35.1 ~ 66.0 = 30 66.1 & up = 50
Symmetry	50/50 ± 10% std (50/50 ± 5% optional**)	
Frequency Stability	± 100 ppm std (± 50 ppm avail)	
Oper Temp Range	0°C ~ 70°C std (other options avail)	
Rise and Fall Time	10 nS max	
Start Up Time	5 mS max	
Logic 0 Level	Vcc X 0.1V max	
Logic 1 Level	Vcc X 0.9V min	
E/D Phase Delay	100 nS max	
Phase Jitter RMS	8 pS typical	

* Denotes frequency range potential. Contact factory for your specific requirement

** 5% symmetry available for selected frequencies - call factory for details

DEVELOPED FREQUENCIES

1.843200	12.288000	19.440000	28.375000	37.000000	50.000000
2.048000	12.352000	19.660800	28.636360	37.056000 ³	50.113630
2.457600	12.441600	20.000000	28.704000 ²	37.632000	50.000000
3.000000	12.500000	20.160000	29.491200	38.912000	52.000000
3.579545	13.000000 ³	20.250000	29.498900	39.321600	52.900000
3.686400	13.248000	20.284000	29.498920	39.398400	53.000000
4.000000	13.330000	20.736000	29.500000	39.460000	53.125000
4.096000	13.500000	22.000000	30.000000	39.927800	53.203425
4.354500	13.600000	22.118400	30.159000	39.936000	53.693175
4.433619	14.318180	22.220000	30.720000	40.000000	54.000000
4.915200	14.400000 ³	22.222200	31.500000	40.500000	54.217400 ³
5.000000	14.745600	22.500000	32.000000	40.550400	55.000000 ³
5.068800	15.000000	23.040000	32.256000	40.608000	56.250000 ³
6.000000	15.360000	23.587000	32.768000	41.472000	56.448000 ³
6.144000	16.000000	23.941100	33.000000	42.000000	57.600000 ³
6.250000	16.384000	24.000000	33.330000	43.180000	60.000000 ³
6.758400	16.500000	24.192000	33.333000	43.243200	62.196000 ³
7.108000	16.666000	24.545450 ³	33.333330	44.236800	62.500000 ³
7.200000	16.666700	24.576000	33.868800	44.736000 ³	63.566400 ³
7.372800	16.670000	25.000000	34.200000	44.900000	100.000000 ²
7.680000	17.631200	25.175000	34.560000	45.000000	106.250000 ²
8.000000	17.664000 ³	25.426500	34.574400	46.000000	108.000000 ²
8.064000	17.734476	25.750000	34.576000	46.647000	125.000000 ²
8.192000	18.432000	26.660000	35.251200	48.000000	
9.830400	18.937500	27.000000	35.328000	48.384000	
10.000000	19.069928	27.500000	35.468950 ³	48.933000	
11.059200	19.200000	28.224000	36.000000	49.152000	
12.000000	19.312500	28.322000	36.864000	49.800000	

² SM992 only

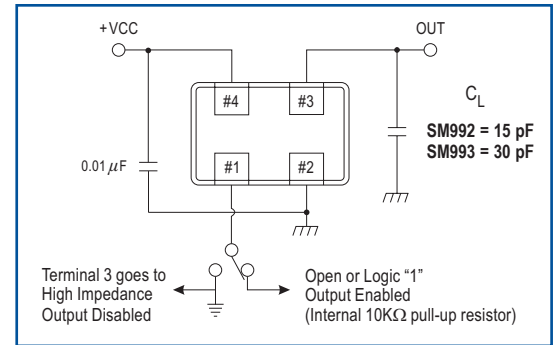
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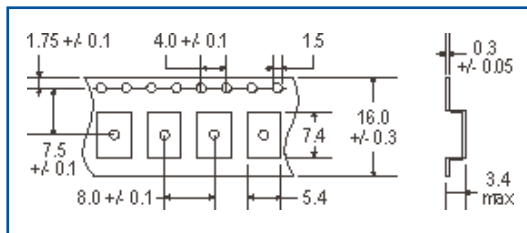
ENVIRONMENTAL PERFORMANCE SPECIFICATIONS

Operating Temp Range	-10°C ~ 70°C standard *
Storage Temp Range	-55°C ~ 125°C
Humidity	85% RH, 85°C, 48 Hours
Hermetic Seal	Leak Rate 2×10^{-8} ATM-cm ³ /sec max
Solderability	MIL-STD-202F Method 208E
Reflow Solderability	260°C for 10 seconds
Vibration	MIL-STD-202F Method 204, 35G, 50 to 2000 Hz
Shock	MIL-STD-202F Method 213B Test Cond E, 1000G, 1/2 Sine Wave
MIL-0-55310	Exceeds environmental and electrical specifications of equivalent MIL-0-55310
Packaging	16mm Tape & Reel (500pcs/reel) or Bulk (<500pcs)

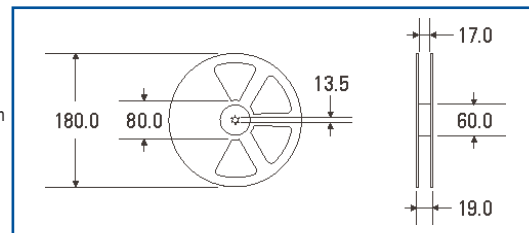
*See Part Numbering Key for other temperature options



TEST CIRCUIT



TAPE DIMENSIONS



REEL DIMENSIONS (500pcs/reel std)

PART NUMBERING KEY

Sample Part Numbers

SM99221C2A
@ 48.933 MHz =

SM99322C2E
@ 1.8 MHz =

SERIES	SYMMETRY	FREQUENCY STABILITY	TEMPERATURE RANGE	PACKAGING	FREQUENCY
SM992 = 3.3V, 15pF SM993 = 3.3V, 30pF	21 = 55/45 % 22 = 60/40 %	B = 100 ppm* C = 50 ppm	2 = 0°C ~ 70°C 3 = -20°C ~ 70°C 5 = -40°C ~ 85°C 7 = -10°C ~ 70°C*	A = Bulk (< 500pcs) E = Tape & Reel* (500pcs/reel)	
SM992	21	C	2	A	48.933
SM993	22	C	2	E	1.8

* Standard

Call factory for additional options. Use full descriptive part number when ordering. Parts will be marked with series and frequency only.

Monitor Products has a proven track record as a pioneer manufacturer in the frequency control market. If our extensive selection of standard and engineered crystals and oscillators does not meet your spec, we will work with you towards a customized solution.

Monitor Products Company Inc reserves the right to make changes to its products and product specifications without notice. No liability is assumed as a result of their use or application.

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