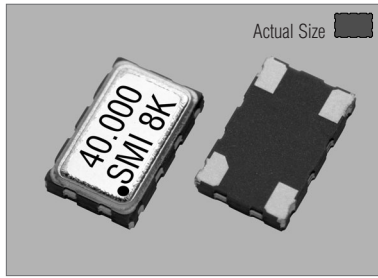


Crystal Clock Oscillators

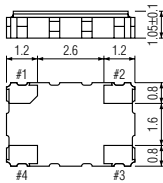
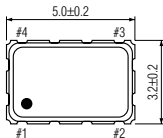
99SMO-SS^{※1} (+3.0V or +3.3V LOW EMI^{※2} OUTPUT MODELS)

STANDARD SMD CLOCK OSCILLATORS

99SMO-SS



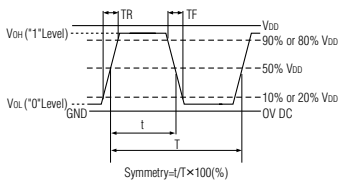
99SMO-SS



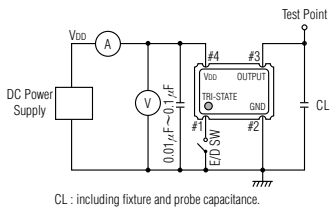
PIN	CONNECTION
1	"L" OPEN or "H"
2	GND
3	Z OUTPUT
4	V _{DD}

Z : high impedance

OUTPUT WAVEFORM

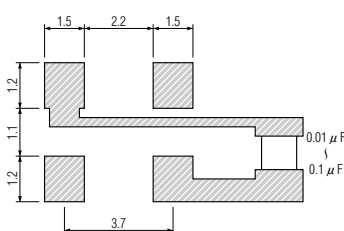


TEST CIRCUIT



CL : including fixture and probe capacitance.

SOLDERING PATTERN



STANDARD SPECIFICATIONS

Spread Spectrum Low EMI

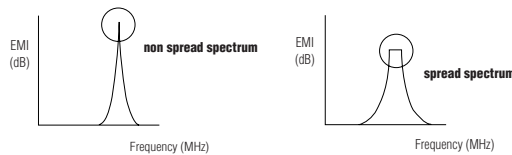
Item	Specifications
Generic part number	99SMO-SS ^{※3}
Frequency range	10.000 MHz to 168.000 MHz
Standard frequencies (MHz)	24.000 25.000 27.000 40.000 54.000
Spread spectrum range	Center spread : A = ±0.5%, B = ±1% or C = ±2%
Frequency stability	±50 ppm (referred to frequency average)
Operating Conditions	
Operating temperature	-10°C to +70°C
Input voltage (V _{DD})	+3.0V DC ±5% or +3.3V DC ±5%
Tri-state control voltage (Pin#1)	V _{IH} : 80%V _{DD} min. V _{IL} : 20%V _{DD} max.
Absolute Max. Ratings	
Supply voltage	-0.5V to +4.0V DC
Storage temperature	-40°C to +85°C
Input current (Pin#1 = Open or V _{IH})	13 mA max. (10.000MHz to 28.000MHz) 15 mA max. (28.000MHz to 168.000MHz)
Output (-10°C to +70°C)	
Symmetry	40% to 60% at 50%V _{DD} level
Rise and fall times	5 ns max. (10%V _{DD} to 90%V _{DD} level)
"0" level	V _{OL} : 10%V _{DD} max.
"1" level	V _{OH} : 90%V _{DD} min.
Load	15 pF max. (CMOS)
Enable / Disable delay time	10 ns max.
Startup time	10 ms max.
Aging	±5 ppm max. at +25°C ±3°C for first year
Jitter(Cycle to cycle)	200 pS max. (10.000MHz to 20.000MHz) 100 pS max. (20.000MHz to 168.000MHz)
Reflow condition	+250°C ±10°C for 10 seconds +170°C ±10°C for 1 to 2 minutes (preheating)

(※1) SS = Spread Spectrum.

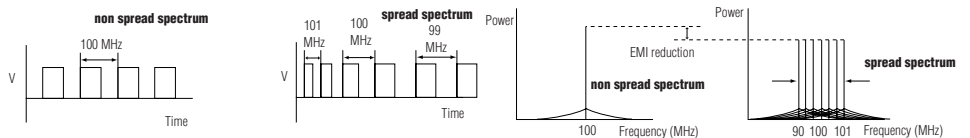
(※2) EMI = Electro Magnetic Interference.

(※3) Final exact part number to be determined with frequency, spread spectrum range and input voltage.
e.g. 99SMO-SS(3.3VB) 40.000 MHz.

SPREAD SPECTRUM FOR EMI REDUCTION



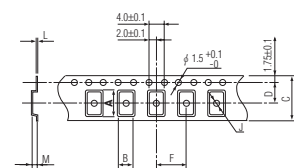
±1% CENTER SPREAD AT 100.000 MHz



PACKAGE DATA

Item	Package	99SMO-SS
Lid		Metal
Base		Ceramic
Sealing		Seam
Terminal		Tungsten (metalized)
Terminal plating		Gold / Nickel (surface) / (under)
RoHS		Compliant (Pb-free)

TAPE SPECIFICATIONS



A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
5.4	3.5	12.0	5.5	8.0	1.5	0.3	1.4	178	1000pcs