

XTAL

CLK OSC

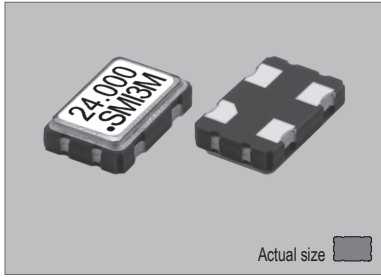
VCXO

TCXO

OCXO

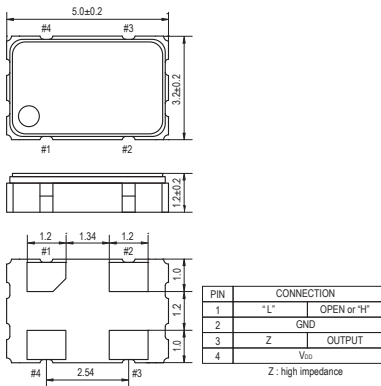
MCF

99SMO

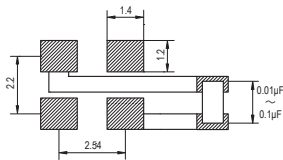


Actual size 0.052 gm (wt.)

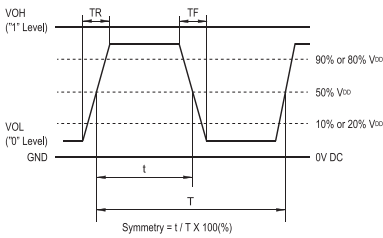
99SMO



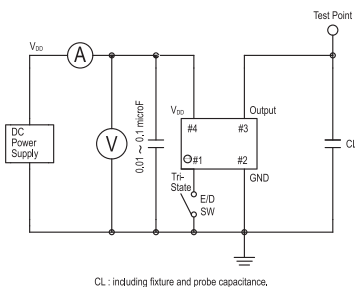
SOLDERING PATTERN



OUTPUT WAVEFORM



TEST CIRCUIT



STANDARD SPECIFICATIONS

- CMOS OUTPUT
- WIDE FREQUENCY RANGE
- PACKAGE SIZE 5.0x3.2 mm

Item		Specifications							
General part number		99SMO*1*2							
Frequency range		1.600 MHz to 165.000 MHz	1.600 MHz to 220.000 MHz	1.600 MHz to 220.000 MHz	1.000 MHz to 60.000 MHz				
Frequency stability*2 (over all conditions)		99SMO(A) : ±100 ppm over -20°C to +70°C 99SMO(B) : ±50 ppm over -20°C to +70°C 99SMO(C) : ±30 ppm over -20°C to +70°C 99SMO(D) : ±25 ppm over -20°C to +70°C 99SMO(E) : ±20 ppm over -20°C to +70°C 99SMO(AW) : ±100 ppm over -40°C to +85°C 99SMO(BW) : ±50 ppm over -40°C to +85°C 99SMO(CW) : ±30 ppm over -40°C to +85°C 99SMO(DW) : ±25 ppm over -40°C to +85°C							
Operating Conditions	Operating temperature	-20°C to +70°C (Standard) -40°C to +85°C (W = Option) -40°C to +105°C (WW = Option)...1.6 MHz to 133.0 MHz							
	Supply voltage (V <sub>DD</sub> )	+1.8V DC ±5%	+2.5V DC ±5%	+3.3V DC ±5%	+5.0V DC ±10%				
	Stand-by control voltage (Pin#1)	V <sub>IH</sub> : 70% V <sub>DD</sub> min. V <sub>IL</sub> : 30% V <sub>DD</sub> max.*3							
Absolute Max. Ratings	Supply voltage	-0.3V to +4.0V DC			-0.5V to +7.0V DC				
	Storage temperature	-55°C to +100°C							
Input current (max.mA) (Pin#1 = Open or V <sub>IH</sub> ) No load	V <sub>DD</sub>	Frequency							
		1.0M+	20M+	35M+	45M+	80M+	100M+	110M+	155M+
+1.8V		1.5	2.0	2.5	7.5	15	25	35	45
+2.5V		2.0	2.5	3.0	9.5	20	30	40	70
+3.3V		2.5	3.5	8.5	14	30	40	50	90
+5.0V		15	20	30	52	n.a.	n.a.	n.a.	n.a.
Stand-by current*3		10 µA max. (Pin #1 = V <sub>IL</sub> ) ... -40°C to +85°C							
Output (-40°C to +85°C)	Symmetry	45% to 55% at 1/2 V <sub>DD</sub> level 40% to 60% at 1/2 V <sub>DD</sub> level (V <sub>DD</sub> = +1.8V / F = 135.000 MHz to 165.000 MHz)							
	Rise and fall times	5 ns max. (10% V <sub>DD</sub> to 90% V <sub>DD</sub> level)							
	"0" Level	V <sub>OL</sub> : 10% V <sub>DD</sub> max.							
	"1" Level	V <sub>OH</sub> : 90% V <sub>DD</sub> min.							
Load		15 pF max. (CMOS, V <sub>DD</sub> = +5.0V / 30 pF max.)							
Disable delay time		200 ns max.							
Enable delay time		10 ms max.							
Start-up time		10 ms max.							
Aging		±5 ppm max. at +25°C ±3°C for first year							
Reflow condition		+250°C ±10°C for 10 seconds +170°C ±10°C for 1 to 2 minutes (preheating)							

(\*1) Formerly 99SMOM

(\*2) Final part number to be assigned with package type, input voltage, frequency stability, operating temperature and frequency.  
e.g. 99SMO(2.5VC) 20.000MHz

(\*3) Internal crystal oscillation to be halted (Pin#1 = V<sub>IL</sub>)

PACKAGE DATA

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

TAPE SPECIFICATIONS

