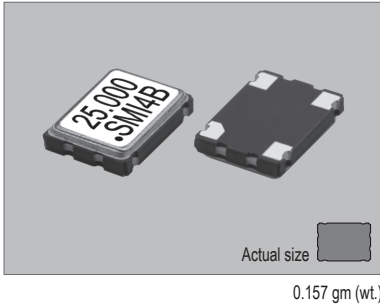
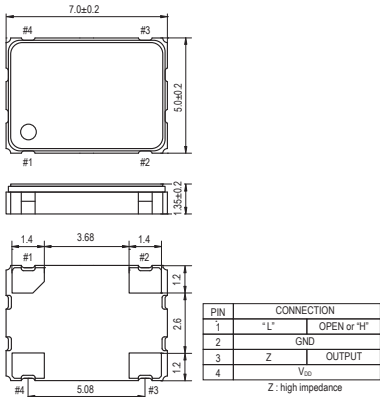


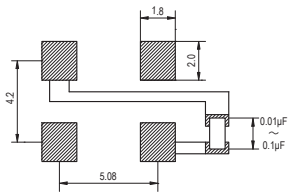
97SMO



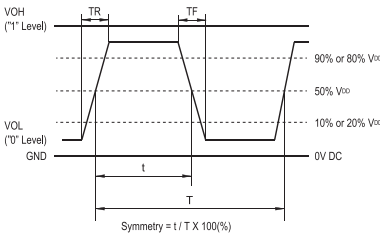
97SMO



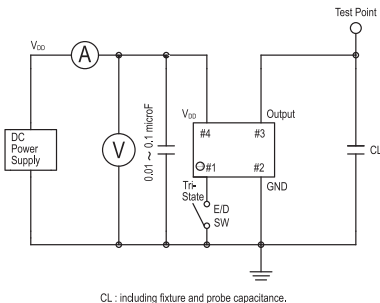
SOLDERING PATTERN



OUTPUT WAVEFORM



TEST CIRCUIT



STANDARD SPECIFICATIONS

- CMOS OUTPUT
- WIDE FREQUENCY RANGE
- PACKAGE SIZE 7.0x5.0 mm

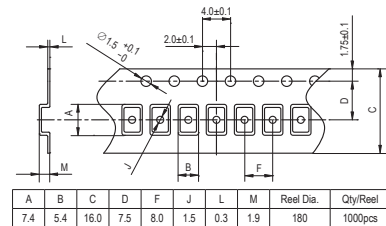
Item		Specifications								
General part number		97SMO*1*2								
Frequency range		1.600 MHz to 165.000 MHz	1.600 MHz to 220.000 MHz	1.600 MHz to 220.000 MHz	1.000 MHz to 60.000 MHz					
Frequency stability (over all conditions)		97SMO(A) : ±100 ppm over -20°C to +70°C 97SMO(B) : ±50 ppm over -20°C to +70°C 97SMO(C) : ±30 ppm over -20°C to +70°C 97SMO(D) : ±25 ppm over -20°C to +70°C 97SMO(E) : ±20 ppm over -20°C to +70°C 97SMO(AW) : ±100 ppm over -40°C to +85°C 97SMO(BW) : ±50 ppm over -40°C to +85°C 97SMO(CW) : ±30 ppm over -40°C to +85°C 97SMO(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)								
	Supply voltage (V _{DD})	+1.8V DC ±5%	+2.5V DC ±5%	+3.3V DC ±5%	+5.0V DC ±10%					
	Stand-by control voltage (Pin#1)	V _{HI} : 70% V _{DD} min. V _{LI} : 30% V _{DD} 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 _{HI}) No load	V _{DD}	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 _{LI}) ... -40°C to +85°C								
Output (-40°C to +85°C)	Symmetry	45% to 55% at 1/2 V _{DD} level 40% to 60% at 1/2 V _{DD} level (V _{DD} = +1.8V / F = 135.000 MHz to 165.000 MHz)								
	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, V _{DD} = +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 +250°C ±10°C for 10 seconds +170°C ±10°C for 1 to 2 minutes (preheating)								
Reflow condition										

(*1) Formerly 97SMO(K)
 (*2) Final part number to be assigned with package type, input voltage, frequency stability, operating temperature and frequency. e.g. 97SMO(3.3VCW) 16.000MHz
 (*3) Internal crystal oscillation to be halted (Pin#1 = V_{LI})

PACKAGE DATA

Item	Package	97SMO
Lid		Metal
Base		Ceramic
Sealing		Seam
Terminal		Tungsten (metalized)
Terminal plating		Gold / Nickel (surface) / (under)
RoHS		Compliant (Pb-free)

TAPE SPECIFICATIONS



XTAL

CLK OSC

VCXO

TCXO

OCXO

MCF