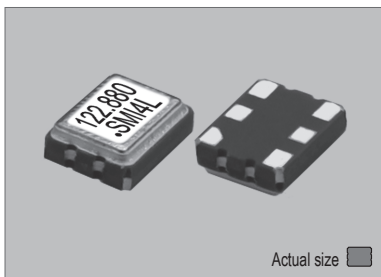


### 32SMO-LVP & 99SMO-LVP (+2.5V or +3.3V FIXED LVPECL MODELS) 3.2x2.5 mm 5.0x3.2 mm

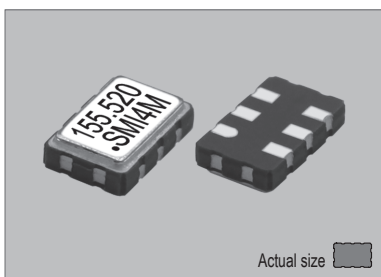
STANDARD SMD CLOCK OSCILLATORS

#### 32SMO-LVP



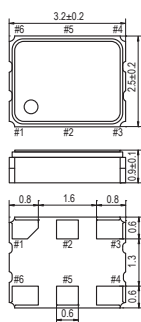
Actual size  
0.024 gm (wt.)

#### 99SMO-LVP



Actual size  
0.051 gm (wt.)

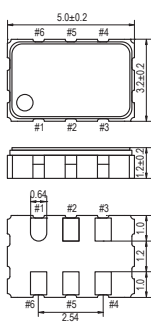
#### 32SMO-LVP



PIN	CONNECTION
1	"L" OPEN or "H"
2	N.C.
3	GND
4	Z OUTPUT
5	Z C-OUTPUT
6	V <sub>DD</sub>

Z: high impedance

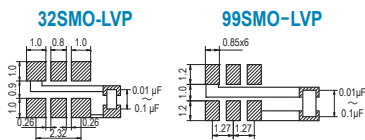
#### 99SMO-LVP



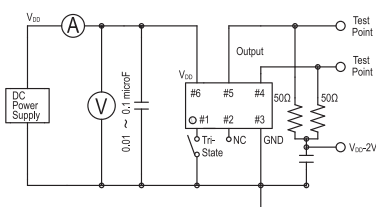
PIN	CONNECTION
1	"L" OPEN or "H"
2	N.C.
3	GND
4	Z OUTPUT
5	Z C-OUTPUT
6	V <sub>DD</sub>

Z: high impedance

#### SOLDERING PATTERN



#### TEST CIRCUIT



## STANDARD SPECIFICATIONS

● LVPECL OUTPUT  
● PACKAGE SIZE 3.2x2.5 & 5.0x3.2 mm

Item	Specifications	
General part number	32SMO-LVP*1	99SMO-LVP*1
Frequency range	5.000 MHz to 175.000 MHz	5.000 MHz to 250.000 MHz
Frequency stability (over all conditions)	32SMO-LVP(A) & 99SMO-LVP(A) : ±100 ppm over -20°C to +70°C	
	32SMO-LVP(B) & 99SMO-LVP(B) : ±50 ppm over -20°C to +70°C	
	32SMO-LVP(C) & 99SMO-LVP(C) : ±30 ppm over -20°C to +70°C	
	32SMO-LVP(D) & 99SMO-LVP(D) : ±25 ppm over -20°C to +70°C	
	32SMO-LVP(E) & 99SMO-LVP(E) : ±20 ppm over -20°C to +70°C	
	32SMO-LVP(AW) & 99SMO-LVP(AW) : ±100 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 <sub>DD</sub> )	+2.5V DC ±5%      +3.3V DC ±5%
	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.*2
Absolute Max. Ratings	Supply voltage	-0.3V to +4.0V DC
	Storage temperature	-50°C to +125°C
Input current (Pin#1 = Open or V <sub>IH</sub> )	70 mA max.	
Stand-by current*2 (Pin#1 = V <sub>IL</sub> )	15 µA max.	
Output (-40°C to +85°C)	Symmetry	45% to 55% at crossing point
	Rise and fall times (20% to 80% of amplitude)	0.5 ns max. (0.25 ns, Typical)
	"0" Level	V <sub>OL</sub> : V <sub>DD</sub> -1.81V to V <sub>DD</sub> -1.62V
	"1" Level	V <sub>OH</sub> : V <sub>DD</sub> -1.025V to V <sub>DD</sub> -0.88V
Load	50 Ω into V <sub>DD</sub> -2V	
Start-up time	10 ms max.	
SSB phase noise (at V <sub>DD</sub> = +3.3V & 156.250 MHz)	-145 dBc / Hz, Typical at 100 kHz offset	
RMS jitter (12 kHz to 20.000 MHz band)	0.5 ps max.	
Disable delay time	200 ns max.	
Enable delay time	4 ms max.	
Differential output voltage	0.4Vp-p min.	
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)	

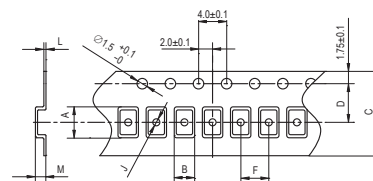
(\*1) Final part number to be assigned with package type, input voltage, frequency stability, operating temperature and frequency. e.g. 99SMO-LVP(3.3VDD) 156.250MHz

(\*2) Internal crystal oscillation to be halted (Pin#1 = V<sub>IL</sub>)

## PACKAGE DATA

Item	Package	32SMO-LVP & 99SMO-LVP
Lid		Metal
Base		Ceramic
Sealing		Seam
Terminal		Tungsten (metallized)
Terminal plating		Gold / Nickel (surface) / (under)
RoHS		Compliant (Pb-free)

## TAPE SPECIFICATIONS



#### 32SMO-HCS

A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
3.5	2.8	8.0	3.5	4.0	1.0	0.25	1.4	180	1000pcs 2000pcs

#### 99SMO-HCS

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	180	1000pcs

## OUTPUT WAVEFORM

