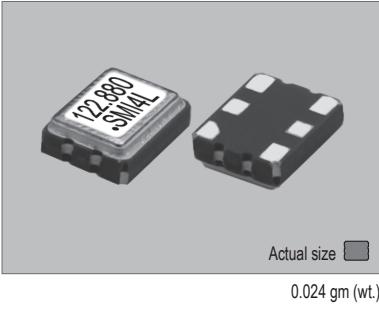


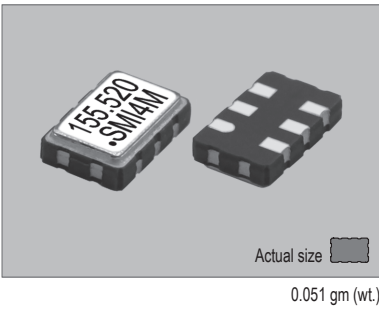
32SMO-LVP & 99SMO-LVP (+2.5V or +3.3V FIXED LVPECL MODELS) 3.2x2.5 mm 5.0x3.2 mm

STANDARD SMD CLOCK OSCILLATORS

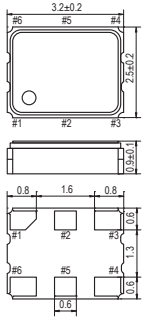
32SMO-LVP



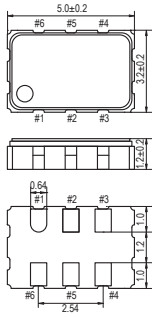
99SMO-LVP



32SMO-LVP



99SMO-LVP



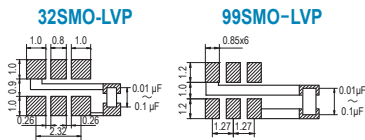
| PIN | CONNECTION |
|-----|-----------------|
| 1 | "L" OPEN or "H" |
| 2 | N.C. |
| 3 | GND |
| 4 | Z OUTPUT |
| 5 | Z C-OUTPUT |
| 6 | V _{DD} |

Z: high impedance

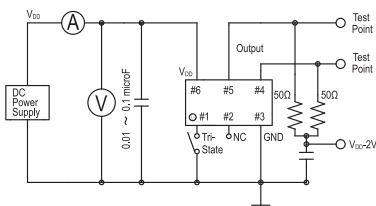
| PIN | CONNECTION |
|-----|-----------------|
| 1 | "L" OPEN or "H" |
| 2 | N.C. |
| 3 | GND |
| 4 | Z OUTPUT |
| 5 | Z C-OUTPUT |
| 6 | V _{DD} |

Z: high impedance

SOLDERING PATTERN



TEST CIRCUIT



STANDARD SPECIFICATIONS

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

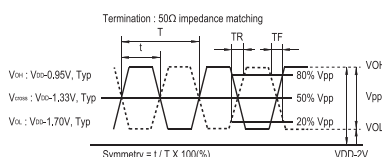
| Item | | Specifications | |
|--|--|---|--------------------------|
| General part number | | 32SMO-LVP*1 | 99SMO-LVP*1 |
| Frequency range | | 5.000 MHz to 175.000 MHz | 5.000 MHz to 250.000 MHz |
| Frequency stability (over all conditions) | | 32SMO-LVP(A) & 99SMO-LVP(A) : ±100 ppm over -20°C to +70°C 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 32SMO-LVP(BW) & 99SMO-LVP(BW) : ±50 ppm over -40°C to +85°C 32SMO-LVP(CW) & 99SMO-LVP(CW) : ±30 ppm over -40°C to +85°C 32SMO-LVP(DW) & 99SMO-LVP(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}) | +2.5V DC ±5% | +3.3V DC ±5% |
| Absolute Max. Ratings | Stand-by control voltage (Pin#1) | V _{IH} : 70% V _{DD} min. V _{IL} : 30% V _{DD} max.*2 | |
| | Supply voltage | -0.3V to +4.0V DC | |
| Input current (Pin#1 = Open or V _{IH}) | Storage temperature | -50°C to +125°C | |
| | Stand-by current*2 (Pin#1 = V _{IL}) | 70 mA max. 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 _{OL} : V _{DD} - 1.81V to V _{DD} - 1.62V | |
| | "1" Level | V _{OH} : V _{DD} - 1.025V to V _{DD} - 0.88V | |
| Start-up time | Load | 50 Ω into V _{DD} -2V | |
| | SSB phase noise (at V _{DD} = +3.3V & 156.250 MHz) | 10 ms max. -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 | | 0.4V _{p-p} min. | |
| 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) Final part number to be assigned with package type, input voltage, frequency stability, operating temperature and frequency. e.g. 99SMO-LVP(3.3VDV) 156.250MHz
(*2) Internal crystal oscillation to be halted (Pin#1 = V_{IL})

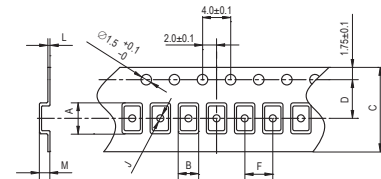
PACKAGE DATA

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

OUTPUT WAVEFORM



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 |