

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

STANDARD SMD CLOCK OSCILLATORS

XTAL

CLK OSC

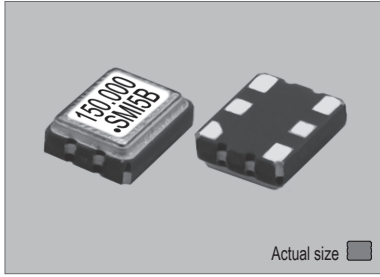
VCXO

TCXO

OCXO

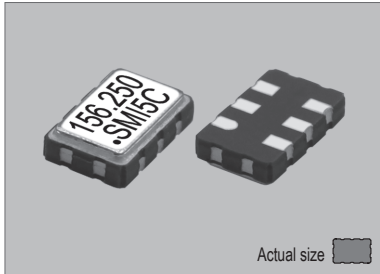
MCF

32SMO-LVD



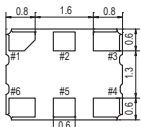
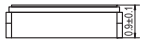
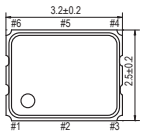
Actual size
0.025 gm (wt.)

99SMO-LVD



Actual size
0.051 gm (wt.)

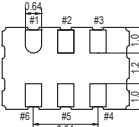
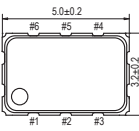
32SMO-LVD



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

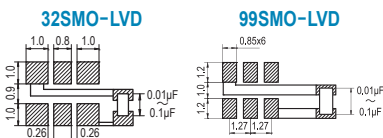
99SMO-LVD



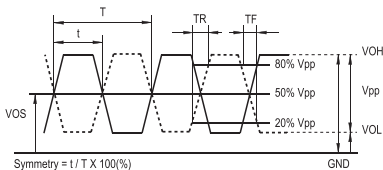
PIN	CONNECTION
1	"L" OPEN or "H"
2	N.C.
3	GND
4	Z OUTPUT
5	Z C-OUTPUT
6	V _{DD}

Z: high impedance

SOLDERING PATTERN



OUTPUT WAVEFORM



STANDARD SPECIFICATIONS

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

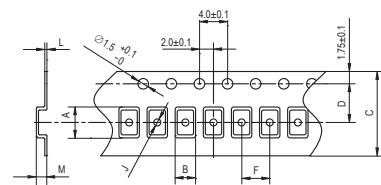
Item		Specifications	
General part number		32SMO-LVD* ¹	99SMO-LVD* ¹
Frequency range		5.000 MHz to 175.000 MHz	5.000 MHz to 250.000 MHz
Frequency stability (over all conditions)		32SMO-LVD(A) & 99SMO-LVD(A) : ±100 ppm over -20°C to +70°C 32SMO-LVD(B) & 99SMO-LVD(B) : ±50 ppm over -20°C to +70°C 32SMO-LVD(C) & 99SMO-LVD(C) : ±30 ppm over -20°C to +70°C 32SMO-LVD(D) & 99SMO-LVD(D) : ±25 ppm over -20°C to +70°C 32SMO-LVD(E) & 99SMO-LVD(E) : ±20 ppm over -20°C to +70°C 32SMO-LVD(AW) & 99SMO-LVD(AW) : ±100 ppm over -40°C to +85°C 32SMO-LVD(BW) & 99SMO-LVD(BW) : ±50 ppm over -40°C to +85°C 32SMO-LVD(CW) & 99SMO-LVD(CW) : ±30 ppm over -40°C to +85°C 32SMO-LVD(DW) & 99SMO-LVD(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% or +3.3V DC ±5%	
	Stand-by control voltage (Pin#1)	V _{IH} : 70% V _{DD} min. V _{IL} : 30% V _{DD} max.* ²	
Absolute Max. Ratings	Supply voltage	-0.5V to +4.0V DC	
	Storage temperature	-50°C to +125°C	
Input current (Pin#1 = Open or V _{IH})		40 mA max. (32SMO-LVD) 75 mA max. (99SMO-LVD)	
Stand-by current* ² (Pin#1 = V _{IL})		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)	0.4 ns max.	
	"0" Level	V _{OL} : +1.1V, Typical (+0.9V min.)	
	"1" Level	V _{OH} : +1.43V, Typical (+1.6V max.)	
	Load	100 Ω (OUT-C OUT)	
Start-up time		10 ms max.	
SSB phase noise (at V _{DD} = +3.3V & 133.000 MHz)		-153 dBc / Hz, Typical at 100 kHz offset	
RMS jitter (12 kHz to 20.000 MHz band) (at V _{DD} = +3.3V & 133.000 MHz)		500 fs max. (125 fs, Typical)	
Disable delay time		200 ns max.	
Enable delay time		4 ms max.	
Differential output voltage		+0.33Vp-p Typical (+0.25Vp-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-LVD(2.5VC) 164.355MHz
(*²) Internal crystal oscillation to be halted (Pin#1 = V_{IL})

PACKAGE DATA

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

TAPE SPECIFICATIONS



32SMO-LVD								Reel Dia.	Qty/Reel
A	B	C	D	F	J	L	M	180	1000pcs 2000pcs
3.5	2.8	8.0	3.5	4.0	1.0	0.25	1.4		

99SMO-LVD								Reel Dia.	Qty/Reel
A	B	C	D	F	J	L	M	180	1000pcs
5.4	3.5	12.0	5.5	8.0	1.5	0.3	1.4		

TEST CIRCUIT

