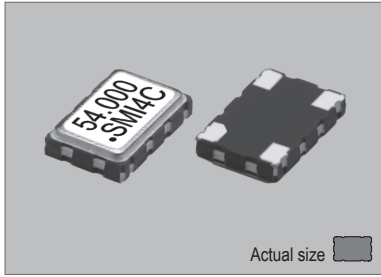


Voltage Controlled Crystal Oscillators

VCXO WIDE FREQ. RANGE 1 to 170 MHz 5.0x3.2 mm CMOS

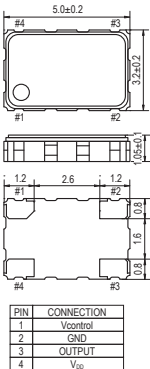
99SMOVD (+1.8V, +2.5V, +2.8V or +3.3V FIXED MODELS) 5.0x3.2 mm STANDARD SMD VCXO

99SMOVD

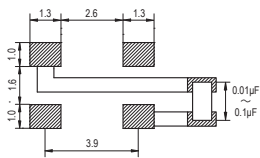


Actual size 0.052 gm (wt.)

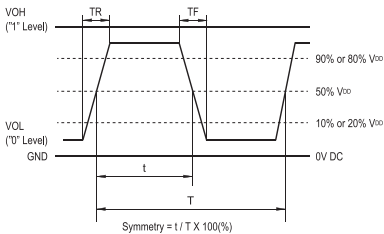
99SMOVD



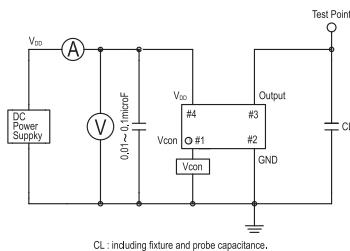
SOLDERING PATTERN



OUTPUT WAVEFORM



TEST CIRCUIT



STANDARD SPECIFICATIONS

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

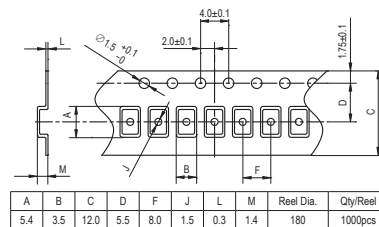
Item	Specifications	
General part number	99SMOVD*1	
Frequency range	1.000 MHz to 55.000 MHz	55.000 MHz to 170.000 MHz
Frequency stability (over all conditions)	99SMOVD(B) : ±50 ppm over -20°C to +70°C 99SMOVD(C) : ±30 ppm over -20°C to +70°C 99SMOVD(D) : ±25 ppm over -20°C to +70°C 99SMOVD(E) : ±20 ppm over -20°C to +70°C 99SMOVD(BW) : ±50 ppm over -40°C to +85°C 99SMOVD(CW) : ±30 ppm over -40°C to +85°C 99SMOVD(DW) : ±25 ppm over -40°C to +85°C Vcon = 1/2 VDD	
Frequency pulling range	VDD = +1.8V Vcon = +0.9V ±0.9V ±110 ppm min.	n.a.
	VDD = +2.5V Vcon = +1.25V ±1.25V ±110 ppm min.	n.a.
	VDD = +2.8V Vcon = +1.4V ±1.4V ±110 ppm min.	n.a.
	VDD = +3.3V Vcon = +1.65V ±1.65V ±110 ppm min.	±90 ppm min.
Frequency change vs. input voltage	±2 ppm max. (VDD ±5%)	
Operating Conditions	Operating temperature	-20°C to +70°C (Standard) -40°C to +85°C (W = Option)
	Supply voltage (VDD)	+1.8V, +2.5V, +2.8V, +3.3V DC ±10% +3.3V DC ±10%
	Control voltage (Vcon = Pin#1)	1/2 VDD ± 1/2 VDD DC
Absolute Max. Ratings	Supply voltage	-0.3V to +5.0V DC
	Vcontrol voltage	-0.3V to VDD +0.5V DC
	Storage temperature	-40°C to +100°C
Input current (no load)	2 mA max. (VDD = +1.8V)	n.a.
	3 mA max. (VDD = +2.5V & +2.8V)	n.a.
	5 mA max. (VDD = +3.3V)	20 mA max. (VDD = +3.3V)
Output (-40°C to +85°C)	Symmetry	45% to 55% at 1/2 VDD level
	Rise and fall times (20% VDD to 80% VDD level)	6 ns max. (VDD = +1.8V) n.a. 4 ns max. (VDD = +2.5V, +2.8V & +3.3V) 4 ns max. (VDD = +3.3V)
	"0" Level	VOL : 20% VDD max.
	"1" Level	VOH : 80% VDD min.
	Load	15 pF max. (CMOS)
Start-up time	10 ms max.	
Frequency linearity	10 % max.	
Frequency slope	Positive	
Modulation bandwidth (-3 dB)	20 kHz min.	
SSB phase noise	-131 dBc / Hz, Typical at 1 kHz offset (at 40.000 MHz & VDD = +3.3V) -130 dBc / Hz, Typical at 1 kHz offset (at 122.880 MHz & VDD = +3.3V)	
Vcon input impedance (Vcon-GND)	10 MΩ 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. 99SMOVD(3.3VD) 27.000 MHz

PACKAGE DATA

Item	Package	99SMOVD
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