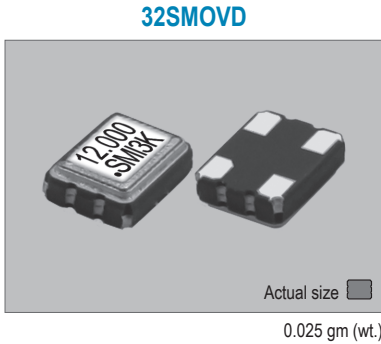


Voltage Controlled Crystal Oscillators

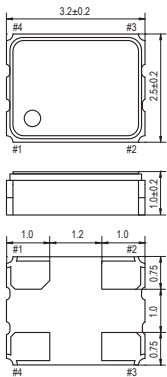
VCXO WIDE FREQ. RANGE 1.3 to 170 MHz $V_{DD} = +1.8V$ to $+3.3V$ 3.2x2.5 mm CMOS

32SMOVD (+1.8V, +2.5V or +3.3V FIXED MODELS) 3.2x2.5 mm STANDARD SMD VCXO



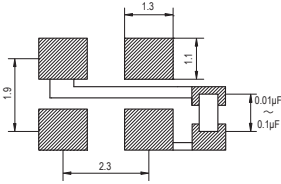
Actual size 0.025 gm (wt.)

32SMOVD

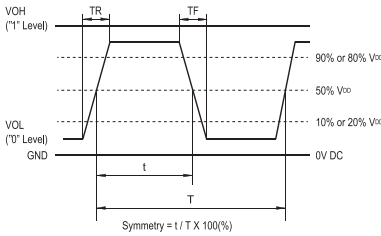


PIN	CONNECTION
1	Vcontrol
2	GND
3	OUTPUT
4	VDD

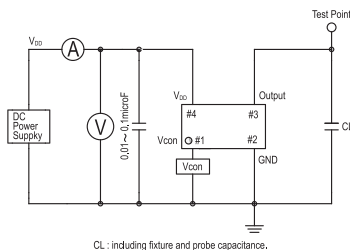
SOLDERING PATTERN



OUTPUT WAVEFORM



TEST CIRCUIT



CL : including fixture and probe capacitance.

STANDARD SPECIFICATIONS

- CMOS OUTPUT
- WIDE FREQUENCY RANGE
- PACKAGE SIZE 3.2x2.5 mm

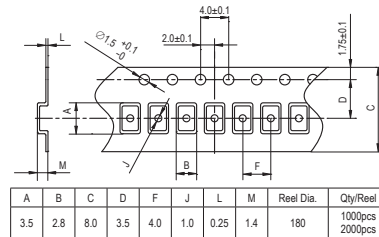
Item	Specifications		
General part number	32SMOVD*1		
Frequency range	1.300 MHz to 55.000 MHz	55.000 MHz to 170.000 MHz	
Frequency stability (over all conditions)	32SMOVD(B) : ±50 ppm over -20°C to +70°C 32SMOVD(C) : ±30 ppm over -20°C to +70°C 32SMOVD(D) : ±25 ppm over -20°C to +70°C 32SMOVD(E) : ±20 ppm over -20°C to +70°C 32SMOVD(BW) : ±50 ppm over -40°C to +85°C 32SMOVD(CW) : ±30 ppm over -40°C to +85°C 32SMOVD(DW) : ±25 ppm over -40°C to +85°C Vcon = 1/2 VDD		
Frequency pulling range	$V_{DD} = +1.8V$ $V_{con} = +0.9V \pm 0.9V$ $V_{DD} = +2.5V$ $V_{con} = +1.25V \pm 1.25V$ $V_{DD} = +3.3V$ $V_{con} = +1.65V \pm 1.65V$	±100 ppm min. ±110 ppm min. ±130 ppm min.	n.a. n.a. ±90 ppm min.
Frequency change vs. input voltage	±2 ppm max. ($V_{DD} \pm 5\%$)		
Operating Conditions	Operating temperature	-20°C to +70°C (Standard) -40°C to +85°C (W = Option)	
	Supply voltage (V_{DD})	+1.8V, +2.5V DC ±5% or +3.3V DC ±10%	+3.3V DC ±10%
	Control voltage ($V_{con} = \text{Pin\#1}$)	1/2 $V_{DD} \pm 1/2 V_{DD}$ DC	
Absolute Max. Ratings	Supply voltage	-0.3V to +5.0V DC	
	Vcontrol voltage	-0.3V to $V_{DD} + 0.5V$ DC	
	Storage temperature	-40°C to +100°C	
Input current (no load)	2 mA max. ($V_{DD} = +1.8V$)	n.a.	
	3 mA max. ($V_{DD} = +2.5V$)	n.a.	
	5 mA max. ($V_{DD} = +3.3V$)	20 mA max. ($V_{DD} = +3.3V$)	
Output (-40°C to +85°C)	Symmetry	45% to 55% at 1/2 V_{DD} level	
	Rise and fall times (20% V_{DD} to 80% V_{DD} level)	6 ns max. ($V_{DD} = +1.8V$)	n.a.
		5 ns max. ($V_{DD} = +2.5V$ & $+3.3V$)	4 ns max. ($V_{DD} = +3.3V$)
	"0" Level	$V_{OL} : 20\% V_{DD}$ max.	
	"1" Level	$V_{OH} : 80\% V_{DD}$ 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	-130 dBc / Hz, Typical at 1 kHz offset (at 27.000 MHz & $V_{DD} = +3.3V$) -125 dBc / Hz, Typical at 1 kHz offset (at 122.880 MHz & $V_{DD} = +3.3V$)		
Vcon input impedance ($V_{con} - GND$)	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. 32SMOVD(1.8VC) 54.000 MHz

PACKAGE DATA

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

TAPE SPECIFICATIONS



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

XTAL

CLK OSC

VCXO

TCXO

OCXO

MCF