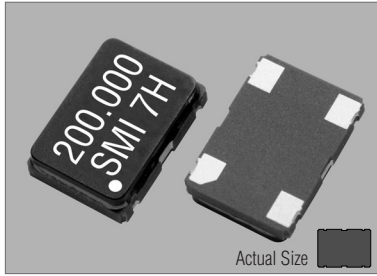


Crystal Clock Oscillators

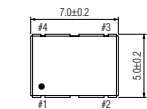
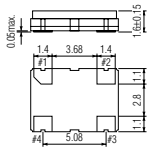
91SMOP (+3.0V, +3.3V or +5V PROGRAMMABLE MODELS)

STANDARD SMD CLOCK OSCILLATORS

91SMOP



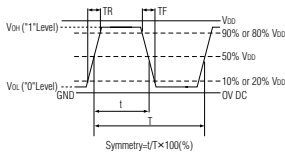
91SMOP



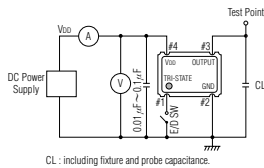
PIN	CONNECTION
1	"L" OPEN or "H"
2	GND
3	Z OUTPUT
4	VDD

Z: high impedance

OUTPUT WAVEFORM

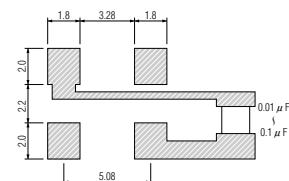


TEST CIRCUIT

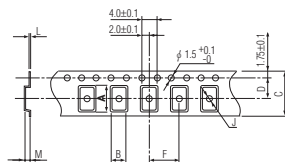


CL: including fixture and probe capacitance.

SOLDERING PATTERN



TAPE SPECIFICATIONS



A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
7.4	5.4	16.0	7.5	8.0	1.5	0.3	1.9	180	1000pcs

STANDARD SPECIFICATIONS

using PLL technology

Item	Specifications			
Generic part number	91SMOP ^{*1}			
Frequency range	1.000 MHz to 200.000 MHz		1.000 MHz to 80.000 MHz	
Frequency stability (-20°C to +75°C) over all conditions	91SMOP(A) : ±100 ppm 91SMOP(B) : ±50 ppm		91SMOP(J) : ±100 ppm 91SMOP(K) : ±50 ppm	
Operating Conditions				
Operating temperature	-20°C to +75°C			
Input voltage (VDD)	+3.0V ±10%, +3.3V ±10% or +5V ±10%			
Tri-state control (Option1)	+3.0V & +3.3V models	SMI P/N	+3.0V & +3.3V models	SMI P/N
OE control voltage	V _{IH} : +2.2 VDD min.	91SMOP(3VA)OE	V _{IH} : +2.2 VDD min.	91SMOP(3VJ)OE
(Pin#1)/(Pin#3)	V _{IL} : +0.5 VDD max.	91SMOP(3VB)OE	V _{IL} : +0.5 VDD max.	91SMOP(3VK)OE
OPEN→Output	+5V models	SMI P/N	+5V models	SMI P/N
V _{IH} →Output	V _{IH} : +4.0 VDD min.	91SMOP(5VA)OE	V _{IH} : +4.0 VDD min.	91SMOP(5VJ)OE
V _{IL} →High Impedance ^{*2}	V _{IL} : +0.5 VDD max.	91SMOP(5VB)OE	V _{IL} : +0.5 VDD max.	91SMOP(5VK)OE
(※2) Internal crystal oscillation to continue.	+3.0V & +3.3V models	SMI P/N	+3.0V & +3.3V models	SMI P/N
Tri-state control (Option2)	+3.0V & +3.3V models	SMI P/N	+3.0V & +3.3V models	SMI P/N
Stand-by (SB) control voltage	V _{IH} : +2.2 VDD min.	91SMOP(3VA)SB	V _{IH} : +2.2 VDD min.	91SMOP(3VJ)SB
(Pin#1)/(Pin#3)	V _{IL} : +0.5 VDD max.	91SMOP(3VB)SB	V _{IL} : +0.5 VDD max.	91SMOP(3VK)SB
OPEN→Output	+5V models	SMI P/N	+5V models	SMI P/N
V _{IH} →Output	V _{IH} : +4.0 VDD min.	91SMOP(5VA)SB	V _{IH} : +4.0 VDD min.	91SMOP(5VJ)SB
V _{IL} →High Impedance ^{*3}	V _{IL} : +0.5 VDD max.	91SMOP(5VB)SB	V _{IL} : +0.5 VDD max.	91SMOP(5VK)SB
(※3) Internal crystal oscillation to stop.				
Absolute Max. Ratings				
Supply voltage	-0.5V to +7.0V DC			
Storage temperature	-55°C to +125°C			
Input current	+3.0V ±10%	30 mA max.	20 mA max.	
(Pin#1=Open or V _{IH})	+3.0V ±10%	30 mA max.	20 mA max.	
	+5V ±10%	50 mA max.	30 mA max.	
Stand-by current ^{*3} (option)	50 μA max. (VDD = +3.0V & Pin #1=V _{IL})			
Output (-20°C to +75°C)				
Symmetry	45% to 55% at 50%VDD level (1.00MHz to 80.00MHz) 40% to 60% at 50%VDD level (80.00MHz to 200.00MHz)			
Rise and fall times	5 ns max. (20%VDD to 80%VDD level)			
"0" level	VOL : 10%VDD max. (1.00MHz to 130.00MHz) VOL : 20%VDD max. (130.00MHz to 200.00MHz)			
"1" level	VOH : 90%VDD min. (1.00MHz to 130.00MHz) VOH : 80%VDD min. (130.00MHz to 200.00MHz)			
Load	15 pF max. (CMOS)		50 pF max. (CMOS)	
Disable delay time	100 ns max.			
Enable delay time	150 ns max.(OE models) 10 ms max.(Stand-by models)			
Startup time	10 ms max.			
Jitter (pSp-p)	100, 200, 250 max. (depending on frequencies)			
Aging (non operating)	±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)			

PACKAGE DATA

Item	Package	91SMOP
Lid		Ceramic
Base		Ceramic
Sealing		Glass
Terminal		Tungsten (metalized)
Terminal plating		Gold / Nickel (surface) / (under)
RoHS		Compliant

(※1) Final exact part number to be determined with frequency, frequency stability, operating temperature and input voltage. e.g. 91SMOP(3.3VA)SB 200.000 MHz

(※2) Internal crystal oscillation to continue(Pin #1=V_{IL}).

(※3) Internal crystal oscillation to be halted(Pin #1=V_{IL}).