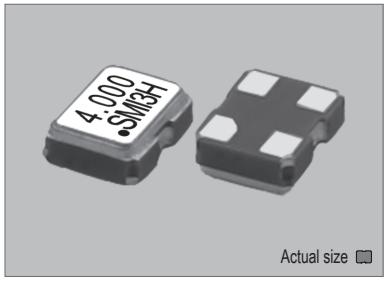
21SMO (+1.8V, +2.5V, +3.0V or +3.3V FIXED MODELS) 2.0x1.6 mm

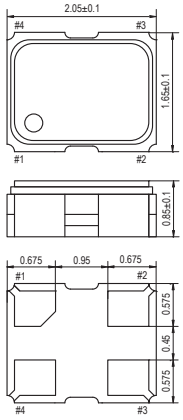
STANDARD SMD CLOCK OSCILLATORS

21SMO



0.008 gm (wt.)

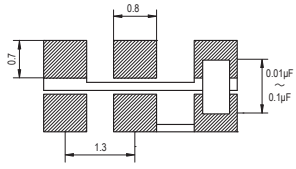
21SMO



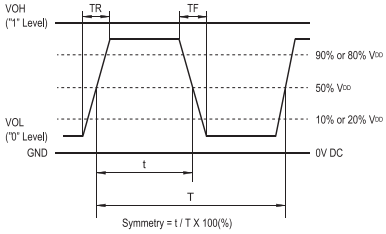
PIN	CONNECTION	
1	"L"	OPEN or "H"
2	GND	
3	Z	OUTPUT
4	V_{DD}	

Z : high impedance

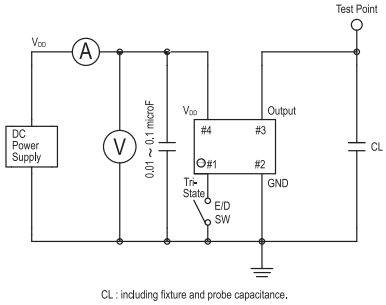
SOLDERING PATTERN



OUTPUT WAVEFORM



TEST CIRCUIT



CL : including fixture and probe capacitance.

STANDARD SPECIFICATIONS

● CMOS OUTPUT
● PACKAGE SIZE 2.0x1.6 mm

Item		Specifications
General part number		21SMO*[1]
Frequency range		1.500 MHz to 80.000 MHz
Frequency stability (over all conditions)		21SMO(A) : ±100 ppm over −10°C to +70°C 21SMO(B) : ±50 ppm over −10°C to +70°C 21SMO(C) : ±30 ppm over −10°C to +70°C 21SMO(D) : ±25 ppm over −10°C to +70°C 21SMO(E) : ±20 ppm over −10°C to +70°C 21SMO(AW) : ±100 ppm over −40°C to +85°C 21SMO(BW) : ±50 ppm over −40°C to +85°C
Operating Conditions	Operating temperature	−10°C to +70°C (Standard) −20°C to +70°C (SW = Standard) −40°C to +85°C (W = Option) −40°C to +105°C (WW = Option)
	Supply voltage (V_{DD})	+1.8V, +2.5V, +3.0V 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	−0.3V to +4.0V DC
	Storage temperature	−55°C to +100°C
Input current (max. mA) (Pin#1 = Open or V_{IH}) No load		See table below
Stand−by current*[2]		10 µA max. (Pin#1 = V_{IL})
Output (−40°C to +85°C)	Symmetry	45% to 55% at 1/2 V_{DD} level
	Rise and fall times	6 ns max. (10% V_{DD} to 90% V_{DD} level)
	"0" Level	V_{OL} : 10% V_{DD} max.
	"1" Level	V_{OH} : 90% V_{DD} min.
	Load	15 pF max. (CMOS)
Disable delay time		150 ns max.
Enable delay time		10 ms max.
Start−up time		10 ms max.
SSB phase noise (at V_{DD} = +3.3V & 40.000 MHz)		-143 dBc/Hz, Typical at 1 kHz offset -157 dBc/Hz, Typical at 100 kHz offset
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)

Input current (max. mA) (Pin#1 = Open or V_{IH}) No load

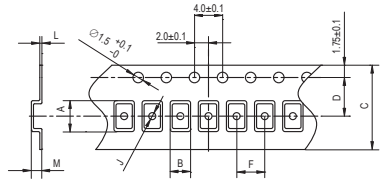
V_{DD}	Frequency							
	1.5M+	10M+	20M+	30M+	40M+	50M+	60M+	70M+
+1.8V	1.8	2.1	2.5	3.5	4.0	4.5	6.0	6.5
+2.5V	2.5	3.0	3.5	4.5	5.0	5.5	6.5	7.0
+3.0V	3.0	3.5	4.0	5.0	5.5	6.0	7.5	8.5
+3.3V	3.5	4.0	4.5	5.5	6.0	6.5	8.0	9.0

(*[1]) Final part number to be assigned with package type, input voltage, frequency stability, operating temperature and frequency.
e.g. 21SMO(2.5VC) 10.000MHz
(*[2]) Internal crystal oscillation to be halted (Pin#1 = V_{IL})

PACKAGE DATA

Item \ Package	21SMO
Lid	Metal
Base	Ceramic
Sealing	Seam
Terminal	Tungsten (metalized)
Terminal plating	Gold / Nickel (surface) / (under)
RoHS	Compliant (Pb−free)

TAPE SPECIFICATIONS



A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
2.2	1.8	8.0	3.5	4.0	1.0	0.25	1.0	180	3000pcs 1000pcs