

XTAL

CLK OSC

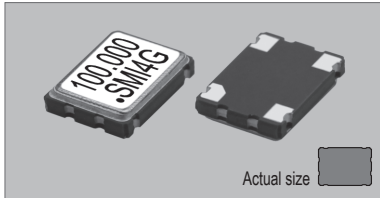
VCXO

TCXO

OCXO

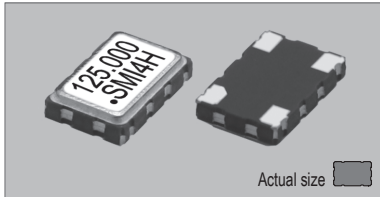
MCF

97SMOHGU



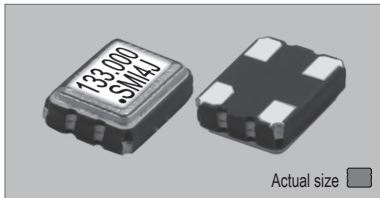
Actual size
0.157 gm (wt.)

99SMOHGU



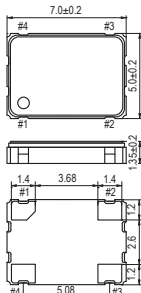
Actual size
0.052 gm (wt.)

32SMOHGU



Actual size
0.025 gm (wt.)

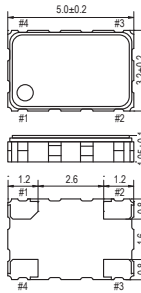
97SMOHGU



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

Z: high impedance

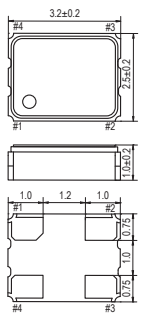
99SMOHGU



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

Z: high impedance

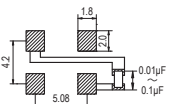
32SMOHGU



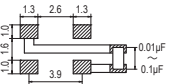
PIN	CONNECTION
1	"L" OPEN or "H"
2	GND
3	Z OUTPUT
4	V _{DD}

Z: high impedance

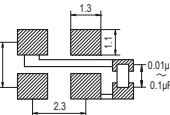
SOLDERING PATTERN 97SMOHGU



99SMOHGU



32SMOHGU



STANDARD SPECIFICATIONS

- HIGH FREQUENCY
- HIGH STABILITY CMOS OUTPUT
- PACKAGE SIZE 7.0x5.0, 5.0x3.2 & 3.2x2.5 mm

Item		Specifications		
General part number*1		97SMOHGU	99SMOHGU	32SMOHGU
Frequency range		55.000 MHz to 160.000 MHz		
Frequency stability*2 (over all conditions)		97 / 99 / 32SMOHGU(F): ±15 ppm over -40°C to +85°C 97 / 99 / 32SMOHGU(G): ±10 ppm over -40°C to +85°C 97 / 99 / 32SMOHGU(H): ±8 ppm over -40°C to +85°C		
Operating Conditions	Operating temperature	-40°C to +85°C (Standard)		
	Supply voltage (V _{DD})	+1.8V, +2.5V, +3.0V or +3.3V DC ±10%		
	Stand-by control voltage (Pin#1)	V _{IH} : 80% V _{DD} min. V _{IL} : 20% V _{DD} max.*3		
Absolute Max. Ratings	Supply voltage	-0.3V to +4.0V DC		
	Storage temperature	-40°C to +85°C		
Input current		30 mA max. (Pin#1 = Open or V _{IH})		
Stand-by current*3		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		200 ns max.		
Enable delay time		4 ms max.		
Start-up time		10 ms max.		
SSB phase noise (at V _{DD} = +3.3V & 80.000 MHz)		-135 dBc / Hz, Typical at 1 kHz offset		
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. 97SMOHGU(3.0VF) 80.000MHz

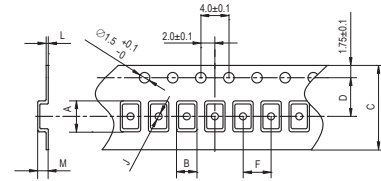
(*2) The frequency stability is inclusive of frequency tolerance (+25°C), temperature stability (-40°C to +85°C), input voltage change, load change, reflow frequency shift and aging (1st year at +25°C).

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

PACKAGE DATA

Item	Package	97 / 99 / 32SMOHGU
Lid		Metal
Base		Ceramic
Sealing		Seam
Terminal		Tungsten (metalized)
Terminal plating		Gold / Nickel (surface) / (under)
RoHS		Compliant (Pb-free)

TAPE SPECIFICATIONS



97SMOHGU

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

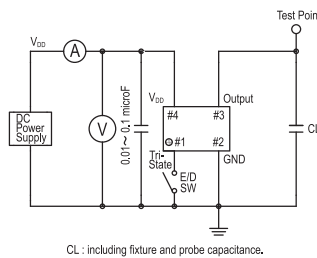
99SMOHGU

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

32SMOHGU

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

TEST CIRCUIT



CL: including fixture and probe capacitance.

OUTPUT WAVEFORM

