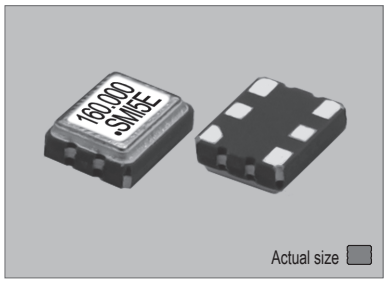
32SMO-HCS & 99SMO-HCS (+2.5V or +3.3V FIXED HCSL MODELS) 3.2x2.5 mm 5.0x3.2 mm

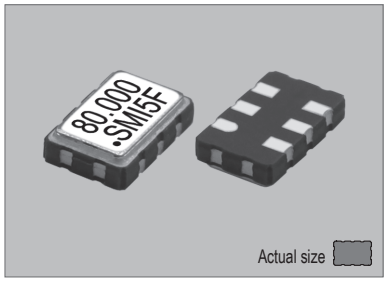
STANDARD SMD CLOCK OSCILLATORS

32SMO-HCS



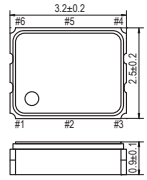
0.025 gm (wt.)

99SMO-HCS



0.051 gm (wt.)

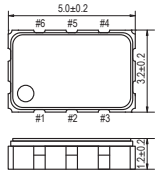
32SMO-HCS



PIN	CONNECTION
1	"L" OPEN or "H"
2	N.C.
3	GND
4	Z OUTPUT
5	Z C-OUTPUT
6	V_{DD}

Z : high impedance

99SMO-HCS

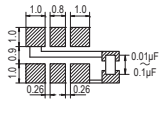


PIN	CONNECTION
1	"L" OPEN or "H"
2	N.C.
3	GND
4	Z OUTPUT
5	Z C-OUTPUT
6	V_{DD}

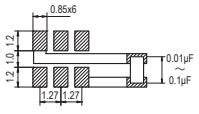
Z : high impedance

SOLDERING PATTERN

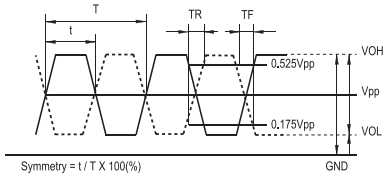
32SMO-HCS



99SMO-HCS



OUTPUT WAVEFOR



STANDARD SPECIFICATIONS

● HCSL OUTPUT
● PACKAGE SIZE 3.2x2.5 & 5.0x3.2 mm

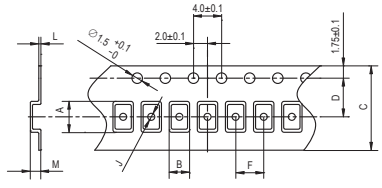
Item		Specifications	
General part number		32SMO-HCS*1	99SMO-HCS*1
Frequency range		13.500 MHz to 175.000 MHz	13.500 MHz to 220.000 MHz
Frequency stability (over all conditions)		32SMO-HCS(A) & 99SMO-HCS(A) : ±100 ppm over -20°C to +70°C 32SMO-HCS(B) & 99SMO-HCS(B) : ±50 ppm over -20°C to +70°C 32SMO-HCS(C) & 99SMO-HCS(C) : ±30 ppm over -20°C to +70°C 32SMO-HCS(D) & 99SMO-HCS(D) : ±25 ppm over -20°C to +70°C 32SMO-HCS(E) & 99SMO-HCS(E) : ±20 ppm over -20°C to +70°C 32SMO-HCS(AW) & 99SMO-HCS(AW) : ±100 ppm over -40°C to +85°C 32SMO-HCS(BW) & 99SMO-HCS(BW) : ±50 ppm over -40°C to +85°C 32SMO-HCS(CW) & 99SMO-HCS(CW) : ±30 ppm over -40°C to +85°C 32SMO-HCS(DW) & 99SMO-HCS(DW) : ±25 ppm over -40°C to +85°C	
Operating Conditions	Operating temperature	-20°C to +70°C (Standard) -40°C to +85°C (W = Option) -40°C to +105°C (WW = Option)	
	Supply voltage (V_{DD})	+2.5V DC ±5%	+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	-50°C to +125°C	
Input current*2 (Pin#1 = Open or V_{IH})		60 mA max.	
Stand-by current (Pin#1 = V_{IL})		15 µA max.	
Output (-40°C to +85°C)	Symmetry	45% to 55% at crossing point	
	Rise and fall times (+0.175V to +0.525V DC level)	0.5 ns max.	
	"0" Level	V_{OL} : -150mV to +150mV	
	"1" Level	V_{OH} : +580mV to +850mV	
	Load	50 Ω	
Start-up time		10 ms max.	
SSB phase noise (at V_{DD} = +3.3V & 155.520 MHz)		-139 dBc / Hz, Typical at 100 kHz offset	
RMS jitter (12 kHz to 20.000 MHz band) (at V_{DD} = +3.3V & 155.520 MHz)		500 fs max. (107 fs, Typical)	
Disable delay time		200 ns max.	
Enable delay time		2 ms max.	
Differential output voltage		+0.4Vp-p 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. 99SMO-HCS(2.5VC) 164.355MHz
(*2) Internal crystal oscillation to be halted (Pin#1 = V_{IL})

PACKAGE DATA

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

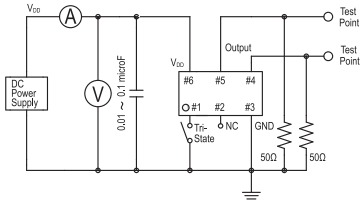
TAPE SPECIFICATIONS



32SMO-HCS

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

99SMO-HCS

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

TEST CIRCUIT