

**327SMO(F) & 327SMO(G)** (+1.8V to +5.0V 32.768 kHz MODELS) 5.0x3.2 mm 7.0x5.0 mm

STANDARD SMD CLOCK OSCILLATORS

XTAL

CLK OSC

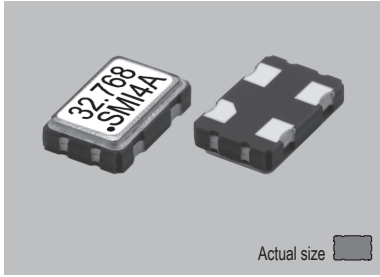
VCXO

TCXO

OCXO

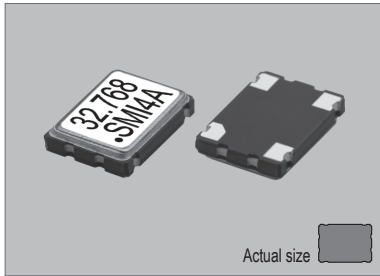
MCF

**327SMO(F)**

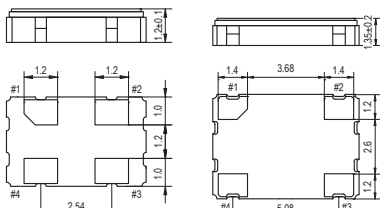
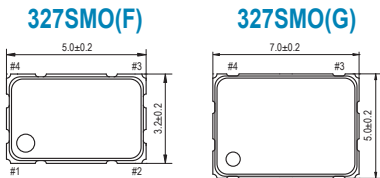


Actual size  
0.0586 gm (wt.)

**327SMO(G)**



Actual size  
0.151 gm (wt.)

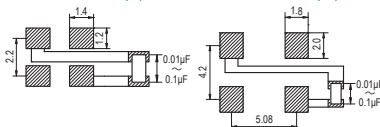


PIN	CONNECTION
1	"L" OPEN or "H"
2	GND
3	Z OUTPUT
4	V <sub>DD</sub>

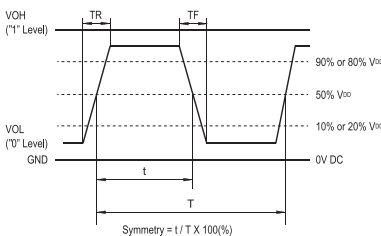
Z: high impedance

**SOLDERING PATTERN**

**327SMO(F) 327SMO(G)**



**OUTPUT WAVEFORM**



**STANDARD SPECIFICATIONS**

- 32.768 kHz CMOS OUTPUT
- HIGH STABILITY
- AT-CUT CRYSTAL BUILT-IN
- PACKAGE SIZE 5.0x3.2 & 7.0x5.0 mm

Item		Specifications	
General part number*1		327SMO(F)*1	327SMO(G)*1
Output frequency		32.768 kHz	
Frequency stability (over all conditions)		327SMO(F)C or 327SMO(G)C : ± 30 ppm over -40°C to +85°C 327SMO(F)D or 327SMO(G)D : ± 25 ppm over -40°C to +85°C	
Operating Conditions	Operating temperature	-40°C to +85°C (Standard)	
	Supply voltage (V <sub>DD</sub> )	+1.8V, +2.5V, +3.0V, +3.3V or +5.0V DC ±5%	
	Stand-by control voltage (Pin#1)	V <sub>IH</sub> : 90% V <sub>DD</sub> min. V <sub>IL</sub> : 10% V <sub>DD</sub> max.*2	
Absolute Max. Ratings	Supply voltage	-0.3V to +7.0V DC	
	Storage temperature	-55°C to +100°C	
Input current (Pin#1 = Open or V <sub>IH</sub> )		60 μA, Typical (80 μA max.) / -40°C to +85°C	
Stand-by current*2		10 μA max. (Pin #1 = V <sub>IL</sub> )	
Output (-40°C to +85°C)	Symmetry	45% to 55% at 1/2 V <sub>DD</sub> level	
	Rise and fall times	12 ns max. (10% V <sub>DD</sub> to 90% V <sub>DD</sub> level)	
	"0" Level	V <sub>OL</sub> : 10% V <sub>DD</sub> max.	
	"1" Level	V <sub>OH</sub> : 90% V <sub>DD</sub> min.	
	Load	30 pF max. (CMOS)	
Disable delay time		2 μs max.	
Enable delay time		0.5 ms max.	
Start-up time		1 ms max.	
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)	

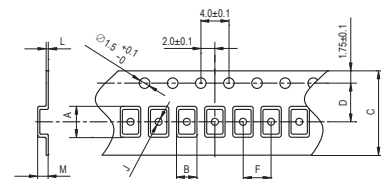
(\*1) Final part number to be assigned with package type, input voltage and frequency stability.  
e.g. 327SMO(3.0V)F

(\*2) Internal crystal oscillation to be halted (Pin#1 = V<sub>IL</sub>)

**PACKAGE DATA**

Item	Package	327SMO(F) & 327SMO(G)
Lid		Metal
Base		Ceramic
Sealing		Seam
Terminal		Tungsten (metalized)
Terminal plating		Gold / Nickel (surface) / (under)
RoHS		Compliant (Pb-free)

**TAPE SPECIFICATIONS**



327SMO(F)									
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

327SMO(G)									
A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
7.65	5.75	16.0	7.5	8.0	2.0	0.3	1.9	180	1000pcs

**TEST CIRCUIT**

