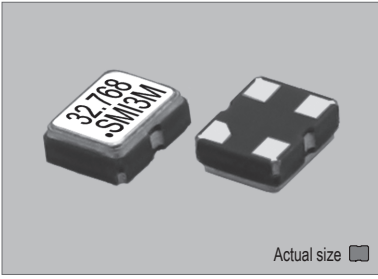


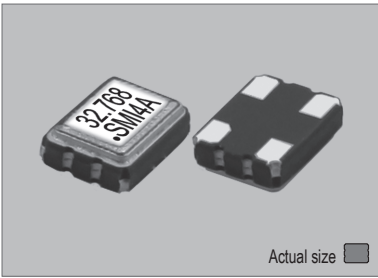
**327SMO(C) & 327SMO(D)** (+1.8V to +5.0V 32.768 kHz MODELS) 2.5x2.0 mm 3.2x2.5 mm **STANDARD SMD CLOCK OSCILLATORS**

**327SMO(C)**



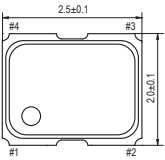
Actual size 0.014 gm (wt)

**327SMO(D)**

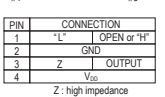
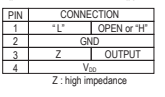
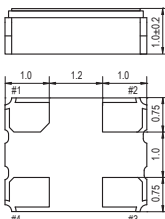
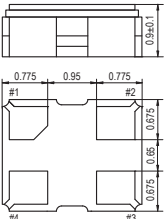
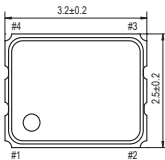


Actual size 0.025 gm (wt)

**327SMO(C)**



**327SMO(D)**



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

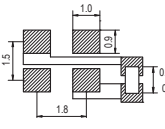
Z: high impedance

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

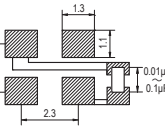
Z: high impedance

**SOLDERING PATTERN**

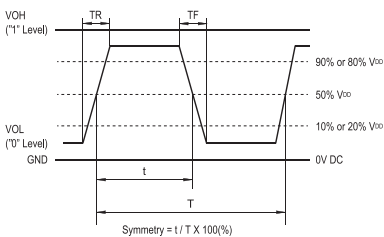
**327SMO(C)**



**327SMO(D)**



**OUTPUT WAVEFORM**



**STANDARD SPECIFICATIONS**

- 32.768 kHz CMOS OUTPUT
- HIGH STABILITY
- AT-CUT CRYSTAL BUILT-IN
- PACKAGE SIZE 2.5x2.0 mm & 3.2x2.5 mm

Item	Specifications	
General part number*1	327SMO(C)*1	327SMO(D)*1
Output frequency	32.768 kHz	
Frequency stability (over all conditions)	327SMO(C)C or 327SMO(D)C : ± 30 ppm over -40°C to +85°C 327SMO(C)D or 327SMO(D)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> )	327SMO(C) : 125 µA, Typical (160 µA max.) / -40°C to +85°C 327SMO(D) : 80 µA, Typical (100 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.
Output	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 +250°C ±10°C for 10 seconds +170°C ±10°C for 1 to 2 minutes (preheating)	
Reflow condition		

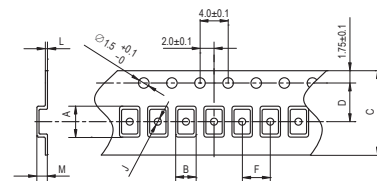
(\*1) Final part number to be assigned with package type, input voltage and frequency stability.  
e.g. 327SMO(3.0VC)D

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

**PACKAGE DATA**

Item	Package	327SMO(C) & 327SMO(D)
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
2.7	2.3	8.0	3.5	4.0	1.1	0.25	1.1	180	1000pcs 2000pcs 3000pcs

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**

