

Miniature, Surface Mount Watch Crystals

SM37 • SM38 • SM39

Monitor Products' SM37, SM38 and SM39 are miniature crystals in highly reliable packages specifically designed for surface mount applications. Hermetically-sealed construction ensures long-term stability and aging characteristics.

ELECTRICAL SPECIFICATIONS

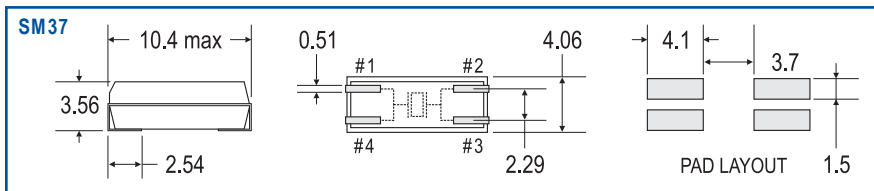
Nominal Frequency	32.768 KHz
Calibration Tolerance	± 20 ppm @ 25°C
Temperature Stability	Parabolic Coefficient -0.04 max ppm/(Δ °C) ² max
Series Resistance	50.0 K Ω max
Load Capacitance	12.5 pF typical, 6pF to infinity available
Motional Capacitance	.003 fF typical
Shunt Capacitance	1.35 pF typical
Drive Level	1 μ W max
Quality Factor	50,000 min
Operating Temperature	-40 to 85°C
Aging (1st year)	± 3 ppm max, 25°C ± 3 °C

FEATURES

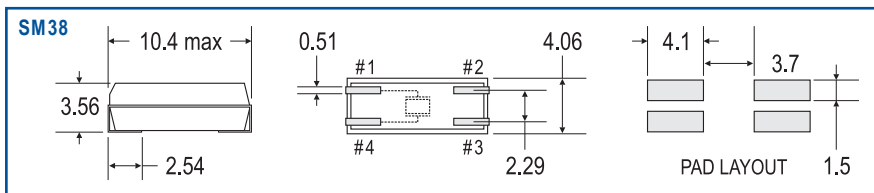
- Ideal for use with high-density circuit boards
- Surface mount
- Plastic package
- Reflow solderable
- Tape and reel

APPLICATIONS

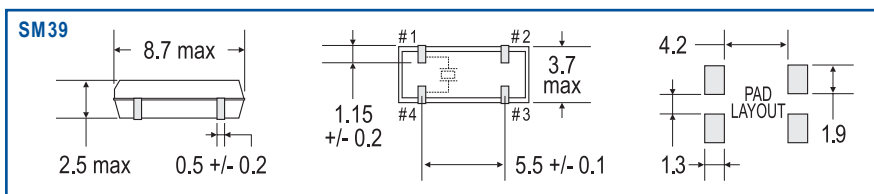
- Systems clock
- Communication equipment
- Computer applications
- Disk drives
- Cameras
- Measuring instruments



Units : mm Packaging: Tape & Reel (2000 pcs/reel) or Bulk (<2000 pcs)



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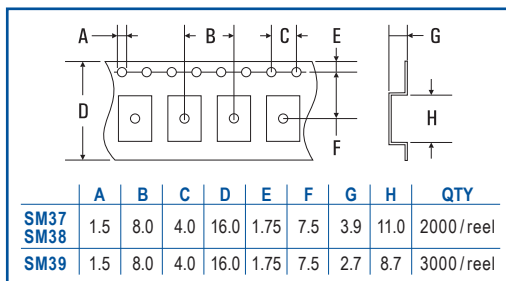
Packaging: Tape & Reel (3000 pcs/reel) or Bulk (<3000 pcs)

Monitor Products has a proven track record as a pioneer manufacturer in the frequency control market. If our extensive selection of standard and engineered crystals and oscillators does not meet your spec, we will work with you towards a customized solution.

SM37 • SM38 • SM39

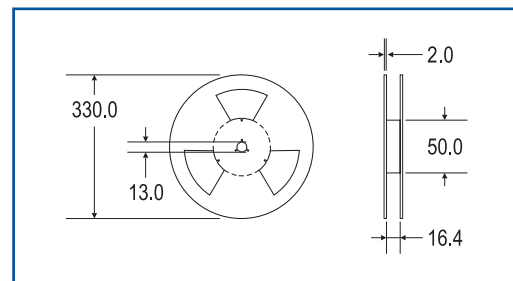
ENVIRONMENTAL PERFORMANCE SPECIFICATIONS

Operating Temperature Range	-40°C~85°C
Storage Temperature Range	-55°C~125°C
Vibration	MIL-STD-202 Method 35G, 50 to 2000 Hz
Shock	MIL-STD-202 Method 213B Test Cond E, 1000G, 1/2 Sine Wave
Humidity	85% RH, 85°C, 48 Hours
Hermetic Seal	Leak Rate 2×10^{-8} ATM-cm ³ /sec max (inner package only)
Reflow Solderability	260°C, 10 secs max
Solderability	MIL-STD-202 Method 208E
Insulation Resistance	500 M Ω min @ 100 VDC
Packaging	Tape & Reel (SM37 & SM38=2000pcs/reel; SM39=3000pcs/reel) or Bulk



TAPE DIMENSIONS

Units : mm



REEL DIMENSIONS

PART NUMBERING KEY

SERIES	CORRELATION	MODE	FREQUENCY TOLERANCE	TEMPERATURE RANGE	PACKAGING	FREQUENCY (KHz)
SM37 SM38 SM39	L = 12.5pf* P = 6.0pf X = Cust Spec	1 = Fundamental*	B = 100ppm* C = 50ppm D = 30ppm H = 20ppm	3 = -20°C ~ 70°C 5 = -40°C ~ 85°C 7 = -10°C ~ 60°C*	A = Bulk SM37/SM38: <2000 pcs SM39: <3000 pcs E = Tape & Reel* SM37/SM38: 2000 pcs/reel SM39: 3000 pcs/reel	
SM37L1C5A @	L	1	C	7	A	32.768
SM38L1B5A @	L	1	B	5	A	32.768
SM39L1C7E @	L	1	C	7	E	32.768

Sample Part Numbers:

* Standard

Call factory for additional options. Use full descriptive part number when ordering. Parts will be marked with series and frequency only.