



**FEATURES**

- Ultra Low Profile
- 1.0mm Height
- Long Term Stability
- Tape and Reel (3,000 pcs. STD)
- $\pm 10$  PPM Available

**DISCONTINUED**

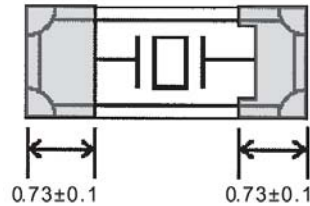
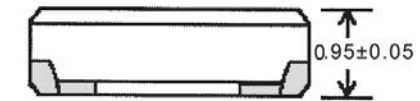
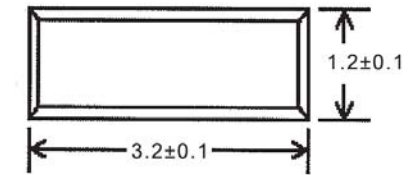
**Quote it!**

Learn more about:  
[Part Marking Identification](#)  
[Tape and Reel Specification](#)  
Internet required

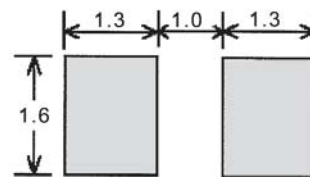
• PART NUMBER <a href="#">Learn More</a> - Internet Required				
Part Number	Model Number	Frequency Stability	Operating Temperature	Frequency
593-Frequency-xxxxx	FSN	-0.045PPM/( $\Delta$ °C) <sup>2</sup>	-40 ~ +85 °C	32.768 kHz

• STANDARD SPECIFICATIONS	
PARAMETERS	MAX (unless otherwise noted)
Frequency	32.768 kHz
Frequency Tolerance @ 25°C	$\pm 20$ PPM
Frequency Stability Temperature Coefficient	-0.045 PPM / ( $\Delta$ °C) <sup>2</sup>
Temperature Range	
Turnover (TO)	+20°C ~ +30°C
Operating (TOPR)	-40°C ~ +85°C
Storage (TSTG)	-55°C ~ +125°C
Equivalent Series Resistance (RS)	65 k $\Omega$
Load Capacitance (CL)	12.5 pF (Standard) 7 pF (Optional)
Insulation Resistance @ 100VDC	500 M $\Omega$ Min
Drive Level	1.0 $\mu$ W
Aging per year	$\pm 5$ PPM

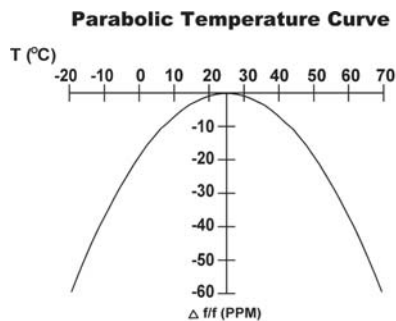
All specifications subject to change without notice. Rev. 7/12/04



**Recommended Solder Pad Layout**



All dimensions are in millimeters.



To determine frequency stability, use parabolic curvature (K)  
For example: What is stability at 45°C?

- 1) Change in T (°C) = 45-25 = 20°C
- 2) Change in frequency = -0.04 PPM \* ( $\Delta$  C)<sup>2</sup>  
= -0.04 PPM \* (20)<sup>2</sup>  
= -16.0 PPM