

# SMD 3.2x1.5mm Tuning Fork



Model: FX135

RoHS Compliant / Pb Free

Rev. 2/2/2006 Preliminary

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[http://www.foxonline.com/need\\_a\\_sample.htm](http://www.foxonline.com/need_a_sample.htm)

Need a Sample®

## FEATURES

- Ultra Low Profile
- 0.9mm Height
- Long Term Stability
- Tape and Reel (3,000 pcs.STD)

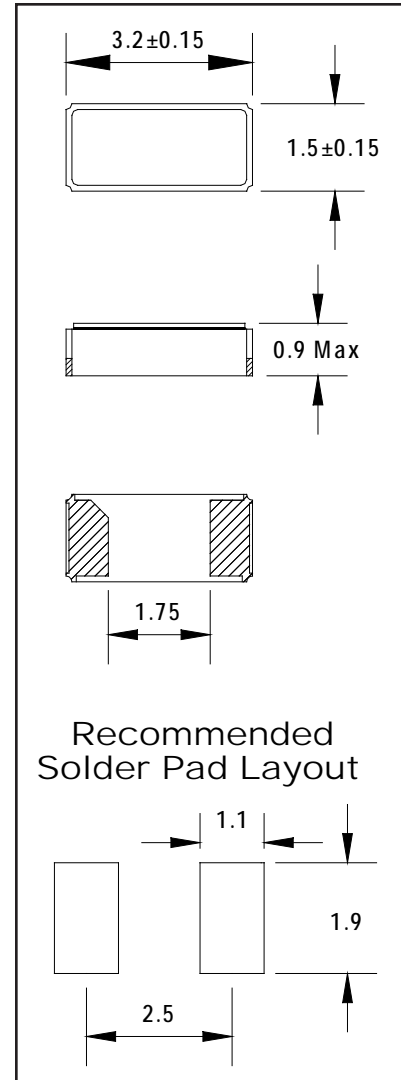
## • PART NUMBER [Learn More](#) - Internet Required

Part Number	Model Number	Frequency Stability	Operating Temperature	Frequency
739-Frequency-xxxxx	FX135	-0.045PPM/( $\Delta^{\circ}\text{C}$ ) <sup>2</sup>	-40 $^{\circ}\text{C}$ ~ +85 $^{\circ}\text{C}$	32.768 kHz

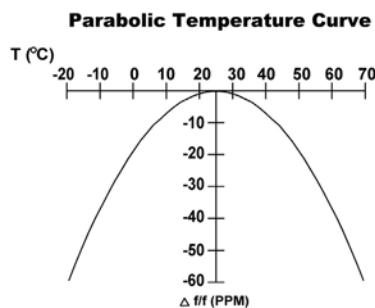
## • STANDARD SPECIFICATIONS

PARAMETERS	MAX (unless otherwise noted)
Frequency	32.768 kHz
Frequency Tolerance @ 25 $^{\circ}\text{C}$	$\pm 20$ PPM
Frequency Stability Temperature Coefficient	-0.045 PPM / ( $\Delta^{\circ}\text{C}$ ) <sup>2</sup>
Temperature Range	
Turnover (TO)	+20 $^{\circ}\text{C}$ ~ +30 $^{\circ}\text{C}$
Operating (TOPR)	-40 $^{\circ}\text{C}$ ~ +85 $^{\circ}\text{C}$
Storage (TSTG)	-55 $^{\circ}\text{C}$ ~ +125 $^{\circ}\text{C}$
Equivalent Series Resistance (RS)	70 k $\Omega$
Load Capacitance (CL)	12.5 pF(Standard) (Fox P/N: FX135A-327) 9pF (Optional) (Fox P/N: FX135B-327)
Insulation Resistance @ 100VDC	500M $\Omega$ Min
Drive Level	1.0uW 0.1uW Typ
Aging per year	$\pm 3$ PPM
Maximum Soldering Temp / Time	260 $^{\circ}\text{C}$ / 10 Seconds
Moisture Sensitivity Level (MSL)	1
Termination Finish	Ni/Au

All specifications subject to change without notice.



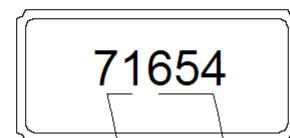
All dimensions are in millimeters.



To determine frequency stability, use parabolic curvature (K).  
For example: What is stability at 45 $^{\circ}\text{C}$ ?

- 1) Change in T ( $^{\circ}\text{C}$ ) = 45-25 = 20 $^{\circ}\text{C}$
- 2) Change in frequency =  $-0.04 \text{ PPM} * (\Delta \text{C})^2$   
=  $-0.04 \text{ PPM} * (20)^2$   
=  $-16.0 \text{ PPM}$

## Fox Crystal FX135 Marking Identification



Date Code: Y/M  
Year: 7=2007, 8=2008 etc.  
Month: 1 thru 9=January thru Sept.  
X, Y, Z=October, Nov., Dec.

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## • TAPE SPECIFICATIONS (millimeters)

MODEL	A	B	C	D	E	F	STD Reel QTY
FX135	∅1.5	4.0	4.0	3.5	8.0	0.85	3,000

## • REEL SPECIFICATIONS (millimeters)

MODEL	G	H	I	J	K	L	M
FX135	2.0	∅13	∅21	∅60	∅180	9	1.6

