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## Product Change Notification

**PCN Publish Date:** 06/19/2015

**PCN#:** 466

**Change Title:** Product End of Life (EOL)

### Products Affected:

Custom Parts (Ordered to customer specified frequency and specifications)

| Model Number | Part Number           |
|--------------|-----------------------|
| FPXLF        | 256LF-Frequency-xxxxx |

### Standard Stocking Parts

| Number       | Frequency | Tolerance  | Stability  | Temp Range   | CL     |
|--------------|-----------|------------|------------|--------------|--------|
| FPXLF036S    | 3.579545  | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | 18pF   |
| FPXLF0368S   | 3.686400  | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | Series |
| FPXLF0368-20 | 3.686400  | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | 20pF   |
| FPXLF040     | 4.000000  | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | 20pF   |
| FPXLF049-20  | 4.915200  | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | 20pF   |
| FPXLF073-20  | 7.372800  | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | 20pF   |
| FPXLF080     | 8.000000  | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | Series |
| FPXLF080-20  | 8.000000  | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | 20pF   |
| FPXLF100-20  | 10.000000 | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | 20pF   |
| FPXLF115-20  | 11.059200 | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | 20pF   |
| FPXLF120-20  | 12.000000 | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | 20pF   |
| FPXLF160     | 16.000000 | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | Series |
| FPXLF160-20  | 16.000000 | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | 20pF   |
| FPXLF200-20  | 20.000000 | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | 20pF   |
| FPXLF250F    | 25.000000 | +/- 50 ppm | +/- 50 ppm | -10 to +70 C | 20pF   |

### Description of Change to the Customer:

End of Life for the FPXLF series.

**Reason for Change:**

Fox has experienced an unfortunate tool failure in the process that produces the FPXLF product family. This failure has resulted in Production being halted.

This part was first introduced by Fox in the 1980's and is well beyond the End of Life in its product lifecycle. The investment required to resume the production process would result in a significant price increase.

In addition to the cost for resuming production of the FPXLF, this product contains lead and is currently ROHS approved through exemption. This exemption will expire in the near future and, if not extended, would result in disqualification of the FPXLF under the ROHS standard.

Fox has other, more cost effective products that can do a better job with less manufacturing issues. (*See suggested substitutions on following page.*)

**Suggested Substitutions:**

- HC49SPXLF - To provide our customers time to modify their board designs if necessary, we are offering the HC49SPXLF on a temporary basis for 1 year from this date. The HC49SPXLF is an HC49SLF modified to a 4 pad configuration to be compatible with the FPXLF recommended solder pad layout.

As alternatives to the traditional 4 pad product, for frequencies of 8 MHz and above, there are also two smaller 2 pad crystals that fit on the crystal connected pads of the solder pad layout.

- FQ5032A – 5x3.2mm, 8 MHz ~ 60 MHz
- FX532AS - 5x3.2mm, 8 MHz ~ 70 MHz (tighter stability version of the FX532A)

Datasheets for all recommended substitutions are attached. In addition, a drawing showing all three substitutions on the FPXLF recommended solder pad layout is attached.

**Schedule of Change:**

- FPXLF – Orders will be supported with existing inventory until depleted.
- Last Buy Date for HC49SPXLF – 06/20/2016
- Last Ship Date for HC49SPXLF -- lead time at time of quote past the buy date.

**Customer Impact and Response:** We sincerely hope this change will have minimal impact on our customers. If you have any questions, please contact Fox Technical Support at [www.foxonline.com/email.htm](http://www.foxonline.com/email.htm) or call 239-693-0099.

# Resistance Weld Low Profile Crystal

**MODEL: HC49SPXLF Series**

RoHS &amp; REACH Compliant Pb Free

Rev. 06/12/2015

**PART NUMBER SELECTION**

| Part Number          | Model Number | Frequency Range (MHz) |
|----------------------|--------------|-----------------------|
| 448LF-Frequency-xxxx | HC49SPXLF    | 3.500 ~ 80.000        |

**SPECIFICATIONS**

| Parameters   | Max (unless otherwise noted)          |
|--|---------------------------------------|
| Frequency Range  | 3.500 ~ 80.000 MHz                    |
| Frequency Tolerance @ 25°C                                   | ±30 PPM <sup>1</sup>                  |
| Frequency Stability, ref @ 25°C<br>Over Operating Temp Range | ±50 PPM <sup>1</sup>                  |
| Temperature Range  |                                       |
| Operating (T <sub>OPR</sub> )                                | -20°C ~ +70°C <sup>1</sup>            |
| Storage (T <sub>STG</sub> )                                  | -55°C ~ +125°C                        |
| Shunt Capacitance (C <sub>O</sub> )                          | 7pF                                   |
| Load Capacitance (C <sub>L</sub> )                           | 10pF ~ Series<br>(Customer Specified) |
| Drive Level  | 1.0 mW                                |
| Aging per year   | ±5 PPM                                |
| Maximum Soldering Temp / Time                                | 250°C Peak<br>≥230°C / 30±10 Sec.     |
| Moisture Sensitivity Level (MSL)                             | 1                                     |
| Termination Finish:  | Ag over Ni                            |

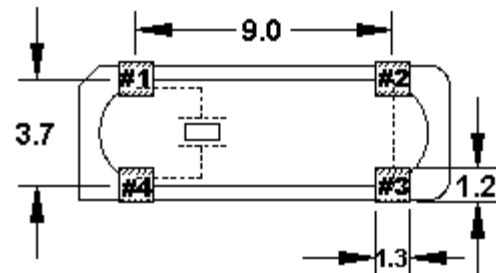
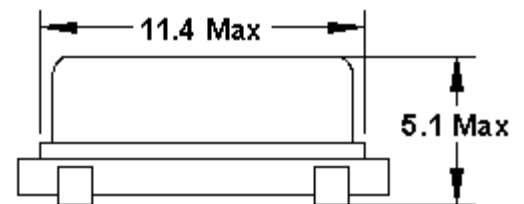
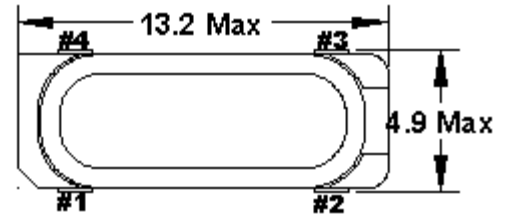
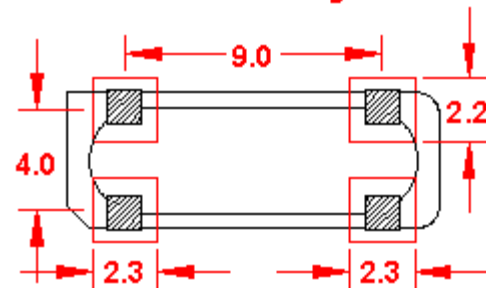
<sup>1</sup>Other tolerances, stabilities, and operating temperature ranges available.

\*Dimensional drawing is for reference to critical specifications defined by size measurements.

 Certain non-critical visual attributes, such as side castellations, reference pin shape, etc. may vary  
 Specifications subject to change without notice.

**ESR**

| Frequency Range (MHz) | Operating Mode     | Max ESR Ω |
|-----------------------|--------------------|-----------|
| 3.500 ~ 4.500         | Fundamental        | 120       |
| 4.500001 ~ 6.000      | Fundamental        | 90        |
| 6.000001 ~ 8.000      | Fundamental        | 70        |
| 8.000001 ~ 12.000     | Fundamental        | 60        |
| 12.000001 ~ 15.000    | Fundamental        | 40        |
| 15.000001 ~ 18.000    | Fundamental        | 30        |
| 18.000001 ~ 40.000    | Fundamental        | 25        |
| 30.000 ~ 35.000       | 3 <sup>rd</sup> OT | 100       |
| 35.000001 ~ 40.000    | 3 <sup>rd</sup> OT | 80        |
| 40.000001 ~ 80.000    | 3 <sup>rd</sup> OT | 70        |


**Recommended Solder Pad Layout**


| Reference / Comments | Title / Description: HC49SPX Standard Specifications |                       |
|----------------------|--|-----------------------|
| Initial release      | Drawing Number:                                      | Size: A               |
|                      | Part Number:   | Cage: 61429           |
|                      | Draftsperson: CMR                                    | Approved: BEC         |
|                      |  | Rev. Date: 06/15/2015 |



# Resin Sealed SMD Crystal

Model: FQ5032 SERIES

RoHS Compliant / Pb Free

Rev. 6/19/2014

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

Need a  
Sample®

## FEATURES

- Surface Mount Resin Sealed
- Low Cost
- Ultra Low Profile
- Fundamental to 48.000 MHz
- Tape and Reel (1,000 pcs STD)

## OPTIONS

- Tolerances to  $\pm 20$  PPM
- Stabilities to  $\pm 20$  PPM
- Temp Range to  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$

## • PART NUMBER

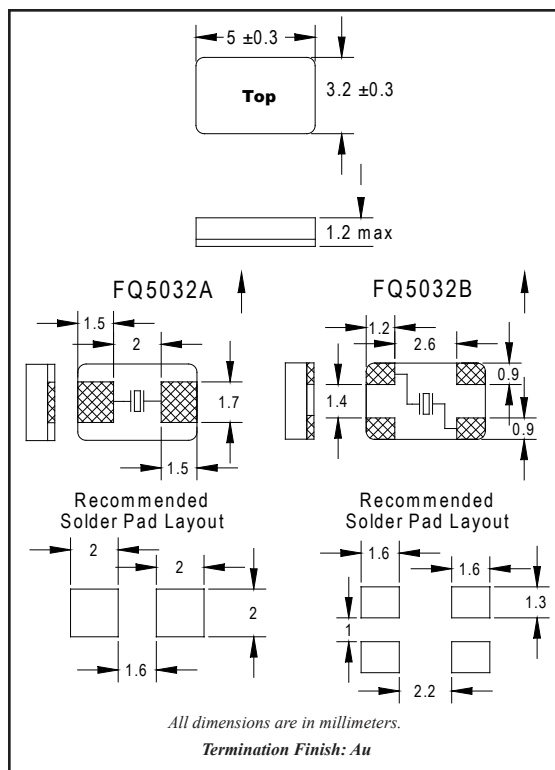
| Part Number          | Model Number | Frequency Range (MHz) |
|----------------------|--------------|-----------------------|
| 738A-Frequency-xxxxx | FQ5032A      | 8.000 ~ 60.000        |
| 738B-Frequency-xxxxx | FQ5032B      | 8.000 ~ 60.000        |

## • STANDARD SPECIFICATIONS<sup>1</sup>

| PARAMETERS   | MAX (unless otherwise noted)                              |
|--|---|
| Frequency Range (Fo)   | 8.000 ~ 60.000 MHz  |
| Frequency Tolerance @ 25°C                                   | $\pm 30$ PPM <sup>1</sup>                                 |
| Frequency Stability, ref @ 25°C<br>Over Operating Temp Range | $\pm 30$ PPM <sup>1</sup>                                 |
| Temperature Range  |   |
| Operating (TOPR)   | $0^{\circ}\text{C} \sim +70^{\circ}\text{C}$ <sup>1</sup> |
| Storage (TSTG)   | $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$            |
| Shunt Capacitance (Co)                                       | 7 pF  |
| Load Capacitance (CL)  | 10 pF ~ Series<br>(Customer Specified)                    |
| Drive Level  | 0.5 mW  |
| Aging per year   | $\pm 5$ PPM   |

<sup>1</sup> Other tolerances, stabilities & operating temperature ranges available. Consult Fox Customer Service for specific requirements.

**NOTE:** The above specifications, having been carefully prepared and checked, is believed to be accurate at the time of publication; however, no responsibility is assumed by Fox Electronics for inaccuracies. All specifications subject to change without notice.



| Frequency Range (MHz) | Operating Mode | Max ESR $\Omega$ |
|-----------------------|----------------|------------------|
| 8.000000 ~ 11.999999  | Fundamental    | 100              |
| 12.000000 ~ 16.000    | Fundamental    | 80               |
| 16.000001 ~ 48.000    | Fundamental    | 50               |
| 48.000001 ~ 60.000    | 3rd OT         | 100              |

# CERAMIC, SEAM-SEALED, SMD, CRYSTAL

## MODEL: FX532AS Series

RoHS / REACH Compliant / Pb Free

### FEATURES

- Low Cost
- Fundamental to 70 MHz
- Seam Sealed
- Tape and Reel (2,000 pcs. STD)

### OPTIONS

- Tolerances to < 10 PPM
- Stabilities to < 10 PPM
- Temperatures to -40°C ~ +85°C

### PART NUMBER SELECTION

| Part Number     | Model Number | Frequency Range (MHz) |
|-----------------|--------------|-----------------------|
| 419S-Freq.-xxxx | FX532AS      | 8.000 ~ 70.000        |

### STANDARD SPECIFICATIONS

| Parameters  |   |
|---|---|
| Frequency Range (F <sub>O</sub> )   | 8.000 ~ 70.000 MHz                          |
| Frequency Tolerance @ 25°C  | ±50 PPM Max <sup>1</sup>                    |
| Frequency Stability, ref @ 25°C<br>Over Operating Temp. Range                     | ±50 PPM Max <sup>1</sup>                    |
| Temperature Range<br>Operating (T <sub>OPR</sub> )<br>Storage (T <sub>STG</sub> ) | -10°C ~ +70°C <sup>1</sup><br>-40°C ~ +90°C |
| Shunt Capacitance (C <sub>O</sub> )   | 7 pF Max                                    |
| Load Capacitance (C <sub>L</sub> )  | 8pF ~ Series<br>(Customer Specified)        |
| Drive Level   | 0.1 mW Max                                  |
| Aging per year  | ± 5 PPM Max                                 |
| Maximum Soldering Temp / Time   | 260°C / 10 Seconds                          |
| Moisture Sensitivity Level (MSL)  | 1   |
| Termination Finish:   | Au  |

<sup>1</sup> Other tolerances, stabilities, and operating temperature ranges available.

### ESR

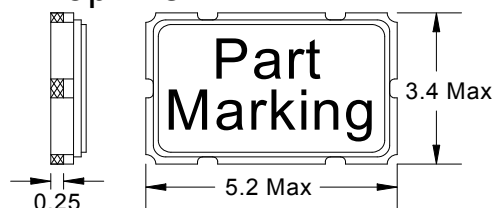
| Frequency Range (MHz) | Operating Mode | Max ESR (Ω) |
|-----------------------|----------------|-------------|
| 8.000 ~ 9.999999      | Fundamental    | 150         |
| 10.000 ~ 15.999999    | Fundamental    | 60          |
| 16 ~ 70.000           | Fundamental    | 50          |

Note: Dimensional drawing is for reference to critical specifications defined by size measurements.

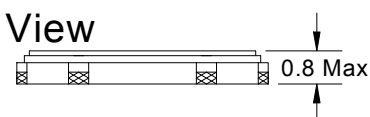
Certain non-critical visual attributes, such as side castellations, etc. may vary

All specifications subject to change without notice.

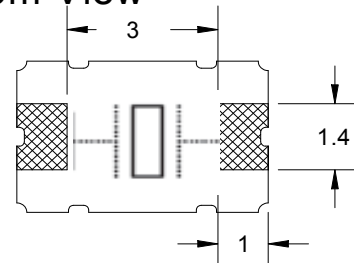
### Top View



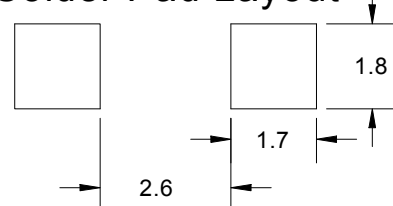
### Side View



### Bottom View



### Recommended Solder Pad Layout

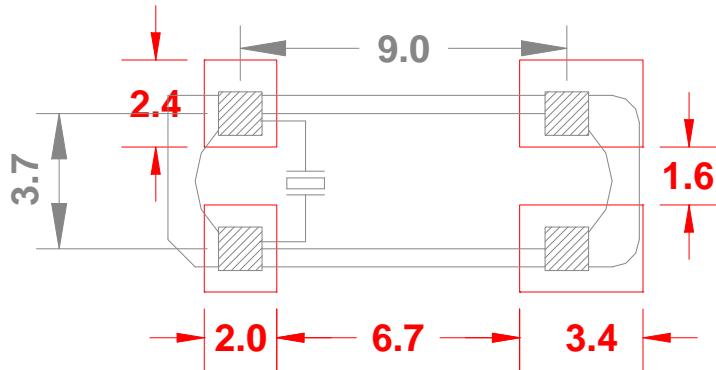


| Reference / Comments                | Title / Description: FX532AS Standard Specifications |               |                  |
|-------------------------------------|--|---------------|------------------|
| Initial release<br>APPROVAL PENDING | Drawing Number:                                      | Rev: 1        | Size: A          |
|                                     | Part Number:   |               | Cage: 61429      |
|                                     | Draftsperson: CMR                                    | Approved: BEC | Date: 06/19/2015 |

HC49SPXLF, FX532AS, and FQ5032A, all on the recommended FPXLF pad layout

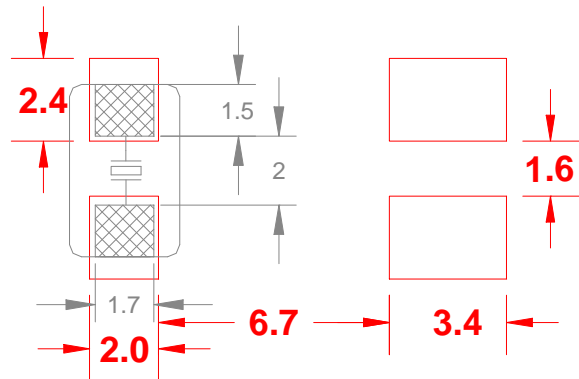
### HC49SPXLF

Primary suggested substitution.  
(Matches FPXLF recommended solder pad layout.)



### FQ5032A

Alternative 2 pad substitution.  
(Connects to active crystal pads.)



### FX532AS

Alternative 2 pad substitution.  
(Connects to active crystal pads.)

