

## ZC930, ZMV930 series

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### SILICON 12V HYPERABRUPT VARACTOR DIODES

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#### Device Description

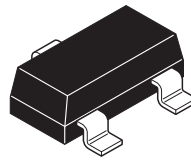
A range of silicon varactor diodes for use in frequency control and filtering. Featuring closely controlled CV characteristics and high Q. Low reverse current ensures very low phase noise performance. Available in single or dual common cathode format in a wide range of miniature surface mount packages.

#### Features

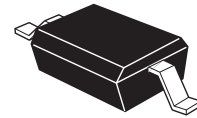
- Close tolerance C-V characteristics
- Octave tuning from 0 to 6V
- Low  $I_R$  (typically 200pA)
- Excellent phase noise performance
- High Q

#### Applications

- VCXO and TCXO
- Wireless communications
- Pagers
- Mobile radio



SOT23



SOD323



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### ABSOLUTE MAXIMUM RATINGS

| PARAMETER                                                | SYMBOL    | MAX.        | UNIT             |
|----------------------------------------------------------|-----------|-------------|------------------|
| Reverse voltage                                          | $V_R$     | 12          | V                |
| Forward current                                          | $I_F$     | 100         | mA               |
| Power dissipation at $T_{amb} = 25^\circ\text{C}$ SOT23  | $P_{tot}$ | 330         | mW               |
| Power dissipation at $T_{amb} = 25^\circ\text{C}$ SOD323 | $P_{tot}$ | 330         | mW               |
| Junction temperature                                     | $T_j$     | 125         | $^\circ\text{C}$ |
| Storage temperature range                                | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |

### TUNING CHARACTERISTICS at $T_{amb} = 25^\circ\text{C}$

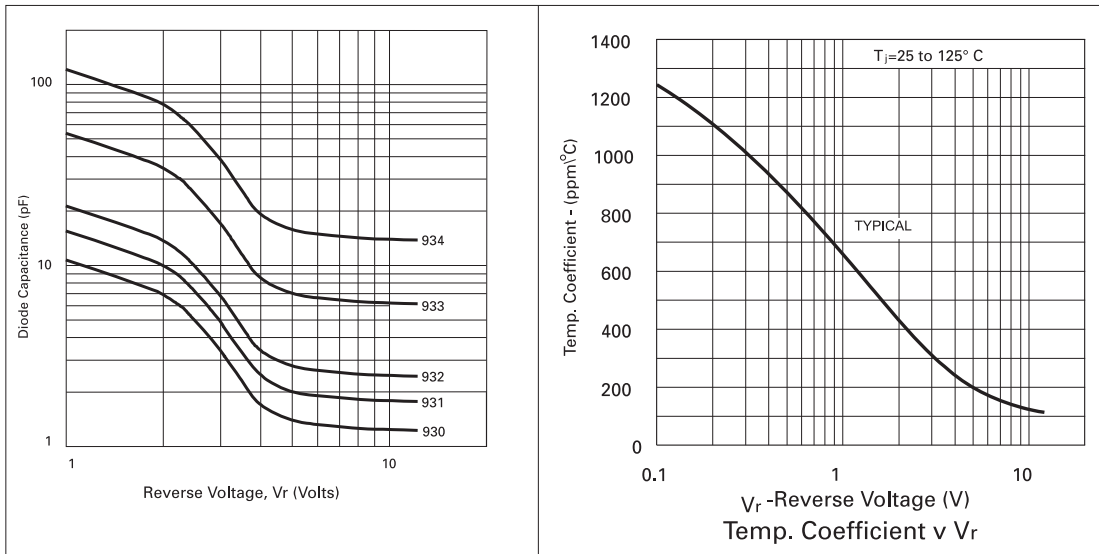
| PART | Capacitance<br>$V_R=1\text{V}$ | Capacitance<br>$V_R=2.5\text{V}$ |         | Capacitance<br>$V_R=4\text{V}$ | Minimum Q<br>$V_R=4\text{V}$<br>$f=50\text{MHz}$ |
|------|--------------------------------|----------------------------------|---------|--------------------------------|--------------------------------------------------|
|      | MIN. pF                        | MIN. pF                          | MAX. pF | MAX. pF                        |                                                  |
| 930  | 8.70                           | 4.30                             | 5.50    | 2.90                           | 200                                              |
| 931  | 13.50                          | 6.50                             | 7.80    | 4.00                           | 300                                              |
| 932  | 17.00                          | 8.50                             | 10.50   | 5.50                           | 200                                              |
| 933  | 42.00                          | 18.00                            | 27.00   | 12.00                          | 150                                              |
| 933A | 42.00                          | 20.25                            | 24.75   | 12.00                          | 150                                              |
| 934  | 95.00                          | 40.00                            | 65.00   | 25.00                          | 80                                               |
| 934A | 95.00                          | 47.25                            | 57.75   | 25.00                          | 80                                               |

### ELECTRICAL CHARACTERISTICS at $T_{amb} = 25^\circ\text{C}$

| PARAMETER                              | CONDITIONS                         | MIN. | TYP. | MAX. | UNIT                   |
|----------------------------------------|------------------------------------|------|------|------|------------------------|
| Reverse breakdown voltage              | $I_R = 10\mu\text{A}$              | 12   |      |      | V                      |
| Reverse voltage leakage                | $V_R = 8\text{V}$                  |      | 0.2  | 100  | nA                     |
| Temperature coefficient of capacitance | $V_R = 3\text{V}, f = 1\text{MHz}$ |      | 300  | 400  | ppCm/ $^\circ\text{C}$ |

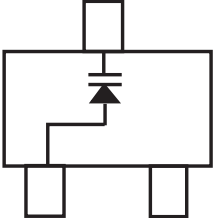
## ZC930, ZMV930 series

### TYPICAL CHARACTERISTICS



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### ORDER CODES AND PART MARKING

| SOT23                                                                             |           | SOD323                                                                            |           |
|-----------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------|-----------|
|  |           |  |           |
| ORDER CODE                                                                        | PART MARK | ORDER CODE                                                                        | PART MARK |
| ZC930TA                                                                           | V15       | ZMV930TA                                                                          | AH        |
| ZC931TA                                                                           | V14       | ZMV931TA                                                                          | AJ        |
| ZC932TA                                                                           | V13       | ZMV932TA                                                                          | AK        |
| ZC933TA                                                                           | V17       | ZMV933TA                                                                          | AL        |
| ZC933ATA                                                                          | A17       | ZMV933ATA                                                                         | AM        |
| ZC934TA                                                                           | V16       | ZMV934TA                                                                          | AN        |
| ZC934ATA                                                                          | A16       | ZMV934ATA                                                                         | AO        |

### SOD323 - PART MARK ORIENTATION



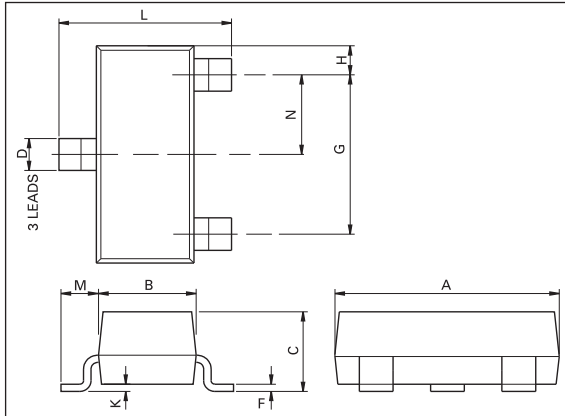
Partmarking shown is for example only

### TAPE AND REEL INFORMATION

| REEL CODE | REEL SIZE      | TAPE WIDTH | QUANTITY PER REEL |
|-----------|----------------|------------|-------------------|
| TA        | 7 inch (180mm) | 8mm        | 3,000             |

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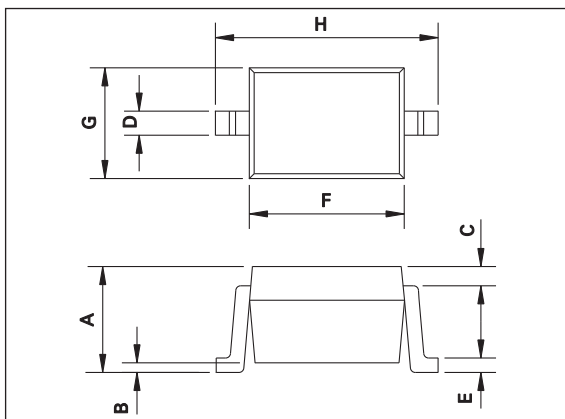
### SOT23 PACKAGE OUTLINE



### PACKAGE DIMENSIONS

| DIM | Millimeters |      | Inches    |        | DIM | Millimeters |      | Inches     |        |
|-----|-------------|------|-----------|--------|-----|-------------|------|------------|--------|
|     | Min.        | Max. | Min.      | Max.   |     | Min.        | Max. | Max.       | Max.   |
| A   | 2.67        | 3.05 | 0.105     | 0.120  | H   | 0.33        | 0.51 | 0.013      | 0.020  |
| B   | 1.20        | 1.40 | 0.047     | 0.055  | K   | 0.01        | 0.10 | 0.0004     | 0.004  |
| C   | —           | 1.10 | —         | 0.043  | L   | 2.10        | 2.50 | 0.083      | 0.0985 |
| D   | 0.37        | 0.53 | 0.015     | 0.021  | M   | 0.45        | 0.64 | 0.018      | 0.025  |
| F   | 0.085       | 0.15 | 0.0034    | 0.0059 | N   | 0.95 NOM    |      | 0.0375 NOM |        |
| G   | 1.90 NOM    |      | 0.075 NOM |        | -   | -           |      | -          |        |

### SOD323 PACKAGE OUTLINE



### PACKAGE DIMENSIONS

| DIM | Millimeters |      | Inches |       |
|-----|-------------|------|--------|-------|
|     | Min.        | Max. | Min.   | Max.  |
| A   | 0.91        | 1.16 | 0.036  | 0.046 |
| B   | 0.0         | 0.1  | 0.0    | 0.004 |
| C   | -           | -    | -      | -     |
| D   | 0.33        | 0.4  | 0.013  | 0.016 |
| E   | 0.12        | 0.2  | 0.005  | 0.008 |
| F   | 1.52        | 1.77 | 0.060  | 0.070 |
| G   | 1.11        | 1.37 | 0.044  | 0.054 |
| H   | 2.46        | 2.71 | 0.097  | 0.107 |

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"Preview"Future device intended for production at some point. Samples may be available

"Active"Product status recommended for new designs

"Last time buy (LTB)"Device will be discontinued and last time buy period and delivery is in effect

"Not recommended for new designs"Device is still in production to support existing designs and production

"Obsolete"Production has been discontinued

Datasheet status key:

"Draft version" This term denotes a very early datasheet version and contains highly provisional information, which may change in any manner without notice.

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