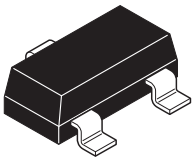
# ZC930, ZMV930 series

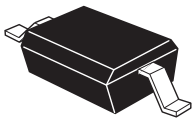
## SILICON 12V HYPERABRUPT VARACTOR DIODES

### 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 rage of miniature surface mount packages.



SOT23



SOD323

### 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

## 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°C SOT23 | $P_{tot}$ | 330 | mW |
| Power dissipation at $T_{amb}$ = 25°C SOD323 | $P_{tot}$ | 330 | mW |
| Junction temperature | $T_j$ | 125 | °C |
| Storage temperature range | $T_{stg}$ | -55 to +150 | °C |

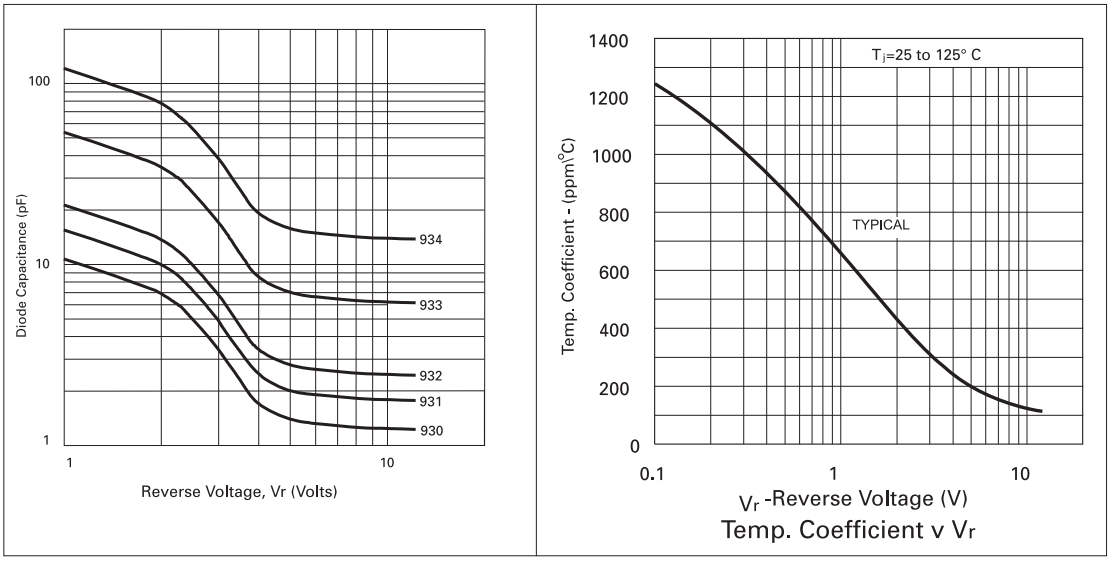
## TUNING CHARACTERISTICS at $T_{amb}$ = 25°C

| PART | Capacitance $V_R$=1V | Capacitance $V_R$=2.5V | | Capacitance $V_R$=4V | Minimum Q $V_R$=4V f=50MHz |
|---|---|---|---|---|---|
| | 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°C

| PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|
| Reverse breakdown voltage | $I_R$ = 10uA | 12 | | | V |
| Reverse voltage leakage | $V_R$ = 8V | | 0.2 | 100 | nA |
| Temperature coefficient of capacitance | $V_R$ = 3V, f = 1MHz | | 300 | 400 | ppCm/°C |

## TYPICAL CHARACTERISTICS



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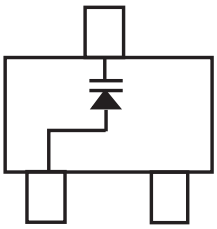
## ORDER CODES AND PART MARKING

| 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 |

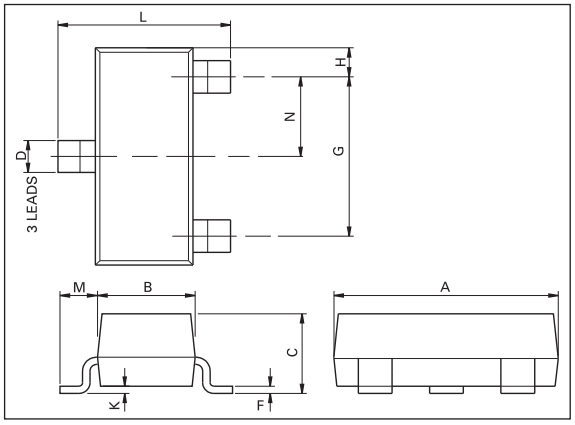
## SOD323 - PART MARK ORIENTATION


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 |

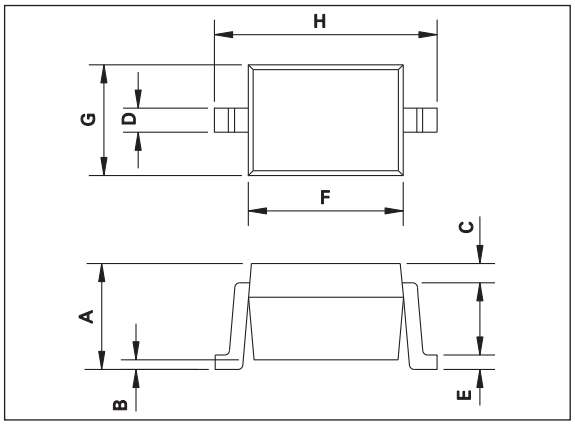
## SOT23 PACKAGE OUTLINE




## 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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