

ZC930, ZMV930, ZV931 series

SILICON 12V HYPERABRUPT VARACTOR DIODES

Device Description

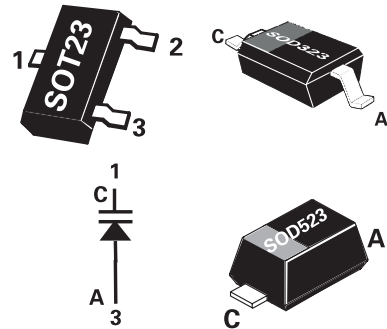
A range of silicon varactor diodes for use in frequency control and filtering. Featuring closely controlled CV characteristics and high Q. Low reverse current ensures very low phase noise performance. Available in single or dual common cathode format in a wide range of miniature surface mount packages.

Features

- Close tolerance C-V characteristics
- Octave tuning from 0 to 6V
- Low I_R (typically 200pA)
- Excellent phase noise performance
- High Q
- Range of miniature surface mount packages

Applications

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



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

| PART | Capacitance $V_R=1\text{V}$ | Capacitance $V_R=2.5\text{V}$ | | Capacitance $V_R=4\text{V}$ | Minimum Q $V_R=4\text{V}$ $f=50\text{MHz}$ |
|------|--------------------------------|----------------------------------|--------|--------------------------------|--|
| | 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 |

ABSOLUTE MAXIMUM RATINGS

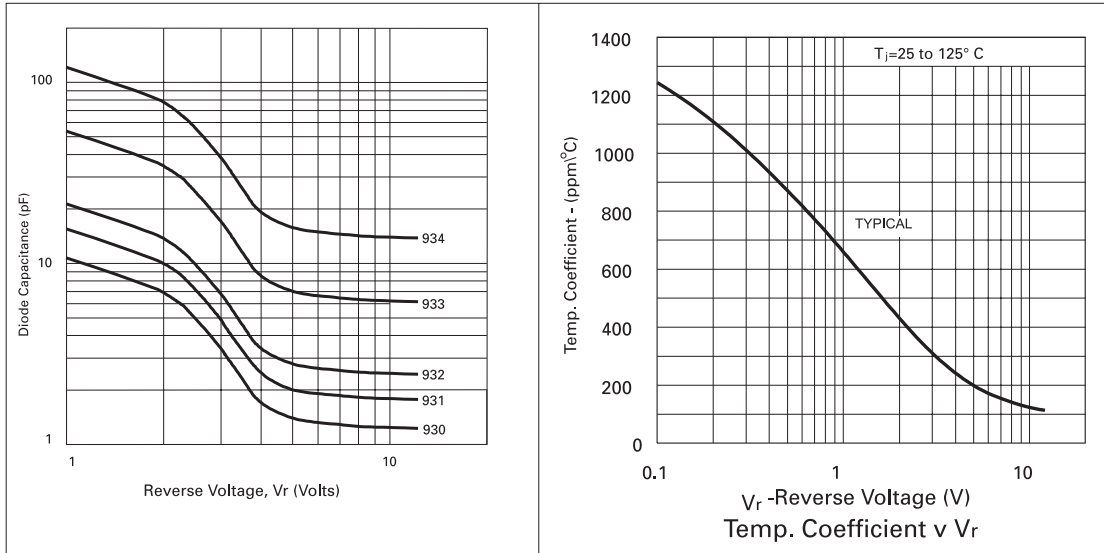
| PARAMETER | SYMBOL | MAX | UNIT |
|--|-----------|-------------|--------------------|
| Reverse voltage | V_R | 12 | V |
| Forward current | I_F | 100 | mA |
| Power dissipation at $T_{amb} = 25^{\circ}\text{C}$ SOT23 | P_{tot} | 330 | mW |
| Power dissipation at $T_{amb} = 25^{\circ}\text{C}$ SOD323 | P_{tot} | 330 | mW |
| Power dissipation at $T_{amb} = 25^{\circ}\text{C}$ SOD523 | P_{tot} | 250 | mW |
| Operating and storage temperature range | | -55 to +150 | $^{\circ}\text{C}$ |

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/ $^{\circ}\text{C}$ |

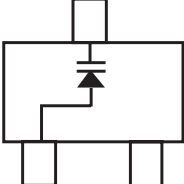


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TYPICAL CHARACTERISTICS



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ORDER CODES AND PART MARKING

| SOT23 | | SOD323 | | SOD523 | |
|---|-----------|---|-----------|---|-----------|
|  | |  | |  | |
| ORDER CODE | PART MARK | ORDER CODE | PART MARK | ORDER CODE | PART MARK |
| ZC930TA | V15 | ZMV930TA | AH | | |
| ZC931TA | V14 | ZMV931TA | AJ | ZV931V2TA | 91 |
| ZC932TA | V13 | ZMV932TA | AK | ZV932V2TA | 92 |
| ZC933TA | V17 | ZMV933TA | AL | ZV933V2TA | 93 |
| ZC933ATA | A17 | ZMV933ATA | AM | | |
| ZC934TA | V16 | ZMV934TA | AN | | |
| ZC934ATA | A16 | ZMV934ATA | AO | | |

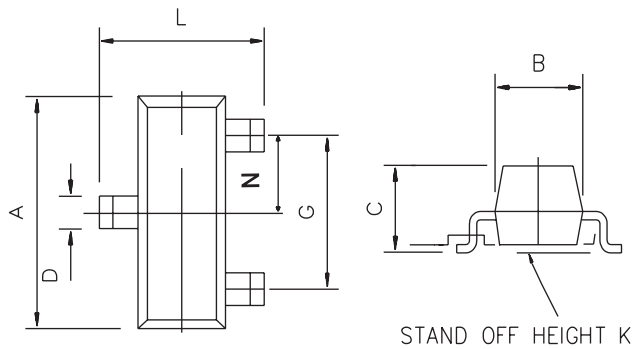
TAPE AND REEL INFORMATION

The order codes are shown as TA which is for 7 inch reels. For 13 inch reels substitute TC in place of TA in the order code.

| REEL CODE | REEL SIZE | TAPE WIDTH | QUANTITY PER REEL |
|-----------|-----------------|------------|-------------------|
| TA | 7 inch (180mm) | 8mm | 3000 |
| TC | 13 inch (330mm) | 8mm | 10000 |

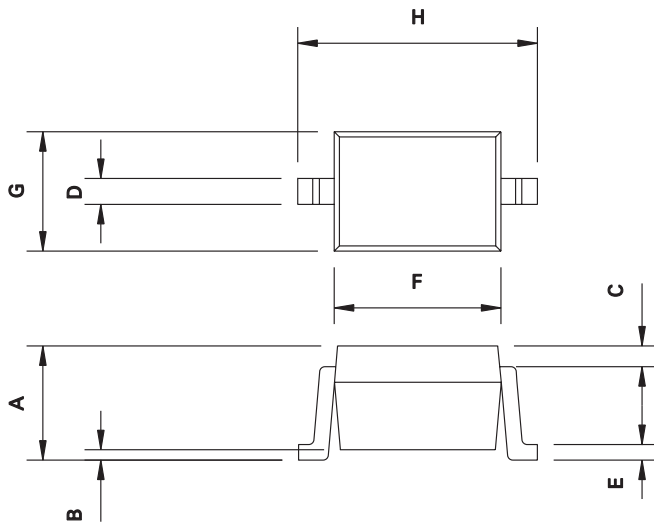
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SOT23 PACKAGE DIMENSIONS



| DIM | Millimetres | | Inches | |
|-----|-------------|------|-----------|--------|
| | Min | Max | Min | Max |
| A | 2.67 | 3.05 | 0.105 | 0.120 |
| B | 1.20 | 1.40 | 0.047 | 0.055 |
| C | - | 1.10 | - | 0.043 |
| D | 0.37 | 0.53 | 0.0145 | 0.021 |
| F | 0.085 | 0.15 | 0.0033 | 0.0059 |
| G | NOM 1.9 | | NOM 0.075 | |
| K | 0.01 | 0.10 | 0.0004 | 0.004 |
| L | 2.10 | 2.50 | 0.0825 | 0.0985 |
| N | NOM 0.95 | | NOM 0.037 | |

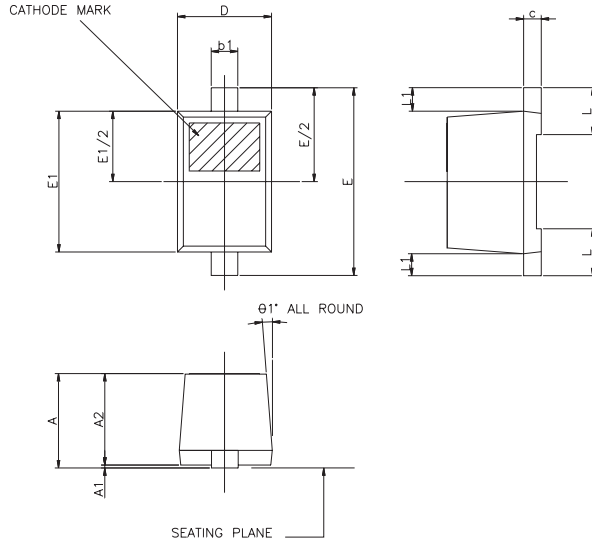
SOD323 PACKAGE DIMENSIONS



| DIM | Millimetres | | Inches | |
|-----|-------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.91 | 1.16 | 0.036 | 0.046 |
| B | 0.0 | 0.1 | 0.0 | 0.004 |
| D | 0.33 | 0.4 | 0.013 | 0.016 |
| E | 0.127 | 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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SOD523 PACKAGE DIMENSIONS



| | MILLIMETRES | |
|----|-------------|-------|
| | MIN. | MAX |
| A | — | 0.800 |
| A1 | 0.000 | 0.100 |
| A2 | 0.600 | 0.800 |
| b1 | 0.160 | 0.300 |
| c | 0.080 | 0.220 |
| D | 0.700 | 0.900 |
| E | 1.500 | 1.700 |
| E1 | 1.100 | 1.300 |
| L | 0.200 | 0.400 |
| L1 | 0.170 | 0.230 |
| 1° | 4° | 10° |

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