



**THE DATASHEET OF
ZC931TA**



ZC930, ZMV930, ZV931 series

SILICON 12V HYPERABRUPT VARACTOR DIODES

Device Description

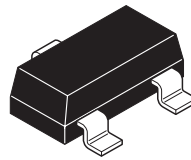
A range of silicon varactor diodes for use in frequency control and filtering. Featuring closely controlled CV characteristics and high Q. Low reverse current ensures very low phase noise performance. Available in single or dual common cathode format in a wide range of miniature surface mount packages.

Features

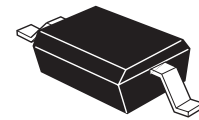
- Close tolerance C-V characteristics
- Octave tuning from 0 to 6V
- Low I_R (typically 200pA)
- Excellent phase noise performance
- High Q
- Range of miniature surface mount packages

Applications

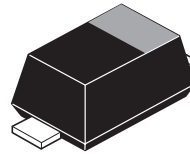
- VCXO and TCXO
- Wireless communications
- Pagers
- Mobile radio



SOT23



SOD323



SOD523

PINOUT



ZC930, ZMV930, ZV931 series

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 |

ABSOLUTE MAXIMUM RATINGS

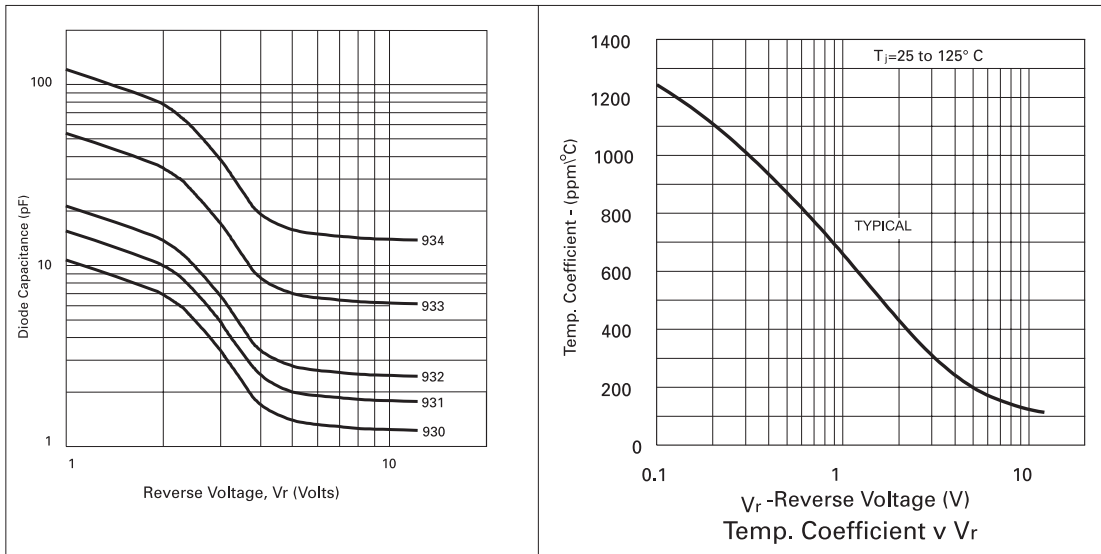
| PARAMETER | SYMBOL | MAX. | UNIT |
|--|-----------|------|------|
| Reverse voltage | V_R | 12 | V |
| Forward current | I_F | 100 | mA |
| Power dissipation at $T_{amb} = 25^{\circ}\text{C}$ SOT23 | P_{tot} | 330 | mW |
| Power dissipation at $T_{amb} = 25^{\circ}\text{C}$ SOD323 | P_{tot} | 330 | mW |
| Power dissipation at $T_{amb} = 25^{\circ}\text{C}$ SOD523 | P_{tot} | 250 | mW |

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



ZC930, ZMV930, ZV931 series

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 | - | - |

SOD323 - PART MARK ORIENTATION



Partmarking shown is for example only

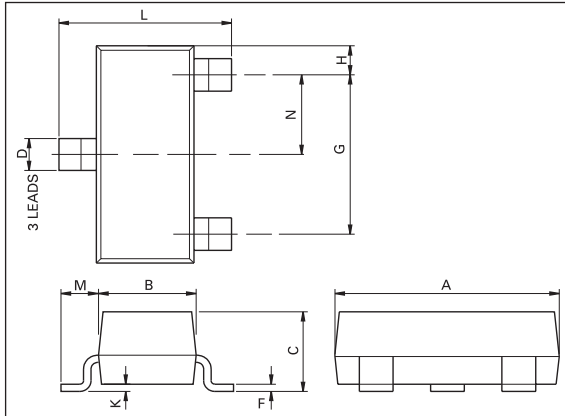
TAPE AND REEL INFORMATION

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 | 3,000 |
| TC | 13 inch (330mm) | 8mm | 10,000 |

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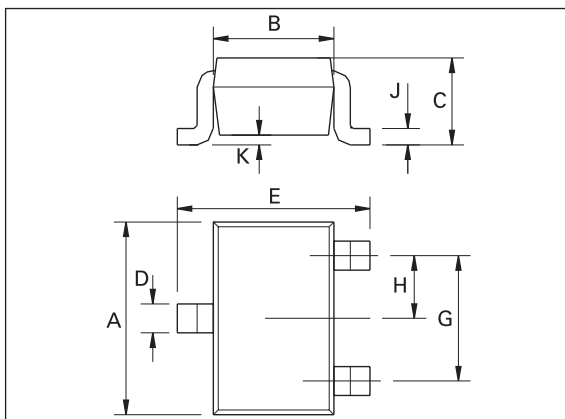
SOT23 PACKAGE OUTLINE



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 | |

SOD323 PACKAGE OUTLINE

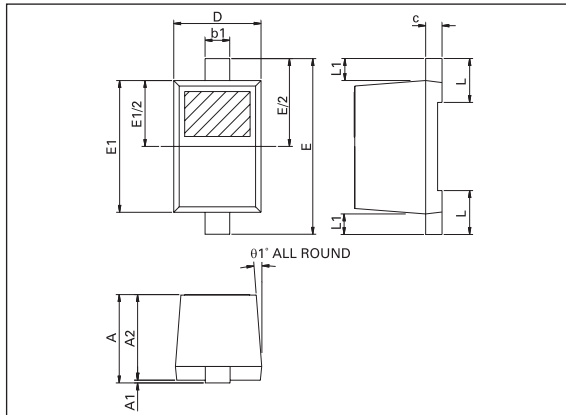


PACKAGE DIMENSIONS

| 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 | 0.12 | 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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SOD523 PACKAGE OUTLINE



PACKAGE DIMENSIONS

| DIM | Millimeters | | Inches | | DIM | Millimeters | | Inches | |
|-----|-------------|-------|--------|--------|------------------|-------------|-------|--------|--------|
| | Min | Max | Min | Max | | Min | Max | Min | Max |
| A | - | 0.800 | - | 0.0314 | E | 1.500 | 1.700 | 0.0590 | 0.0669 |
| A1 | 0.000 | 0.100 | 0.000 | 0.0039 | E1 | 1.100 | 1.300 | 0.0433 | 0.0511 |
| A2 | 0.600 | 0.800 | 0.0236 | 0.0314 | L | 0.200 | 0.400 | 0.0078 | 0.0157 |
| b1 | 0.160 | 0.300 | 0.0062 | 0.0118 | L1 | 0.170 | 0.230 | 0.0066 | 0.0090 |
| c | 0.080 | 0.220 | 0.0031 | 0.0086 | $\theta 1^\circ$ | 4° | 10° | 4° | 10° |

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