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## SILICON 25V HYPERABRUPT VARACTOR DIODES

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ZC829, ZDC833, ZMV829, ZMDC830, ZV831 Series

### Device description

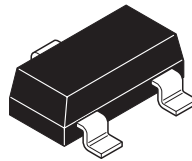
A range of silicon varactor diodes for use in frequency control and filtering. Featuring closely controlled CV characteristics and high Q. Low reverse current ensures very low phase noise performance. Available in single or dual common cathode format in a wide range of miniature surface mount packages.

### Features

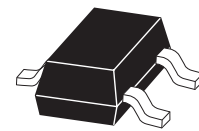
- Close tolerance C-V characteristics
- High tuning ratio
- Low I<sub>R</sub> (typically 200pA)
- Excellent phase noise performance
- High Q
- Range of miniature surface mount packages

### Applications

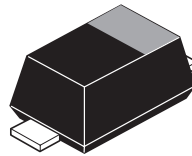
- VCXO and TCXO
- Wireless communications
- Pagers
- Mobile radio



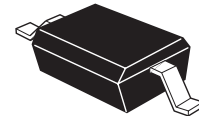
SOT23



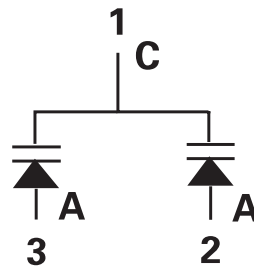
SOT323



SOD523



SOD323



\*Where steeper CV slopes are required there is the 12V hyperabrupt range.  
ZC930, ZMV930, ZV930, ZV931 Series

# 830 SERIES

## TUNING CHARACTERISTICS at Tamb = 25 °C

| PART | Capacitance (pF)<br>V <sub>R</sub> =2V, f=1MHz |       |       | Min Q<br>V <sub>R</sub> =3V<br>f=50MHz | Capacitance Ratio<br>C <sub>2</sub> / C <sub>20</sub><br>at f=1MHz |      |
|------|--|-------|-------|--|--|------|
|      | MIN.   | NOM.  | MAX.  |  | MIN.   | MAX. |
| 829A | 7.38   | 8.2   | 9.02  | 250                                    | 4.3  | 5.8  |
| 829B | 7.79   | 8.2   | 8.61  | 250                                    | 4.3  | 5.8  |
| 830A | 9.0  | 10.0  | 11.0  | 300                                    | 4.5  | 6.0  |
| 830B | 9.5  | 10.0  | 10.5  | 300                                    | 4.5  | 6.0  |
| 831A | 13.5   | 15.0  | 16.5  | 300                                    | 4.5  | 6.0  |
| 831B | 14.25  | 15.0  | 15.75 | 300                                    | 4.5  | 6.0  |
| 832A | 19.8   | 22.0  | 24.2  | 200                                    | 5.0  | 6.5  |
| 832B | 20.9   | 22.0  | 23.1  | 200                                    | 5.0  | 6.5  |
| 833A | 29.7   | 33.0  | 36.3  | 200                                    | 5.0  | 6.5  |
| 833B | 31.35  | 33.0  | 34.65 | 200                                    | 5.0  | 6.5  |
| 834A | 42.3   | 47.0  | 51.7  | 200                                    | 5.0  | 6.5  |
| 834B | 44.65  | 47.0  | 49.35 | 200                                    | 5.0  | 6.5  |
| 835A | 61.2   | 68.0  | 74.8  | 100                                    | 5.0  | 6.5  |
| 835B | 64.6   | 68.0  | 71.4  | 100                                    | 5.0  | 6.5  |
| 836A | 90.0   | 100.0 | 110.0 | 100                                    | 5.0  | 6.5  |

## ABSOLUTE MAXIMUM RATINGS

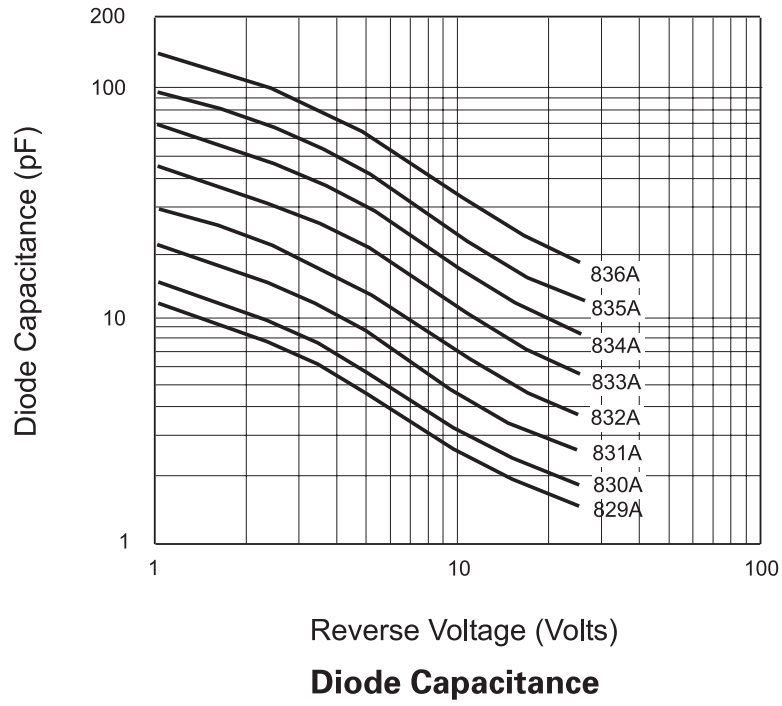
| PARAMETER   | SYMBOL           | MAX         | UNIT |
|---|------------------|-------------|------|
| Forward current                                     | I <sub>F</sub>   | 200         | mA   |
| Power dissipation at T <sub>amb</sub> = 25°C SOT23  | P <sub>tot</sub> | 330         | mW   |
| Power dissipation at T <sub>amb</sub> = 25°C SOD323 | P <sub>tot</sub> | 330         | mW   |
| Power dissipation at T <sub>amb</sub> = 25°C SOD523 | P <sub>tot</sub> | 250         | mW   |
| Operating and storage temperature range             |                  | -55 to +150 | °C   |

## ELECTRICAL CHARACTERISTICS at Tamb = 25 °C

| PARAMETER                              | CONDITIONS                    | MIN. | TYP. | MAX. | UNIT    |
|--|-------------------------------|------|------|------|---------|
| Reverse breakdown voltage              | I <sub>R</sub> = 10uA         | 25   |      |      | V       |
| Reverse voltage leakage                | V <sub>R</sub> = 20V          |      | 0.2  | 20   | nA      |
| Temperature coefficient of capacitance | V <sub>R</sub> = 3V, f = 1MHz |      | 300  | 400  | ppCm/°C |

# 830 SERIES

## TYPICAL CHARACTERISTICS



# 830 SERIES

## ORDER CODES AND PART MARKING

| SOT23      |           | SOD323     |           | SOD523     |           | SOT23      |           | SOT323     |           |
|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|
| ORDER CODE | PART MARK | ORDER CODE | PART MARK | ORDER CODE | PART MARK | ORDER CODE | PART MARK | ORDER CODE | PART MARK |
| ZC829ATA   | J9A       | ZMV829ATA  | AA        |            |           |            |           |            |           |
| ZC829BTA   | J9B       | ZMV829BTA  | CA        |            |           |            |           |            |           |
| ZC830ATA   | J1A       | ZMV830ATA  | AB        |            |           |            |           |            |           |
| ZC830BTA   | J1B       | ZMV830BTA  | CB        |            |           |            |           |            |           |
| ZC831ATA   | J3A       | ZMV831ATA  | AC        |            |           |            |           |            |           |
| ZC831BTA   | J3B       | ZMV831BTA  | CC        | ZV831BV2TA | 81        |            |           | ZMDC831BTA | CC        |
| ZC832ATA   | J4A       | ZMV832ATA  | AD        |            |           |            |           |            |           |
| ZC832BTA   | J4B       | ZMV832BTA  | CD        | ZV832BV2TA | 82        |            |           | ZMDC832BTA | CD        |
| ZC833ATA   | J2A       | ZMV833ATA  | AE        |            |           |            | ZDC833ATA | C2A        |           |
| ZC833BTA   | J2B       | ZMV833BTA  | CE        |            |           |            |           |            |           |
| ZC834ATA   | J5A       | ZMV834ATA  | AF        |            |           |            | ZDC834ATA | C5A        |           |
| ZC834BTA   | J5B       | ZMV834BTA  | CF        |            |           |            |           |            |           |
| ZC835ATA   | J6A       | ZMV835ATA  | AG        |            |           |            |           |            |           |
| ZC835BTA   | J6B       | ZMV835BTA  | CG        |            |           |            |           |            |           |

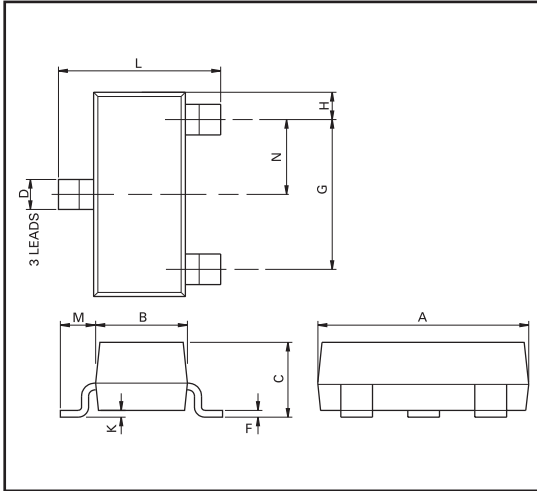
### TAPE AND REEL INFORMATION

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             |

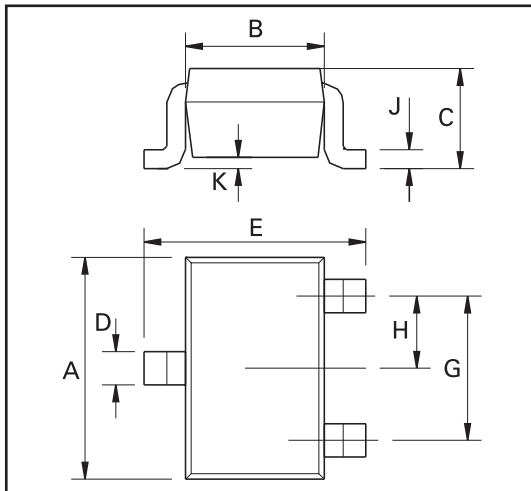
# 830 SERIES

## SOT23 PACKAGE DIMENSIONS



| DIM | Millimeters |      | 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 |

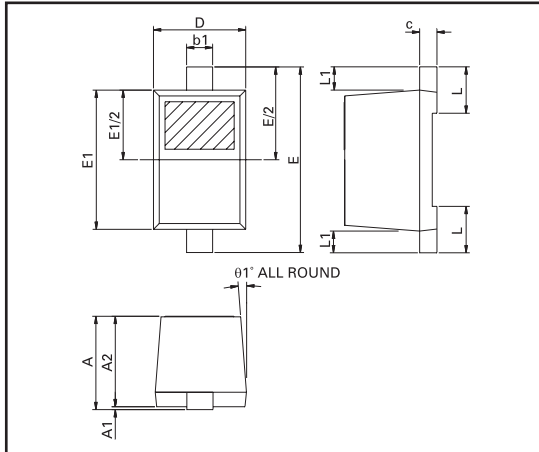
## SOT323 PACKAGE DIMENSIONS



| 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 |
| 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 |

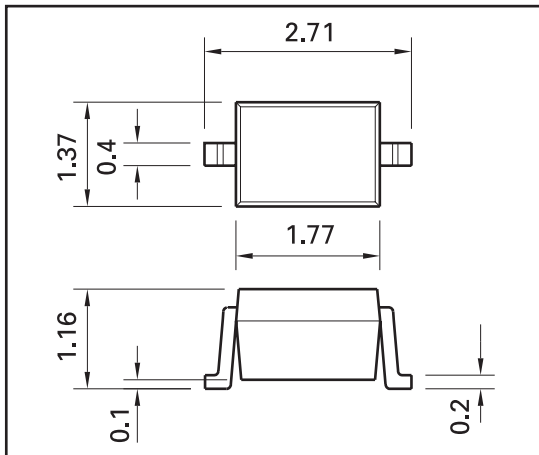
# 830 SERIES

## SOD523 PACKAGE DIMENSIONS



| DIM | Millimeters |       | Inches |        |
|-----|-------------|-------|--------|--------|
|     | Min         | Max   | Min    | Max    |
| A   | -           | 0.800 | -      | 0.0314 |
| A1  | 0.000       | 0.100 | 0.000  | 0.0039 |
| A2  | 0.600       | 0.800 | 0.0236 | 0.0314 |
| b1  | 0.160       | 0.300 | 0.0062 | 0.0118 |
| c   | 0.080       | 0.220 | 0.0031 | 0.0086 |
| D   | 0.700       | 0.900 | 0.0275 | 0.0354 |
| E   | 1.500       | 1.700 | 0.0590 | 0.0669 |
| E1  | 1.100       | 1.300 | 0.0433 | 0.0511 |
| L   | 0.200       | 0.400 | 0.0078 | 0.0157 |
| L1  | 0.170       | 0.230 | 0.0066 | 0.0090 |
| θ1° | 4°          | 10°   | 4°     | 10°    |

## SOD323 PACKAGE DIMENSIONS



| DIM | Millimeters |      | Inches |       |
|-----|-------------|------|--------|-------|
|     | Min         | Max  | Min    | Max   |
| A   | 1.8         | 2.2  | 0.071  | 0.087 |
| B   | 1.15        | 1.35 | 0.045  | 0.053 |
| C   | 0.8         | 1.0  | 0.031  | 0.039 |
| D   | 0.2         | 0.4  | 0.008  | 0.016 |
| F   | 0.1         | 0.25 | 0.004  | 0.01  |
| G   | 1.2         | 1.4  | 0.047  | 0.055 |

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