
SILICON 28V HYPERABRUPT VARACTOR DIODES

ZC829, ZDC833, ZMV829, ZMDC830, ZV831 Series**Device Description**

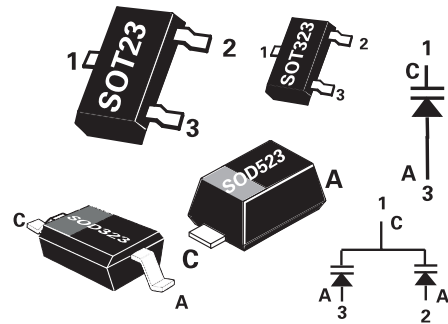
A range of silicon varactor diodes for use in frequency control and filtering. Featuring closely controlled CV characteristics and high Q. Low reverse current ensures very low phase noise performance. Available in single or dual common cathode format in a wide range of miniature surface mount packages.

Features

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

Applications

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



*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) V _R =2V, f=1MHz | | | Min Q V _R =3V f=50MHz | Capacitance Ratio C ₂ / C ₂₀ 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 |
| 836B | 95.0 | 100.0 | 105.0 | 100 | 5.0 | 6.5 |

ABSOLUTE MAXIMUM RATINGS

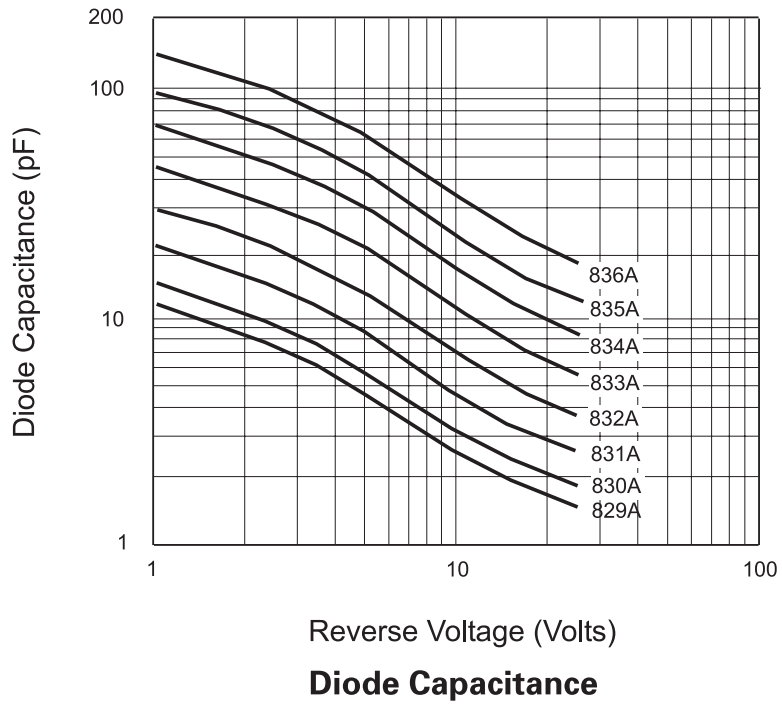
| PARAMETER | SYMBOL | MAX | UNIT |
|---|------------------|-------------|------|
| Forward current | I _F | 200 | mA |
| Power dissipation at T _{amb} = 25°C SOT23 | P _{tot} | 330 | mW |
| Power dissipation at T _{amb} = 25°C SOD323 | P _{tot} | 330 | mW |
| Power dissipation at T _{amb} = 25°C SOD523 | P _{tot} | 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 _R = 10uA | 25 | | | V |
| Reverse voltage leakage | V _R = 20V | | 0.2 | 20 | nA |
| Temperature coefficient of capacitance | V _R = 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 | | | | | | |
| ZC836ATA | J7A | | | | | | | | |
| ZC836BTA | J7B | | | | | | | | |

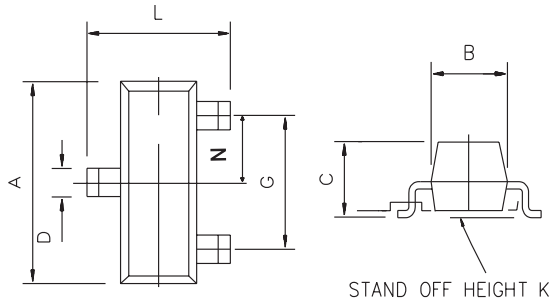
TAPE AND REEL INFORMATION

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 |

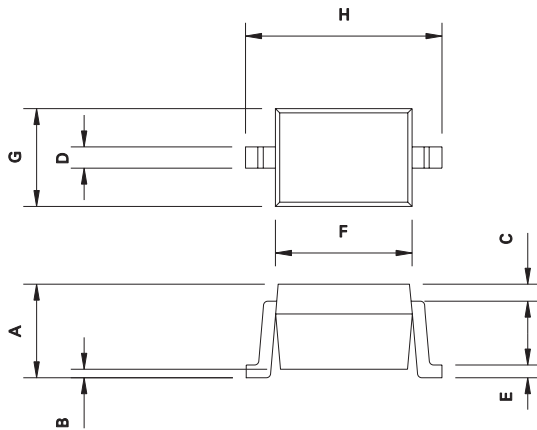
830 series

SOT23 PACKAGE DIMENSIONS



| DIM | 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 | |

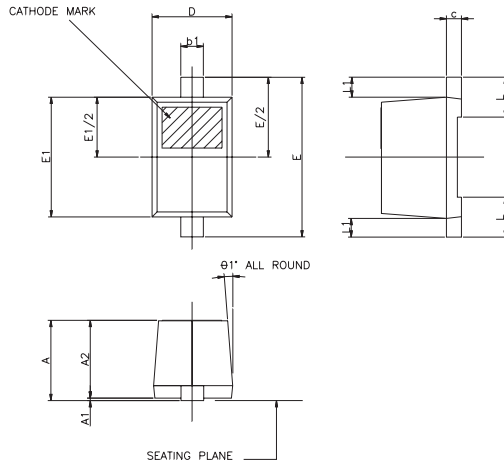
SOD323 PACKAGE DIMENSIONS



| 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 |

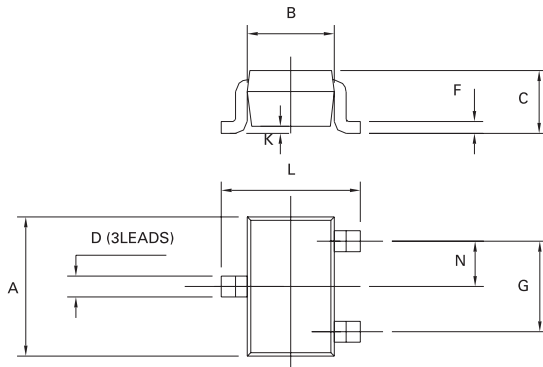
830 series

SOD523 PACKAGE DIMENSIONS



| DIM | 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 |
| $\theta 1^\circ$ | 4° | 10° |

SOD323 PACKAGE DIMENSIONS



| DIM | Millimetres | | 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 |
| K | — | 0.1 | — | 0.004 |
| L | 2.0 | 2.2 | 0.079 | 0.087 |
| N | 0.60 | 0.70 | 0.023 | 0.028 |

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