



Microsemi[®]

KVX2001 – KVX3901A

SURFACE MOUNT VARACTOR DIODES

Wide Bandwidth SOT-23 Hyperabrupt

RoHS Compliant



DESCRIPTION

These families of high ratio hyperabrupt varactor diodes employ high energy ion implantation and grown junction epitaxy to provide highly repeatable C / V functions and the highest Q values available in the industry. The economical SOT-23 package allows these devices to be used in a wide range of VHF-UHF and wireless microwave designs. All are available in single die 23-0 configuration (see configuration sheet). Other configurations are available - consult factory for availability.

This series of diodes meets RoHS requirements per EU Directive 2002/95/EC. Consult the factory for details.

APPLICATIONS

These devices are ideal for wide bandwidth linear VCO's from VHF through 1500 MHz. They are especially well suited for economy applications that demand ruggedness and repeatability. Straight line frequency Vs. Voltage functions are realized across mid voltage ranges. They can also be used in voltage variable filter and phase shifting applications which demand higher peak voltage handling and lower distortion by selecting back to back configurations. Consult factory for availability.

**ABSOLUTE MAXIMUM RATINGS AT 25° C
(UNLESS OTHERWISE SPECIFIED)**

| Rating | Symbol | Value | Unit |
|---|------------------|-------------|---------|
| Maximum Working Voltage (KVX3xxx) | V _R | 27 | V |
| Maximum Working Voltage (KVX2xxx) | | 22 | |
| Maximum Leakage Current @ 80% of Rated V _B | I _R | 50 | nA |
| Forward Voltage @ 50mA | V _F | 1.0 | V |
| Thermal Coefficient of Capacitance @4 Volts | T _{CC} | 300 | ppm/ °C |
| Storage Temperature | T _{STG} | -55 to +125 | °C |
| Operating Temperature | T _{OP} | -55 to +125 | °C |

IMPORTANT: For the most current data, consult our website: www.MICROSEMI.com
Specifications are subject to change. Consult factory for the latest information.



These devices are ESD sensitive and must be handled using ESD precautions.

¹ Unless otherwise specified, these products are supplied with matte Tin terminations suitable for RoHS compliant assembly.



APPLICATIONS/BENEFITS

- High Linearity VCOs
- PLL VCOs
- Octave Bandwidth VCOs
- VVFs
- Low ϕ Noise VCO.s
- ϕ Shifters

20V Microwave Hyperabrupt Varactors

ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)

| MODEL NUMBER | V _B (V) I _R = 10uA (Min) | C _T (pF) ¹ V _R = 0V (Min) | C _T (pF) ¹ V _R = 4V (Min – Max) | C _T (pF) ¹ V _R = 20V (Min – Max) | Q ² V _R =4V (Min) |
|-----------------|--|--|--|---|---|
| KVX2122 | 22 | 2.7 | 1.25 - 1.75 | 0.43 - 0.57 | 1000 |
| KVX2132 | 22 | 4.2 | 1.7 - 2.5 | 0.52 – 0.72 | 850 |
| KVX2142 | 22 | 6.3 | 2.2 - 3.8 | 0.68 - 0.96 | 700 |
| KVX2152 | 22 | 11.9 | 3.7 - 5.5 | 0.94 - 1.3 | 600 |
| KVX2162 | 22 | 26.0 | 9.0 - 11.0 | 1.9 - 2.5 | 400 |

25V VHF/UHF Hyperabrupt Varactors

ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)

| MODEL NUMBER | V _B (V) I _R = 10uA (Min) | C _T (pF) ¹ V _R = 3V (Min) | C _T (pF) ¹ V _R = 25V (Min – Max) | Q ² V _R =4V (Min) |
|-----------------|--|--|---|---|
| KVX31S1 | 27 | 9.5 - 14.5 | 1.8 - 2.8 | 200 |
| KVX3201A | 27 | 9.5 - 14.5 | 1.8 - 2.8 | 750 |
| KVX38S2 | 27 | 26.0 - 32.0 | 4.3- 6.0 | 200 |
| KVX3901A | 27 | 26.0 – 32.0 | 4.3 - 6.0 | 500 |

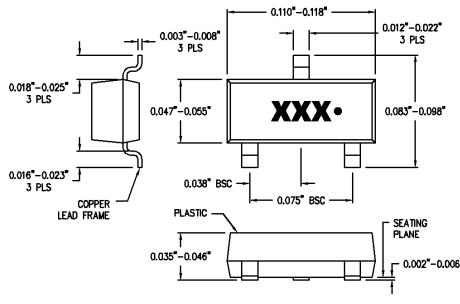
20VHF/UHF Hyperabrupt Varactors

ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)

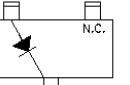
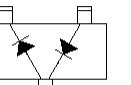
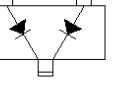
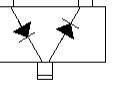
| MODEL NUMBER | V _B (V) I _R = 10uA (Min) | C _T (pF) ¹ V _R = 4V (Min) | C _T (pF) ¹ V _R = 8V (Min – Max) | C _T (pF) ¹ V _R = 20V (Min – Max) | Q ² V _R =4V (Min) |
|-----------------|--|--|--|---|---|
| KVX2001 | 22 | 18 - 22 | 7.5 - 10.5 | 3.1 - 3.9 | 160 |
| KVX2201 | 22 | 45 - 55 | 18 - 25 | 7.3 - 9.2 | 125 |
| KVX2301 | 22 | 100 - 120 | 39 - 55 | 15 - 19 | 80 |

1. Capacitance is measured at $f = 1$ MHz
2. Q is determined at $V_R = 4V$, $f = 50$ MHz by $Q = 1/2\pi f R_s C_j$

PACKAGE STYLE 23-X



STANDARD CONFIGURATIONS

| 23-0 | 23-1 | 23-2 |
|---|---|---|
|  |  |  |
| 23-3 | 23-4 | 23-5 |
|  |  |  |

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