

## ZC930, ZMV930 series

---

### SILICON 12V HYPERABRUPT VARACTOR DIODES

---

#### Device Description

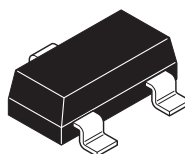
A range of silicon varactor diodes for use in frequency control and filtering. Featuring closely controlled CV characteristics and high Q. Low reverse current ensures very low phase noise performance. Available in single or dual common cathode format in a wide range of miniature surface mount packages.

#### Features

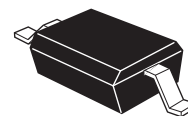
- Close tolerance C-V characteristics
- Octave tuning from 0 to 6V
- Low  $I_R$  (typically 200pA)
- Excellent phase noise performance
- High Q

#### Applications

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



SOT23



SOD323



## ZC930, ZMV930 series

### 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
Junction temperature	$T_j$	125	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

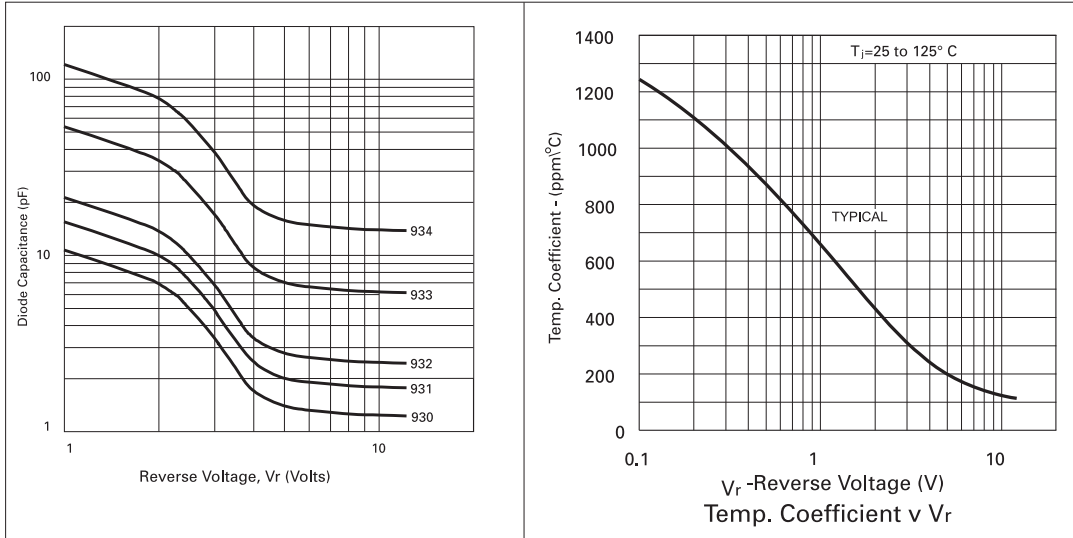
PART	Capacitance $V_R=1\text{V}$	Capacitance $V_R=2.5\text{V}$		Capacitance $V_R=4\text{V}$	Minimum $Q$ $V_R=4\text{V}$ $f=50\text{MHz}$
	MIN. pF	MIN. pF	MAX. pF	MAX. pF	
930	8.70	4.30	5.50	2.90	200
931	13.50	6.50	7.80	4.00	300
932	17.00	8.50	10.50	5.50	200
933	42.00	18.00	27.00	12.00	150
933A	42.00	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

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

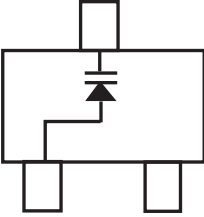

# ZC930, ZMV930 series

## TYPICAL CHARACTERISTICS



# ZC930, ZMV930 series

## ORDER CODES AND PART MARKING

SOT23		SOD323	
			
ORDER CODE	PART MARK	ORDER CODE	PART MARK
ZC930TA	V15	ZMV930TA	AH
ZC931TA	V14	ZMV931TA	AJ
ZC932TA	V13	ZMV932TA	AK
ZC933TA	V17	ZMV933TA	AL
ZC933ATA	A17	ZMV933ATA	AM
ZC934TA	V16	ZMV934TA	AN
ZC934ATA	A16	ZMV934ATA	AO

## SOD323 - PART MARK ORIENTATION



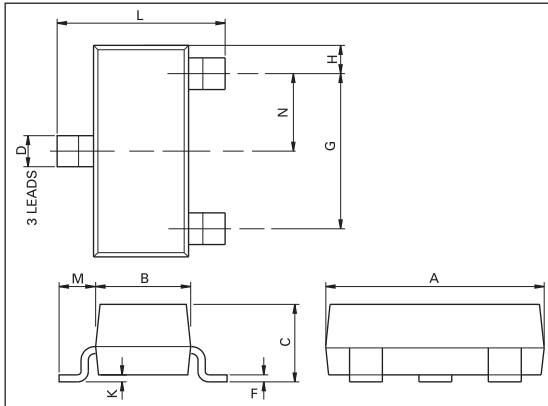
Partmarking shown is for example only

## TAPE AND REEL INFORMATION

REEL CODE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
TA	7 inch (180mm)	8mm	3,000

## ZC930, ZMV930 series

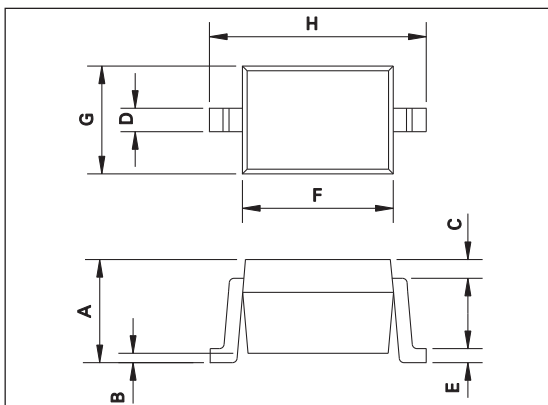
### SOT23 PACKAGE OUTLINE



### 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	
G	1.90 NOM		0.075 NOM		-	-		-	

### SOD323 PACKAGE OUTLINE



### 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
C	-	-	-	-
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

# ZC930, ZMV930 series

## Definitions

### Product change

Zetex Semiconductors reserves the right to alter, without notice, specifications, design, price or conditions of supply of any product or service. Customers are solely responsible for obtaining the latest relevant information before placing orders.

### Applications disclaimer

The circuits in this design/application note are offered as design ideas. It is the responsibility of the user to ensure that the circuit is fit for the user's application and meets with the user's requirements. No representation or warranty is given and no liability whatsoever is assumed by Zetex with respect to the accuracy or use of such information, or infringement of patents or other intellectual property rights arising from such use or otherwise. Zetex does not assume any legal responsibility or will not be held legally liable (whether in contract, tort (including negligence), breach of statutory duty, restriction or otherwise) for any damages, loss of profit, business, contract, opportunity or consequential loss in the use of these circuit applications, under any circumstances.

### Life support

Zetex products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Zetex Semiconductors plc. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body  
or
2. support or sustain life and whose failure to perform when properly used in accordance with instructions  
for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

### Reproduction

The product specifications contained in this publication are issued to provide outline information only which (unless agreed by the company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned.

### Terms and Conditions

All products are sold subjects to Zetex' terms and conditions of sale, and this disclaimer (save in the event of a conflict between the two when the terms of the contract shall prevail) according to region, supplied at the time of order acknowledgement.

For the latest information on technology, delivery terms and conditions and prices, please contact your nearest Zetex sales office.

### Quality of product

Zetex is an ISO 9001 and TS16949 certified semiconductor manufacturer.

To ensure quality of service and products we strongly advise the purchase of parts directly from Zetex Semiconductors or one of our regionally authorized distributors. For a complete listing of authorized distributors please visit: [www.zetex.com/salesnetwork](http://www.zetex.com/salesnetwork)

Zetex Semiconductors does not warrant or accept any liability whatsoever in respect of any parts purchased through unauthorized sales channels.

### ESD (Electrostatic discharge)

Semiconductor devices are susceptible to damage by ESD. Suitable precautions should be taken when handling and transporting devices. The possible damage to devices depends on the circumstances of the handling and transporting, and the nature of the device. The extent of damage can vary from immediate functional or parametric malfunction to degradation of function or performance in use over time. Devices suspected of being affected should be replaced.

### Green compliance

Zetex Semiconductors is committed to environmental excellence in all aspects of its operations which includes meeting or exceeding regulatory requirements with respect to the use of hazardous substances. Numerous successful programs have been implemented to reduce the use of hazardous substances and/or emissions.

All Zetex components are compliant with the RoHS directive, and through this it is supporting its customers in their compliance with WEEE and ELV directives.

### Product status key:

"Preview"Future device intended for production at some point. Samples may be available

"Active"Product status recommended for new designs

"Last time buy (LTB)"Device will be discontinued and last time buy period and delivery is in effect

"Not recommended for new designs"Device is still in production to support existing designs and production

"Obsolete"Production has been discontinued

Datasheet status key:

"Draft version" This term denotes a very early datasheet version and contains highly provisional information, which may change in any manner without notice.

"Provisional version" This term denotes a pre-release datasheet. It provides a clear indication of anticipated performance. However, changes to the test conditions and specifications may occur, at any time and without notice.

"Issue" This term denotes an issued datasheet containing finalized specifications. However, changes to specifications may occur, at any time and without notice.



ISSUE 10 - JUNE 2007

## ZC930, ZMV930 series

© Zetex Semiconductors plc 2007

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Kustermann-Park Balanstraße 59 D-81541 München Germany Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 <a href="mailto:europe.sales@zetex.com">europe.sales@zetex.com</a>	Zetex Inc 700 Veterans Memorial Hwy Hauppauge, NY 11788 USA Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 <a href="mailto:usa.sales@zetex.com">usa.sales@zetex.com</a>	Zetex (Asia) Ltd 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong Telephone: (852) 26100 611 Fax: (852) 24250 494 <a href="mailto:asia.sales@zetex.com">asia.sales@zetex.com</a>	Zetex Semiconductors plc Zetex Technology Park Chadderton, Oldham, OL9 9LL United Kingdom Telephone (44) 161 622 4444 Fax: (44) 161 622 4446 <a href="mailto:hq@zetex.com">hq@zetex.com</a>

ISSUE 10 - JUNE 2007