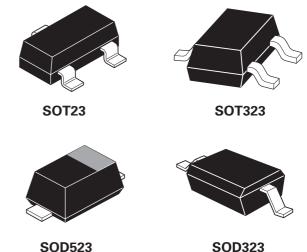


# 830 series Silicon 25V hyperabrupt varactor diodes

### ZC829, ZDC833, ZMV829, ZMDC830 and ZV831

## **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 rage of miniature surface mount packages.

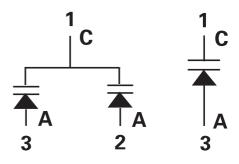


#### **Features**

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

## **Applications**

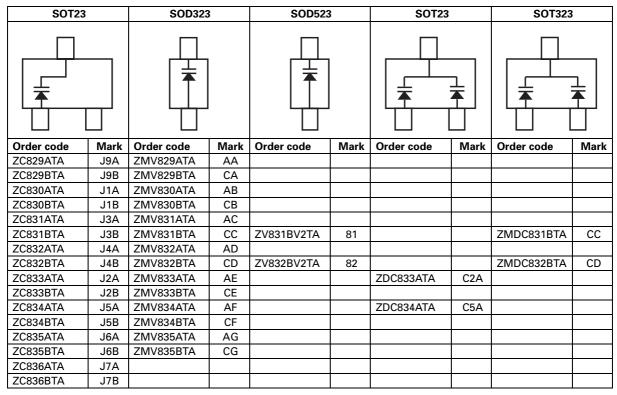
- VCXO and TCXO
- Wireless communications
- Pagers
- · Mobile radio



Where steeper CV slopes are required there is the 12V hyperabrupt range:

ZC930, ZMV930, ZV930 and ZV931

## Order codes and device marking



#### Note:

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.

### Tape and reel information

Reel code	Reel size (inches)	Tape width (millimeters)	Quantity per reel
TA	7	8	3,000
TC	13	8	10,000

# Tuning characteristics at $T_{amb} = 25^{\circ}C$

Part	Capacitance (pF) V <sub>R</sub> =2V, f=1MHz			Min Q V <sub>R</sub> = 3V f = 50MHz	C <sub>2</sub> /	nce ratio C <sub>20</sub> 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

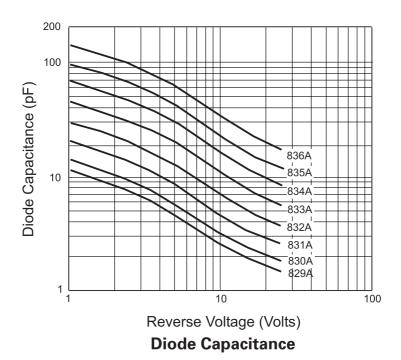
## **Absolute maximum ratings**

Parameter	Symbol	Max.	Unit
Forward current	I <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

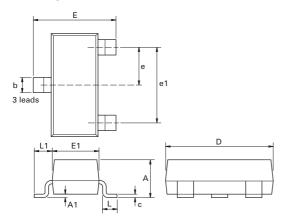
## Electrical characteristics at T<sub>amb</sub> = 25°C

Paramater	Conditions	Min.	Тур.	Max.	Unit
Reverse breakdown voltage	$I_R = 10\mu A$	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

## **Typical characteristics**



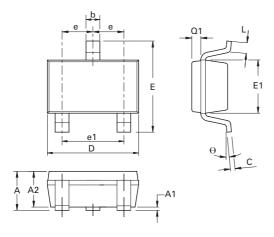
## Package outline - SOT23



Dim.	Millim	neters	Inc	hes	Dim.	Millim	eters	Inc	hes
	Min.	Max.	Min.	Max.		Min.	Max.	Max.	Max.
Α	2.67	3.05	0.105	0.120	Н	0.33	0.51	0.013	0.020
В	1.20	1.40	0.047	0.055	K	0.01	0.10	0.0004	0.004
С	-	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 N	lОМ	0.0375	NOM
G	1.90 l	NOM	0.075	NOM	-	-	-	-	-

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

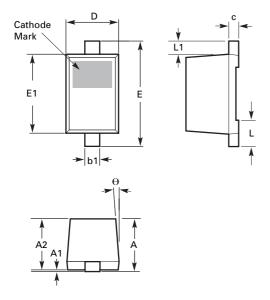
## Package outline - SOT323



Dim.	Millim	neters	Inc	hes	Dim.	Millim	eters	Inc	hes
	Min.	Max.	Min.	Max.		Min.	Max.	Max.	Max.
Α	0.80	1.10	0.0315	0.0433	E1	1.15	1.35	0.0453	0.0532
A1	0	0.10	0	0.0039	е	0.65 E	BSC	0.025	6 BSC
A2	0.80	1.00	0.0315	0.394	e1	1.30 E	BSC	0.051	2 BSC
b	0.25	0.40	0.0098	0.0158	L	0.10	0.30	0.0039	0.0118
С	0.10	0.26	0.0039	0.0102	Q1	0.10	0.40	0.0039	0.0158
D	1.80	2.20	0.0709	0.0866	θ	0°	30°	0°	30°
E	1.80	2.40	0.0709	0.0945	-	-	-	-	-

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

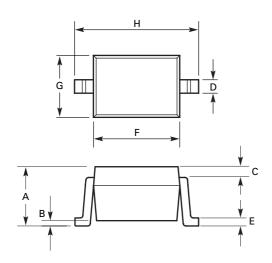
## Package outline - SOD523



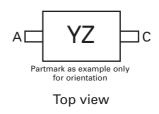
DIM	Millin	neters	Inc	hes	DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
Α	-	0.800	-	0.0314	E	1.500	1.700	0.0590	0.0669
A1	0.000	0.100	0.000	0.0039	E1	1.100	1.300	0.0433	0.0511
A2	0.600	0.800	0.0236	0.0314	L	0.200	0.400	0.0078	0.0157
b1	0.160	0.300	0.0062	0.0118	L1	0.170	0.230	0.0066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

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

# Package outline - SOD323



# Top mark



DIM	Millimeters		DIM	Millin	neters
	Min.	Max.		Min.	Max.
Α	0.91	1.16	E	0.127	0.200
В	0.00	0.10	F	1.52	1.77
С	-	-	G	1.11	1.37
D	0.33	0.40	Н	2.46	2.71

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"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 de	esigns" Device is still in production to support existing designs and production
"Obsolete"	Production has been discontinued
Datasheet status key:	
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