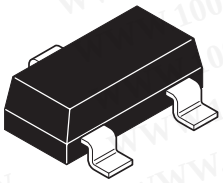
830 series
Silicon 25V hyperabrupt varactor diodes

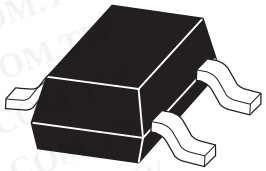
ZC829, ZDC833, ZMV829, ZMDC830 and ZV831

Description

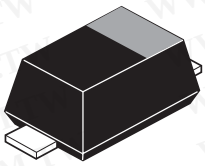
A range of silicon varactor diodes for use in frequency control and filtering. Featuring closely controlled CV characteristics and high Q. Low reverse current ensures very low phase noise performance. Available in single or dual common cathode format in a wide rage of miniature surface mount packages.



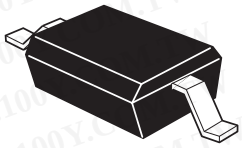
SOT23



SOT323



SOD523



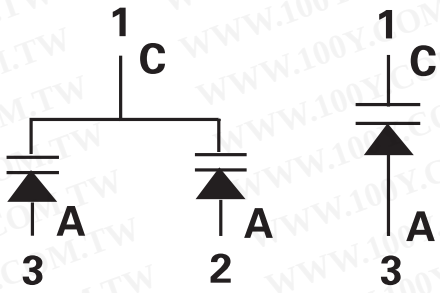
SOD323

Features

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

Applications

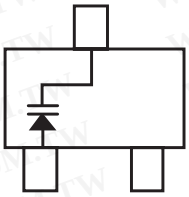
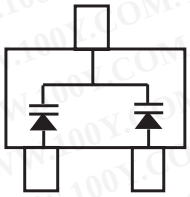
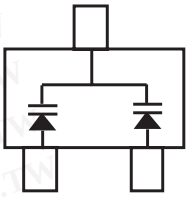
- VCXO and TCXO
- Wireless communications
- Pagers
- Mobile radio



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

ZC930, ZMV930, ZV930 and ZV931

Order codes and device marking

SOT23		SOD323		SOD523		SOT23		SOT323	
									
Order code	**Mark**	**Order code**	**Mark**	**Order code**	**Mark**	**Order code**	**Mark**	**Order code**	**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								

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°C

Part	Capacitance (pF) V_R=2V, f=1MHz			Min Q V_R = 3V f = 50MHz	Capacitance ratio C_2 / C_{20} @ 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

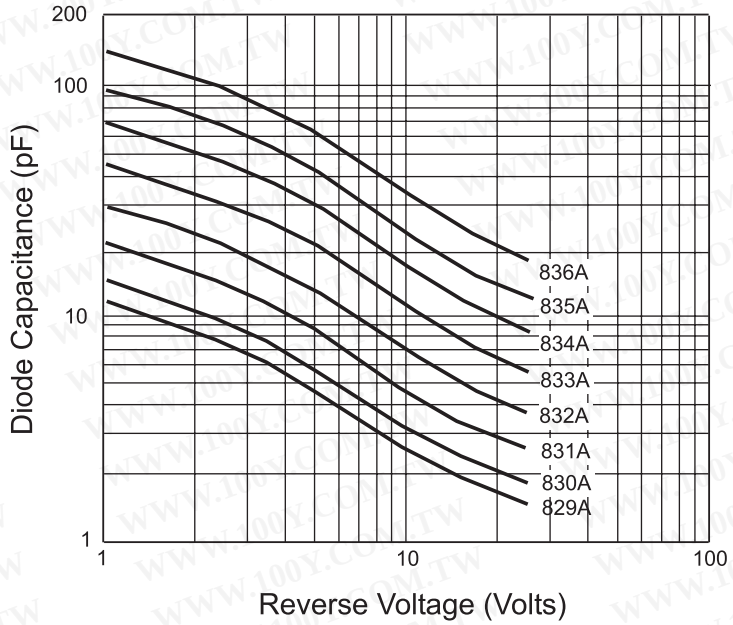
Absolute maximum ratings

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 T_{amb} = 25°C

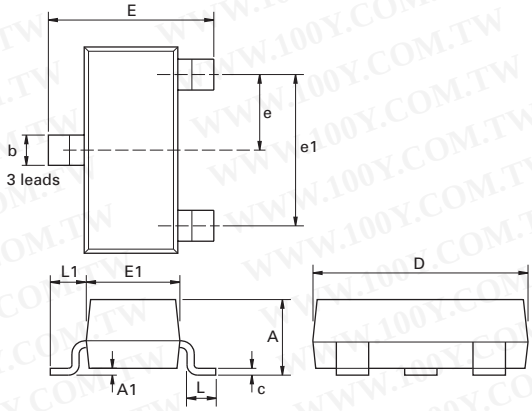
Paramater	Conditions	Min.	Typ.	Max.	Unit
Reverse breakdown voltage	I_R = 10μA	25			V
Reverse voltage leakage	V_R = 20V		0.2	20	nA
Temperature coefficient of capacitance	V_R = 3V, f = 1MHz		300	400	ppCm/°C

Typical characteristics



Diode Capacitance

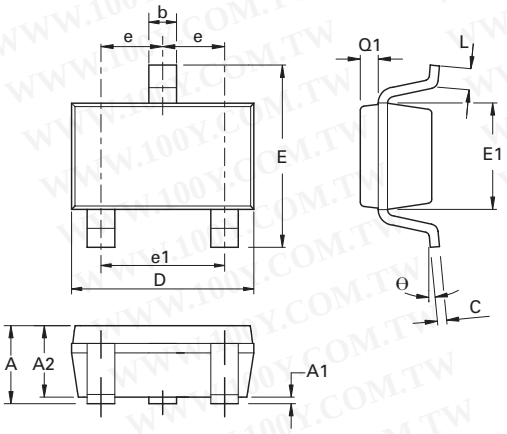
Package outline - SOT23



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		-	-	-	-	-

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

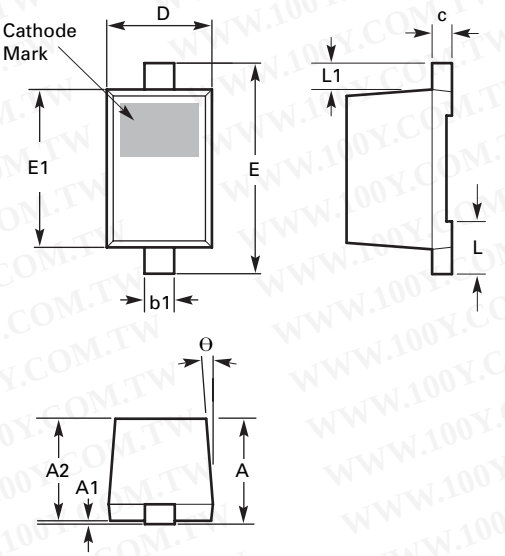
Package outline - SOT323



Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Max.	Max.
A	0.80	1.10	0.0315	0.0433	E1	1.15	1.35	0.0453	0.0532
A1	0	0.10	0	0.0039	e	0.65 BSC		0.0256 BSC	
A2	0.80	1.00	0.0315	0.394	e1	1.30 BSC		0.0512 BSC	
b	0.25	0.40	0.0098	0.0158	L	0.10	0.30	0.0039	0.0118
C	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

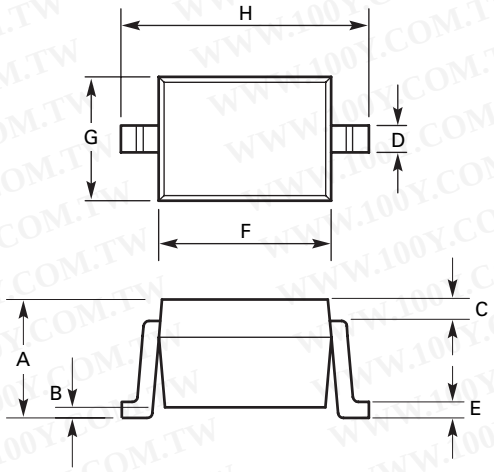
Package outline - SOD523



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	–	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
c	0.080	0.220	0.0031	0.0086	U	4°	10°	4°	10°
D	0.700	0.900	0.0275	0.0354	-	-	-	-	-

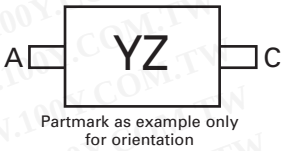
Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

Package outline - SOD323



DIM	Millimeters		DIM	Millimeters	
	Min.	Max.		Min.	Max.
A	0.91	1.16	E	0.127	0.200
B	0.00	0.10	F	1.52	1.77
C	-	-	G	1.11	1.37
D	0.33	0.40	H	2.46	2.71

Top mark



Partmark as example only for orientation

Top view

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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 designs"	Device is still in production to support existing designs and production
"Obsolete"	Production has been discontinued

Datasheet status key:

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