CRYSTALONCS
2805 Veterans Highway
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VOLTAGE-VARIABLE-CAPACITANCE DIODES
SILICON PASSIVATED
CV830 Series replaces MV830 Series

CV830 thru CV840

GEOMETRY 415

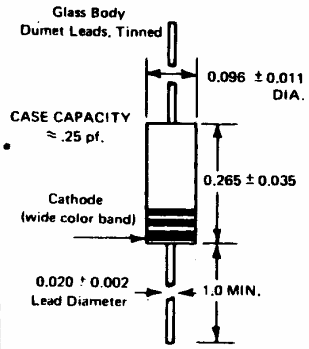
SILICON VOLTAGE-VARIABLE-CAPACITANCE DIODES

. . . designed for electronic-tuning applications from 15 to 100 pf.

- Guaranteed C_T versus V_R Slope
- Guaranteed High-Frequency Q
- Wide Tuning Range
- 100% Hermetic-Seal Check
- 100% High-Temperature Bake
- Solid-State Reliability to Replace Mechanical Tuning Methods

MECHANICAL DATA

DO-7 PACKAGE



All Dimensions in Inches

MAXIMUM RATINGS: T_C = 25°C (UNLESS OTHERWISE NOTED)

Characteristic	Symbol	Rating	Unit
Reverse Voltage	V_R	30	Volts
Forward Current	I_F	250	mA
Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	400 2.67	mW mW/°C
Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	· 2 13.3	W mW/°C
Junction Temperature	T_J	+175	°C
Storage Temperature Range	T_{stg}	−65 to +200	°C

ELECTRICAL CHARACTERISTICS: T_A = 25°C (UNLESS OTHERWISE NOTED) SEE NOTES

Characteristic — All Types	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Breakdown Voltage	BV_R	I_R = 10 μAdc	30	—	—	Vdc
Reverse Voltage Leakage Current	I_R	V_R = 25 Vdc	—	—	0.2	μ Adc
Series Inductance	L_S	f = 250 mc, L ≈ 1/16"	—	5	10	nhy
Case Capacitance	C_C	f = 1 mc, L = 0	—	0.25	0.3	pf

Device	C_T, Diode Capacitance V_R = 4 Vdc, f = 1 mc pf			TR, Tuning Ratio f = 1 mc C_4/C_{25}		Q, Figure of Merit V_R = 4 Vdc, f = 50 mc		α	
	Min	Typ	Max	Min	Typ	Min	Typ	Min	Typ
CV830	13.5	15.0	16.5	1.8	2.00	30	35	0.32	0.375
CV831	16.2	18.0	19.8	1.8	2.00	25	30	0.32	0.375
CV832	19.8	22.0	24.2	1.8	2.10	25	30	0.32	0.40
CV833	24.3	27.0	29.7	1.8	2.10	25	30	0.32	0.40
CV834	29.7	33.0	36.3	1.9	2.12	20	25	0.35	0.41
CV835	35.1	39.0	42.9	1.9	2.12	20	25	0.35	0.41
CV836	42.3	47.0	51.7	1.9	2.15	15	20	0.35	0.415
CV837	50.4	56.0	61.6	1.9	2.15	15	20	0.35	0.415
CV838	61.2	68.0	74.8	2.0	2.18	15	20	0.375	0.425
CV839	73.8	82.0	90.2	2.0	2.18	10	15	0.375	0.425
CV840	90.0	100.0	110.0	2.0	2.18	10	15	0.375	0.425

PARAMETER TEST METHODS

1. L_S, SERIES INDUCTANCE
L_S is measured on a shorted package at 250mc using an impedance bridge (Boonton Radio Model 250A RX Meter). L = lead length.

2. C_C, CASE CAPACITANCE
C_C is measured on an open package at 1 mc using a capacitance bridge (Boonton Electronics Model 75A or equivalent).

3. C_T, DIODE CAPACITANCE
(C_T = C_C + C_J). C_T is measured at 1 mc using a capacitance bridge (Boonton Electronics Model 33AS9 or equivalent).

4. TR, TUNING RATIO
TR is the ratio of C_T measured at 4 Vdc divided by C_T measured at 25 Vdc.

5. Q, FIGURE OF MERIT
Q is calculated by taking the G and C readings of an admittance bridge at the specified frequency and substituting in the following equations:

$$Q = \frac{2\pi f C}{G}$$

(Boonton Electronics Model 33B1 or equivalent).

6. α, DIODE CAPACITANCE REVERSE VOLTAGE SLOPE
The diode capacitance, C_T (as measured at V_R = 4 Vdc, f = 1 mc) is compared to C_T (as measured at V_R = 30 Vdc, f = 1 mc) by the following equation which defines α.

$$\alpha = \frac{\log C_T(4) - \log C_T(25)}{\log 25 - \log 4}$$

Note that a C_T versus V_R law is assumed as shown in the following equation where C_C is included.

$$C_T = \frac{K}{V_R}$$