

# CODI Semiconductor, Inc.

## JEDEC REGISTERED VOLTAGE VARIABLE CAPACITOR

JEDEC REGISTERED  
VOLTAGE  
VARIABLE  
CAPACITORS

### SPECIFICATION LIST

TYPE	Cj @ 4, 1 mhz (pf)	±%					Cj Ratio Cj1/Cj2 @ V1/V2		ΔC/ΔT (%/°C)	Q @ 4V, 50 mhz	Ir max. @ V <sub>R</sub> @ 25°C		
		-	A	B	C	D	min.	max.			μA	volts	
1N950	35	20							0.03	7	1.0	130	
1N951	50	20					2.4	1/10	0.03	7	1.0	80	
1N952	70	20					2.4	1/10	0.03	7	1.0	60	
1N953	100	20					2.4	1/10	0.03	7	1.0	25	
1N954	35	20					2.4	1/10	0.03	7	1.0	25	
1N955	50	20					2.4	1/10	0.03	7	1.0	25	
1N956	70	20					2.4	1/10	0.03	7	1.0	25	
1N3182	33	30					1.4@500KHZ	4/10		25@200MHZ	5.0	20	
1N3488	56	10					2.5	0.1/15	0.03	7	1.0	15	
1N3551	50	6					1.35	1.41	0.03	30	0.2@85°C	10	
1N3552	21.25	6					1.35	1.41	0.03	25	0.1@85°C	20	
1N3554	12	20					4.5	2/80	0.03	60	0.1	50	
1N3555	20	20					4.5	2/80	0.03	60	10	110	
1N3556	47	10					6.4	1/100	0.03	100	0.1	50	
1N3557	24@8V 55.5@1V	20 19					5.0 8.9	4/200 1/200	0.03	75@8V	10	210	
1N3945	20@50MHZ	10					1.15	3/5	4% (-40 to +25°C) 2% ( 25 to +85°C)	7	1.0	20	
1N3946	60@6V,50MHZ 71@4V,50MHZ	10 12					1.32	4/8	6V:2% (-40 to +25°C) 1% ( 25 to +85°C) 4V:4% (-40 to +25°C) 2% ( 25 to +85°C)	9@6V 7@4V	1.0	9	
1N3947	70	20					1.15	3/5	4% (-40 to +25°C) 2% ( 25 to +85°C)	9	1.0	9	
1N4598	22@6V	20					4.5	2/80	0.03	50	0.1	80	
1N4599	47@50MHZ	5					5.0	2/100	0.1	100	0.5	100	
1N4609	22	15					3.5	1/30	0.04	60	0.5	30	
1N4786,A-D	6.8	20	10	5	2	1	2.40 2.08	2.56 2.17	0.1/4 4/25	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	25
1N4787,A-D	8.2	20	10	5	2	1	2.42 2.12	2.58 2.20	0.1/4 4/25	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	25
1N4788,A-D	10	20	10	5	2	1	2.34 2.17	2.50 2.26	0.1/4 4/25	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	25
1N4789,A-D	12	20	10	5	2	1	2.35 2.19	2.49 2.27	0.1/4 4/25	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	25
1N4790,A-D	15	20	10	5	2	1	2.37 2.23	2.49 2.28	0.1/4 4/25	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	25
1N4791,A-D	18	20	10	5	2	1	2.36 2.01	2.48 2.05	0.1/4 4/20	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	20
1N4792,A-D	22	20	10	5	2	1	2.35 2.01	2.46 2.05	0.1/4 4/20	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	20
1N4793,A-D	27	20	10	5	2	1	2.35 2.02	2.46 2.06	0.1/4 4/20	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	20
1N4794,A-D	33	20	10	5	2	1	2.35 2.02	2.46 2.06	0.1/4 4/20	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	20
1N4795,A-D	39	20	10	5	2	1	2.34 2.02	2.44 2.07	0.1/4 4/20	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	20
1N4796,A-D	47	20	10	5	2	1	2.33 2.03	2.43 2.07	0.1/4 4/20	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	20
1N4797,A-D	56	20	10	5	2	1	2.32 1.78	2.42 1.82	0.1/4 4/15	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	15
1N4798,A-D	68	20	10	5	2	1	2.30 1.78	2.40 1.82	0.1/4 4/15	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	15
1N4799,A-D	82	20	10	5	2	1	2.26 1.79	2.36 1.82	0.1/4 4/15	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	15
1N4800,A-D	100	20	10	5	2	1	2.24 1.81	2.33 1.83	0.1/4 4/15	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	15
1N4801,A-D	6.8	20	10	5	2	1	2.40 3.51	2.56 3.85	0.1/4 4/100	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	100
1N4802,A-D	8.2	20	10	5	2	1	2.42 3.53	2.58 3.80	0.1/4 4/100	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	100
1N4803,A-D	10	20	10	5	2	1	2.34 3.82	2.50 4.13	0.1/4 4/100	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	100
1N4804,A-D	12	20	10	5	2	1	2.35 3.86	2.49 4.13	0.1/4 4/100	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	100

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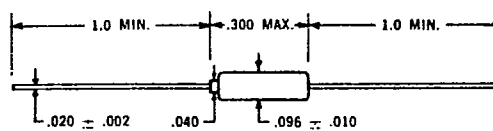
TYPE	Cj @ 4, 1 mhz (pf)	±%					Cj Ratio Cj1/Cj2 @ Vj/V2			ΔC/ΔT (%/°C)	Q @ 4V, 50 mhz	I <sub>r</sub> max @ 25° C μA	V <sub>r</sub> volts
		-	A	B	C	D	min.	max.					
1N4805,A-D	15	20	10	5	2	1	2.37 3.91	2.49 4.13	0.1/4 4/100	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	100
1N4806,A-D	18	20	10	5	2	1	2.36 3.94	2.48 4.13	0.1/4 4/90	5% (-40 to +85°C)	15 (750@1MHZ)	5nA	90
1N4807,A-D	22	20	10	5	2	1	2.35 3.97	2.46 4.15	0.1/4 4/90	5% (-40 to +85°C)	15	5nA	90
1N4808,A-D	27	20	10	5	2	1	2.35 3.51	2.46 3.62	0.1/4 4/65	5% (-40 to +85°C)	15	5nA	65
1N4809,A-D	33	20	10	5	2	1	2.35 3.39	2.46 3.48	0.1/4 4/60	5% (-40 to +85°C)	15	5nA	60
1N4810,A-D	39	20	10	5	2	1	2.34 3.27	2.44 3.33	0.1/4 4/55	5% (-40 to +85°C)	15	5nA	55
1N4811,A-D	47	20	10	5	2	1	2.33 3.13	2.43 3.20	0.1/4 4/50	5% (-40 to +85°C)	15	5nA	50
1N4812,A-D	56	20	10	5	2	1	2.32 2.83	2.42 2.87	0.1/4 4/40	5% (-40 to +85°C)	15	5nA	40
1N4813,A-D	68	20	10	5	2	1	2.30 2.48	2.40 2.51	0.1/4 4/30	5% (-40 to +85°C)	15	5nA	30
1N4814,A-D	82	20	10	5	2	1	2.26 2.07	2.36 2.10	0.1/4 4/20	5% (-40 to +85°C)	15	5nA	20
1N4815,A-D	100	20	10	5	2	1	2.24 2.07	2.33 2.09	0.1/4 4/20	5% (-40 to +85°C)	15	5nA	20
1N5139,A	6.8	10	5	5			2.7		4/60	0.03	350	0.02	55
JAN,TX1N5139A	6.8		5				2.7		4/60	0.03	350	0.02	55
1N5140,A	10	10	5				2.8		4/60	0.03	300	0.02	55
JAN,TX1N5140A	10		5				2.8		4/60	0.03	300	0.02	55
1N5141,A	12	10	5				2.8		4/60	0.03	300	0.02	55
JAN,TX1N5141A	12		5				2.8		4/60	0.03	300	0.02	55
1N5142,A	15	10	5				2.8		4/60	0.03	250	0.02	55
JAN,TX1N5142A	15		5				2.8		4/60	0.03	250	0.02	55
1N5143,A	18	10	5				2.8		4/60	0.03	250	0.02	55
JAN,TX1N5143A	18		5				2.8		4/60	0.03	250	0.02	55
1N5144,A	22	10	5				3.2		4/60	0.03	200	0.02	55
JAN,TX1N5144A	22		5				3.2		4/60	0.03	200	0.02	55
1N5145,A	27	10	5				3.2		4/60	0.03	200	0.02	55
JAN,TX1N5145A	27		5				3.2		4/60	0.03	200	0.02	55
1N5146,A	33	10	5				3.2		4/60	0.03	200	0.02	55
JAN,TX1N5146A	33		5				3.2		4/60	0.03	200	0.02	55
1N5147,A	39	10	5				3.2		4/60	0.03	200	0.02	55
JAN,TX1N5147A	39		5				3.2		4/60	0.03	200	0.02	55
1N5148,A	48	10	5				3.2		4/60	0.03	200	0.02	55
JAN,TX1N5148A	48		5				3.2		4/60	0.03	200	0.02	55
1N5440,A-D	4.7	20	10	5	2	1	2.4	3.1	2/30	0.04	450	0.02	25
1N5441,A-D	6.8	20	10	5	2	1	2.5	3.1	2/30	0.04	450	0.02	25
1N5442,A-D	8.2	20	10	5	2	1	2.5	3.1	2/30	0.04	450	0.02	25
1N5443,A-D	10	20	10	5	2	1	2.6	3.1	2/30	0.04	400	0.02	25
1N5444,A-D	12	20	10	5	2	1	2.6	3.1	2/30	0.04	400	0.02	25
1N5445,A-D	15	20	10	5	2	1	2.6	3.1	2/30	0.04	400	0.02	25
1N5446,A-D	18	20	10	5	2	1	2.6	3.1	2/30	0.04	350	0.02	25
1N5447,A-D	20	20	10	5	2	1	2.6	3.1	2/30	0.04	350	0.02	25
1N5448,A-D	22	20	10	5	2	1	2.6	3.2	2/30	0.04	350	0.02	25
1N5449,A-D	27	20	10	5	2	1	2.6	3.2	2/30	0.04	350	0.02	25
1N5450,A-D	33	20	10	5	2	1	2.6	3.2	2/30	0.04	350	0.02	25
1N5451,A-D	39	20	10	5	2	1	2.6	3.2	2/30	0.04	300	0.02	25
1N5452,A-D	47	20	10	5	2	1	2.6	3.2	2/30	0.04	200	0.02	25
1N5453,A-D	56	20	10	5	2	1	2.6	3.3	2/30	0.03	200	0.02	25
1N5454,A-D	68	20	10	5	2	1	2.7	3.3	2/30	0.03	175	0.02	25
1N5455,A-D	82	20	10	5	2	1	2.7	3.3	2/30	0.03	175	0.02	25
1N5456,A-D	100	20	10	5	2	1	2.7	3.3	2/30	0.03	175	0.02	25
1N5457,A-D	120	20	10	5	2	1	2.7	3.3	2/30	0.03	150	0.02	25
1N5458,A-D	3.9	20	10	5	2	1	2.5	3.1	2/30	0.03	600	0.02	25
1N5459,A-D	4.7	20	10	5	2	1	2.6	3.1	2/30	0.03	600	0.02	25
1N5460,A-D	5.6	20	10	5	2	1	2.6	3.1	2/30	0.03	600	0.02	25
1N5461,A-D	6.8	20	10	5	2	1	2.7	3.1	2/30	0.03	600	0.02	25
1N5462,A-D	8.2	20	10	5	2	1	2.8	3.1	2/30	0.03	600	0.02	25
1N5463,A-D	10	20	10	5	2	1	2.8	3.1	2/30	0.03	550	0.02	25
1N5464,A-D	12	20	10	5	2	1	2.8	3.1	2/30	0.03	550	0.02	25
1N5465,A-D	15	20	10	5	2	1	2.8	3.1	2/30	0.03	550	0.02	25
1N5466,A-D	18	20	10	5	2	1	2.9	3.1	2/30	0.03	500	0.02	25
1N5467,A-D	20	20	10	5	2	1	2.9	3.1	2/30	0.03	500	0.02	25

2

TYPE	Cj @ 4, 1 mhz (pF)	±%					Cj Ratio Cj1/Cj2 @ V1/V2			Δ C / Δ T (%/°C)	Q @ 4V, 50 mhz	Ir max. @ Vr	
		-	A	B	C	D	min.	max.				μ A	volts
1N5468,A-D	22	20	10	5	2	1	2.9	3.2	2/30	0.03	500	0.02	25
1N5469,A-D	27	20	10	5	2	1	2.9	3.2	2/30	0.03	500	0.02	25
1N5470,A-D	33	20	10	5	2	1	2.9	3.2	2/30	0.03	500	0.02	25
1N5471,A-D	39	20	10	5	2	1	2.9	3.2	2/30	0.03	450	0.02	25
1N5472,A-D	47	20	10	5	2	1	2.9	3.2	2/30	0.03	400	0.02	25
1N5473,A-D	56	20	10	5	2	1	2.9	3.3	2/30	0.03	300	0.02	25
1N5474,A-D	68	20	10	5	2	1	2.9	3.3	2/30	0.03	250	0.02	25
1N5475,A-D	82	20	10	5	2	1	2.9	3.3	2/30	0.03	225	0.02	25
1N5476,A-D	100	20	10	5	2	1	2.9	3.3	2/30	0.03	200	0.02	25
1N5681,A,B	6.8	20	10	5			3.1	3.3 Typ.	4/40	0.03	600	0.02	40
1N5682,A,B	8.2	20	10	5			3.1	3.3 Typ.	4/40	0.03	600	0.02	40
1N5883,A,B	10	20	10	5			3.2	3.4 Typ.	4/40	0.03	550	0.02	40
1N5684,A,B	12	20	10	5			3.2	3.4 Typ.	4/40	0.03	550	0.02	40
1N5685,A,B	15	20	10	5			3.2	3.4 Typ.	4/40	0.03	550	0.02	40
1N5686,A,B	18	20	10	5			3.2	3.4 Typ.	4/40	0.03	500	0.02	40
1N5687,A,B	22	20	10	5			3.3	3.5 Typ.	4/40	0.03	500	0.02	40
1N5688,A,B	27	20	10	5			3.3	3.5 Typ.	4/40	0.03	500	0.02	40
1N5689,A,B	33	20	10	5			3.3	3.5 Typ.	4/40	0.03	500	0.02	40
1N5690,A,B	39	20	10	5			3.3	3.5 Typ.	4/40	0.03	450	0.02	40
1N5691,A,B	47	20	10	5			3.3	3.5 Typ.	4/40	0.03	400	0.02	40
1N5692,A,B	56	20	10	5			3.3	3.5 Typ.	4/40	0.03	300	0.02	40
1N5693,A,B	68	20	10	5			3.3	3.5 Typ.	4/40	0.03	250	0.02	40
1N5694,A,B	82	20	10	5			3.3	3.5 Typ.	4/40	0.03	225	0.02	40
1N5695,A,B	100	20	10	5			3.3	3.5 Typ.	4/40	0.03	200	0.02	40
1N5696,A,B	6.8	20	10	5			2.7	2.9 Typ.	2/60	0.03	450	0.02	60
1N5697,A,B	8.2	20	10	5			2.7	2.9 Typ.	2/60	0.03	450	0.02	60
1N5698,A,B	10	20	10	5			2.8	3.0 Typ.	2/60	0.03	400	0.02	60
1N5699,A,B	12	20	10	5			2.8	3.0 Typ.	2/60	0.03	400	0.02	60
1N5700,A,B	15	20	10	5			2.8	3.0 Typ.	2/60	0.03	400	0.02	60
1N5701,A,B	18	20	10	5			2.8	3.0 Typ.	2/60	0.03	375	0.02	60
1N5702,A,B	22	20	10	5			3.2	3.4 Typ.	2/60	0.03	375	0.02	60
1N5703,A,B	27	20	10	5			3.2	3.4 Typ.	2/60	0.03	350	0.02	60
1N5704,A,B	33	20	10	5			3.2	3.4 Typ.	2/60	0.03	350	0.02	60
1N5705,A,B	39	20	10	5			3.2	3.4 Typ.	2/60	0.03	325	0.02	60
1N5706,A,B	47	30	10	5			3.2	3.4 Typ.	2/60	0.03	300	0.02	60
1N5707,A,B	56	20	10	5			3.2	3.4 Typ.	2/60	0.03	225	0.02	60
1N5708,A,B	68	20	10	5			3.2	3.4 Typ.	2/60	0.03	175	0.02	60
1N5709,A,B	82	20	10	5			3.2	3.4 Typ.	2/60	0.03	150	0.02	60
1N5710,A,B	100	20	10	5			3.2	3.4 Typ.	2/60	0.03	150	0.02	60

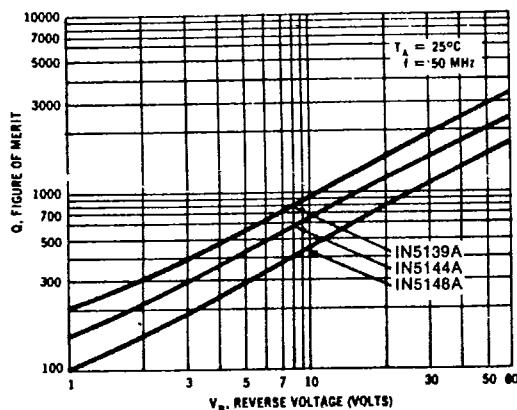
**CASE OUTLINE**

NOTE: All above VVCs are available in JEDEC Registered DO-7 cases

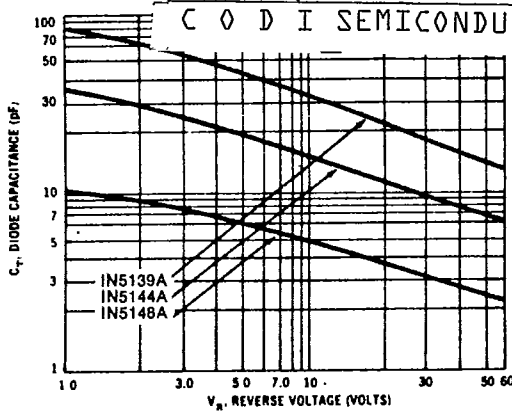


DO-7 (400mw @ 50°C)

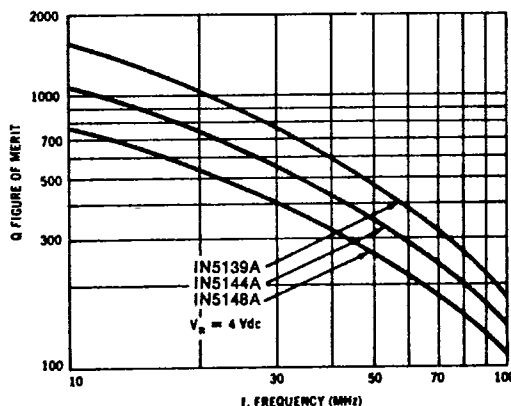
**FIGURE OF MERIT (Q) vs. REVERSE VOLTAGE (V<sub>r</sub>)**



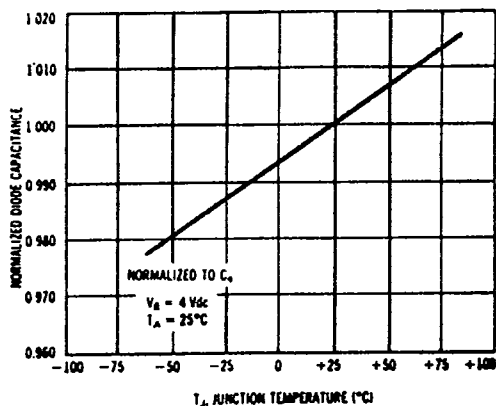
**CAPACITANCE (C<sub>t</sub>) vs. REVERSE VOLTAGE (V<sub>r</sub>)**



**FIGURE OF MERIT (Q) vs. FREQUENCY (f)**



**NORMALIZED DIODE CAPACITANCE (C<sub>n</sub>) vs. TEMPERATURE (T<sub>j</sub>)**



**TYPICAL COMPUTER PRINTOUT  
1N5147A**

A typical computer run used in verifying the compliance of a Bi-Taxial™ Voltage Variable Capacitor with a theoretically perfect device is reprinted below.

Columns (1) and (2) are the actual data measured for the particular diode tested; column (3) is the value of C<sub>j</sub> that is computed from the VVC equation; and column (4) is the difference between the predicted and actual values of C<sub>j</sub> at that particular voltage. Note that deviation figure is usually in the same order as the measurement error.

CODI SEMICONDUCTOR'S  
VOLTAGE VARIABLE CAPACITOR  
UNIT 15

VO OF THIS DIODE IS 0.641,  
AND THE EXPONENT N IS 0.479  
VVC EQUATION IS  
 $C = 81.9 / (- (V - 0.641))^{0.479}$

V (VOLTS) (MEASURED)	C (PF)	C (PF) (PREDICTED)	DEVIATION (MEASURED) (PREDICTED)
1.00	64.62	64.57	0.05
2.00	51.19	51.41	-0.22
3.00	43.91	44.08	-0.17
4.00	39.39	39.25	-0.14
5.00	35.62	35.74	-0.12
6.00	33.08	33.06	0.02
8.00	29.14	29.14	-0.00
10.00	26.63	26.38	0.25
15.00	21.91	21.93	-0.02
20.00	19.26	19.20	0.06
30.00	15.91	15.89	0.02
40.00	13.88	13.88	-0.00
60.00	11.40	11.46	-0.06

SUM OF SQUARED DEVIATIONS IS 0.190  
AVERAGE DEVIATION IS 0.089

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