



HYPERABRUPT TUNING VARACTORS

ASI's silicon Hyperabrupt Tuning Varactors are highly reproducible ion-implanted devices for use at HF, VHF, UHF and MICROWAVE frequencies.

Applications Include:

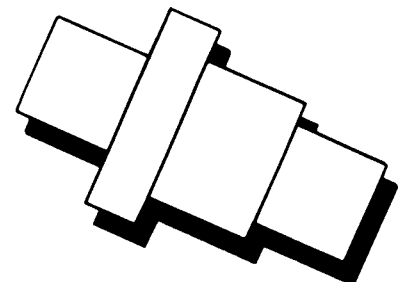
HF - For tuning LC resonant circuits up to 100 MHz and wide deviation voltage tuned crystal oscillators.

VHF - Octave tuning of LC tank circuits up to 500 MHz and straight line frequency tuning over a 3 to 8 volt tuning range.

UHF - Octave tuning of LC tank circuits up to 800 MHz and above and straight line tuning over a 3 to 8 volt tuning range.

MICROWAVE - Linear wideband tuning of microwave filters, resonators and local oscillators.

All of the Hyperabrupt Tuning Varactor Diodes meet or exceed the Military Environmental Specifications of MIL-S-19500 and Methods from MIL-STD-750 and/or customer specifications.



HF Hyperabrupt Tuning Varactors

Features:

- Medium to HF operation
- Ultra high Q
- 10:1 tuning ratio from 2 to 10 volts
- Linear frequency performance versus voltage

Electrical Specifications (T_A = 25°C)

TYPE	C _T DIODE CAPACITANCE (pF) f=1 MHz				TR TUNING RATIO f=1 MHz		Q FIGURE OF MERIT				V _{BR} (Vdc)	I _R (nAdc)						
	V _R =1.25 Vdc		V _R =2 Vdc		V _R =7 Vdc		V _R =10 Vdc		C(1.25V)/C(7V)		C(2V)/C(10V)		f=1 MHz		f=10 MHz		I _R =10 μAdc	V _R =10 Vdc
	MIN/TYP/MAX	MIN/TYP/MAX	MIN/TYP/MAX	MIN/TYP/MAX	MIN/TYP/MAX	MIN/TYP/MAX	MIN/TYP/MAX	MIN/TYP/MAX	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN/TYP	MAX
AHV8401	-/81.5/-	46/47/68	-/6.1/-	4.2/4.7/5.2	-/13/-	10/12/17	-	-	-	-	140	12/20	50					
AHV8402	-/81.5/-	46/57/68	-/6.1/-	4.2/4.7/5.2	-/13/-	10/12/17	-	-	700	-	12/20	100						
AHV8403	-/81.5/-	46/57/-	-/6.1/-	-/4.7/5.2	-/13/-	10/12/-	-	-	700	-	12/20	1000						
AHV8501	-/180/-	100/125/150	-/13/-	8.6/9.6/10.6	-/14/-	10/13/17.5	-	-	-	130	12/20	50						
AHV8502	-/180/-	100/125/150	-/13/-	8.6/9.6/10.6	-/14/-	10/13/17.5	-	-	500	-	12/20	100						
AHV8503	-/180/-	100/125/-	-/13/-	-/9.6/10.6	-/14/-	10/13/-	-	-	500	-	12/20	1000						
AHV8601	-/255/-	140/175/210	-/18.5/-	12.6/14.0/15.4	-/14/-	10/12.5/17	-	-	-	120	12/20	50						
AHV8602	-/255/-	140/175/210	-/18.5/-	12.6/14.0/15.4	-/14/-	10/12.5/17	-	-	500	-	12/20	100						
AHV8603	-/255/-	140/175/-	-/18.5/-	-/14.0/15.4	-/14/-	10/12.5/-	-	-	500	-	12/20	1000						
AHV8701	-/325/-	180/225/270	-/24/-	16.2/18.0/19.8	-/14/-	10/12.5/17	-	-	-	115	12/20	50						
AHV8702	-/325/-	180/225/270	-/24/-	16.2/18.0/19.8	-/14/-	10/12.5/17	-	-	500	-	12/20	100						
AHV8703	-/325/-	180/225/-	-/24/-	-/18.0/19.8	-/14/-	10/12.5/-	-	-	500	-	12/20	1000						
AHV8801	450/500/550	-/350/-	30.5/35.0/37.5	-/26.5/-	12/14/18	-/13/-	-	70	-	-	12/20	100						
AHV8802	450/500/550	-/350/-	30.5/35.0/37.5	-/26.5/-	12/14/18	-/13/-	300	-	-	-	12/20	200						
AHV8803	450/500/-	-/350/-	-/35.0/37.5	-/26.5/-	12/14/-	-/13/-	300	-	-	-	12/20	2000						

VHF Hyperabrupt Tuning Varactors

Features:

- HF to VHF operation
- Octave tuning from 4 to 20 volts
- Ultra high Q
- Linear frequency performance versus voltage

Electrical Specifications (T_A = 25°C)

TYPE	C _T DIODE CAPACITANCE (pF) f=1 MHz			TR TUNING RATIO f=1 MHz		Q V _R =4 Vdc f=50 MHz	V _{BR} (Vdc)	I _R (nAdc)		
	V _R =4 Vdc	V _R =8 Vdc	V _R =20 Vdc	C(4V)/C(8V)	C(4V)/C(20V)	MIN	MIN/TYP	V _R =6 Vdc	V _R =10 Vdc	V _R =20 Vdc
	MIN/TYP/MAX	MIN/TYP/MAX	MIN/TYP/MAX	MIN/TYP/MAX	MIN/TYP/MAX	MIN	MIN/TYP	MAX	MAX	MAX
AHV9001	18/20/22	7.5/8.5/10.5	3.1/3.5/3.9	-	5.4/6.0/6.6	220	22/30	-	-	100
AHV9001A	19/20/21	7.8/8.5/9.2	3.1/3.5/3.9	-	5.4/6.0/6.6	230	22/30	-	-	100
AHV9002	18/20/22	7.5/8.5/10.5	-	1.8/2.4/2.7	-	220	15/18	-	100	-
AHV9002A	19/20/21	7.8/8.5/9.2	-	2.0/2.4/2.7	-	220	15/18	-	100	-
AHV9004	18/20/22	7.0/8.5/11.0	-	-	-	120	8/12	250	-	-
AHV9201	45/50/55	18/20/25	7.3/8.0/9.2	-	5.6/6.3/6.9	165	22/30	-	-	100
AHV9201A	47.5/50/52.5	18/20/25	7.3/8.0/9.2	-	5.6/6.3/6.9	165	22/30	-	-	100
AHV9202	45/50/55	18/20/25	-	1.8/2.5/2.8	-	165	15/18	-	100	-
AHV9202A	47.5/50/52.5	18.4/20/21.6	-	2.2/2.5/2.8	-	165	15/18	-	100	-
AHV9204	45/50/55	17/20/26	-	-	-	100	8/12	250	-	-
AHV9301	100/110/120	39/45/55	15/17/19	-	5.9/6.6/7.3	110	22/30	-	-	100
AHV9301A	105/110/115	41.4/45/48.6	15/17/19	-	5.9/6.6/7.3	110	22/30	-	-	100
AHV9302	100/110/120	39/45/55	-	1.8/2.5/2.8	-	110	15/18	-	100	-
AHV9302A	105/110/115	41.4/45/48.6	-	2.15/2.5/2.8	-	110	15/18	-	100	-
AHV9304	100/110/120	36/45/58	-	-	-	60	8/12	250	-	-
AHV9401	140/155/170	55/65/80	22.5/25/28	-	5.8/6.4/7.1	90	22/30	-	-	500
AHV9401A	147/155/163	59.8/65/70.2	22.5/25/28	-	5.8/6.4/7.1	90	22/30	-	-	500
AHV9402	140/155/170	55/65/80	-	1.8/2.4/2.8	-	90	15/18	-	500	-
AHV9402A	147/155/163	59.8/65/70.2	-	2.1/2.4/2.7	-	90	15/18	-	500	-
AHV9404	140/155/170	50/65/85	-	-	-	50	8/12	500	-	-
AHV9501	180/200/220	70/85/105	29/32/36	-	5.8/6.4/7.1	80	22/30	-	-	500
AHV9501A	190/200/210	78/85/92	92/32/36	-	5.8/6.4/7.1	80	22/30	-	-	500
AHV9502	180/200/220	70/85/105	-	1.8/2.5/2.8	-	80	15/18	-	500	-
AHV9502A	190/200/210	78/85/92	-	2.0/2.5/2.7	-	80	15/18	-	500	-
AHV9504	180/200/220	65/85/110	-	-	-	45	8/12	500	-	-

UHF Hyperabrupt Tuning Varactors

- Features:**
- VHF to UHF operation
 - Octave tuning from 3 to 20 volts
 - Ultra high Q
 - Linear frequency performance versus voltage

Electrical Specifications (T_A = 25°C)

TYPE	C _T DIODE CAPACITANCE (pF) f=1 MHz			TR TUNING RATIO f=1 MHz		Q V _R =3 Vdc f=50 MHz	V _{BR} (Vdc) I _R =10 μAdc	I _R (nAdc)		
	V _R =3 Vdc MIN/TYP/MAX	V _R =8 Vdc MIN/TYP/MAX	V _R =20 Vdc MIN/TYP/MAX	C(3V)/C(20V) MIN/TYP/MAX	C(3V)/C(8V) MIN/TYP/MAX	MIN	MIN/TYP	V _R =6 Vdc MAX	V _R =10 Vdc MAX	V _R =20 Vdc MAX
	AHV9101	10.5/11.5/12.5	4.3/5.0/5.7	2.0/2.15/2.3	5.0/5.5/5.8	—	350	22/30	—	—
AHV9101A	10.9/11.5/12.1	4.6/5.0/5.4	2.0/2.15/2.3	5.0/5.5/5.8	—	350	22/30	—	—	100
AHV9102	10.5/11.5/12.5	4.3/5.0/5.7	2.0/2.2/2.4	4.7/5.0/5.5	—	300	22/30	—	—	100
AHV9102A	10.9/11.5/12.1	4.6/5.0/5.4	2.0/2.2/2.4	4.7/5.0/5.5	—	300	22/30	—	—	100
AHV9103	10.5/11.5/12.5	4.3/5.0/5.7	—	—	1.9/2.3/2.7	300	15/18	—	500	—
AHV9103A	10.9/11.5/12.1	4.6/5.0/5.4	—	—	2.0/2.3/2.6	300	15/18	—	500	—
AHV9104	10.5/11.5/12.5	—	—	—	—	150	8/12	500	—	—
AHV9801	25/28/31	10/12/13.5	4.5/4.8/5.1	5.2/5.75/6.1	—	250	22/30	—	—	100
AHV9801A	26.5/28/29.5	11/12/13	4.5/4.8/5.1	5.2/5.75/6.1	—	250	22/30	—	—	100
AHV9802	25/28/31	10/12/13.5	4.5/4.8/5.3	4.9/5.2/5.8	—	200	22/30	—	—	100
AHV9802A	26.5/28/29.5	11/12/13	4.5/4.8/5.3	4.9/5.2/5.8	—	200	22/30	—	—	100
AHV9803	25/28/31	10/12/13.5	—	—	1.9/2.4/2.8	200	15/18	—	500	—
AHV9803A	26.5/28/29.5	11/12/13	—	—	2.0/2.4/2.7	200	15/18	—	500	—
AHV9804	25/28/31	—	—	—	—	100	8/12	500	—	—

Microwave Hyperabrupt Tuning Varactors

- Features:**
- Octave tuning from 0 to 10 volts
 - Ultra high Q
 - Linear frequency performance versus voltage

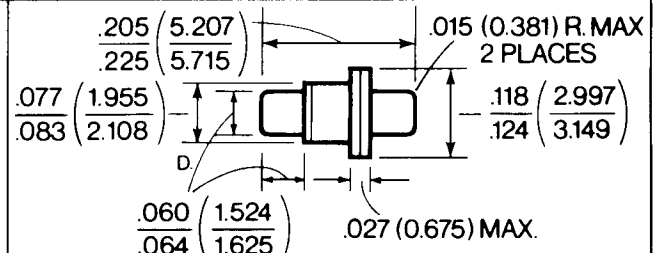
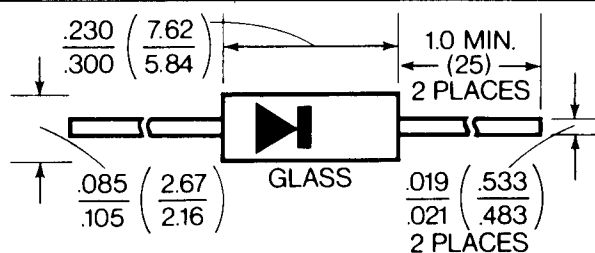
Electrical Specifications (T_A = 25°C)

TYPE NUMBER	C _T DIODE CAPACITANCE (pF)				Q V _R =4V	V _{BR} (Vdc) Mv	I _R (nAdc)
	f=1 MHz V _R =4 Vdc		f=1 MHz V _R =20 Vdc		f=50 MHz MIN	I _R =10 μAdc MIN	V _R =20 Vdc MAX
	MIN	MAX	MIN	MAX			
AHV9500A	0.90	1.10	0.35	0.45	500	22	50
AHV9500B	1.35	1.65	0.45	0.55	500	22	50
AHV9500C	1.80	2.20	0.55	0.70	400	22	50
AHV9500D	2.70	3.30	0.70	0.90	400	22	50
AHV9500E	4.50	5.50	1.00	1.30	400	22	50

STYLE DO-7

PACKAGE STYLES

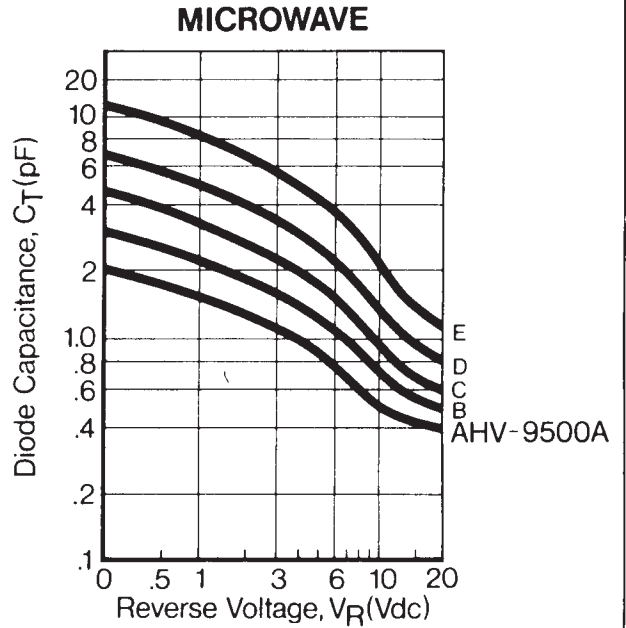
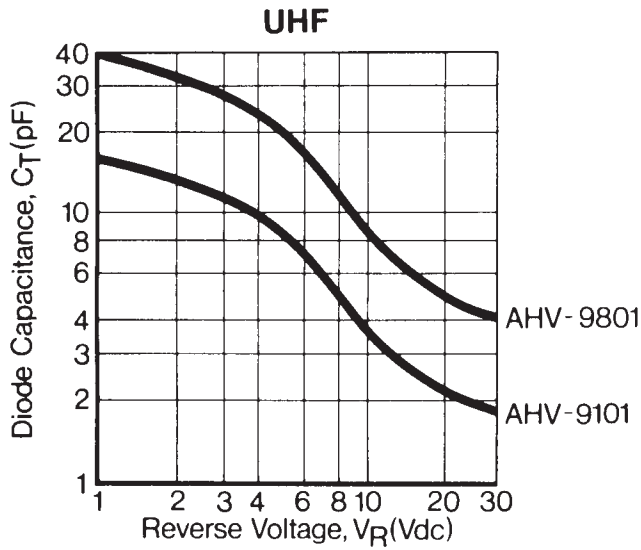
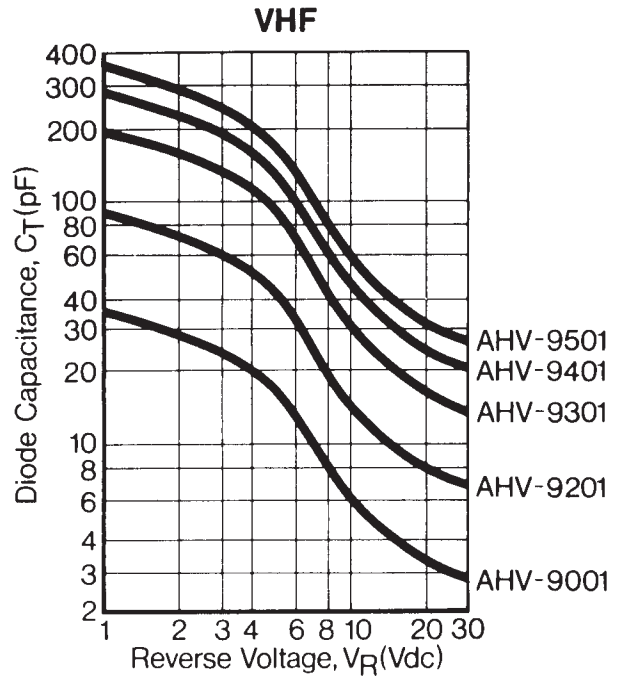
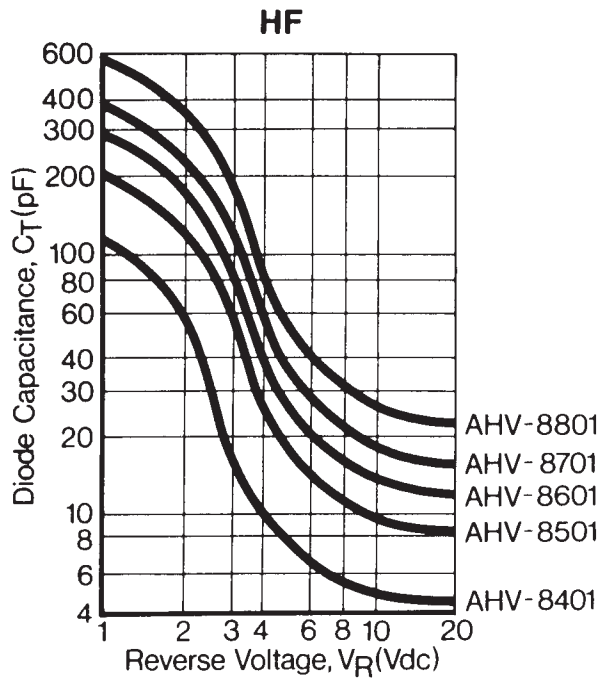
STYLE 51



NOTES:

1. DO-7 glass package for HF, VHF and UHF Hyperabrupts.
2. Style 51 ceramic package for MICROWAVE Hyperabrupts.
3. Other package styles and chips are available upon request.

TYPICAL CAPACITANCE VS. TUNING VOLTAGE



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