Broad Band

Voltage Variable Attenuator

RVA-2500+

50Ω 10 to 2500 MHz

Maximum Ratings

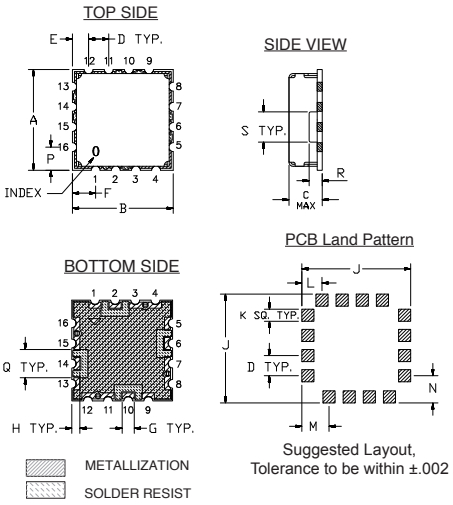
Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 85°C
Absolute Max. Supply Voltage(V+)	12V
Absolute Max. Control Voltage(Vctrl)	20V
Absolute Max. RF Input Level	+20 dBm

Permanent damage may occur if any of these limits are exceeded.

Pin Connections

RF IN	2
RF OUT	10
V CONTROL	6
V+	14
GROUND	1,3,4,5,7,8,9,11,12,13,15,16

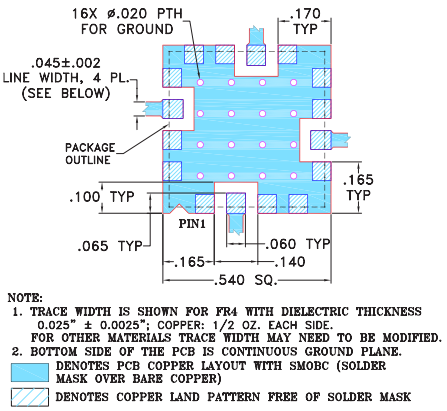
Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J
.500	.500	.195	.100	.080	.115	.060	.040	.540
12.70	12.70	4.95	2.54	2.03	2.92	1.52	1.02	13.72
K	L	M	N	P	Q	R	S	wt.
.060	.100	.135	.135	.115	.140	.070	.150	grams
1.52	2.54	3.43	3.43	2.92	3.56	1.78	3.81	1.0

Demo Board MCL P/N: TB-163
Suggested PCB Layout (PL-040)



NOTE:
1. TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS 0.025" ± 0.0025"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Features

- Broadband, 10-2500 MHz
- IP3, +43 dBm typ.
- 40 dB attenuation @ 1500 MHz
- Good VSWR at IN/OUT ports over attenuation range
- Minimal phase deviation over attenuation range
- No external bias and RF matching network required
- Shielded case

CASE STYLE: DV874

Applications

- Power level control
- Feed forward amplifiers

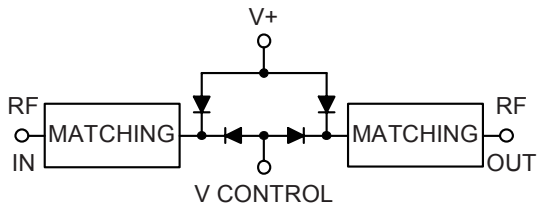
+RoHS Compliant
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Electrical Specifications (T_{AMB}= 25°C)

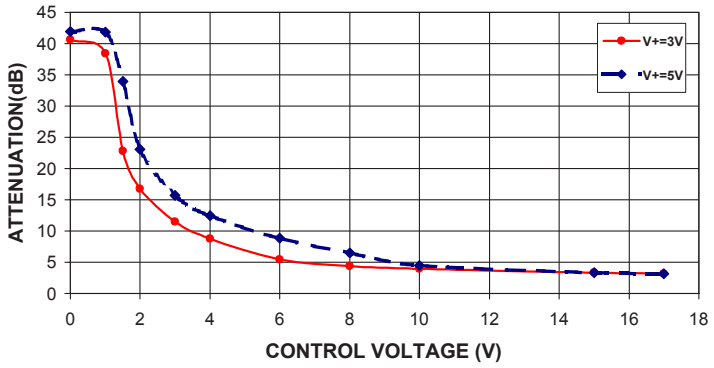
FREQ. (MHz)		MIN. INSERTION LOSS, dB (+15V)		MAX. ATTENUATION dB (0V)		INPUT POWER (dBm)	CONTROL Voltage (V)	CONTROL Current (mA)	IP3 (dBm)	RETURN LOSS (dB)	POWER SUPPLY Voltage (V)	POWER SUPPLY Current (mA)
Min.	Max.	Typ.	Max.	Typ.	Min.	Max.		Max.	Typ.	Typ.		Max.
10 - 500		3.0	4.6	55	41	+20	0 - 17	30	43	20	+3 to +5	5
500 - 1500		3.3	5.0	40	30	+20	0 - 17	30	43	20	+3 to +5	5
1500 - 2500		4.0	6.2	37	25	+20	0 - 17	30	44	20	+3 to +5	5

Notes:
Rise/Fall time: 14μSec / 25μSec Typ.
Switching Time, turn on/off: 14μSec / 25μSec Typ.
Improved R.Loss in/out performance can be achieved at certain frequencies by choosing a V+ between +3V to +5V

Equivalent Schematic



RVA-2500+
TYPICAL ATTENUATION AT 1000MHz



Notes
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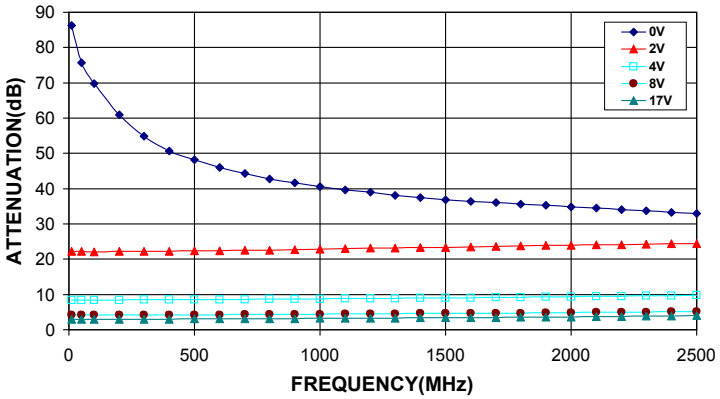
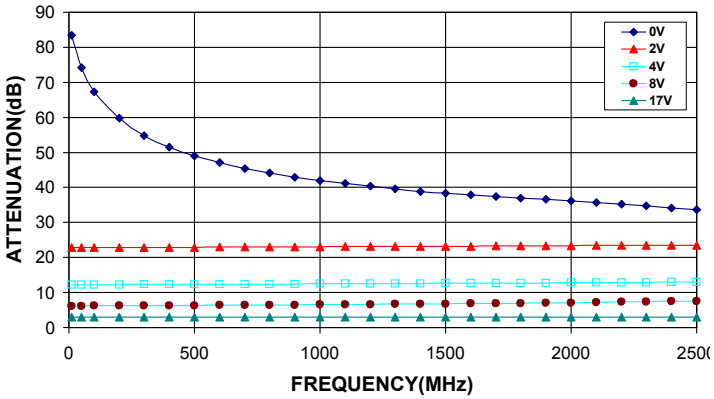
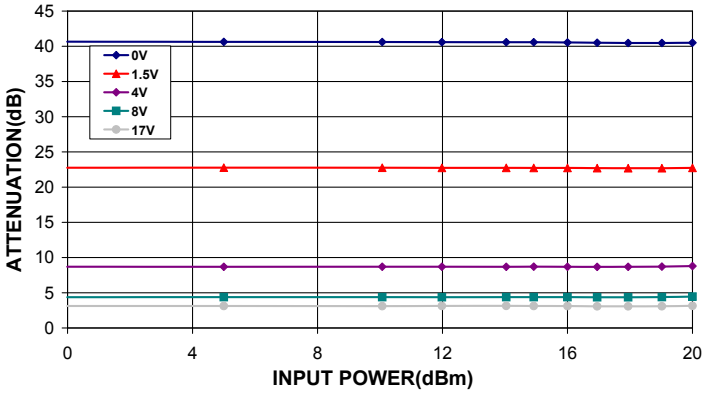
RVA-2500+
ATTENUATION Vs. FREQUENCY
OVER CONTROL VOLTAGES @ V+=3V



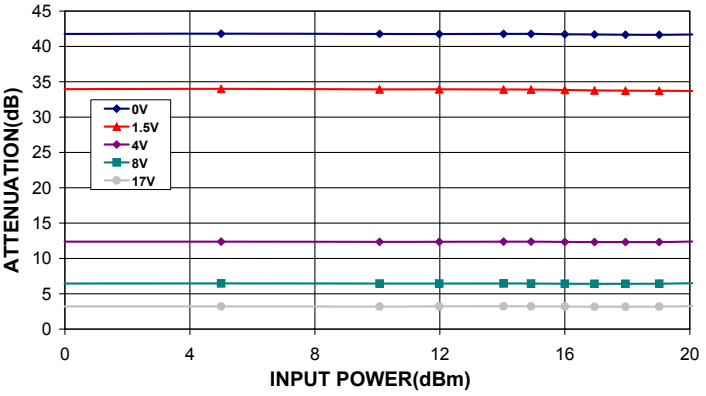
RVA-2500+
ATTENUATION Vs. FREQUENCY
OVER CONTROL VOLTAGES @ V+=5V



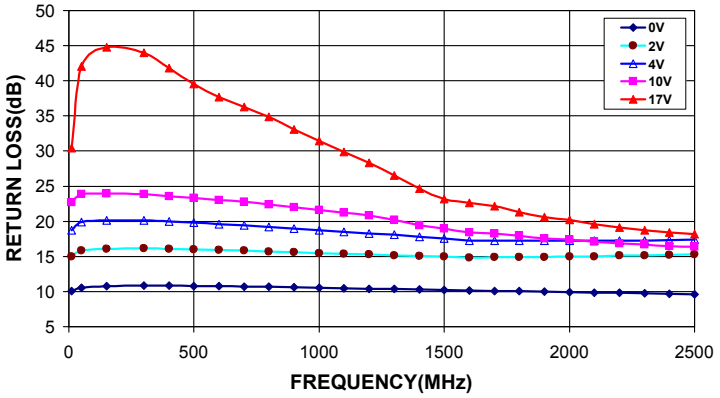
RVA-2500+
ATTENUATION Vs. INPUT POWER
OVER CONTROL VOLTAGES AT 1000MHz @ V+=3V



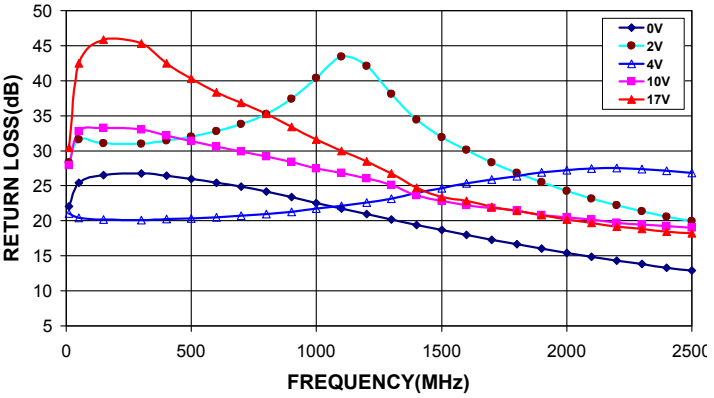
RVA-2500+
ATTENUATION Vs. INPUT POWER
OVER CONTROL VOLTAGES AT 1000MHz @ V+=5V



RVA-2500+
INPUT RETURN LOSS Vs. FREQUENCY
Vs. CONTROL VOLTAGE @ V+=3V



RVA-2500+
INPUT RETURN LOSS Vs. FREQUENCY
OVER CONTROL VOLTAGES @ V+=5V



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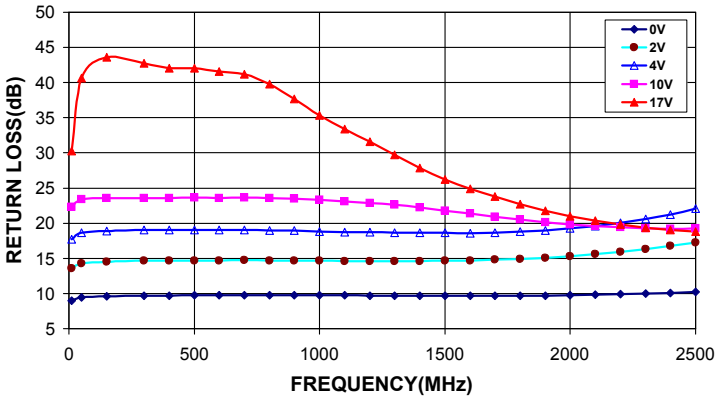
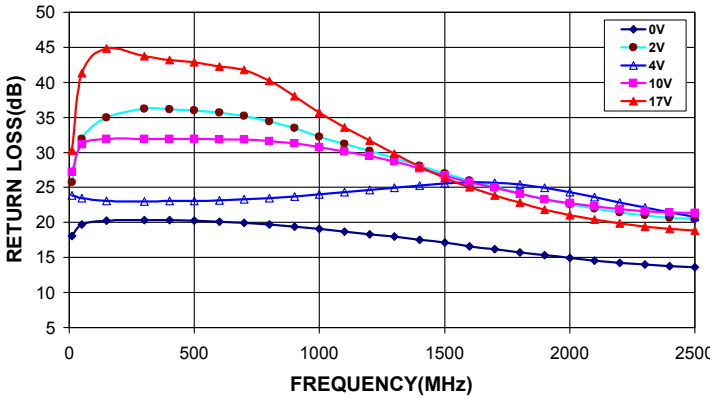
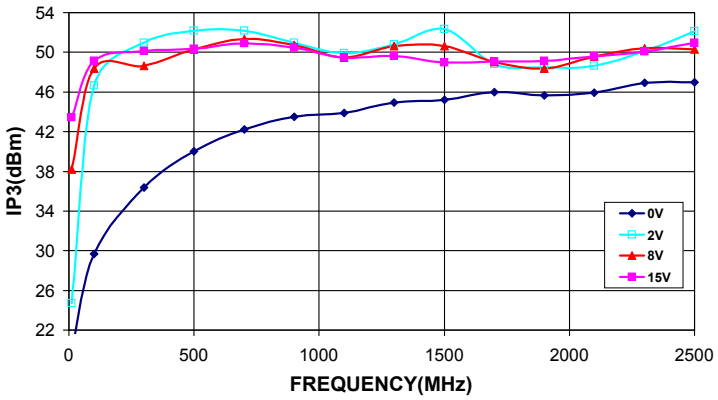
RVA-2500+
OUTPUT RETURN LOSS Vs. FREQUENCY
OVER CONTROL VOLTAGES @ V+=3V



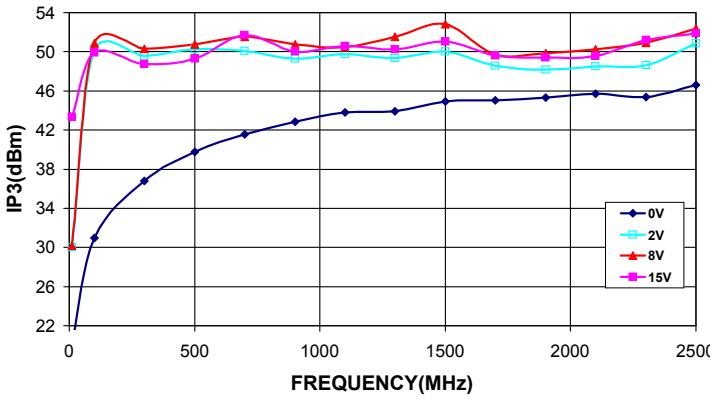
RVA-2500+
OUTPUT RETURN LOSS Vs. FREQUENCY
Vs. CONTROL VOLTAGE @ V+=5V



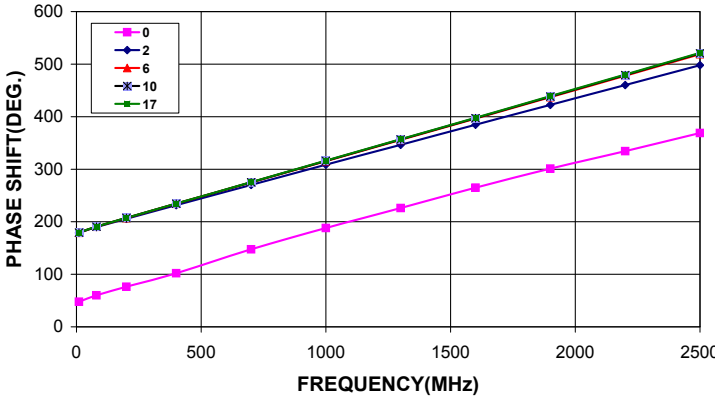
RVA-2500+
IP3 Vs. FREQUENCY
OVER CONTROL VOLTAGES @ V+=3V



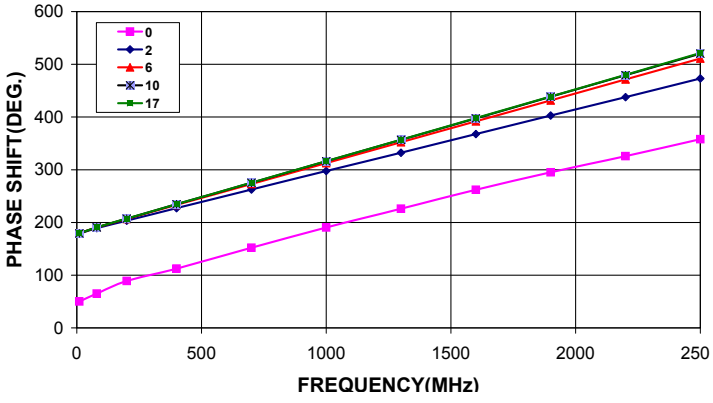
RVA-2500+
IP3 Vs. FREQUENCY
OVER CONTROL VOLTAGES @ V+=5V



RVA-2500+
PHASE SHIFT Vs. FREQUENCY
OVER CONTROL VOLTAGES @ V+=3V



RVA-2500+
PHASE SHIFT Vs. FREQUENCY
OVER CONTROL VOLTAGES @ V+=5V



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Voltage Variable Attenuator RVA-2500+

Typical Performance Data

V CONTROL (V)	ATTENUATION @ 1000 MHz (dB)	
	@V+=3V	@V+=5V
0.0	40.61	41.94
1.0	38.40	41.83
1.5	22.81	33.91
2.0	16.78	23.06
3.0	11.50	15.69
4.0	8.74	12.46
6.0	5.42	8.90
8.0	4.40	6.50
10.0	3.93	4.48
15.0	3.33	3.34
17.0	3.19	3.18

FREQ. (MHz)	ATTENUATION Vs. V CONTROL Vs. V+ (dB)									
	@V Control=0V		@V Control=2V		@V Control=4V		@V Control=8V		@V Control=17V	
	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V
10	86.30	83.44	22.30	22.87	8.47	12.20	4.18	6.16	2.93	2.92
50	75.64	74.19	22.17	22.82	8.42	12.21	4.13	6.18	2.92	2.91
80	73.13	69.95	22.14	22.81	8.42	12.22	4.14	6.19	2.93	2.92
100	69.73	67.24	22.14	22.79	8.43	12.23	4.14	6.20	2.94	2.93
150	64.77	63.05	22.14	22.83	8.44	12.25	4.16	6.21	2.95	2.95
200	60.87	59.86	22.19	22.83	8.45	12.27	4.16	6.23	2.96	2.95
250	57.26	57.26	22.21	22.85	8.47	12.28	4.18	6.25	2.99	2.97
300	54.92	54.85	22.17	22.81	8.48	12.29	4.18	6.25	2.99	2.98
400	50.72	51.56	22.25	22.87	8.51	12.30	4.21	6.28	3.01	3.00
500	48.14	49.03	22.36	22.90	8.54	12.33	4.24	6.32	3.04	3.03
600	45.98	47.07	22.45	22.94	8.56	12.36	4.26	6.34	3.07	3.06
700	44.23	45.44	22.51	22.98	8.62	12.39	4.30	6.39	3.10	3.09
800	42.76	44.16	22.61	23.01	8.65	12.41	4.34	6.42	3.12	3.11
900	41.64	42.92	22.73	23.04	8.71	12.43	4.37	6.46	3.16	3.14
1000	40.61	41.94	22.81	23.06	8.74	12.46	4.40	6.50	3.19	3.18
1100	39.71	41.10	22.95	23.11	8.80	12.49	4.45	6.56	3.23	3.22
1200	38.96	40.33	23.09	23.17	8.87	12.54	4.49	6.61	3.28	3.26
1300	38.13	39.62	23.20	23.20	8.92	12.58	4.54	6.68	3.32	3.31
1400	37.48	38.89	23.28	23.18	8.99	12.60	4.59	6.73	3.36	3.34
1500	36.80	38.35	23.31	23.22	9.04	12.61	4.61	6.78	3.39	3.37
1600	36.43	37.89	23.43	23.22	9.06	12.63	4.63	6.81	3.42	3.41
1700	36.04	37.44	23.63	23.27	9.14	12.67	4.70	6.89	3.47	3.46
1800	35.60	37.01	23.75	23.33	9.22	12.71	4.74	6.96	3.53	3.51
1900	35.21	36.58	23.88	23.35	9.31	12.73	4.81	7.04	3.59	3.56
2000	34.83	36.20	23.96	23.40	9.38	12.77	4.86	7.12	3.65	3.62
2100	34.47	35.73	24.09	23.43	9.45	12.83	4.91	7.20	3.70	3.69
2200	34.07	35.25	24.16	23.45	9.54	12.85	4.98	7.29	3.77	3.74
2300	33.68	34.72	24.27	23.49	9.61	12.88	5.04	7.38	3.84	3.82
2400	33.26	34.19	24.34	23.50	9.69	12.92	5.09	7.46	3.89	3.87
2500	32.90	33.62	24.44	23.54	9.79	12.96	5.17	7.55	3.98	3.95

Typical Performance Data

FREQ. (MHz)	INPUT RETURN LOSS Vs. V CONTROL Vs. V+ (dB)									
	@V Control=0V		@V Control=2V		@V Control=4V		@V Control=10V		@V Control=17V	
	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V
10	10.05	22.08	14.97	28.31	18.73	21.04	22.68	27.96	30.43	30.47
50	10.57	25.44	15.81	31.59	19.86	20.44	23.88	32.76	42.04	42.49
80	10.68	26.15	16.00	31.15	20.07	20.22	24.08	33.57	46.04	46.93
100	10.71	26.45	16.08	30.85	20.17	20.13	24.10	33.75	46.16	47.13
150	10.75	26.53	16.08	31.09	20.13	20.20	23.94	33.23	44.74	45.88
200	10.80	26.85	16.16	30.74	20.22	20.09	24.01	33.57	46.12	47.67
250	10.79	26.67	16.12	31.02	20.14	20.17	23.84	32.96	43.58	44.69
300	10.82	26.76	16.15	30.99	20.15	20.13	23.84	32.98	44.00	45.31
400	10.82	26.43	16.09	31.47	20.00	20.26	23.60	32.17	41.81	42.52
500	10.79	25.97	16.03	31.97	19.81	20.37	23.34	31.39	39.57	40.26
600	10.77	25.46	15.91	32.78	19.59	20.53	23.01	30.60	37.64	38.31
700	10.73	24.85	15.82	33.79	19.41	20.72	22.75	29.86	36.31	36.84
800	10.68	24.14	15.70	35.21	19.21	20.95	22.43	29.19	34.86	35.26
900	10.63	23.37	15.59	37.38	18.95	21.26	22.02	28.42	33.09	33.42
1000	10.54	22.56	15.47	40.34	18.69	21.71	21.61	27.50	31.40	31.61
1100	10.48	21.74	15.35	43.39	18.49	22.13	21.20	26.85	29.84	29.95
1200	10.42	20.94	15.26	42.13	18.29	22.60	20.81	26.06	28.35	28.44
1300	10.36	20.16	15.15	38.13	18.07	23.18	20.21	25.15	26.55	26.75
1400	10.29	19.40	15.06	34.44	17.82	24.01	19.40	23.64	24.62	24.76
1500	10.21	18.66	14.97	31.95	17.58	24.67	18.93	22.82	23.14	23.43
1600	10.15	17.97	14.86	30.11	17.26	25.38	18.40	22.21	22.65	22.85
1700	10.10	17.29	14.87	28.35	17.25	25.88	18.26	21.85	22.14	22.01
1800	10.04	16.67	14.90	26.86	17.21	26.37	17.96	21.42	21.29	21.45
1900	10.02	16.06	14.94	25.50	17.22	26.94	17.58	20.83	20.61	20.77
2000	9.92	15.41	15.00	24.27	17.22	27.26	17.38	20.51	20.18	20.19
2100	9.86	14.86	15.01	23.18	17.21	27.44	17.12	20.16	19.60	19.68
2200	9.80	14.30	15.11	22.18	17.28	27.52	16.85	19.74	19.13	19.15
2300	9.74	13.81	15.12	21.33	17.27	27.40	16.67	19.48	18.76	18.85
2400	9.67	13.32	15.18	20.56	17.33	27.16	16.47	19.21	18.39	18.5
2500	9.61	12.90	15.26	19.92	17.42	26.83	16.37	19.01	18.15	18.25

Typical Performance Data

FREQ. (MHz)	OUTPUT RETURN LOSS Vs. V CONTROL Vs. V+ (dB)									
	@V Control=0V		@V Control=2V		@V Control=4V		@V Control=10V		@V Control=17V	
	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V
10	9.00	18.06	13.58	25.72	17.71	23.84	22.29	27.26	30.24	30.30
50	9.42	19.68	14.26	31.89	18.64	23.50	23.39	31.16	40.68	41.33
80	9.51	19.99	14.42	33.62	18.84	23.25	23.56	31.79	43.56	44.65
100	9.55	20.12	14.47	34.36	18.91	23.12	23.63	31.96	44.06	45.23
150	9.59	20.24	14.51	34.94	18.92	23.09	23.59	31.93	43.60	44.82
200	9.65	20.35	14.61	35.90	19.04	22.98	23.65	32.23	44.12	45.27
250	9.65	20.30	14.60	35.71	18.99	23.06	23.56	31.82	42.85	43.95
300	9.69	20.33	14.64	36.25	19.05	23.00	23.60	31.96	42.76	43.73
400	9.71	20.32	14.64	36.11	19.02	23.05	23.56	31.94	42.01	43.17
500	9.75	20.25	14.69	35.98	19.06	23.11	23.61	31.92	42.06	42.87
600	9.76	20.12	14.70	35.65	19.07	23.18	23.60	31.82	41.55	42.29
700	9.77	19.98	14.71	35.21	19.03	23.29	23.63	31.83	41.21	41.77
800	9.78	19.73	14.70	34.44	18.97	23.44	23.57	31.60	39.78	40.20
900	9.76	19.40	14.68	33.45	18.93	23.68	23.48	31.29	37.70	37.99
1000	9.74	19.08	14.65	32.25	18.82	24.02	23.30	30.76	35.33	35.68
1100	9.72	18.70	14.59	31.21	18.76	24.34	23.08	30.10	33.37	33.58
1200	9.70	18.34	14.60	30.20	18.70	24.68	22.88	29.48	31.56	31.71
1300	9.70	17.96	14.60	29.16	18.65	24.98	22.60	28.71	29.71	29.84
1400	9.69	17.55	14.63	28.09	18.64	25.30	22.24	27.68	27.87	27.97
1500	9.67	17.10	14.65	27.01	18.61	25.55	21.80	26.71	26.24	26.37
1600	9.66	16.62	14.68	26.00	18.57	25.73	21.34	25.76	24.91	25.04
1700	9.65	16.17	14.79	25.05	18.68	25.65	20.93	24.92	23.76	23.85
1800	9.66	15.72	14.91	24.17	18.77	25.41	20.53	24.11	22.70	22.81
1900	9.70	15.32	15.09	23.35	18.97	24.98	20.16	23.34	21.73	21.80
2000	9.75	14.93	15.30	22.62	19.25	24.36	19.84	22.80	20.98	21.03
2100	9.81	14.58	15.59	22.00	19.60	23.62	19.62	22.32	20.34	20.40
2200	9.88	14.25	15.91	21.45	20.06	22.84	19.40	21.91	19.79	19.84
2300	9.99	13.99	16.34	21.01	20.61	22.12	19.29	21.63	19.36	19.41
2400	10.09	13.76	16.77	20.66	21.24	21.42	19.23	21.43	19.02	19.07
2500	10.24	13.64	17.28	20.49	22.07	20.84	19.27	21.32	18.82	18.87

Typical Performance Data

FREQ. (MHz)	INPUT IP3 Vs. V CONTROL Vs. V+ (dBm)									
	@V Control=0V		@V Control=2V		@V Control=4V		@V Control=8V		@V Control=15V	
	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V
10	20.02	20.28	24.70	29.99	27.05	33.84	38.19	30.17	43.42	43.38
20	20.55	22.71	29.25	34.00	31.08	36.58	41.48	34.14	46.15	46.17
50	26.22	27.34	42.97	44.64	49.77	41.84	49.34	43.32	51.36	50.06
100	29.67	30.97	46.64	50.16	50.78	51.58	48.38	50.85	49.15	49.89
200	34.23	33.92	49.37	50.53	50.08	52.87	48.68	51.13	49.17	49.22
300	36.38	36.78	50.96	49.57	50.65	52.48	48.62	50.30	50.12	48.76
400	39.12	38.37	50.52	49.58	50.66	52.60	48.71	51.19	50.10	49.76
500	39.99	39.76	52.20	50.22	51.80	53.06	50.32	50.75	50.33	49.28
600	41.08	40.33	51.59	50.08	52.00	52.96	52.09	50.74	52.44	49.53
700	42.23	41.56	52.19	50.05	52.21	52.48	51.32	51.51	50.91	51.70
800	43.01	42.28	50.90	49.90	52.24	51.92	52.01	50.65	52.42	50.37
900	43.49	42.83	50.94	49.32	52.65	53.04	50.74	50.73	50.45	50.04
1000	44.08	43.56	50.43	50.37	50.32	50.06	50.05	50.02	50.09	50.12
1100	43.90	43.82	49.91	49.75	51.20	50.86	49.45	50.49	49.48	50.56
1200	44.80	43.90	51.03	49.81	51.21	52.67	51.28	51.35	50.15	50.11
1300	44.94	43.90	50.77	49.34	51.06	53.01	50.65	51.53	49.61	50.24
1400	45.68	44.01	52.09	49.31	50.88	50.16	51.23	51.33	49.62	51.48
1500	45.24	44.93	52.35	50.02	50.94	51.74	50.61	52.81	48.99	51.04
1600	45.88	45.65	48.56	48.27	48.22	48.00	49.14	50.05	49.19	49.37
1700	45.98	45.01	48.80	48.55	49.60	49.88	49.01	49.71	49.09	49.63
1800	45.11	44.90	49.46	49.36	48.54	48.00	48.16	49.46	48.01	49.07
1900	45.66	45.33	48.49	48.15	49.89	49.55	48.35	49.88	49.14	49.40
2000	46.32	46.01	49.74	48.09	48.46	49.49	48.93	49.55	48.92	49.51
2100	45.93	45.68	48.63	48.48	49.80	49.22	49.57	50.26	49.60	49.59
2200	46.80	46.31	48.90	48.59	50.03	49.55	48.76	50.32	49.44	49.61
2300	46.90	45.39	50.12	48.62	51.36	50.95	50.39	50.91	50.08	51.21
2400	47.02	46.52	50.07	51.47	51.34	51.68	50.65	52.51	51.80	51.30
2500	46.99	46.58	52.10	50.84	51.16	52.55	50.28	52.37	50.97	51.86

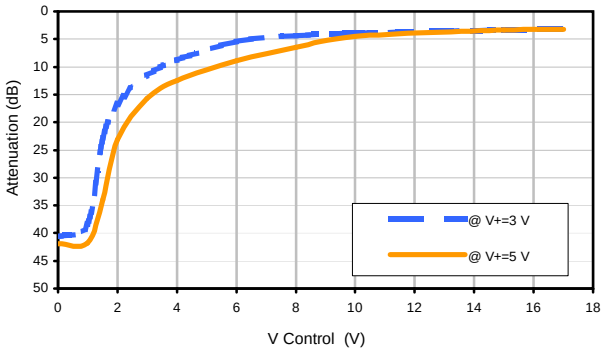
Typical Performance Data

FREQ. (MHz)	PHASE SHIFT Vs. V CONTROL Vs. V+ (deg)									
	@V Control=0V		@V Control=2V		@V Control=6V		@V Control=10V		@V Control=17V	
	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V
10	47.67	50.00	178.89	178.76	179.15	179.37	179.23	179.23	179.25	179.24
80	60.00	65.00	189.79	189.14	190.55	190.56	190.66	190.65	190.71	190.75
200	76.34	89.00	205.57	203.39	207.06	206.63	207.22	207.26	207.33	207.30
400	101.98	112.52	231.57	227.08	234.31	233.21	234.47	234.48	234.64	234.67
700	147.55	152.13	270.21	262.47	274.91	272.83	275.19	275.25	275.48	275.45
1000	188.13	190.38	308.51	297.61	315.42	312.57	315.88	315.96	316.28	316.27
1300	226.19	225.97	346.49	332.37	355.83	352.17	356.53	356.61	357.07	357.01
1600	264.83	261.93	384.62	367.72	396.40	391.85	397.27	397.40	397.97	397.99
1900	301.06	295.08	422.50	402.89	437.17	431.60	438.22	438.41	439.11	439.09
2200	334.49	325.74	460.31	437.73	477.92	471.26	479.20	479.28	480.15	480.14
2500	368.94	357.86	498.03	473.13	518.95	511.05	520.40	520.35	521.47	521.41

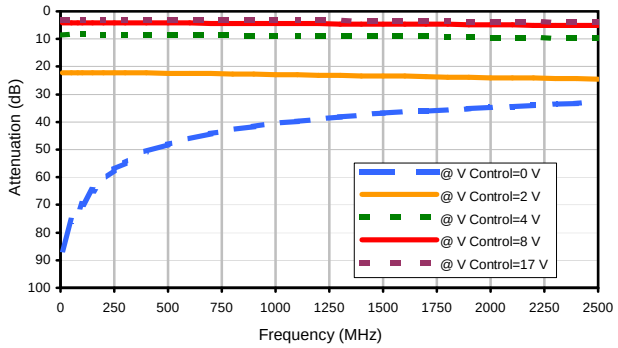
Voltage Variable Attenuator RVA-2500+

Typical Performance Curves

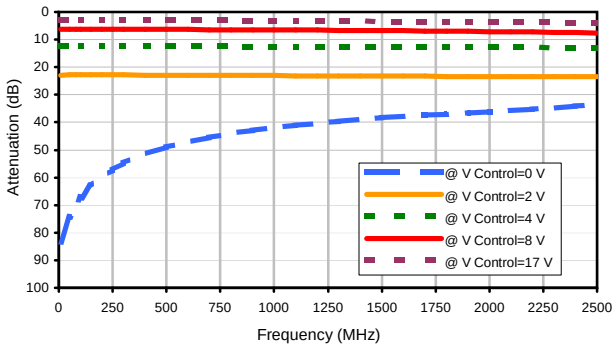
Attenuation @ 1000 MHz



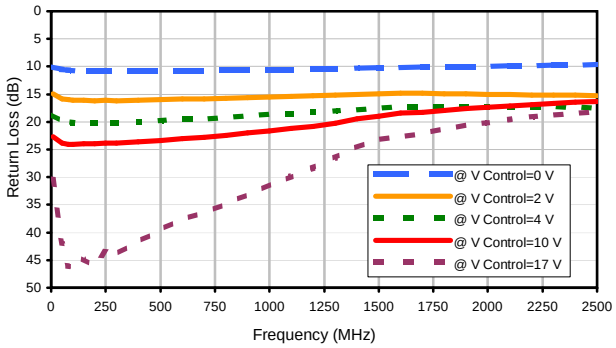
Attenuation @ V+=3 V



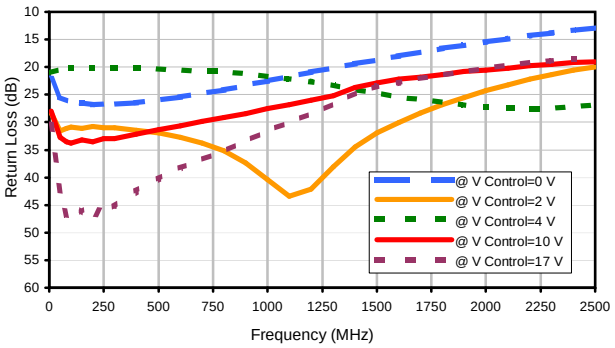
Attenuation @ V+=5 V



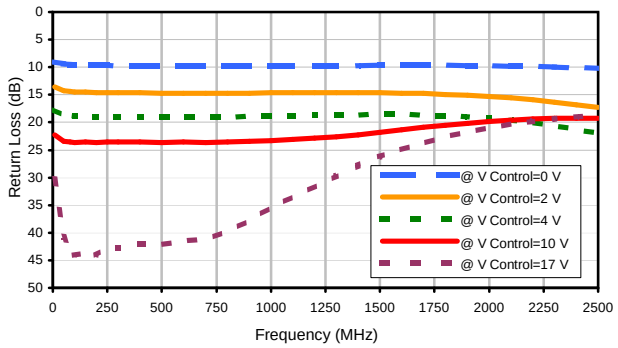
Input Return Loss @ V+=3 V



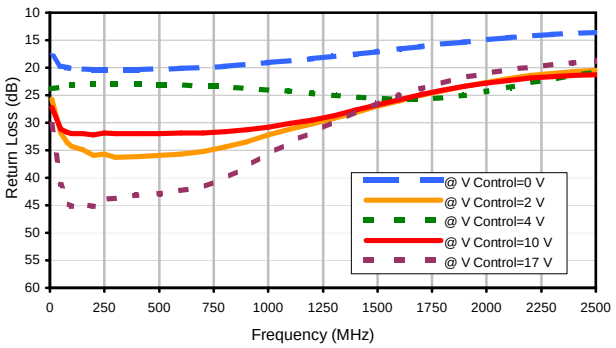
Input Return Loss @ V+=5 V



Output Return Loss @ V+=3 V

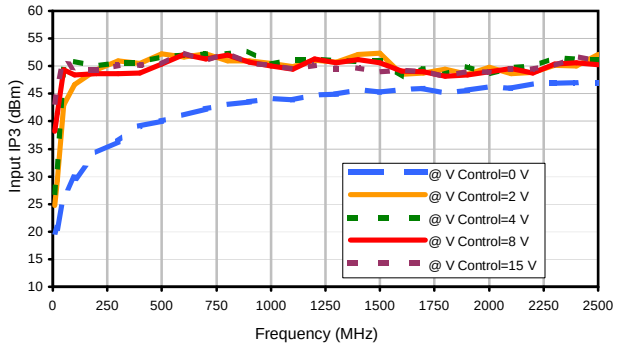


Output Return Loss @ V+=5 V

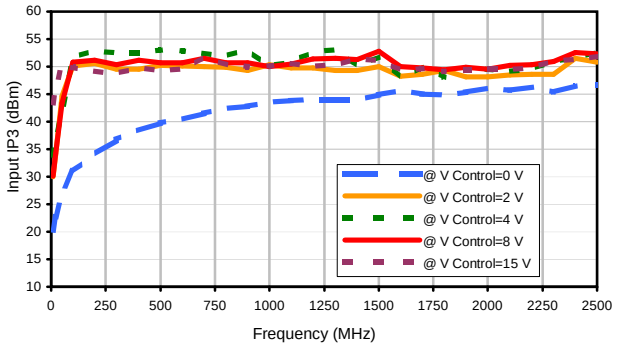


Typical Performance Curves

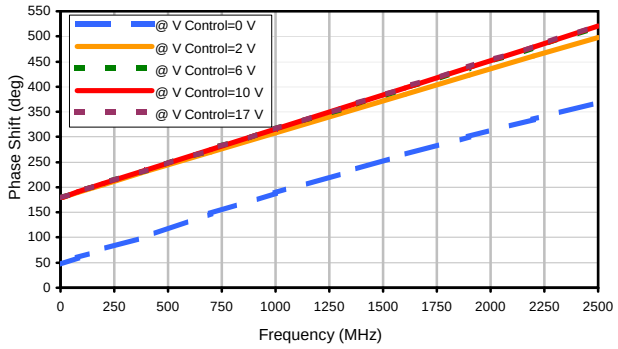
Input IP3 @ V+=3 V



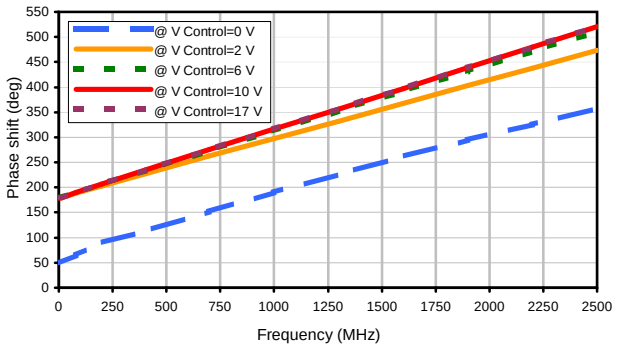
Input IP3 @ V+=5 V



Phase Shift @ V+=3 V

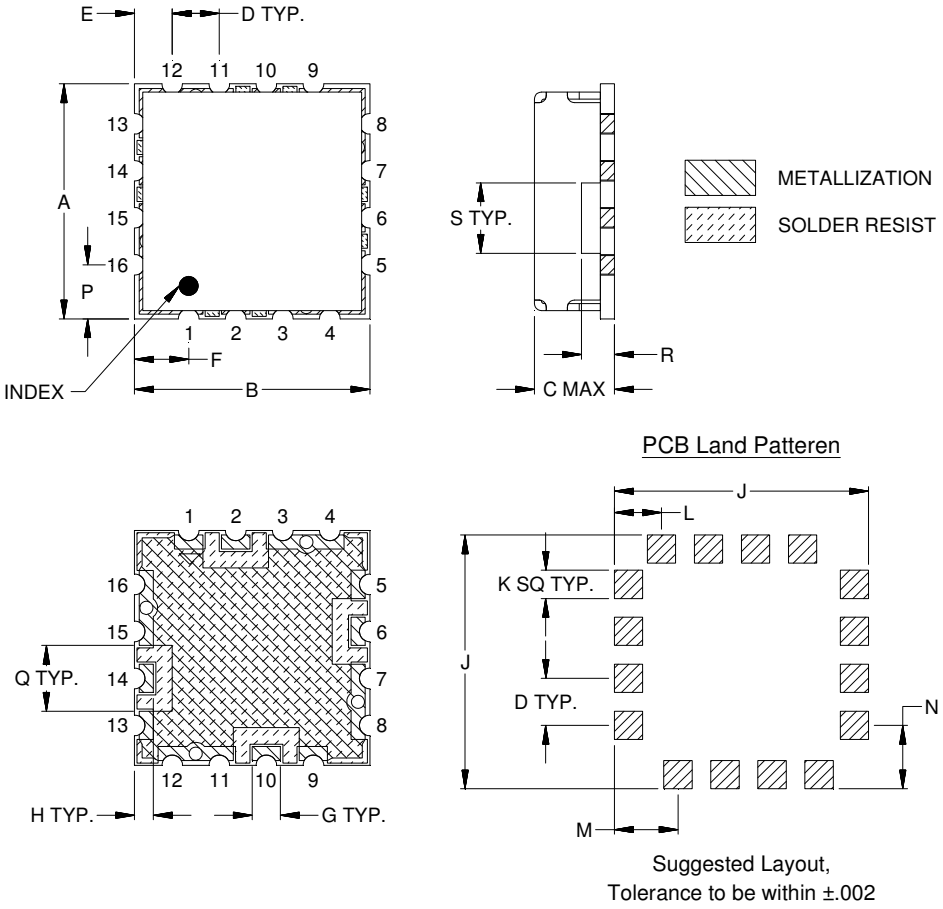


Phase Shift @ V+=5 V



Case Style DV

Outline Dimensions DV874



CASE#	A	B	C	D	E	F	G	H	J	K	L	M
DV874	.500 (12.70)	.500 (12.70)	.195 (4.95)	.100 (2.54)	.080 (2.03)	.115 (2.92)	.060 (1.52)	.040 (1.02)	.540 (13.72)	.060 (1.52)	.100 (2.54)	.135 (3.43)

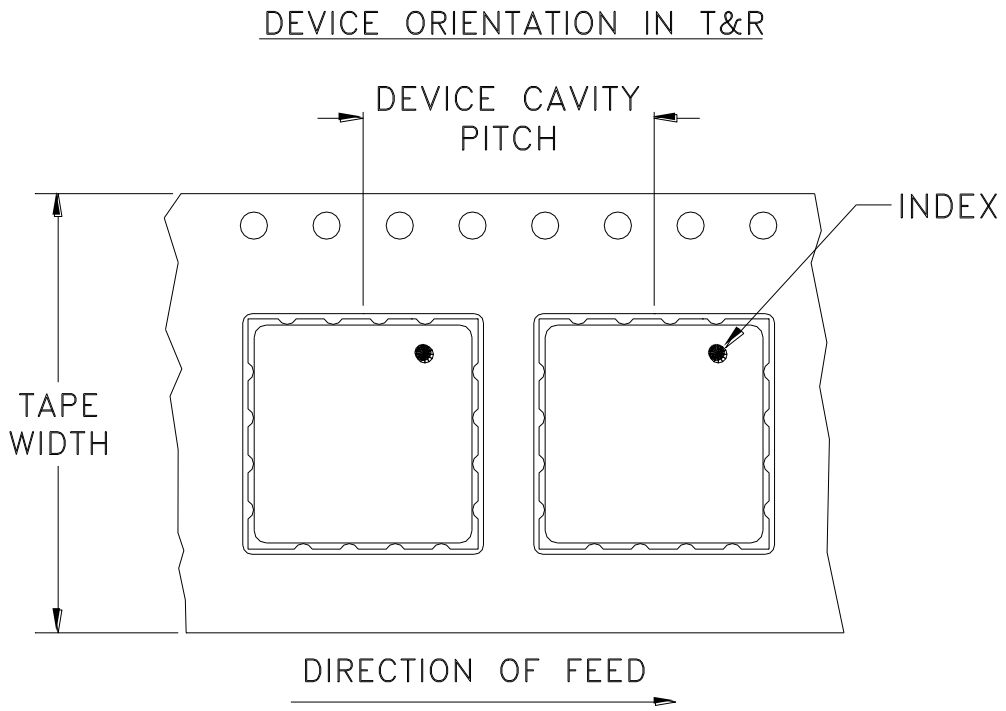
CASE#	N	P	Q	R	S	WT.GRAM
DV874	.135 (3.43)	.115 (2.92)	.140 (3.56)	.070 (1.78)	.150 (3.81)	1.0

Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015

Notes:

1. Case material: Nickel-Silver alloy.
2. Base: Printed wiring laminate.
3. Termination finish:
   For RoHS Case Styles: 3-5 µ inch (.08-.13 microns) Gold over 120-240 µ inch (3.05-6.10 microns) Nickel plate.
   For RoHS-5 Case Styles: Tin-Lead plate.

Tape & Reel Packaging TR-F37



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
24	16	7	Small quantity standards (see note)	10
				20
				50
				100
		13	Standard	200
				500

Note: Please consult individual model data sheet to determine device per reel availability.

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf

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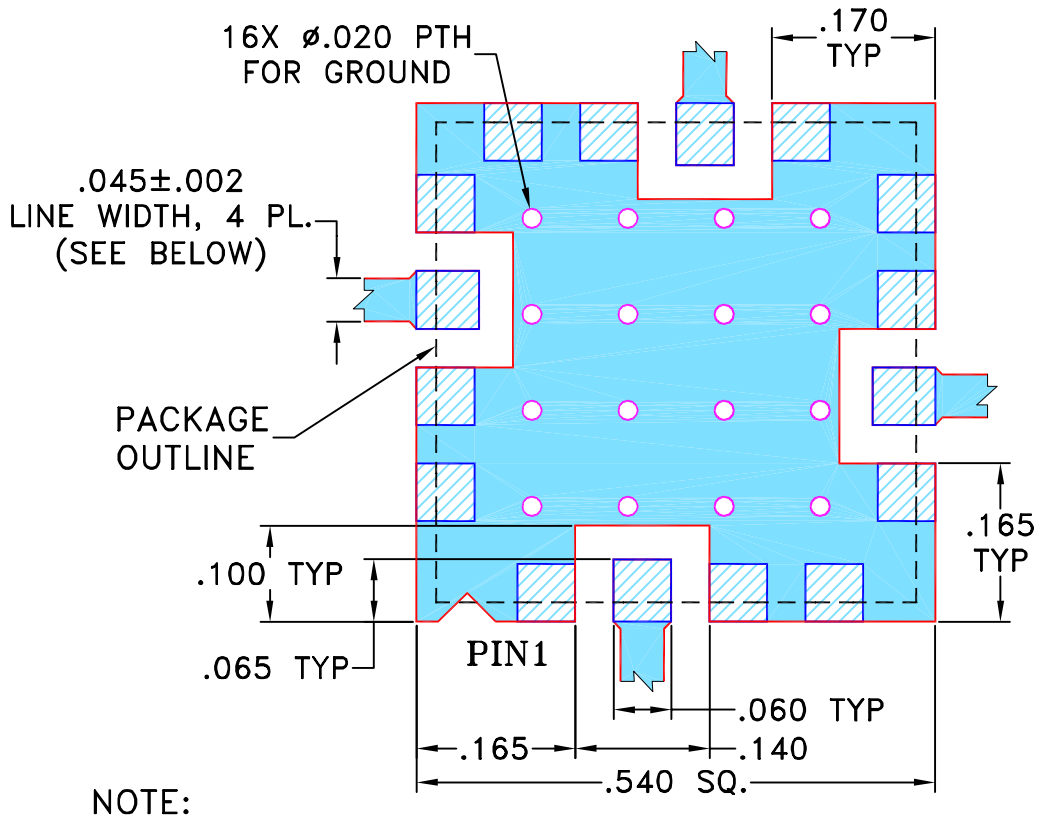
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
A	M94233	CHANGE LINE WIDTH	09/04	RZ	HH
B	M101567	ADD CS: DV874	10/05	DK	HH
B	R62061	ADD CS: DV874	10/05	DK	HH
C	M102713	ADDED "...WITH SMOBC"	01/12/06	GF	IL

SUGGESTED MOUNTING CONFIGURATION FOR DV894 & DV897 CASE STYLES, "np" PIN CONNECTION



NOTE:

1. TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS 0.025" ± 0.0025"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	DK (RAVON)	28 OCT 05
TOLERANCES ON:	CHECKED	RZ (RAVON)	28 OCT 05
2 PL DECIMALS ±	APPROVED	HH (RAVON)	28 OCT 05
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

ASHEETA1.DWG REV:A DATE:01/12/95

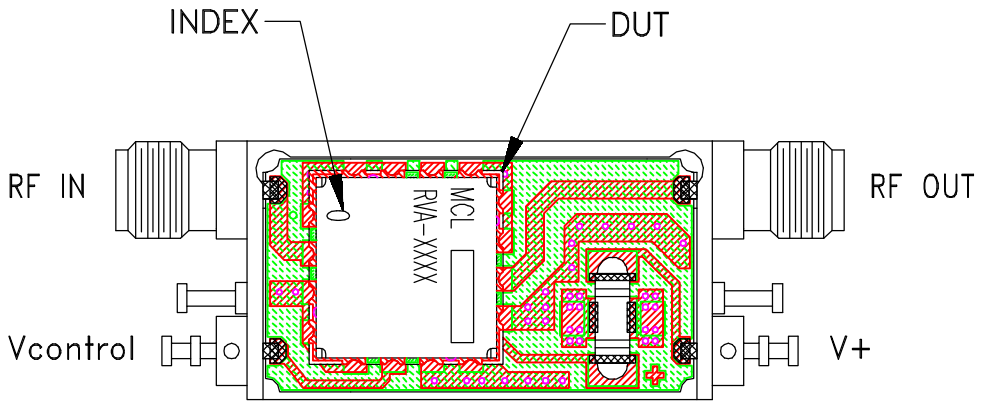
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, np, DV894/897, RVA, TB-163

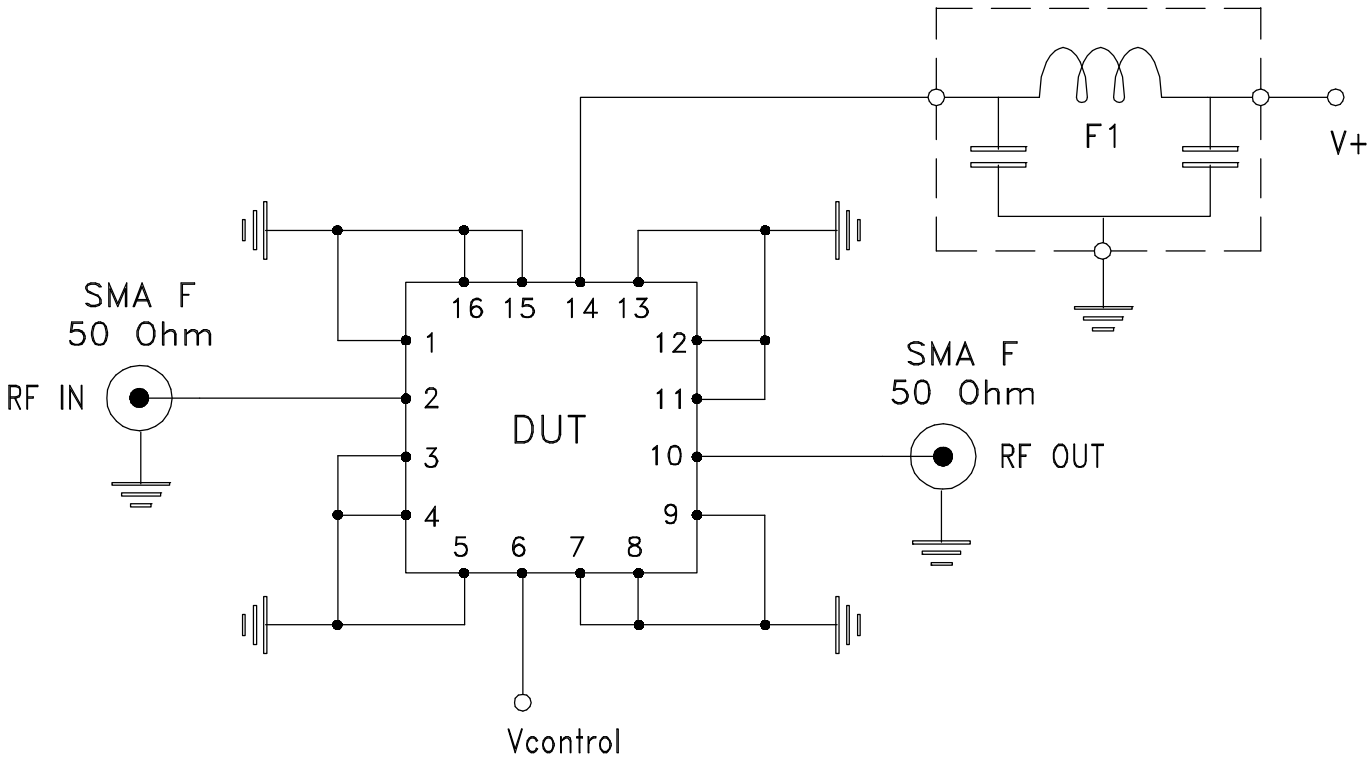
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-040	C

FILE:	SCALE:	SHEET:
98PL040	5:1	1 OF 1

Evaluation Board and Circuit



TB-163



Schematic Diagram

Notes:
1. SMA Female connectors.
2. PCB Material: ROGERS R04350B or equivalent, Dielectric Constant=4.5, Thickness=.020 inch.

Mini-Circuits®

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Environmental Specifications ENV65T3

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 85° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutectic Process: 225°C peak Pb-Free Process, 245°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Vibration (High Frequency)	20g peak, 20-2000 Hz, 4 times in each of three axes (total 12)	MIL-STD-883, Method 2007.3, Condition A
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215