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IF/RF Low Cost Cascadable Modules

Selection Guide

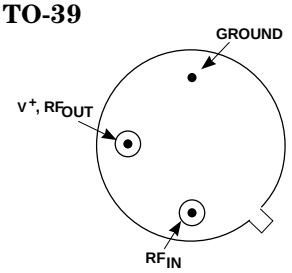
GPD Series
GPM Series

Features
- **Small Size**
- **Hermetic**
- **High Gain**
- **Modifiable Roll-off**

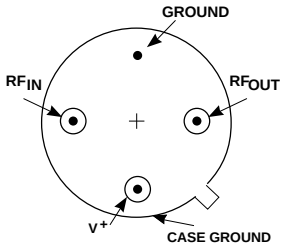
Applications
- **Gain Blocks**
- **Mixer Post/Pre-Amp**
- **Prototypes**

Description
The GPD and GPM amplifiers, available in TO-12 (4-pin) and TO-39 (3-pin) packages, are designed for applications which require the highest performance-to-cost ratio or where size is an important factor. Some versions are equipped with internal coupling and bypass capacitors, however the "60" Series requires external coupling and bypass capacitors. This gives the user freedom to set the low frequency roll-off as needed. The GPM modules contain Si MMICs, while the GPD modules are discrete hybrid devices. These amplifiers are excellent for IF amplification purposes such as mixer postamps.

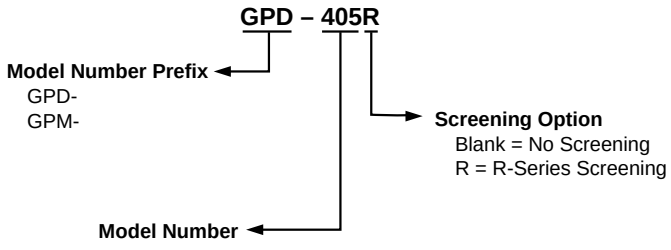
Case Types
TO-39



TO-12



Product Options



GPD Series Low Cost Amplifiers, TO-39 Package[1]

Typical Specifications at 25°C

Model	Frequency Response (MHz) Minimum	Gain over 0° to 50°C (dB) Minimum	Gain[2] over –55° to +85°C (dB) Minimum	Noise Figure (dB) Typical	Power Output at 1 dB Gain Compression (dBm) Typical	Gain Flatness (±dB) Typical	3rd-Order Intercept Point (dBm) Typical	Input Power (±1% Reg.) Voltage (VDC) Typical	Input Power (±1% Reg.) Current (mA) Typical
GPD-110	0.1-400	—	12	4.0	–2.0	1.0	+12	2.5	10
GPD-120	0.1-400	—	13	5.5	+8.0	1.0	+24	5.5	25
GPD-130	0.1-400	—	12	7.0	+17.0	1.0	+27	6.0	60
GPD-310	0.1-1000	8	7	5.0	–1.0	1.0	+11	2.3	10
GPD-311	0.1-1000	12	11	4.5	+3.0	1.0	+15	2.7	15
GPD-321	0.1-1000	12	11	4.7	+8.0	1.0	+20	3.5	25
GPD-320	0.1-1000	8	7	5.0	+8.0	1.0	+18	3.0	25
GPD-331	0.1-1000	10	9	6.0	+16.0	1.0	+28	5.5	60
GPD-330	0.1-1000	7	6	6.5	+16.0	1.0	+26	4.5	60
GPD-410	0.1-1500	12	11	4.2	+2.5	1.0	+15	2.5	15
GPD-420	0.1-1500	11	10	4.7	+8.0	1.0	+20	2.8	25
GPD-430	0.1-1500	10	9	6.3	+16.0	1.0	+28	5.0	60

Notes: 1. Three external capacitors (input, output coupling and RF bypass) are required to establish low frequency roll-off. An external bias resistor, with a value determined by the available bias voltage ($R_D = [V_{CC} - V_D] \div I_D$), where R_D is the value of the bias resistor (Ohms), V_{CC} is the available source voltage, V_D is the required device bias voltage (per specification) and I_D is the device current (per specification).
2. Military temperature conditions: –55° to +85°C

GPD Series Low Cost Amplifiers, TO-12 Package

Guaranteed Specifications at 0° to 50°C Case Temperature,Typical Values at 25°C

Model	Frequency Response (MHz) Minimum	Gain (dB) Minimum	Gain[2] (dB) Minimum	Noise Figure (dB) Typical	Power Output for 1 dB Gain Compression (dBm) Typical	Gain Flatness (±dB) Typical	3rd-Order Intercept Point (dBm) Typical	Input Power (±1% Reg.) Voltage (VDC) Typical	Input Power (±1% Reg.) Current (mA) Typical
GPD-201	5-200	30	26	3.0	+5	1.0	+13	+15	30
GPD-202	5-200	25	23	5.5	+11	1.0	+18	+15	60
GPD-251	5-200	25	23	4.0	+1	1.0	+10	+5	30
GPD-252	5-200	15	14	4.0	0	1.0	+12	+5	11
GPD-401/-461[1]	5-400	13	12	4.0	–2	1.0	+9	+15	10
GPD-411	5-400	12	11	3.0	–6	1.0	+4	+15	7
GPD-402/-462[1]	5-400	13	12	8.0	+8	1.0	+18	+15	24
GPD-403/-463[1]	5-400	9	8	7.5	+16	1.0	+25	+24	65
GPD-404/-464[1]	5-400	9	8	7.5	+17	1.0	+26	+15	70
GPD-405	10-400	13	12	6.5	+23	1.0	+36	+15	90
GPM-552	5-500	33	32	4.5	0	0.2	+14	+15	34
GPD-1001/-1061[1]	5-1000	12	11	6.0	0	1.0	+12	+15	15
GPD-1002/-1062[1]	5-1000	12	11	7.0	+6	1.0	+16	+15	27
GPM-1052	5-1000	20	20	7.0	+8	0.3	+20	+15	60
GPD-1003/-1063[1]	5-1000	10	9	7.0	+14	1.0	+25	+15	55

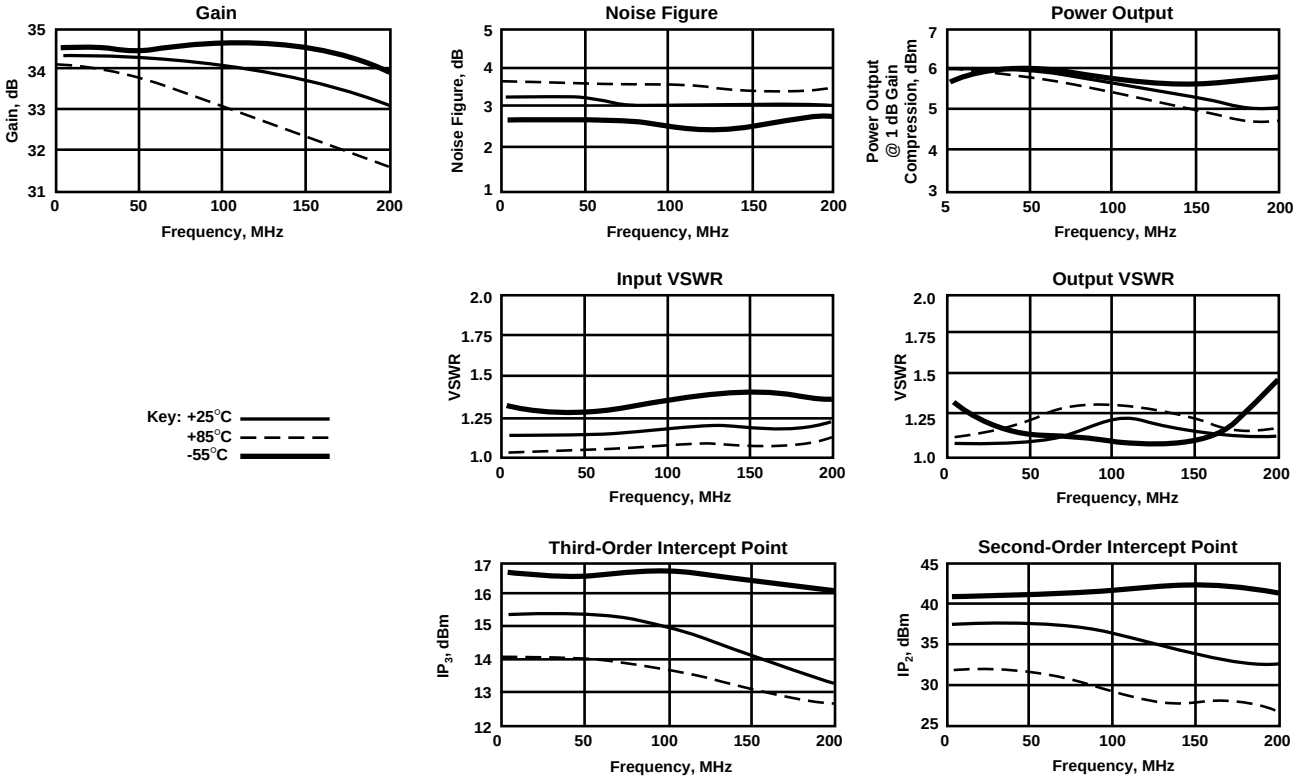
Notes: 1. The 60 Series is the same as the standard series except that three external capacitors are required to establish low frequency roll-off.
2. Military temperature conditions: –55° to +85°C

Maximum Ratings and Thermal Characteristics Table

Model	Maximum Ratings					Thermal Characteristics[1]				
	DC Voltage (Volts)	Continuous RF Input Power (dBm)	Operating Case Temp. (°C)	Storage Temp. (°C)	"R" Series Burn-In Temp. (°C)	q_{JC} (°C/W)	Active Transistor Power Dissipation (mW)	Junction Temp. Above Case Temp. (°C)	MTBF MIL-HDBK-217E, A_{UF} @ 90°C (Hrs)	Weight (Grams)
GPD-201	+17	+13	–55 to +125	–62 to +150	+125	105/105	15/33	2/3	1,678,671	1.5
GPD-202	+17	+13	–55 to +125	–62 to +150	+125	105/105	69/116	7/12	1,621,478	1.5
GPD-251	+12	+13	–55 to +125	–62 to +150	+125	105/105	25/43	2/5	1,678,323	1.5
GPD-252	+12	+13	–55 to +125	–62 to +150	+125	105	20	2	2,000,470	1.5
GPD-401/-461	+17	+13	–55 to +125	–62 to +150	+125	90	14	2	2,045,316 (401) 2,388,527 (461)	1.5
GPD-402/-462	+17	+13	–55 to +125	–62 to +150	+125	90	82	7	2,325,901 (402) 2,640,329 (462)	1.5
GPD-403/-463	+25	+13	–55 to +125	–62 to +150	+125	85	275	23	3,058,127 (403) 3,602,215 (463)	1.5
GPD-404/-464	+17	+13	–55 to +115	–62 to +150	+115	85	330	28	2,435,672 (404) 2,512,908 (464)	1.5
GPD-405	+17	+13	–55 to +100	–62 to +150	+100	55	750	41	1,607,022	1.5
GPD-411	+17	+13	–55 to +125	–62 to +150	+125	105[2]	24[2]	3[2]	1,608,303	1.5
GPM-552	+17	+17	–55 to +125	–62 to +150	+125	135/135	85/85	12/12	—	1.5
GPD-1001/-1061	+17	+13	–55 to +125	–62 to +150	+125	105	37	4	1,639,228 (1001) 1,910,397 (1061)	1.5
GPD-1002/-1062	+17	+13	–55 to +125	–62 to +150	+125	105	82	9	1,639,228 (1002) 1,882,476 (1062)	1.5
GPD-1003/-1063	+17	+13	–55 to +125	–62 to +150	+125	75	185	14	869,341 (1003) 2,101,101 (1063)	1.5
GPM-1052	+17	+17	–55 to +125	–62 to +150	+125	130/130	125/175	16/23	—	1.5

Notes: 1. Values refer to 1st and 2nd stage transistors respectively.

GPD-201—5 to 200 MHz
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)



GPD-201—5 to 200 MHz (continued)

Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

Numerical Readings **Bias = 15.00 Volts**

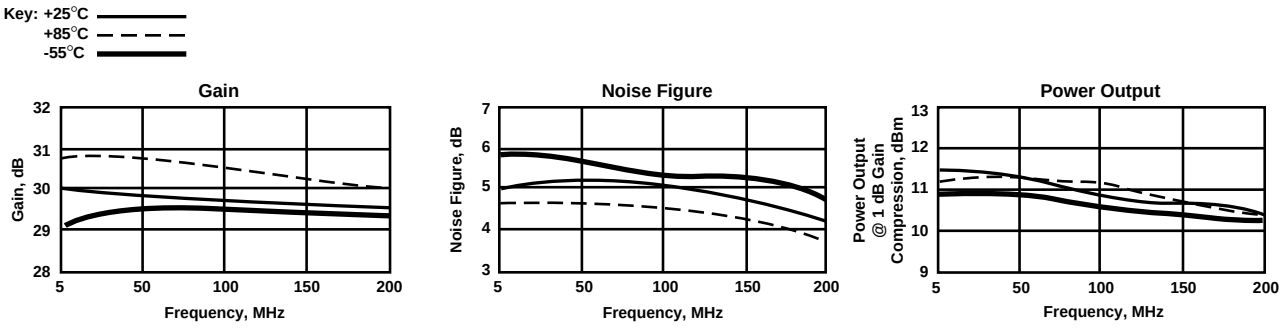
FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.22	34.08	–21.48	.03	.00	1.38	45.05
150.0	1.24	33.63	–31.73	–.07	.56	1.35	42.53
200.0	1.30	33.06	–41.78	.03	.55	1.35	45.17
250.0	1.33	32.23	–51.68		.52	1.35	44.14
300.0	1.39	31.33	–60.39		.46	1.37	45.09
350.0	1.42	30.34	–68.41		.40	1.41	42.90
400.0	1.46	29.22	–74.90		.33	1.46	45.16
450.0	1.49	28.20	–80.20		.28	1.51	42.67
500.0	1.51	27.05	–84.95		.21	1.55	42.98
550.0	1.54	25.98	–87.93		.18	1.59	43.16
600.0	1.56	25.02	–91.38		.15	1.61	42.20
650.0	1.57	23.93	–93.28		.08	1.64	41.70

S-Parameters **Bias = 15.00 Volts**

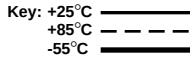
FREQUENCY MHz	S_{11}		S_{21}		S_{12}		S_{22}	
	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.089	–160.6	34.037	–21.5	–42.671	20.2	.172	–.6
150.00	.105	–151.2	33.599	–31.7	–45.997	38.9	.153	.8
200.00	.128	–152.6	33.063	–41.6	–45.886	28.4	.150	6.5
250.00	.144	–153.4	32.220	–51.6	–44.026	30.1	.148	13.7
300.00	.162	–156.8	31.300	–60.1	–43.385	56.6	.159	19.6
350.00	.173	–159.8	30.270	–68.4	–43.056	76.0	.171	22.6
400.00	.187	–163.6	29.200	–74.7	–41.723	80.0	.186	22.8
450.00	.199	–167.2	28.195	–80.2	–43.575	79.7	.204	21.9
500.00	.206	–170.2	27.005	–84.7	–43.475	100.7	.216	20.4
550.00	.214	–174.7	25.949	–87.7	–42.361	109.1	.227	17.7
600.00	.218	–177.3	24.986	–91.3	–41.674	113.8	.235	15.0
650.00	.224	–179.3	23.911	–93.2	–41.737	124.4	.242	11.7

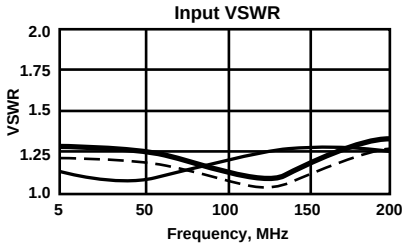
GPD-202—5 to 200 MHz

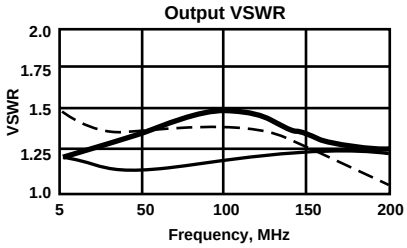
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)

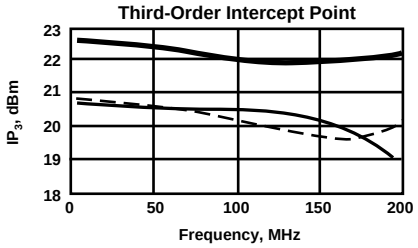


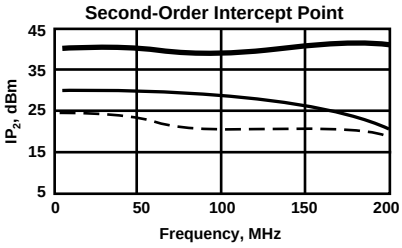
GPD-202—5 to 200 MHz (continued)
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)











Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

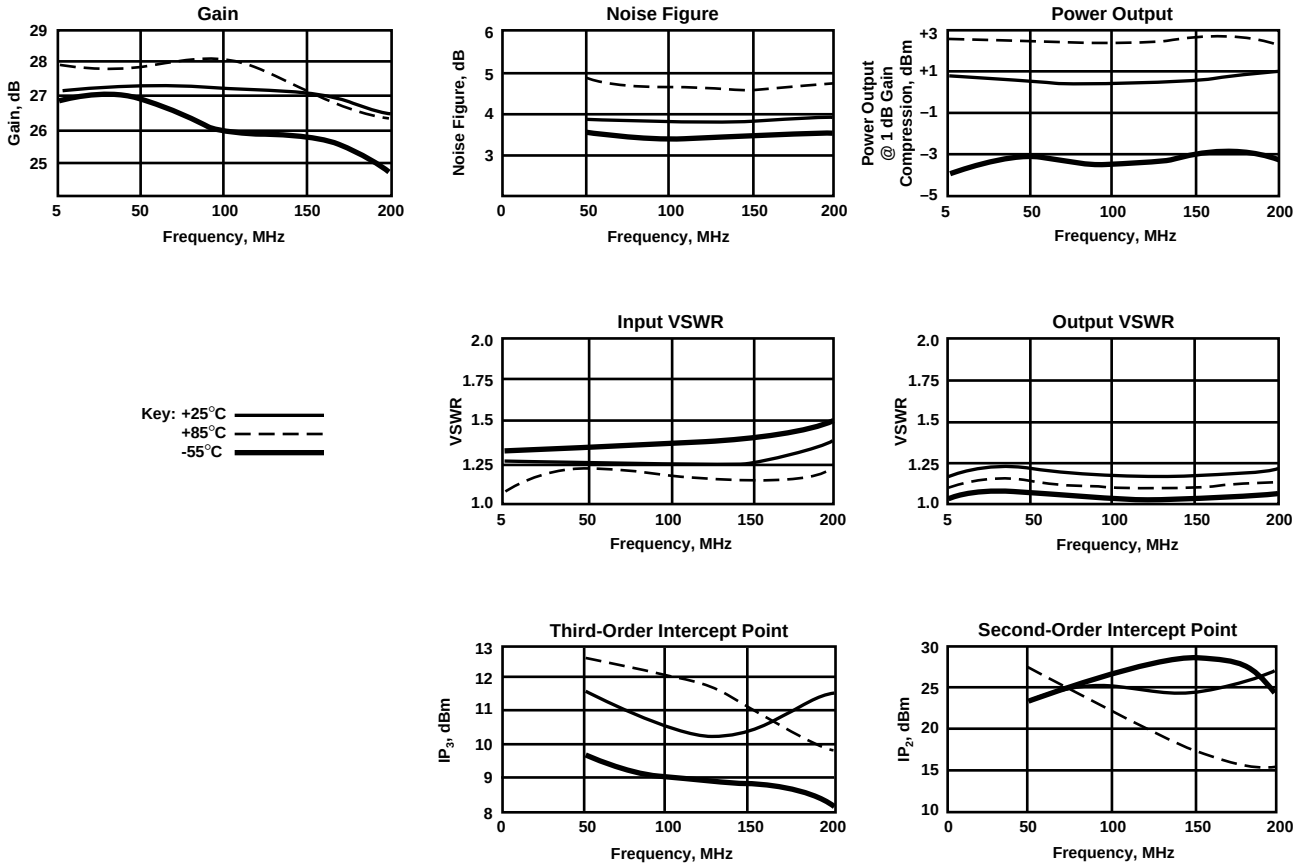
Numerical Readings **Bias = 15.00 Volts**

FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.12	30.00	–16.42	.10	.00	1.17	58.12
150.0	1.17	29.68	–24.50	–.20	.43	1.22	46.81
200.0	1.23	29.27	–31.95	.10	.42	1.25	46.32
250.0	1.29	28.71	–39.74		.40	1.30	47.00
300.0	1.34	28.08	–46.54		.38	1.35	48.35
350.0	1.40	27.43	–53.39		.35	1.39	45.49
400.0	1.45	26.61	–59.25		.30	1.43	48.21
450.0	1.50	25.89	–64.05		.26	1.47	46.06
500.0	1.53	25.03	–68.45		.21	1.49	46.03
550.0	1.57	24.18	–71.53		.19	1.51	44.99
600.0	1.61	23.41	–75.32		.18	1.53	45.06
650.0	1.63	22.52	–77.92		.11	1.54	44.21
700.0	1.65	21.77	–79.36		.07	1.55	43.24
750.0	1.68	21.03	–80.55		.07	1.55	43.10

S-Parameters **Bias = 15.00 Volts**

FREQUENCY	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.053	–93.5	29.974	–16.5	–47.603	33.3	.087	22.5
150.00	.078	–97.9	29.675	–24.5	–45.367	7.5	.101	32.5
200.00	.103	–105.1	29.286	–31.8	–46.409	14.1	.118	36.0
250.00	.127	–114.3	28.726	–39.8	–47.945	63.9	.130	38.2
300.00	.150	–120.9	28.084	–46.4	–45.731	52.9	.150	38.0
350.00	.168	–126.8	27.376	–53.5	–45.001	66.9	.163	37.4
400.00	.186	–133.4	26.609	–59.1	–44.254	77.6	.175	35.8
450.00	.201	–139.3	25.889	–64.1	–45.714	91.1	.188	33.7
500.00	.214	–144.3	25.004	–68.2	–46.501	95.0	.197	31.3
550.00	.224	–149.3	24.177	–71.4	–44.719	109.6	.205	27.9
600.00	.234	–153.8	23.397	–75.3	–43.458	112.8	.211	25.3
650.00	.244	–157.0	22.526	–77.9	–42.576	129.7	.213	21.7
700.00	.252	–161.3	21.772	–79.2	–44.257	145.0	.216	18.8
750.00	.260	–165.0	21.026	–80.4	–42.019	148.5	.217	14.8

GPD-251—5 to 200 MHz
Typical Performance Over Temperature (@ +5 VDC unless otherwise noted)



Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

Numerical Readings **Bias = 5.00 Volts**

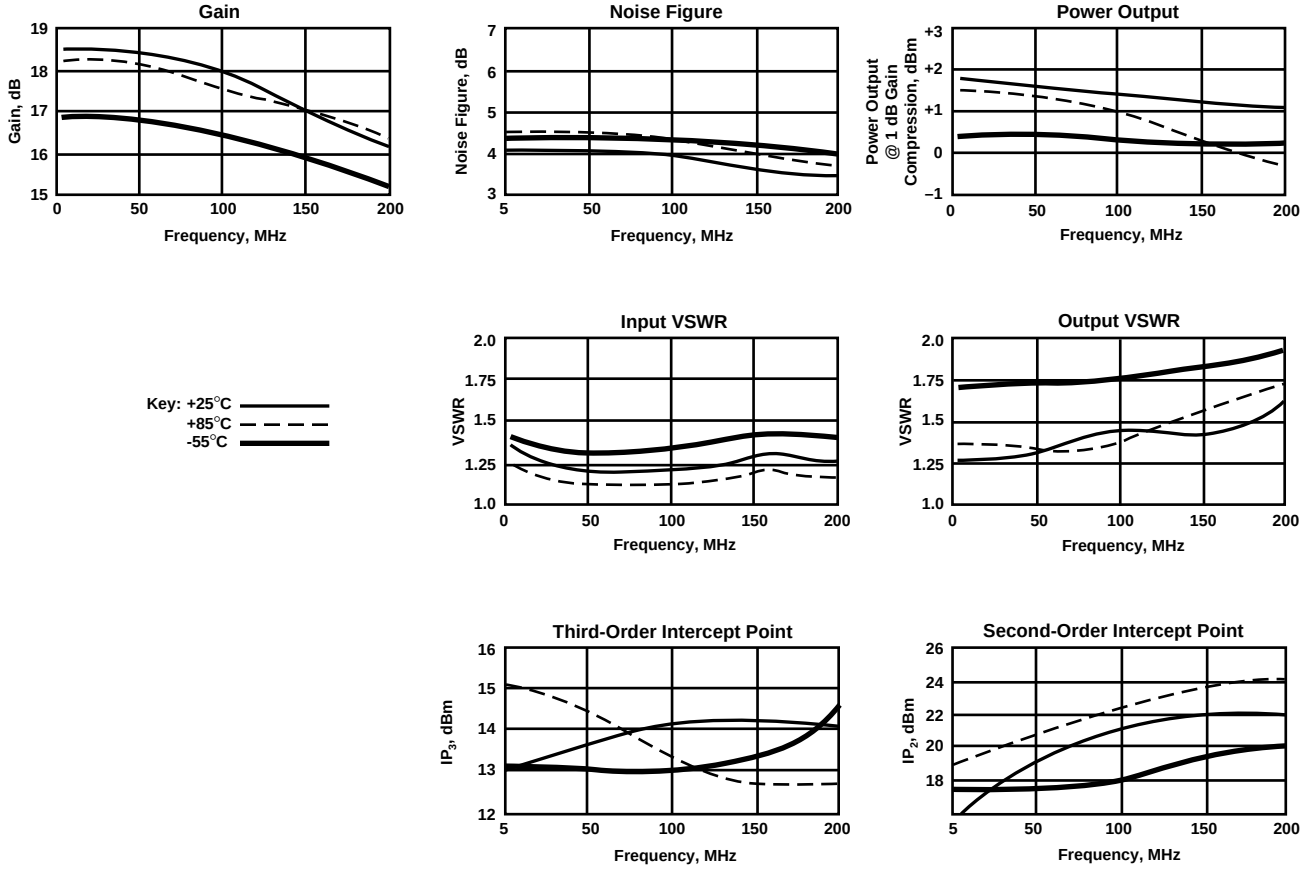
FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.30	26.85	–18.13	.11	.00	1.12	49.96
150.0	1.34	26.52	–27.54	–.23	.50	1.12	49.00
200.0	1.43	26.01	–36.25	.11	.47	1.14	44.42
250.0	1.50	25.41	–44.49		.44	1.15	47.30
300.0	1.57	24.63	–51.92		.40	1.16	48.12
350.0	1.63	23.87	–58.94		.38	1.18	44.41
400.0	1.68	22.97	–65.67		.32	1.19	47.34
450.0	1.73	22.04	–70.41		.26	1.19	48.00
500.0	1.76	21.18	–74.90		.23	1.19	49.28
550.0	1.79	20.19	–78.51		.19	1.19	45.90
600.0	1.82	19.32	–81.65		.15	1.18	46.52
650.0	1.83	18.46	–83.95		.11	1.17	45.45
700.0	1.85	17.61	–85.55		.07	1.17	46.48
750.0	1.87	16.81	–86.49		.04	1.16	45.87

GPD-251—5 to 200 MHz (continued)
Automatic Network Analyzer Measurements

S-Parameters **Bias = 5.00 Volts**

FREQUENCY MHz	S_{11}		S_{21}		S_{12}		S_{22}	
	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.139	–162.5	27.137	–18.5	–44.479	38.4	.050	175.0
150.00	.159	–154.9	26.804	–28.2	–47.583	20.7	.058	170.5
200.00	.185	–156.6	26.299	–36.7	–48.131	16.6	.066	161.4
250.00	.206	–159.2	25.656	–45.2	–47.285	55.0	.073	152.3
300.00	.227	–162.4	24.852	–52.4	–44.079	39.6	.079	142.0
350.00	.249	–166.4	24.046	–59.7	–46.115	68.9	.085	133.8
400.00	.264	–170.0	23.168	–66.3	–44.291	66.4	.089	125.7
450.00	.271	–173.8	22.228	–71.2	–47.319	68.9	.086	117.8
500.00	.278	–178.1	21.313	–75.4	–47.221	82.0	.089	110.9
550.00	.288	177.5	20.337	–79.1	–47.594	104.2	.087	104.6
600.00	.297	175.1	19.458	–82.2	–44.654	101.1	.086	98.6
650.00	.298	173.5	18.598	–84.7	–45.687	129.1	.082	92.7
700.00	.290	170.1	17.711	–85.9	–45.548	123.8	.078	86.8
750.00	.296	165.8	16.899	–86.8	–44.792	138.8	.075	81.3

GPD-252—5 to 200 MHz
Typical Performance Over Temperature (@ +5 VDC unless otherwise noted)



GPD-252—5 to 200 MHz
Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

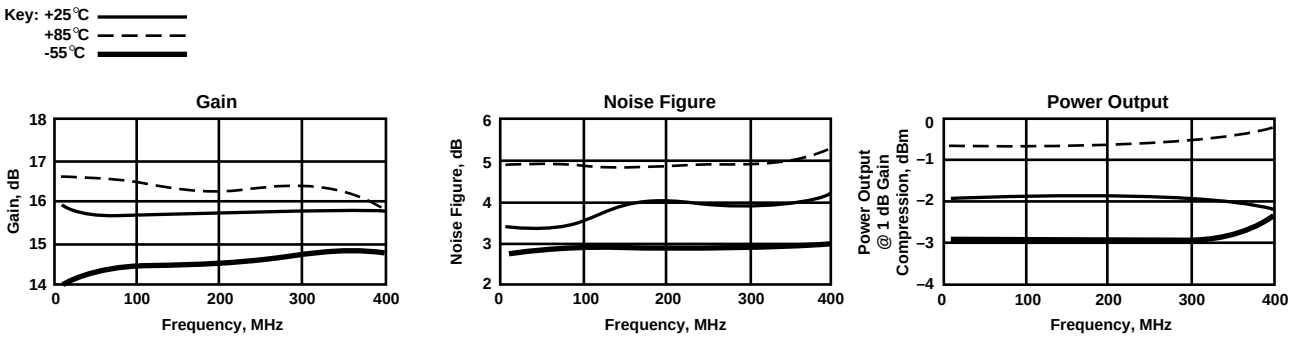
Numerical Readings **Bias = 5.00 Volts**

FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.17	17.72	170.96	.21	.00	1.48	45.93
150.0	1.27	17.11	167.48	–.43	.16	1.44	37.18
200.0	1.24	16.47	165.32	.21	.08	1.59	38.02
250.0	1.24	15.74	164.43		10.00	1.65	34.80
300.0	1.23	15.14	165.41		19.95	1.73	34.26
350.0	1.24	14.43	166.16		19.90	1.80	29.16
400.0	1.27	13.78	169.08		19.88	1.84	27.98
450.0	1.30	13.23	170.54		19.88	1.88	27.23
500.0	1.33	12.53	173.43		19.83	1.92	26.82
550.0	1.35	12.11	176.61		19.85	1.94	26.84
600.0	1.38	11.62	178.84		19.82	1.98	26.63
650.0	1.43	11.06	–176.94		19.81	2.02	26.40
700.0	1.47	10.73	–174.33		19.85	2.06	26.18
750.0	1.51	10.33	–171.41		19.83	2.09	26.13

S-Parameters **Bias = 5.00 Volts**

FREQUENCY	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.095	174.6	17.662	170.2	–26.104	21.1	.163	28.8
150.0	.095	177.6	17.021	167.3	–25.690	29.1	.204	26.8
200.0	.093	–178.2	16.449	165.7	–25.590	36.2	.228	22.4
250.0	.097	–174.3	15.644	164.8	–25.752	44.2	.250	19.1
300.0	.107	–175.0	15.066	165.5	–25.551	51.8	.269	14.8
350.0	.121	–171.0	14.409	166.3	–25.690	60.5	.288	11.5
400.0	.130	–171.4	13.793	169.3	–25.566	69.6	.297	7.8
450.0	.136	–171.8	13.213	170.4	–25.902	79.1	.307	4.1
500.0	.146	–174.8	12.501	173.2	–25.790	86.4	.315	.8
550.0	.163	–179.2	12.106	176.3	–25.933	96.0	.322	–2.6
600.0	.180	–178.7	11.591	178.7	–25.795	106.1	.328	–6.5
650.0	.188	–178.3	11.007	–177.2	–25.731	115.1	.338	–10.0
700.0	.191	178.8	10.668	–174.9	–25.587	125.0	.347	–12.7
750.0	.202	175.5	10.246	–171.8	–25.558	134.1	.352	–16.1

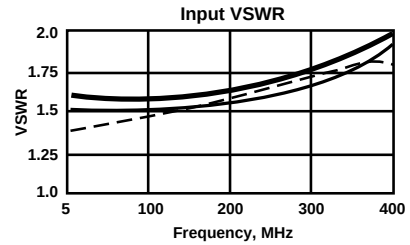
GPD-401/461—5 to 400 MHz
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)

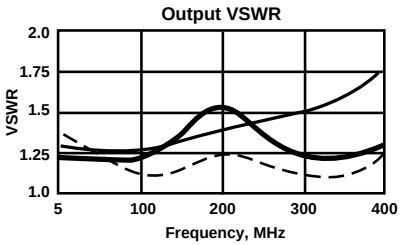


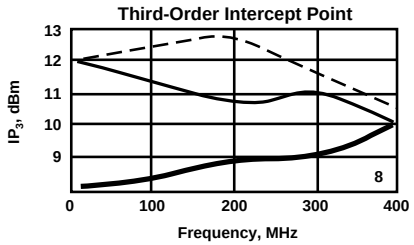
GPD-401/461—5 to 400 MHz (continued)

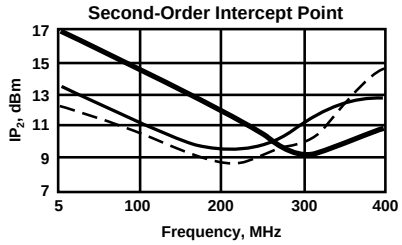
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)

Key: +25°C
+85°C
-55°C









Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

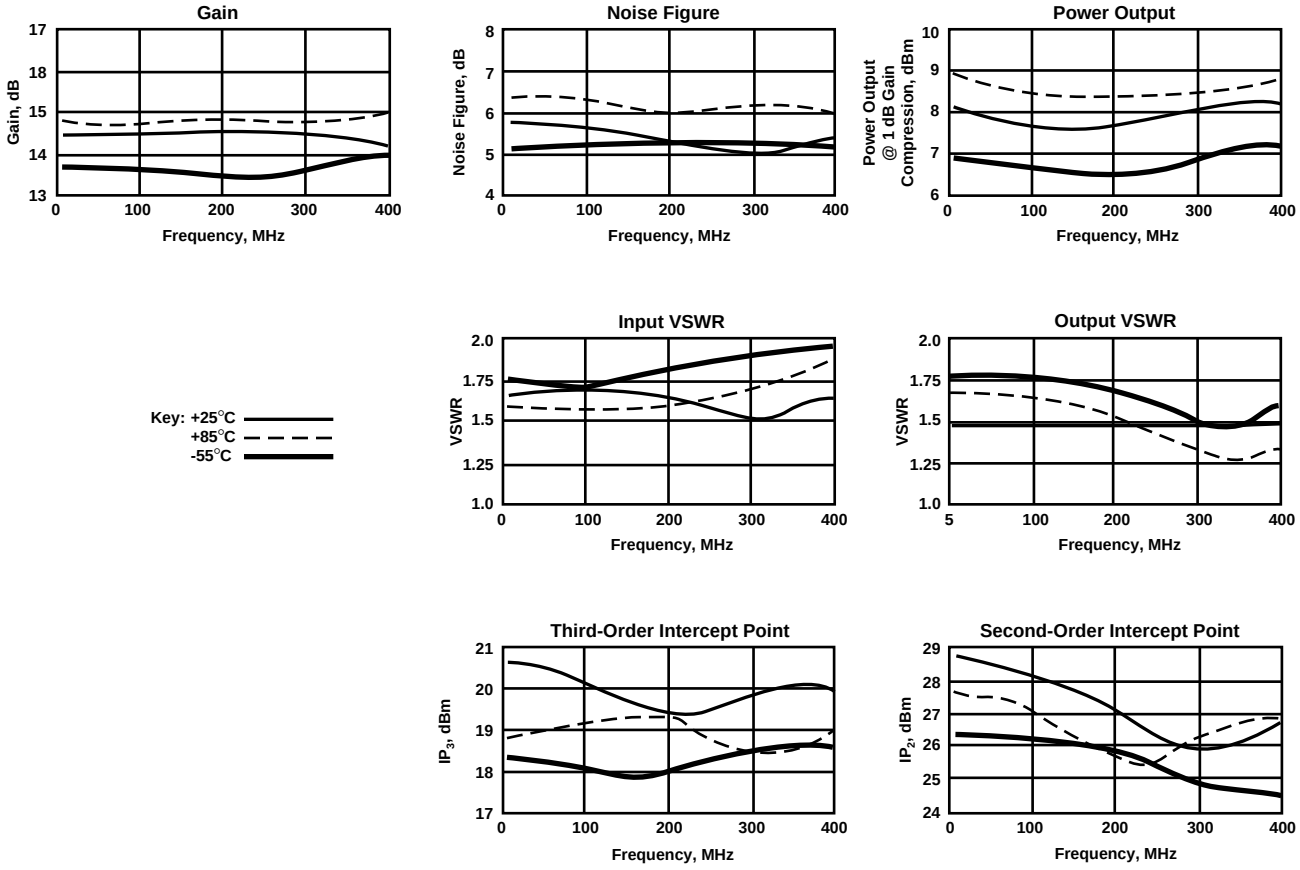
Numerical Readings — **Bias = 15.00 Volts**

FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.52	15.67	173.87	–.28	.00	1.29	21.66
150.0	1.53	15.59	170.27	–.06	.19	1.33	21.44
200.0	1.56	15.63	167.02	.51	.22	1.38	21.20
250.0	1.61	15.64	162.47	–.20	.22	1.44	21.21
300.0	1.68	15.71	159.15	.30	.21	1.53	20.98
350.0	1.79	15.81	154.98	–.04	.23	1.63	20.79
400.0	1.93	15.68	150.97	–.22	.21	1.76	20.73
450.0	2.13	15.70	147.51		.25	1.92	20.67
500.0	2.39	15.56	141.80		.27	2.12	20.47
550.0	2.70	15.33	137.78		.27	2.33	20.28
600.0	3.08	15.26	132.21		.33	2.60	20.44
650.0	3.52	14.74	126.06		.29	2.91	20.34
700.0	3.99	14.25	121.67		.25	3.26	20.34
750.0	4.48	13.80	117.03		.28	3.59	20.42

S-Parameters — **Bias = 15.00 Volts**

FREQUENCY	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.202	–170.8	15.663	173.7	–21.532	14.5	.128	20.6
150.00	.210	–166.4	15.577	170.1	–21.411	16.8	.139	33.2
200.00	.218	–163.9	15.614	167.1	–21.411	22.1	.161	41.4
250.00	.229	–159.3	15.620	162.4	–21.236	28.0	.182	47.3
300.00	.252	–156.3	15.674	159.2	–20.928	32.5	.210	49.9
350.00	.283	–153.6	15.743	154.9	–20.848	38.3	.239	52.8
400.00	.319	–152.7	15.647	151.1	–20.562	42.9	.273	55.1
450.00	.361	–153.5	15.694	147.4	–20.685	46.0	.310	55.2
500.00	.408	–155.5	15.502	142.0	–20.475	50.7	.355	54.6
550.00	.456	–159.0	15.279	137.8	–20.305	54.1	.398	52.9
600.00	.510	–163.6	15.203	132.2	–20.351	57.7	.441	50.3
650.00	.558	–168.7	14.701	126.1	–20.361	62.4	.487	46.7
700.00	.594	–174.6	14.199	121.8	–20.367	65.4	.528	42.7
750.00	.633	179.5	13.755	117.2	–20.424	68.8	.565	37.8

GPD-402/462—5 to 400 MHz
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)



Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

Numerical Readings **Bias = 15.00 Volts**

FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.63	14.33	174.29	.02	.00	1.45	23.70
150.0	1.60	14.23	170.90	.05	.18	1.46	23.27
200.0	1.56	14.24	167.76	.33	.20	1.45	22.92
250.0	1.53	14.17	163.59	–.40	.20	1.45	22.76
300.0	1.53	14.23	160.48	–.11	.19	1.45	22.49
350.0	1.55	14.22	156.84	–.32	.18	1.47	22.00
400.0	1.58	14.09	154.18	.43	.17	1.51	21.79
450.0	1.68	14.11	150.88		.21	1.54	21.28
500.0	1.83	13.97	146.56		.21	1.61	21.01
550.0	2.06	13.81	143.23		.22	1.70	20.54
600.0	2.33	13.76	138.65		.26	1.82	20.37
650.0	2.67	13.38	133.97		.24	1.97	20.05
700.0	3.08	13.05	130.10		.22	2.15	19.79
750.0	3.60	12.74	126.17		.24	2.35	19.62
800.0	4.17	12.36	121.50		.22	2.58	19.88

GPD-402/462—5 to 400 MHz (continued)

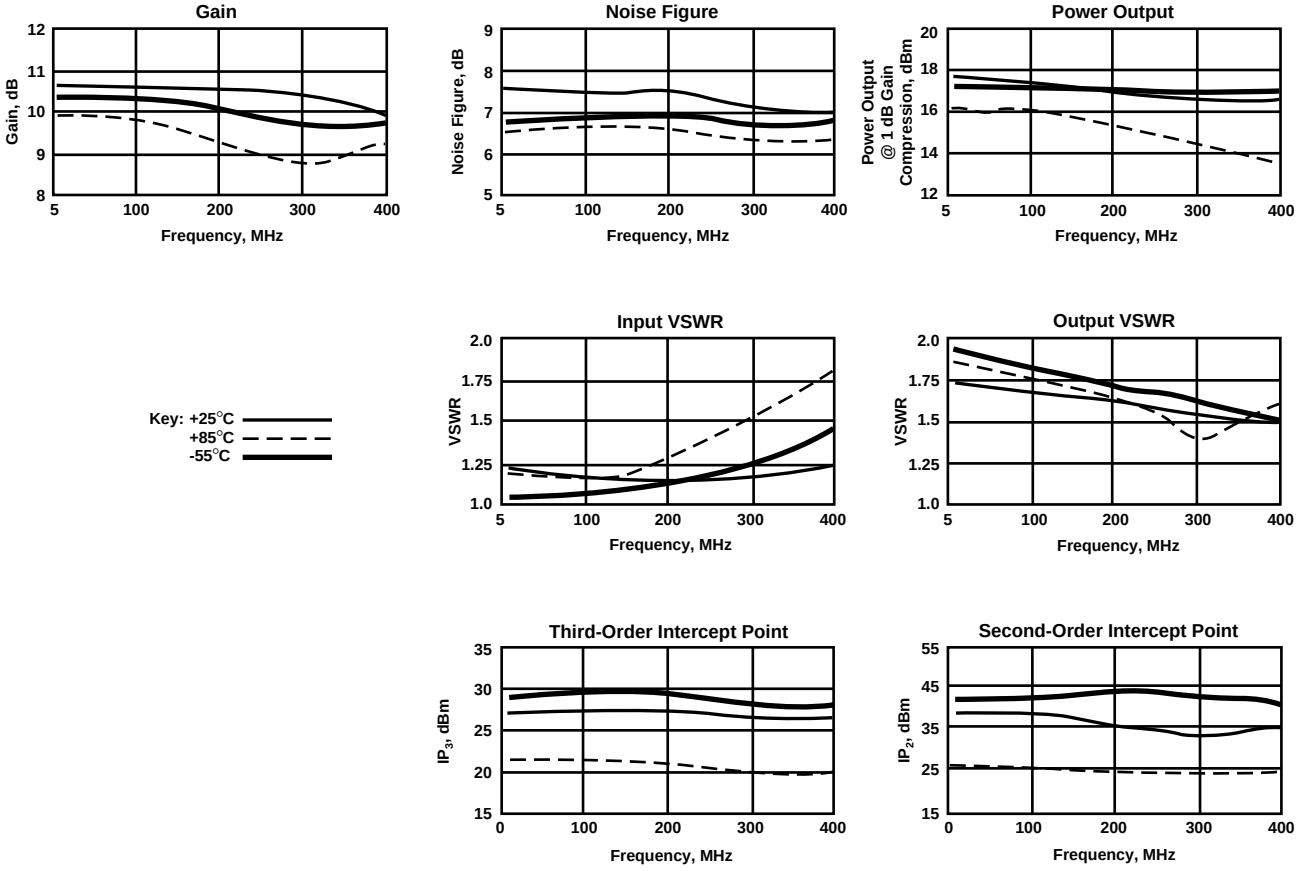
Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

S-Parameters **Bias = 15.00 Volts**

FREQUENCY MHz	S_{11}		S_{21}		S_{12}		S_{22}	
	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.235	–179.6	14.333	174.0	–23.399	15.6	.183	3.2
150.00	.230	–178.7	14.267	170.8	–23.288	23.6	.181	8.7
200.00	.221	–177.6	14.297	167.9	–23.158	28.4	.183	11.3
250.00	.209	–173.3	14.225	163.6	–22.753	36.3	.181	14.4
300.00	.207	–168.0	14.267	160.7	–22.286	42.9	.185	18.2
350.00	.212	–160.8	14.253	156.9	–22.099	49.7	.187	24.2
400.00	.228	–154.2	14.179	154.0	–21.392	55.4	.196	29.4
450.00	.258	–148.9	14.178	150.5	–21.186	58.8	.209	34.4
500.00	.298	–146.4	13.985	146.4	–20.985	64.6	.231	38.2
550.00	.346	–145.8	13.839	142.9	–20.484	67.1	.259	41.0
600.00	.400	–147.2	13.746	138.4	–20.250	71.3	.292	41.7
650.00	.457	–150.1	13.382	133.7	–20.036	75.1	.329	41.1
700.00	.512	–154.7	13.047	130.0	–19.837	77.9	.366	39.4
750.00	.569	–159.7	12.735	126.1	–19.672	79.9	.406	36.7
800.00	.617	–164.5	12.341	121.4	–19.820	81.9	.441	32.8

GPD-403/463—5 to 400 MHz

Typical Performance Over Temperature (@ +24 VDC unless otherwise noted)



GPD-403/463—5 to 400 MHz (continued)
Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

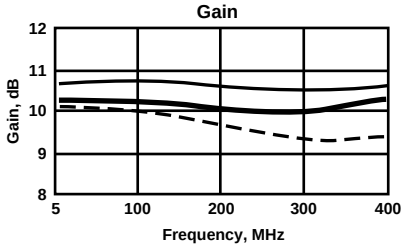
Numerical Readings **Bias = 24.00 Volts**

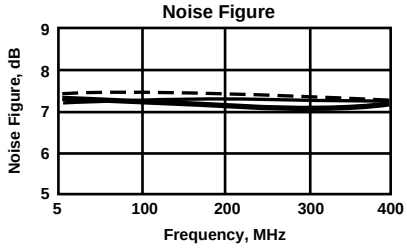
FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.07	10.50	176.22	.39	.00	1.65	20.66
150.0	1.10	10.37	174.17	.56	.15	1.63	20.24
200.0	1.12	10.33	170.97	–.40	.16	1.62	20.03
250.0	1.16	10.14	168.32	–.83	.13	1.60	19.76
300.0	1.19	10.14	166.45	–.47	.10	1.57	19.52
350.0	1.24	10.04	164.55	–.13	.09	1.55	19.09
400.0	1.28	9.95	163.35	.88	.08	1.51	18.72
450.0	1.33	9.79	161.56		.08	1.48	18.40
500.0	1.38	9.59	160.50		.07	1.45	18.10
550.0	1.45	9.46	158.96		.10	1.41	17.64
600.0	1.52	9.24	156.90		.08	1.39	17.26
650.0	1.61	9.05	155.95		.07	1.35	16.95
700.0	1.70	8.89	154.22		.10	1.32	16.50
750.0	1.81	8.64	152.36		.10	1.29	16.19
800.0	1.95	8.31	150.69		.08	1.28	16.00

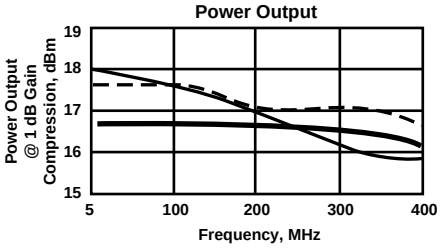
S-Parameters **Bias = 24.00 Volts**

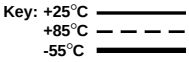
FREQUENCY	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.033	–121.8	10.482	176.1	–20.574	17.0	.248	–11.4
150.00	.049	–116.6	10.369	174.0	–20.272	24.0	.242	–16.0
200.00	.059	–115.5	10.352	171.1	–20.208	30.4	.236	–20.6
250.00	.075	–115.0	10.160	168.3	–19.797	38.1	.231	–26.7
300.00	.089	–117.5	10.149	166.6	–19.324	44.8	.226	–31.3
350.00	.105	–119.1	10.018	164.4	–19.131	51.8	.215	–37.4
400.00	.126	–121.5	9.947	163.4	–18.672	58.1	.204	–43.6
450.00	.144	–123.9	9.812	161.4	–18.416	63.5	.193	–50.0
500.00	.162	–126.4	9.572	160.6	–18.125	69.5	.183	–56.3
550.00	.182	–130.4	9.470	158.9	–17.575	74.6	.173	–63.3
600.00	.209	–133.6	9.238	156.9	–17.317	78.9	.162	–70.1
650.00	.237	–136.8	9.045	155.9	–16.391	84.5	.150	–76.9
700.00	.262	–141.5	8.896	154.2	–16.538	88.7	.140	–82.6
750.00	.291	–146.6	8.638	152.4	–16.183	93.1	.127	–89.8
800.00	.323	–151.3	8.281	150.7	–16.035	96.6	.120	–96.3

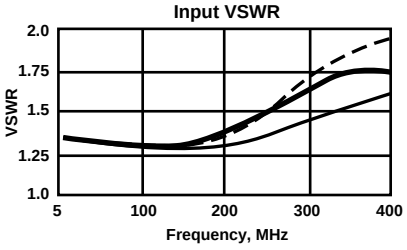
GPD-404/464—5 to 400 MHz
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)

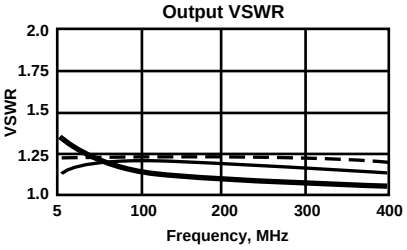


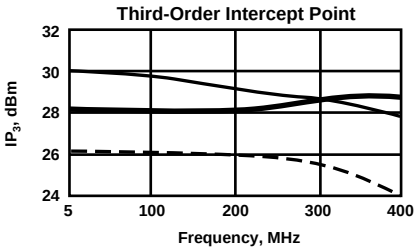


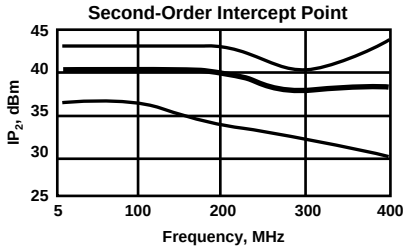












Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

Numerical Readings **Bias = 15.00 Volts**

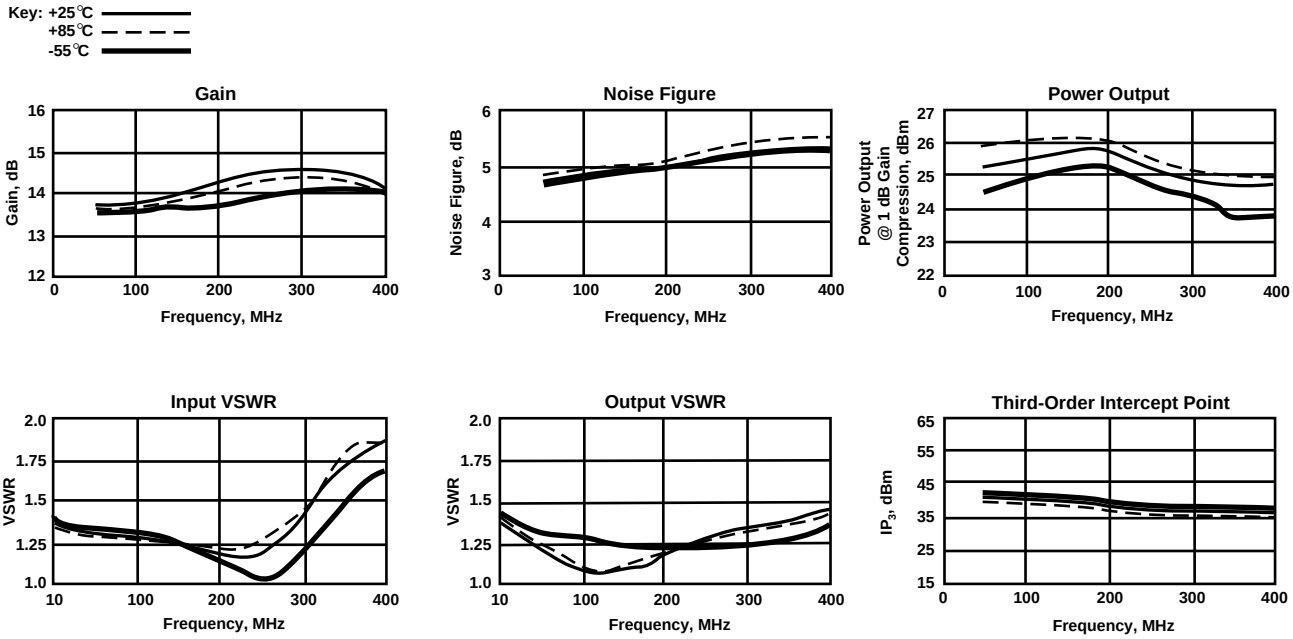
FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.32	10.54	178.94	.07	.00	1.11	22.94
150.0	1.33	10.48	177.20	–.07	.07	1.10	22.53
200.0	1.36	10.48	176.26	.55	.10	1.09	22.11
250.0	1.40	10.44	173.60	–.53	.11	1.10	22.07
300.0	1.44	10.49	172.17	–.39	.07	1.08	21.80
350.0	1.50	10.56	171.03	.04	.07	1.09	21.43
400.0	1.57	10.59	169.72	.31	.07	1.10	21.09
450.0	1.66	10.55	168.68		.06	1.12	20.76
500.0	1.75	10.56	167.56		.08	1.14	20.52
550.0	1.90	10.46	165.67		.10	1.18	20.09
600.0	2.05	10.38	163.83		.11	1.22	19.87
650.0	2.23	10.32	161.76		.13	1.25	19.52
700.0	2.44	10.17	159.27		.13	1.28	19.16
750.0	2.72	9.94	156.96		.13	1.31	18.89

GPD-404/464—5 to 400 MHz (continued)
Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

S-Parameters **Bias = 15.00 Volts**

FREQUENCY	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.134	–164.2	10.510	178.5	–22.866	13.7	.053	–22.2
150.00	.142	–158.3	10.495	176.9	–22.529	21.5	.051	–32.2
200.00	.153	–155.0	10.485	176.3	–22.392	28.5	.044	–42.6
250.00	.163	–150.7	10.466	173.4	–21.934	35.5	.043	–60.8
300.00	.181	–147.2	10.488	172.1	–21.655	41.8	.043	–76.1
350.00	.199	–144.4	10.519	170.9	–21.382	47.4	.042	–100.2
400.00	.222	–142.7	10.578	169.8	–20.861	54.1	.046	–123.8
450.00	.247	–142.3	10.548	168.6	–20.826	58.2	.056	–141.5
500.00	.277	–142.3	10.518	167.6	–20.497	64.2	.065	–156.4
550.00	.308	–143.0	10.458	165.6	–19.989	68.7	.081	–170.0
600.00	.343	–144.5	10.363	163.8	–19.753	73.0	.096	179.2
650.00	.381	–146.5	10.318	161.7	–19.460	78.4	.110	170.6
700.00	.421	–149.8	10.161	159.3	–19.193	81.3	.124	162.3
750.00	.465	–153.5	9.929	157.0	–18.834	84.9	.133	154.1

GPD-405—10 to 400 MHz
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)



GPD-405—10 to 400 MHz (continued)

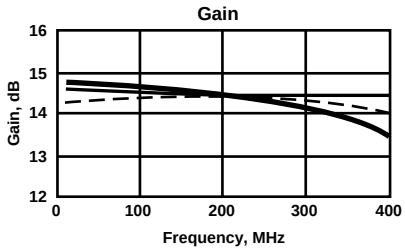
Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

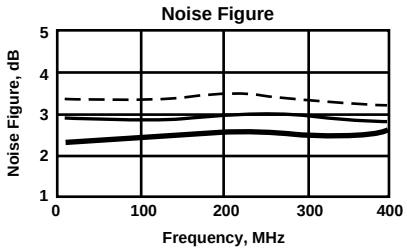
S-Parameters **Bias = 15.00 Volts**

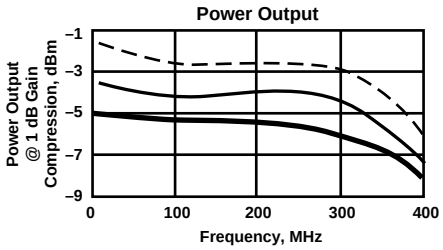
FREQUENCY	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.177	177.7	13.5	146.1	–19.5	–18.7	.069	–51.5
120.00	.179	174.0	13.5	138.2	–19.4	–23.9	.064	–54.0
140.00	.182	170.8	13.5	130.5	–19.4	–29.2	.059	–56.6
160.00	.185	167.7	13.4	123.1	–19.5	–34.1	.054	–59.6
180.00	.190	164.5	13.4	115.7	–19.5	–38.3	.048	–62.8
200.00	.194	161.4	13.4	108.3	–19.4	–42.5	.042	–66.8
220.00	.198	158.5	13.5	100.8	–19.4	–47.2	.036	–70.1
240.00	.203	155.5	13.4	93.2	–19.3	–51.8	.030	–72.3
260.00	.208	152.5	13.4	85.5	–19.3	–56.7	.024	–73.0
280.00	.213	149.5	13.4	77.9	–19.2	–61.8	.017	–69.2
300.00	.218	146.8	13.4	70.4	–19.3	–67.1	.010	–43.5
320.00	.225	143.6	13.4	62.7	–19.4	–71.7	.011	+7.2
340.00	.232	140.5	13.3	55.0	–19.4	–75.5	.019	+32.5
360.00	.240	137.2	13.3	47.2	–19.4	–80.1	.030	+37.5
380.00	.249	133.8	13.2	39.6	–19.3	–84.9	.042	+35.6
400.00	.258	130.6	13.2	31.7	–19.3	–90.0	.055	+31.3
500.00	.317	111.4	12.6	–9.0	–19.9	–113.6	.145	–4.6
600.00	.394	87.7	11.5	–50.2	–20.6	–135.9	.246	–49.2
700.00	.476	63.3	9.8	–87.2	–21.1	–134.0	.343	–92.4

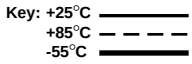
GPD-411—5 to 400 MHz

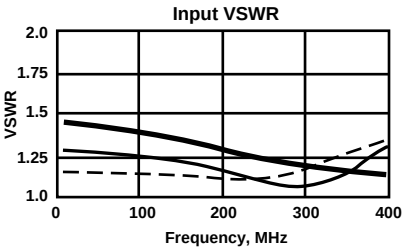
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)

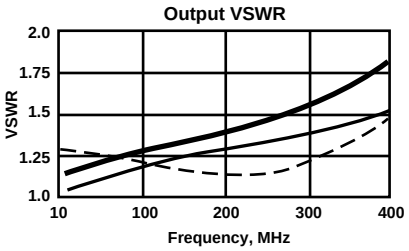


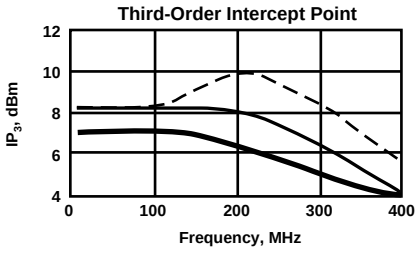


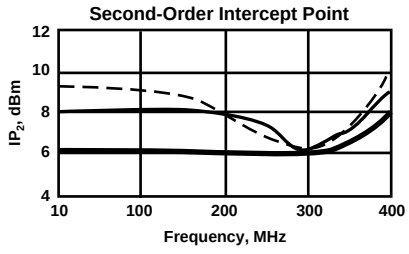












GPD-411—5 to 400 MHz (continued)
Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

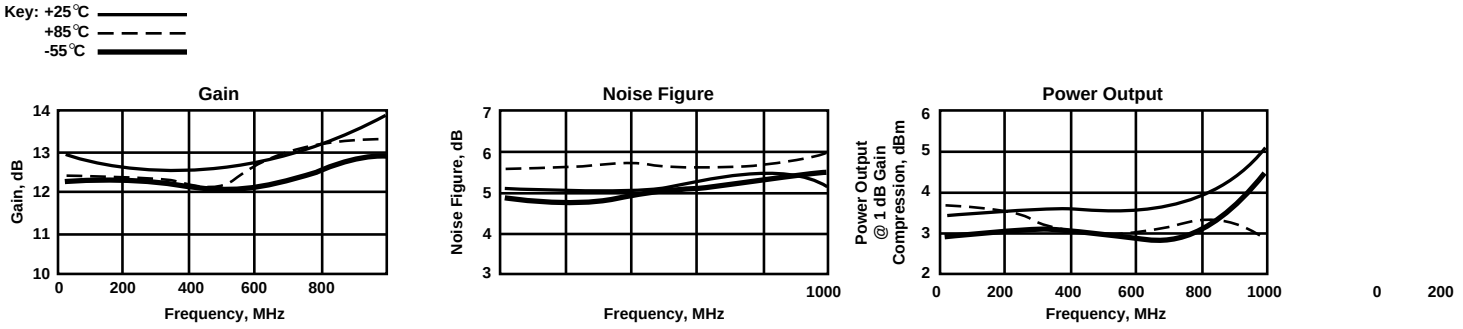
Numerical Readings **Bias = 15.00 Volts**

FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.16	14.43	175.96	.45	.00	1.07	18.89
150.0	1.13	14.41	173.40	.16	.15	1.10	19.16
200.0	1.10	14.29	170.52	–.44	.14	1.15	19.03
250.0	1.10	14.28	168.36	–.33	.13	1.20	18.85
300.0	1.12	14.23	165.99	–.43	.11	1.28	18.88
350.0	1.19	14.20	164.26	.11	.10	1.37	18.59
400.0	1.32	14.25	162.37	.48	.16	1.48	18.42
450.0	1.52	14.18	158.38		.20	1.64	18.18
500.0	1.81	14.18	155.28		.25	1.87	18.08
550.0	2.30	14.30	149.36		.36	2.19	17.81
600.0	3.29	14.01	142.52		.42	2.64	18.00
650.0	5.62	13.78	134.30		.57	3.31	18.38
700.0	11.68	12.74	122.18		.64	4.43	19.33
750.0	33.90	10.82	111.34		.43	5.77	21.27

S-Parameters **Bias = 15.00 Volts**

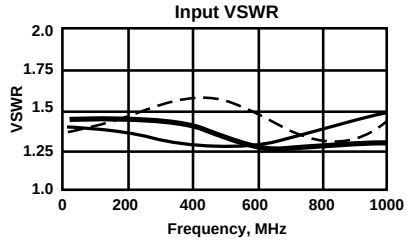
FREQUENCY	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.115	161.8	14.519	175.6	–19.416	9.5	.077	3.7
150.00	.103	148.8	14.369	173.3	–19.099	13.9	.087	–4.6
200.00	.080	138.6	14.309	170.8	–19.092	16.5	.104	–14.0
250.00	.058	119.0	14.233	168.2	–18.857	20.5	.129	–20.5
300.00	.039	77.3	14.239	166.1	–18.869	24.2	.150	–30.7
350.00	.055	10.4	14.208	163.9	–18.565	26.4	.180	–40.9
400.00	.104	–18.9	14.240	161.7	–18.388	28.8	.214	–51.0
450.00	.175	–35.7	14.104	157.7	–18.086	29.4	.252	–62.4
500.00	.266	–49.1	14.058	154.7	–17.961	28.8	.304	–72.5
550.00	.387	–61.9	14.128	148.9	–17.553	26.1	.368	–83.2
600.00	.528	–75.7	13.762	142.3	–17.693	19.0	.442	–94.6
650.00	.696	–91.4	13.447	135.0	–18.240	12.3	.523	–106.1
700.00	.855	–108.8	12.485	124.3	–19.094	1.4	.610	–119.7
750.00	.979	–127.6	10.764	114.0	–21.247	–12.1	.681	–133.0

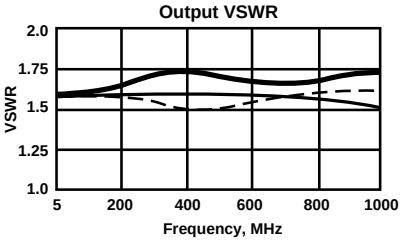
GPD-1001/1061—5 to 1000 MHz
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)

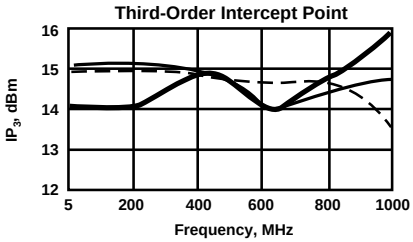


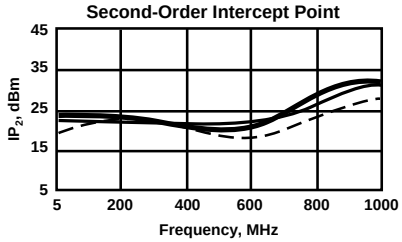
GPD-1001/1061—5 to 1000 MHz (continued)
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)

Key: +25°C
+85°C
-55°C









Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

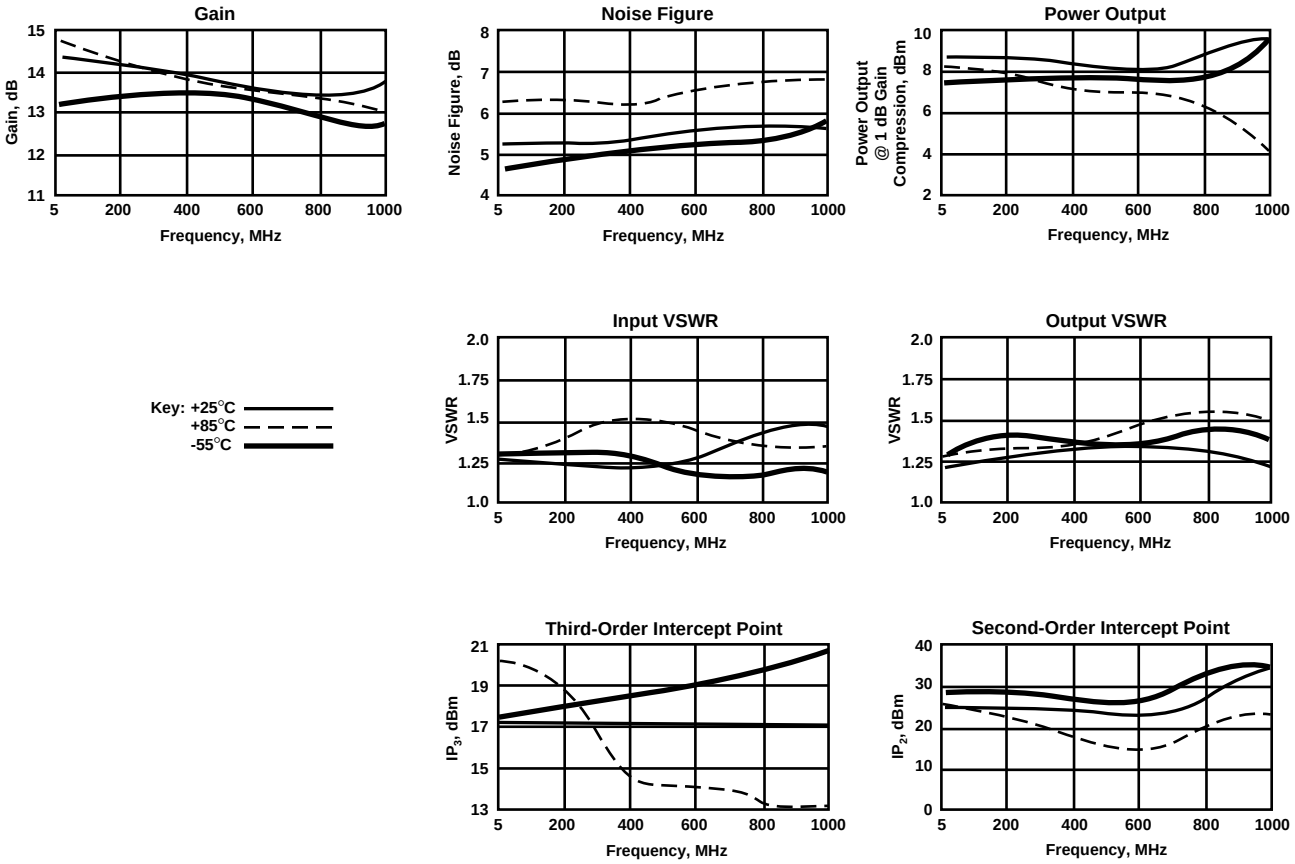
Numerical Readings — **Bias = 15.00 Volts**

FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.29	12.80	175.00	–1.27	.00	1.55	21.19
200.0	1.25	12.70	171.12	–.70	.15	1.57	20.80
300.0	1.20	12.70	165.90	–.76	.13	1.59	20.73
400.0	1.15	12.68	161.70	.19	.10	1.59	20.57
500.0	1.11	12.69	157.36	.98	.11	1.60	20.31
600.0	1.13	12.82	152.75	1.51	.14	1.58	20.06
700.0	1.18	12.91	148.43	2.34	.14	1.57	19.83
800.0	1.26	13.20	142.15	1.21	.17	1.54	19.55
900.0	1.33	13.44	135.24	–.56	.25	1.48	19.29
1000.0	1.40	13.89	125.84	–4.81	.33	1.48	18.85
1100.0	1.66	14.25	110.43		.49	1.60	18.52
1200.0	2.65	14.09	88.12		.66	1.95	19.60
1300.0	5.16	11.75	67.01		.53	2.26	21.99

S-Parameters — **Bias = 15.00 Volts**

FREQUENCY	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.126	176.0	12.781	175.4	–20.769	6.5	.216	.8
200.00	.109	170.2	12.735	171.2	–20.961	11.4	.222	3.4
300.00	.090	167.9	12.693	165.9	–20.665	18.5	.228	3.6
400.00	.070	176.0	12.683	161.8	–20.550	24.4	.229	3.1
500.00	.051	–165.9	12.662	157.5	–20.195	28.3	.232	.6
600.00	.059	–137.8	12.787	152.8	–20.108	32.5	.228	–2.0
700.00	.084	–125.1	12.899	148.5	–19.851	36.3	.224	–4.7
800.00	.115	–134.4	13.175	142.2	–19.505	38.1	.213	–8.0
900.00	.145	–153.4	13.447	135.5	–19.210	38.4	.198	–6.6
1000.00	.170	169.8	13.865	126.0	–18.813	37.5	.195	–.2
1100.00	.247	112.2	14.251	110.7	–18.550	32.7	.234	7.1
1200.00	.450	52.0	14.090	88.5	–19.649	25.2	.322	–.4
1300.00	.675	2.7	11.730	67.1	–21.993	21.1	.390	–19.1
1400.00	.789	–33.2	7.973	53.1	–23.851	29.5	.364	–40.5
1500.00	.831	–54.8	4.163	50.8	–24.626	37.0	.302	–53.1

GPD-1002/1062—5 to 1000 MHz
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)



Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

Numerical Readings **Bias = 15.00 Volts**

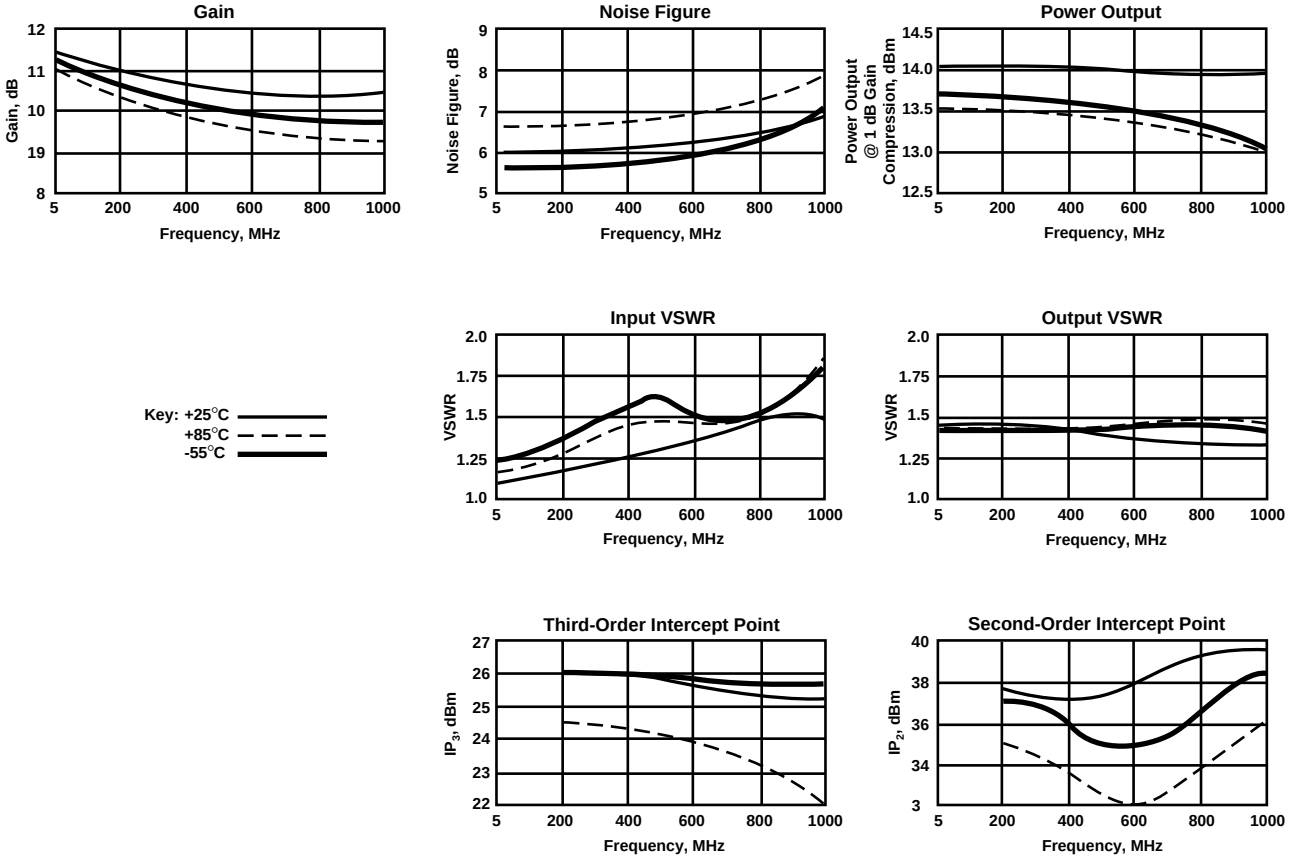
FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.29	14.23	174.38	–.16	.00	1.26	24.09
200.0	1.26	14.06	167.94	–.52	.19	1.27	23.33
300.0	1.21	13.97	161.47	–.93	.16	1.29	23.49
400.0	1.17	13.83	156.06	–.27	.14	1.30	23.05
500.0	1.18	13.67	150.80	.53	.14	1.31	22.61
600.0	1.23	13.57	145.27	1.08	.16	1.30	22.14
700.0	1.30	13.44	139.93	1.82	.17	1.29	21.64
800.0	1.39	13.43	133.32	1.29	.18	1.26	21.23
900.0	1.44	13.41	125.77	–.18	.26	1.20	20.79
1000.0	1.49	13.53	115.90	–3.99	.33	1.18	19.94
1100.0	1.76	13.51	100.99		.48	1.25	19.43
1200.0	2.74	12.87	80.86		.59	1.43	19.96
1300.0	5.08	10.21	60.92		.44	1.57	21.81

GPD-1002/1062—5 to 1000 MHz (continued)
Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

S-Parameters **Bias = 15.00 Volts**

FREQUENCY	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.130	177.2	14.212	174.2	–23.883	10.1	.114	1.0
200.00	.115	174.5	14.090	168.1	–23.830	14.4	.118	9.1
300.00	.094	177.6	13.974	161.6	–23.220	23.4	.127	9.4
400.00	.081	–168.4	13.831	156.2	–22.778	31.2	.130	9.0
500.00	.081	–150.6	13.638	150.9	–22.618	36.0	.134	6.5
600.00	.102	–139.1	13.535	145.2	–22.092	41.8	.132	3.1
700.00	.131	–138.6	13.423	139.9	–21.605	45.5	.127	–1.0
800.00	.162	–150.9	13.412	133.3	–21.127	48.1	.115	–6.2
900.00	.178	–171.3	13.416	126.0	–20.662	48.3	.097	–5.4
1000.00	.197	151.2	13.496	116.0	–19.983	47.6	.084	10.0
1100.00	.272	95.7	13.510	101.1	–19.447	42.2	.112	29.1
1200.00	.462	40.7	12.865	81.0	–20.066	34.7	.175	19.4
1300.00	.668	–4.2	10.191	60.9	–21.823	26.8	.225	–4.7
1400.00	.793	–37.1	6.343	51.1	–24.091	28.3	.213	–28.4
1500.00	.837	–58.2	2.570	50.1	–25.353	36.2	.174	–48.3

GPD-1003/1063—5 to 100 MHz
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)



GPD-1003/1063 (continued)
Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

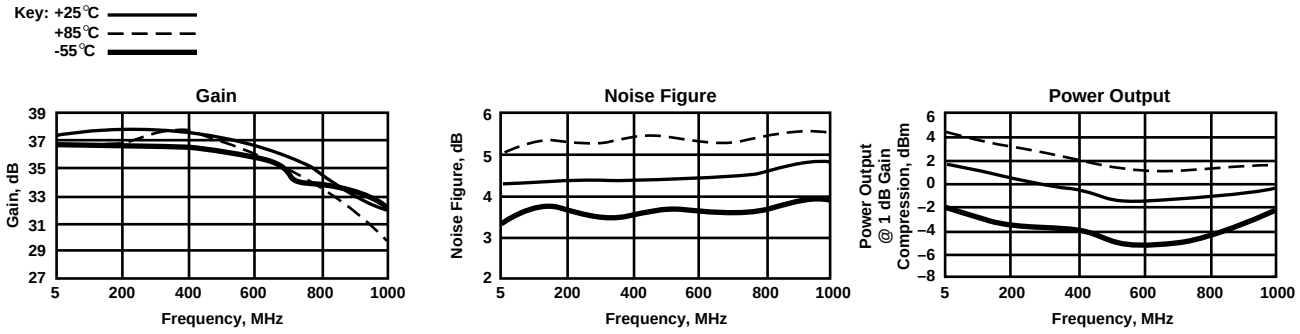
Numerical Readings **Bias = 15.00 Volts**

FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.13	11.32	161.40	–.60	.00	1.46	22.29
200.0	1.17	11.18	141.34	–1.28	.54	1.43	22.12
300.0	1.23	11.14	122.54	–.68	.51	1.39	21.89
400.0	1.27	10.98	104.21	.36	.51	1.34	21.62
500.0	1.31	10.84	86.05	1.58	.53	1.29	21.29
600.0	1.36	10.72	66.56	1.47	.52	1.26	21.00
700.0	1.41	10.74	47.59	1.88	.57	1.26	21.02
800.0	1.53	10.67	26.70	.38	.56	1.22	19.34
900.0	1.50	10.75	6.68	–.23	.59	1.24	18.98
1000.0	1.54	10.88	–16.41	–3.94	.00	1.28	18.61

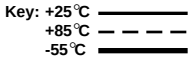
S-Parameters **Bias = 15.00 Volts**

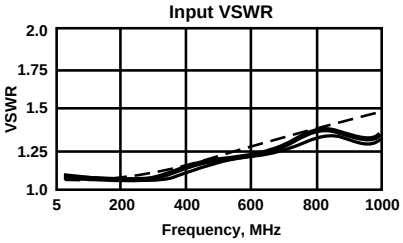
FREQUENCY	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.053	–123.2	11.016	171.9	–21.498	11.5	.149	–9.5
200.00	.086	–119.4	11.120	167.0	–22.503	5.8	.125	–16.6
300.00	.082	–127.5	11.249	160.5	–20.865	25.2	.148	–22.0
400.00	.104	–130.2	10.294	154.6	–21.173	25.7	.139	–38.5
500.00	.113	–132.5	10.857	148.1	–21.142	33.8	.141	–49.3
600.00	.137	–146.1	10.755	141.8	–21.214	33.8	.136	–64.1
700.00	.144	–157.4	10.768	135.9	–20.690	39.1	.147	–77.9
800.00	.153	–169.4	10.778	127.8	–20.598	43.3	.156	–93.9
900.00	.186	169.2	10.973	120.2	–19.731	40.8	.157	–109.0
1000.00	.207	136.3	11.218	109.3	–18.887	36.1	.160	–128.3
1100.00	.293	88.5	11.458	95.4	–20.163	40.2	.165	–152.0
1200.00	.455	32.3	10.592	76.2	–19.339	31.5	.144	–175.6
1300.00	.646	–15.4	8.449	55.5	–19.985	24.1	.132	169.3
1400.00	.763	–50.0	5.442	43.9	–21.462	20.9	.133	154.4
1500.00	.820	–75.6	2.652	39.0	–22.063	25.1	.133	138.6
1800.00	.862	–94.2	.174	37.8	–22.710	30.6	.145	117.1
1700.00	.892	–109.5	–2.115	35.7	–24.469	22.8	.163	102.4

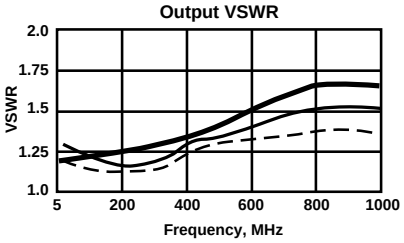
GPM-552—5 to 500 MHz
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)

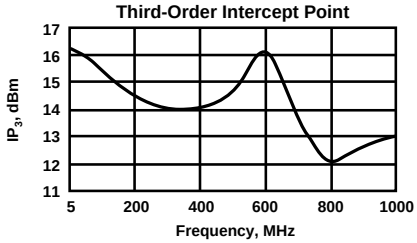


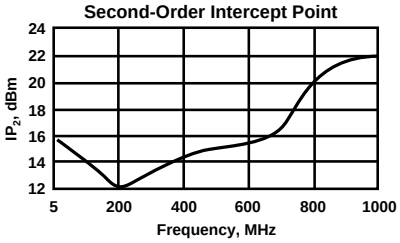
GPM-552—5 to 500 MHz (continued)
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)

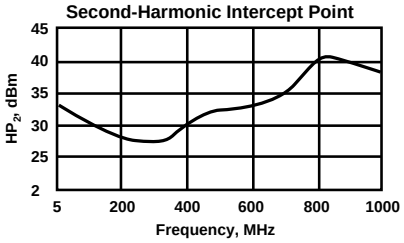












Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

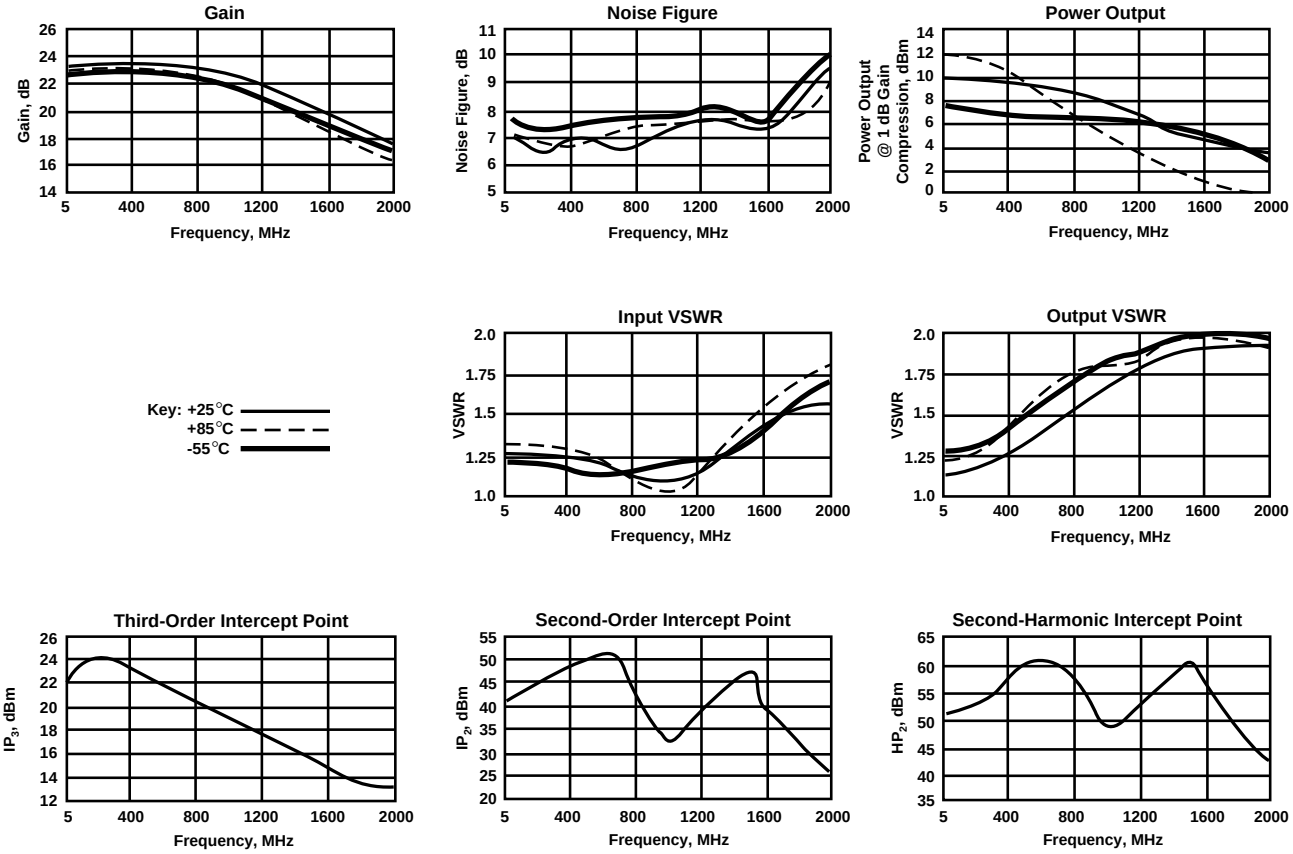
Numerical Readings — **Bias = 15.00 Volts**

FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.06	37.36	–2.73	.00	1.13	46.24
150.0	1.06	37.39	–.81	.52	1.18	46.82
200.0	1.01	37.48	.99	.56	1.18	42.08
250.0	1.04	37.54	1.50	.59	1.19	49.53
350.0	1.09	37.55	1.75	.67	1.26	42.90
400.0	1.08	37.53	.46	.69	1.31	46.05
450.0	1.12	37.58	–.54	.71	1.33	44.11
500.0	1.14	37.58	–2.72	.73	1.36	43.15

S-Parameters — **Bias = 15.00 Volts, 31.80 mA**

FREQUENCY MHz	S_{11}		S_{21}		S_{12}		S_{22}	
	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.023	–45.3	38.196	–13.4	–43.252	9.0	.092	–17.3
150.00	.041	–20.9	38.216	–21.2	–44.382	34.7	.075	–23.9
200.00	.022	–28.8	38.317	–28.5	–46.343	22.8	.076	–22.7
250.00	.041	–17.8	38.378	–36.1	–47.346	35.2	.080	–21.0
300.00	.023	16.3	38.387	–44.4	–45.052	36.7	.086	–21.8
350.00	.045	7.1	38.338	–53.1	–45.824	42.7	.103	–28.9
400.00	.048	–3.8	38.267	–62.4	–43.623	56.2	.120	–33.1
450.00	.061	19.3	38.156	–72.0	–44.366	45.5	.135	–41.0
500.00	.075	23.3	38.074	–81.7	–43.714	51.5	.145	–46.5
550.00	.080	17.2	37.911	–91.7	–43.756	48.8	.156	–52.7

GPM-1052—5 to 1000 MHz
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)



Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

Numerical Readings **Bias = 15.00 Volts**

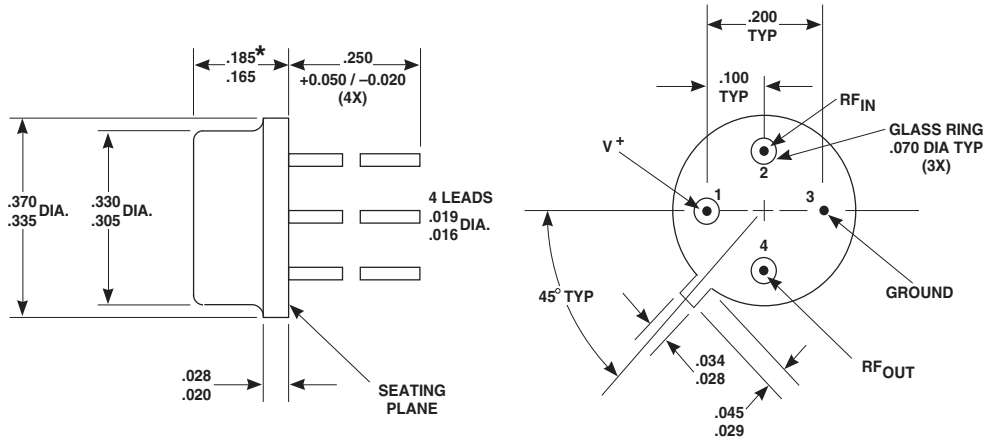
FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.27	23.10	–1.06	.26	.00	1.29	37.74
200.0	1.28	23.22	–.53	.05	.91	1.34	38.26
300.0	1.26	23.26	.50	–.08	.88	1.38	40.19
400.0	1.23	23.15	.65	–.04	.91	1.45	37.94
500.0	1.20	23.07	.27	–.05	.93	1.51	39.22
600.0	1.17	23.06	.08	–.12	.91	1.57	38.89
700.0	1.14	22.95	.18	–.10	.91	1.62	37.90
800.0	1.11	22.84	.02	–.08	.92	1.68	37.89
900.0	1.10	22.66	–.35	.01	.91	1.75	38.38
1000.0	1.08	22.29	–.49	.29	.92	1.80	38.80

GPM-1052—5 to 1000 MHz (continued)
Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

S-Parameters **Bias = 15.00 Volts**

FREQUENCY	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.120	174.2	23.188	–10.3	–36.001	.5	.138	–21.9
150.00	.122	178.8	23.284	–16.1	–41.210	3.6	.137	–30.0
200.00	.125	–179.1	23.211	–21.3	–38.986	–1.5	.148	–32.1
250.00	.120	–179.4	23.233	–26.5	–37.965	22.7	.150	–36.4
300.00	.112	–179.5	23.231	–32.0	–41.795	9.6	.160	–41.9
350.00	.108	–179.7	23.161	–37.7	–38.308	16.8	.164	–46.9
400.00	.110	–167.9	23.149	–42.1	–40.926	18.2	.195	–55.3
450.00	.101	–176.9	23.117	–49.1	–38.585	11.8	.193	–58.0
500.00	.093	–178.9	23.107	–55.2	–39.673	17.6	.207	–59.7
550.00	.086	–177.4	23.091	–61.5	–38.490	13.9	.219	–62.7
600.00	.083	–178.9	23.104	–67.3	–37.638	11.4	.230	–66.0
650.00	.075	–174.4	23.111	–73.7	–38.089	23.6	.237	–68.5
700.00	.069	–175.7	23.088	–79.6	–38.919	16.3	.238	–72.7
750.00	.061	–174.3	23.024	–85.5	–38.214	18.2	.248	–78.4
800.00	.054	–169.5	22.927	–91.9	–40.107	25.0	.262	–82.0
850.00	.047	–162.8	22.841	–98.1	–38.402	21.8	.270	–84.7
900.00	.043	–149.6	22.708	–104.6	–40.210	17.2	.277	–86.8
950.00	.042	–142.4	22.484	–110.7	–39.685	20.7	.283	–90.2
1000.00	.042	–134.0	22.286	–116.3	–37.621	38.5	.291	–91.8

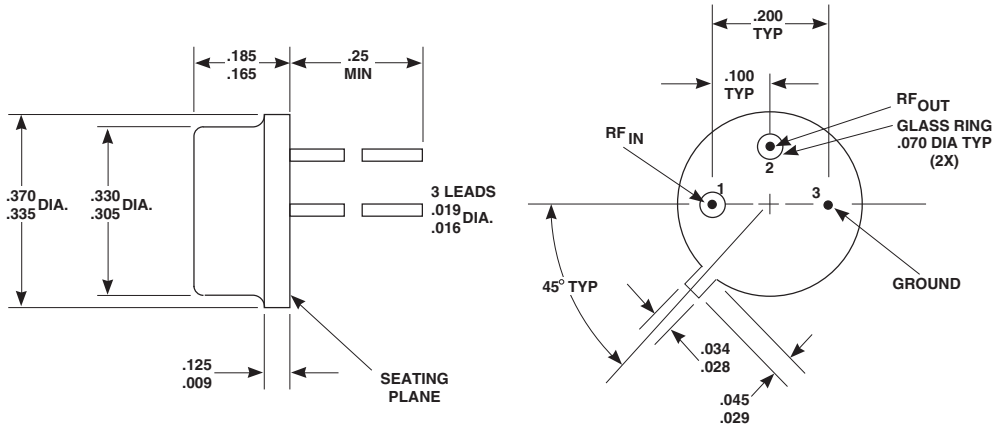
Case Drawings
TO-12



APPROXIMATE WEIGHT 1.7 GRAMS

*NOTES (UNLESS OTHERWISE SPECIFIED):
1. FOR GPD-405 (TO-12T CASE) THESE DIMENSIONS ARE: .230/.260
2. DIMENSIONS ARE SPECIFIED IN INCHES

TO-39



APPROXIMATE WEIGHT 1.7 GRAMS

DIMENSIONS ARE SPECIFIED IN INCHES

NOTES (UNLESS OTHERWISE SPECIFIED):
1. DIMENSIONS ARE SPECIFIED IN INCHES
2. TOLERANCES: xx ± .02
   xxx ± .010

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