TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 5/10

AP719 10 TO 700 MHz TO-8 CASCADABLE AMPLIFIER

Typical Values	AP719
Low Noise Figure	<3.5 dB
High Gain	27.5 dB
High Reverse Isolation	38 dB
High Power Output	+24.3 dBm
High Performance Thin Film	
Standard Size TO-8 Package	

SPECIFICATIONS*

Parameter	Typical	Guaranteed 0 to 50 °C	Guaranteed -55 to +85 °C
Frequency (Min.)	5-800 MHz	10-700 MHz	10-700 MHz
Small Signal Gain (Min.)	27.5 dB	26.5 dB	26.0 dB
Gain Flatness (Max.)	±0.3 dB	±0.5 dB	±0.7 dB
Noise Figure (Max.)	<3.5 dB	4.2^ dB	4.7^ dB
SWR (Max.) Input/Output	<1.6:1	1.9:1	2.0:1
Power Output (Min.) @ 1dB comp.	+24.3 dBm	+23.5 dBm	+23.0 dBm
Reverse Isolation	38.0 dB	—	—
DC Current (Max.)	165.0 mA	175.0 mA	180.0 mA

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.
^ 0.5 dB higher above 500 MHz.

INTERMODULATION PERFORMANCE

Typical @ 25 °C; 100 MHz	AP719
Second Order Harmonic Intercept Point	+56 dBm
Second Order Two Tone Intercept Point	+50 dBm
Third Order Two Tone Intercept Point	+36 dBm

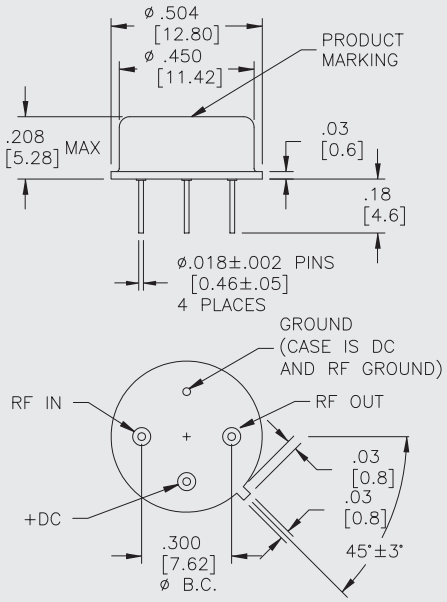
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-62 to +125 °C
Maximum Case Temperature	+115 °C
Maximum DC Voltage	+17 Volts
Maximum Continuous RF Input Power	+13 dBm
Maximum Short Term Input Power (1 Minute Max.)	50 Milliwatts
Maximum Peak Power (3 µsec Max.)	0.5 Watt
Burn-in Temperature	+100 °C
Thermal Resistance[1] (θjc)	+15 °C/Watt
Junction Temperature Rise Above Case (Tjc)	+37.5 °C

[1] Thermal resistance is based on total power dissipation.

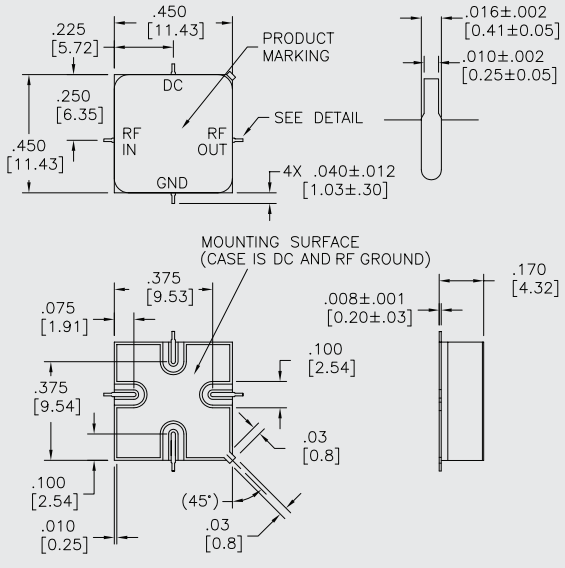
AP719

TO-8 Package for Amplifiers



APS719

SMTO-8 Package for Amplifiers

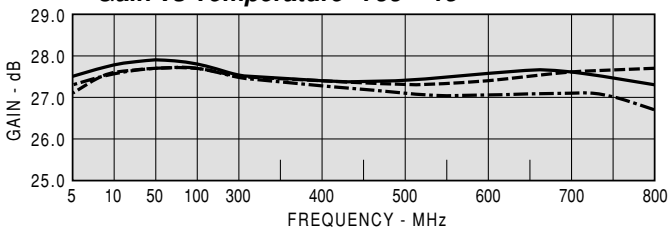


DIMENSIONS ARE IN INCHES [MILLIMETERS]

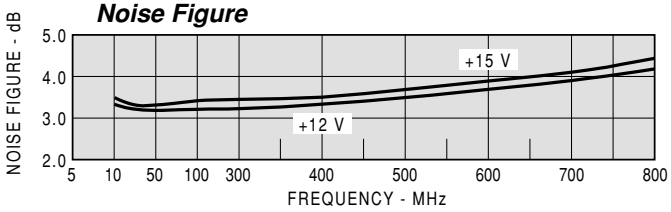
TYPICAL PERFORMANCE

KEY: +25 °C ——
+85 °C –·–
-55 °C – – –

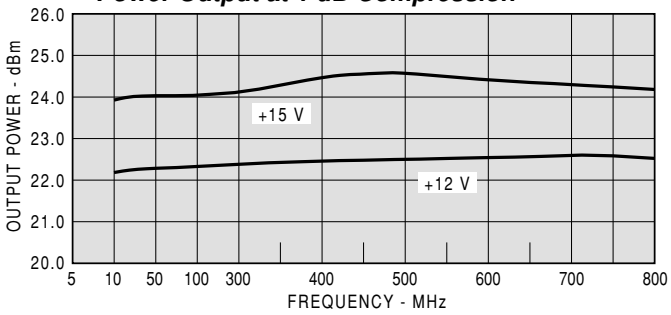
Gain vs Temperature Vcc = 15



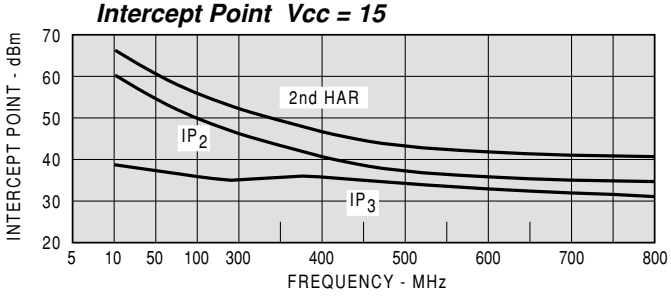
Noise Figure



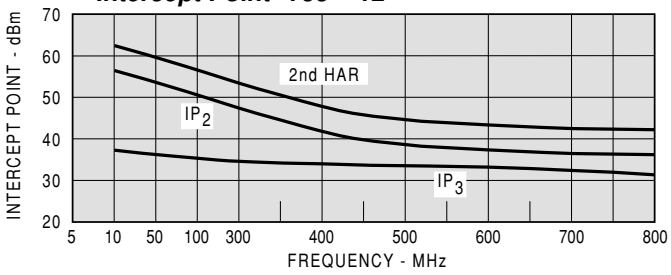
Power Output at 1 dB Compression



Intercept Point Vcc = 15



Intercept Point Vcc = 12



TYPICAL AUTOMATIC TEST DATA

Model: AP719 Vcc=+15V Icc=164.83

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
5	1.16	1.19	27.36	35		-38.2
10	1.09	1.24	27.60	15		-38.2
50	1.08	1.27	27.81	-13	1.2	-37.7
100	1.10	1.28	27.80	-33	1.0	-38.0
200	1.17	1.29	27.65	-68	0.99	-38.1
300	1.27	1.31	27.47	-102	0.95	-37.4
400	1.38	1.34	27.34	-136	0.95	-37.4
500	1.47	1.33	27.34	-171	0.96	-36.9
600	1.49	1.32	27.44	153	1.0	-36.0
700	1.46	1.46	27.67	113	1.1	-35.1
800	1.72	2.02	27.55	69	1.2	-34.0

LINEAR S-PARAMETERS

Model: AP719 Vcc=+15V Icc=164.83

FREQ.	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5	0.08	-83.6	23.34	35.0	0.012	35.6	0.09	24.3
10	0.04	-60.2	24.00	15.2	0.012	16.8	0.11	9.6
50	0.04	-44.3	24.58	-13.3	0.013	-2.8	0.12	3.2
100	0.05	-59.6	24.54	-32.5	0.013	-8.1	0.12	1.9
200	0.08	-80.1	24.12	-68.1	0.012	-18.8	0.13	0.4
300	0.12	-96.3	23.63	-102.1	0.013	-30.5	0.14	-4.1
400	0.16	-112.9	23.27	-136.3	0.013	-39.7	0.14	-15.0
500	0.19	-135.7	23.29	-170.8	0.014	-55.0	0.14	-35.0
600	0.20	-167.6	23.54	153.2	0.016	-69.2	0.14	-76.3
700	0.19	139.4	24.19	113.4	0.018	-91.8	0.19	-135.4
800	0.26	58.8	23.86	68.6	0.020	-117.1	0.34	170.8
900	0.49	-6.0	21.02	17.2	0.019	-153	0.53	125.9

Model: AP719 Vcc=+12V Icc=130.60

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
5	1.18	1.20	27.13	33		-38.2
10	1.11	1.24	27.41	14		-38.0
50	1.10	1.27	27.62	-14	1.3	-37.8
100	1.12	1.28	27.61	-33	1.0	-37.6
200	1.19	1.29	27.44	-69	1.0	-37.4
300	1.29	1.32	27.24	-103	0.95	-37.6
400	1.41	1.34	27.10	-137	0.95	-36.9
500	1.51	1.33	27.11	-172	0.97	-36.1
600	1.55	1.37	27.23	151	1.0	-35.7
700	1.56	1.60	27.45	110	1.1	-34.3
800	1.92	2.34	27.22	64	1.3	-33.3

LINEAR S-PARAMETERS

Model: AP719 Vcc=+12V Icc=130.60

FREQ.	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5	0.08	-74.7	22.73	32.9	0.012	35.5	0.09	2.4
10	0.05	-52.5	23.47	14.3	0.013	16.3	0.11	1.4
50	0.05	-40.9	24.04	-13.7	0.013	1.2	0.12	1.8
100	0.06	-58.8	24.00	-33.0	0.013	-7.9	0.12	1.0
200	0.09	-82.7	23.54	-68.8	0.013	-17.1	0.13	-1.3
300	0.13	-99.9	23.00	-103.2	0.013	-28.1	0.14	-8.0
400	0.17	-117.2	22.66	-137.5	0.014	-40.1	0.15	-21.1
500	0.20	-140.7	22.67	-172.5	0.016	-54.0	0.14	-45.0
600	0.22	-174.3	23.00	151.0	0.016	-68.0	0.15	-88.7
700	0.22	131.4	23.57	110.2	0.019	-89.7	0.23	-143.0
800	0.31	55.3	22.96	64.1	0.022	-120.3	0.40	167.0
900	0.54	-8.3	19.52	11.7	0.021	-154.7	0.59	123.1