TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 5/10

AS5002

300 TO 5000 MHz SMTO-8 CASCADABLE AMPLIFIER

Typical Values	AS5002
Low Noise Figure	<2.2 dB
Medium Output Level	+16.0 dBm
High Gain	+21.0 dB
High Performance Thin Film	
Standard Size SMTO-8	

SPECIFICATIONS*

Parameter		Typical	Guaranteed 0 to 50 °C	Guaranteed -55 to +85 °C
Frequency (Min.)		300-5200 MHz	300-5000 MHz	300-5000 MHz
Small Signal Gain (Min.)				
	300-2000 MHz	22.0 dB	20.5 dB	20.0 dB
	2000-5000 MHz	21.0 dB	19.5 dB	19.0 dB
Gain Flatness (Max.)				
	300-2000 MHz	±0.5 dB	±0.7 dB	±0.8 dB
	2000-5000 MHz	±0.6 dB	±0.8 dB	±0.9 dB
Noise Figure (Max.)		<2.2 dB	2.7 dB	3.2 dB
SWR (Max.)	Input	<1.6:1	1.9:1	2.0:1
	Output	<1.3:1	1.7:1	1.8:1
Power Output (Min.) @ 1dB comp.		+16.0 dBm	+15.0 dBm	+14.5 dBm
Reverse Isolation		39.0 dB	—	—
DC Current (Max.)		88.0 mA	96.0 mA	101.0 mA

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.

INTERMODULATION PERFORMANCE

Typical @ 25 °C; 3000 MHz	+12 Volts	+15 Volts
Second Order Harmonic Intercept Point	+34 dBm	+38 dBm
Second Order Two Tone Intercept Point	+28 dBm	+32 dBm
Third Order Two Tone Intercept Point	+22 dBm	+25 dBm

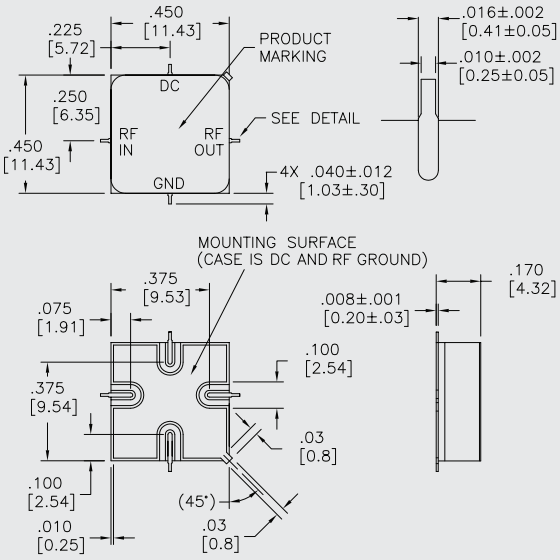
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-62 to +125 °C
Maximum Case Temperature	+125 °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	+95 °C
Thermal Resistance[1] (θjc)	+16 °C/Watt
Junction Temperature Rise Above Case (Tjc)	+21.0 °C

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

AS5002

SMTO-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

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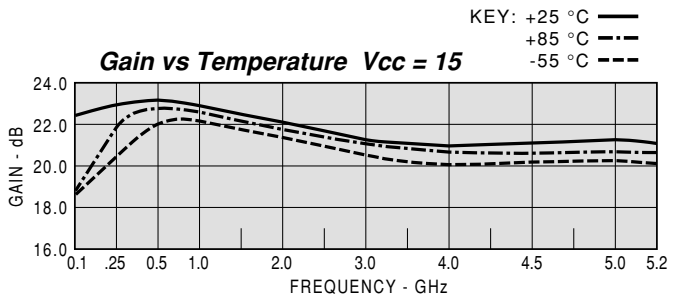
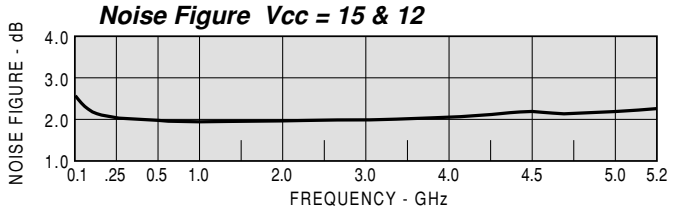
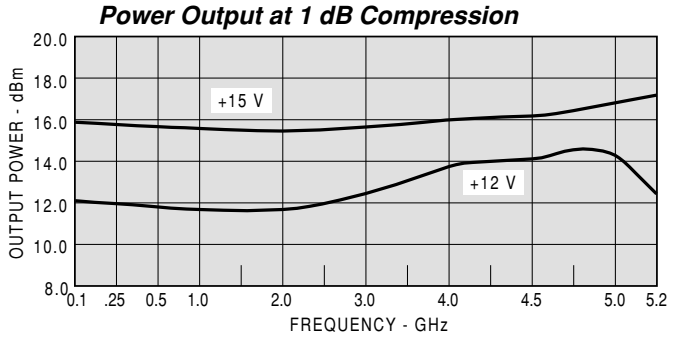
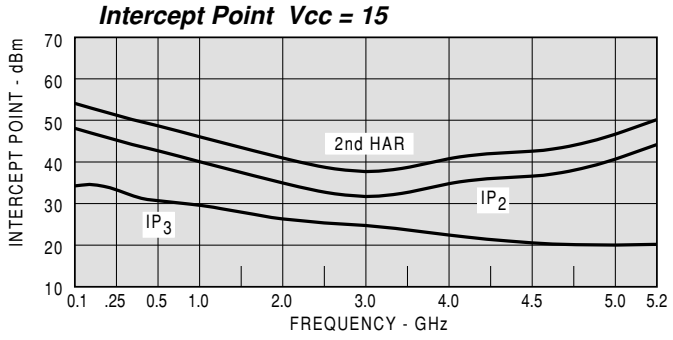
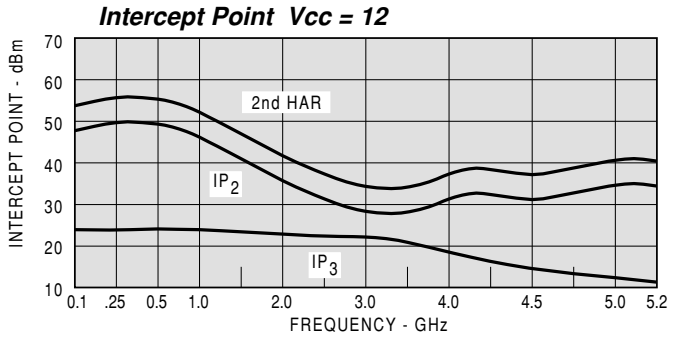
TYPICAL PERFORMANCE











TYPICAL AUTOMATIC TEST DATA

Model: AS5002 Vcc= +15V Icc= 86.33

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
50	1.53	1.34	21.37	31		-36.0
100	1.27	1.23	22.83	11		-36.8
500	1.15	1.17	23.26	-42	0.29	-38.1
1000	1.21	1.18	23.03	-90	0.26	-38.1
1200	1.24	1.18	22.94	-109	0.26	-38.3
1400	1.25	1.18	22.80	-127	0.25	-37.6
1600	1.27	1.20	22.60	-146	0.26	-38.3
1800	1.30	1.20	22.42	-164	0.25	-38.3
2000	1.33	1.18	22.15	179	0.24	-38.7
2200	1.35	1.16	21.89	161	0.25	-38.8
2400	1.39	1.17	21.61	143	0.25	-39.3
2600	1.44	1.20	21.20	127	0.21	-39.3
2800	1.50	1.26	21.16	111	0.23	-39.7
3000	1.53	1.28	21.21	95	0.23	-40.2
3200	1.57	1.26	21.11	78	0.22	-40.7
3400	1.61	1.29	21.06	60	0.26	-40.8
3600	1.64	1.33	21.08	43	0.26	-40.0
3700	1.65	1.33	21.00	34	0.24	-40.8
3800	1.65	1.28	20.96	25	0.23	-41.3
3900	1.67	1.24	20.90	17	0.24	-40.7
4000	1.68	1.23	20.86	8	0.23	-40.5
4200	1.62	1.22	20.87	-8	0.23	-40.9
4400	1.61	1.22	20.91	-26	0.24	-40.5
4600	1.63	1.19	21.04	-44	0.27	-42.6
4800	1.60	1.07	21.21	-63	0.26	-40.5
5000	1.55	1.02	21.46	-83	0.29	-39.7
5200	1.50	1.13	21.27	-105	0.30	-40.7
5400	1.45	1.12	20.92	-124	0.26	-41.0

LINEAR S-PARAMETERS

Model: AS5002 Vcc= 15V Icc= 86.33

FREQ.	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
50	0.21	-64.0	11.71	31.2	0.016	-12.2	0.15	-99.1
100	0.12	-64.6	13.84	11.1	0.014	-12.0	0.10	-123.3
500	0.07	-72.1	14.55	-42.4	0.012	-27.4	0.08	-171.4
1000	0.10	-104.4	14.17	-90.2	0.013	-45.5	0.08	179.8
1200	0.11	-114.9	14.03	-108.6	0.012	-53.4	0.08	171.4
1400	0.11	-124.6	13.80	-127.0	0.013	-65.7	0.08	161.8
1600	0.12	-136.4	13.50	-145.5	0.012	-73.8	0.09	160.0
1800	0.13	-146.1	13.22	-163.5	0.012	-83.9	0.09	156.8
2000	0.14	-153.8	12.82	178.6	0.012	-91.2	0.08	152.4
2200	0.15	-160.0	12.43	160.7	0.011	-99.9	0.07	146.5
2400	0.16	-166.6	12.03	143.2	0.011	-110.4	0.08	143.6
2600	0.18	-176.3	11.48	127.3	0.011	-121.0	0.09	149.3
2800	0.20	173.9	11.42	111.5	0.010	-134.3	0.12	152.6
3000	0.21	164.7	11.50	95.1	0.010	-140.4	0.12	145.8
3200	0.22	155.7	11.36	77.9	0.009	-154.1	0.11	137.4
3400	0.23	147.7	11.30	59.7	0.009	-168.8	0.13	129.8
3600	0.24	140.3	11.33	42.5	0.010	-176.6	0.14	126.3
3800	0.25	131.7	11.17	25.5	0.009	170.6	0.12	129.7
4000	0.25	124.3	11.05	8.4	0.009	154.1	0.10	119.0
4200	0.24	115.5	11.06	-8.3	0.009	145.2	0.10	102.8
4400	0.23	105.1	11.10	-26.4	0.009	128.7	0.10	117.2
4600	0.24	96.1	11.27	-44.4	0.007	118.8	0.09	122.5
4800	0.23	86.7	11.49	-62.7	0.009	105.6	0.04	112.0
5000	0.22	75.1	11.83	-82.9	0.010	83.0	0.01	70.5
5200	0.20	64.9	11.58	-104.9	0.009	62.2	0.06	31.9
5300	0.19	55.7	11.31	-115.0	0.009	49.7	0.06	26.8
5400	0.18	42.6	11.12	-124.4	0.009	50.6	0.06	7.4

Model: AS5002 Vcc= +12V Icc= 79.94

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
50	1.54	1.37	21.65	31		-36.6
500	1.20	1.22	23.45	-42	0.28	-38.4
1000	1.27	1.24	23.22	-89	0.25	-38.9
1500	1.30	1.28	22.89	-134	0.25	-38.2
2000	1.33	1.29	22.31	-178	0.23	-38.9
2500	1.36	1.31	21.50	139	0.22	-38.9
3000	1.43	1.43	21.41	100	0.23	-39.2
3500	1.53	1.47	21.26	59	0.20	-39.4
4000	1.66	1.38	21.18	17	0.23	-38.5
4500	1.72	1.36	21.43	-25	0.23	-38.9
5000	1.72	1.39	21.91	-72	0.29	-37.4
5200	1.65	1.50	21.90	-92	0.30	-37.8
5400	1.59	1.48	22.13	-109	0.26	-37.6