

AC2023 AC2025

5 TO 2000 MHz TO-8 CASCADABLE AMPLIFIERS

Typical Values	AC2023	AC2025
Low Noise Figure	3.2 dB	3.4 dB
High Single Stage Gain	12.5 dB	12.5 dB
High Performance Thin Film Standard Size TO-8 Package		

SPECIFICATIONS*

Parameter	Typical	Guaranteed		
		0 to 50 °C	-55 to +85 °C	
Frequency (Min.)		1-2000 MHz	5-2000 MHz	5-2000 MHz
Small Signal Gain (Min.)	12.5 dB	12.0 dB	11.5 dB	
Gain Flatness (Max.)	AC2023 ±0.25 dB AC2025 ±0.25 dB	±0.5 dB	±0.5 dB	±0.7 dB ±0.8 dB
Noise Figure (Max.)	AC2023 3.2 dB AC2025 3.4 dB	4.0 dB	4.2 dB	4.5 dB 4.7 dB
SWR (Max.)	Input/Output	< 1.5:1	2.0:1	2.0:1
Power Output (Min.) @ 1dB comp.	AC2023 +4.0 dBm AC2025 +8.5 dBm	+2.5 dBm +7.0 dBm	+2.0 dBm +7.0 dBm	
Reverse Isolation	AC2023 17.0 dB AC2025 18.0 dB	—	—	
DC Current (Max.)	AC2023 15.0 mA AC2025 24.0 mA	17.0 mA	20.0 mA	30.0 mA

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

INTERMODULATION PERFORMANCE

Typical @ 25 °C	AC2023	AC2025
Second Order Harmonic Intercept Point	+27 dBm	+39 dBm
Second Order Two Tone Intercept Point	+21 dBm	+33 dBm
Third Order Two Tone Intercept Point	+16 dBm	+22.5 dBm

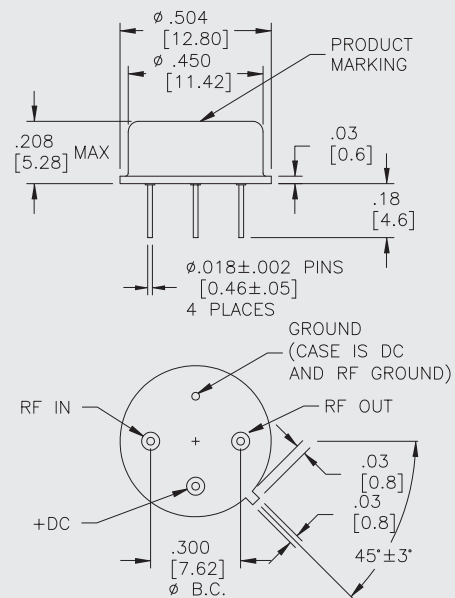
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-62 to +125 °C
Maximum Case Temperature	+125 °C
Maximum DC Voltage	+18 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 (AC2023/AC2025)	+125 °C
Thermal Resistance ¹ (θ _{jc} ; AC2023)	+54 °C/Watt
Thermal Resistance ¹ (θ _{jc} ; AC2025)	+59 °C/Watt
Junction Temperature Rise Above Case (T _{jc} ; AC2023)	+13.8 °C
Junction Temperature Rise Above Case (T _{jc} ; AC2025)	+24.0 °C

¹ Thermal resistance is based on total power dissipation.

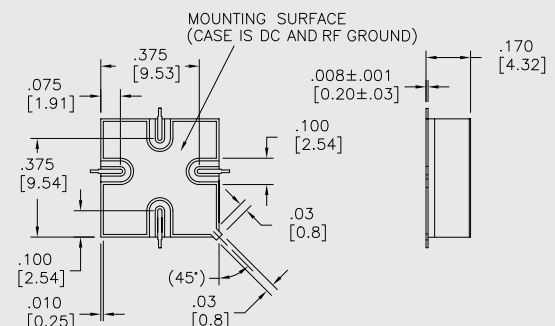
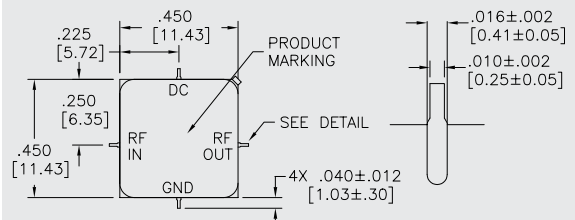
AC2023/AC2025

TO-8 Package for Amplifiers



AS2023/AS2025

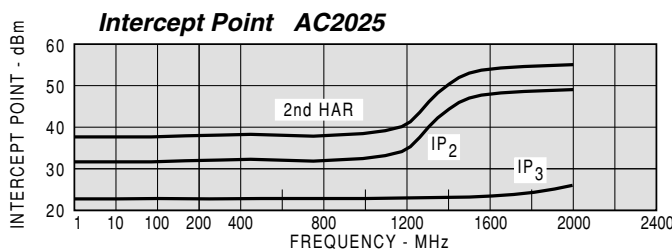
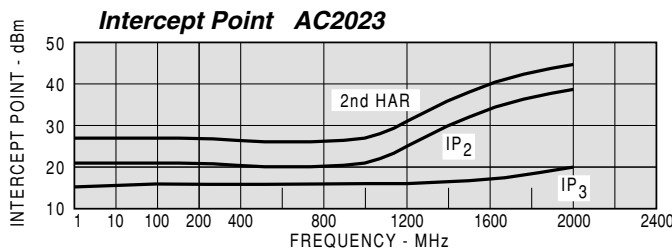
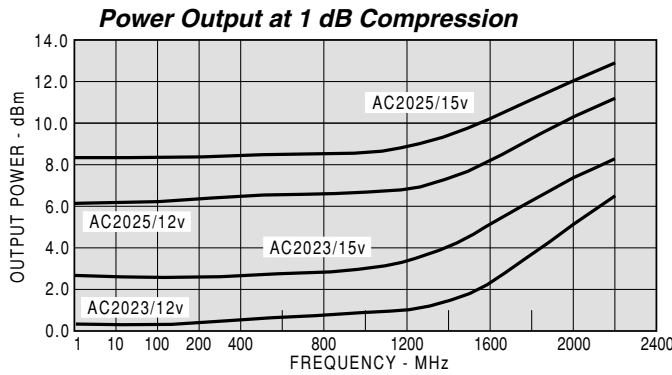
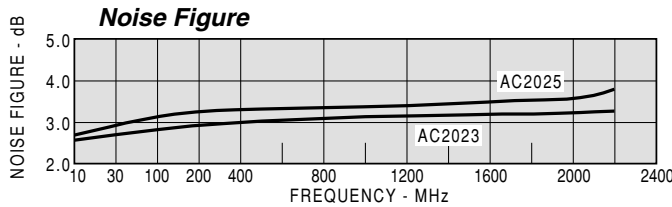
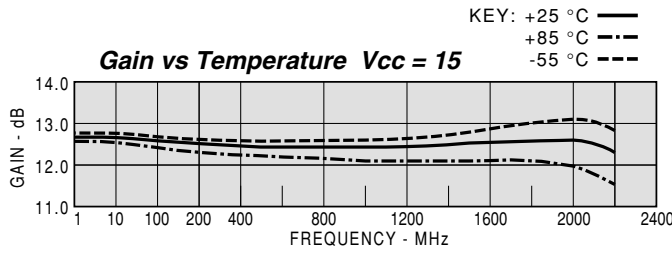
SMT0-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

TYPICAL PERFORMANCE

TYPICAL AUTOMATIC TEST DATA



MODEL: AC2023 Vcc = +15V Icc = 13.90 mA

FREQ. MHz	VSWR IN	VSWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB
1	1.32	1.36	12.6		-17.9
10	1.12	1.15	12.9		-17.6
50	1.10	1.14	12.8	0.491	-17.5
200	1.13	1.16	12.7	0.352	-17.6
400	1.17	1.20	12.6	0.353	-17.7
600	1.25	1.25	12.6	0.354	-17.7
800	1.36	1.27	12.5	0.354	-17.7
1000	1.53	1.29	12.5	0.360	-17.7
1200	1.71	1.34	12.5	0.357	-17.6
1400	1.93	1.38	12.5	0.378	-17.4
1600	1.96	1.36	12.7	0.388	-17.0
1800	1.79	1.26	12.9	0.438	-16.3
2000	1.59	1.04	12.7	0.524	-15.7
2200	2.49	1.35	11.3	0.572	-15.7

MODEL: AC2023 Vcc = +15V Icc = 13.90 mA

LINEAR S-PARAMETERS

FREQ. MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1	0.14	-117.6	4.28	-161.3	0.128	24	0.15	-118.5
10	0.06	-171.6	4.41	-179.8	0.133	2	0.07	-174.1
50	0.05	-170.9	4.36	173.3	0.133	-3	0.07	163.9
200	0.06	-155.5	4.30	154.2	0.131	-13	0.07	118.4
400	0.08	-137.4	4.25	128.9	0.131	-25	0.09	69.5
600	0.11	-132.3	4.25	103.4	0.131	-38	0.11	30.7
800	0.15	-137.5	4.23	77.9	0.131	-50	0.12	-9.3
1000	0.21	-150.3	4.22	52.0	0.131	-63	0.13	-51.9
1200	0.26	-168.7	4.21	26.4	0.132	-76	0.14	-93.6
1400	0.32	175.5	4.21	-0.9	0.135	-89	0.16	-131.6
1600	0.33	150.3	4.33	28.8	0.142	-102	0.15	-167.4
1800	0.28	113.4	4.43	-60.3	0.153	-118	0.11	155.8
2000	0.23	37.7	4.29	-98.0	0.163	-138	0.02	163.6
2200	0.43	-49.6	3.68	-139.5	0.164	-162	0.15	-132.3

MODEL: AC2025 Vcc = +15V Icc = 24.36 mA

FREQ. MHz	VSWR IN	VSWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB
1	1.47	1.68	12.6		-18.4
10	1.28	1.49	12.0		-18.2
50	1.27	1.48	12.7	0.485	-18.1
200	1.25	1.47	12.6	0.342	-18.2
400	1.20	1.45	12.6	0.345	-18.2
600	1.17	1.42	12.6	0.344	-18.1
800	1.19	1.36	12.5	0.345	-18.0
1000	1.28	1.28	12.6	0.354	-17.9
1200	1.42	1.19	12.6	0.354	-17.7
1400	1.60	1.14	12.6	0.378	-17.5
1600	1.65	1.12	12.8	0.387	-17.2
1800	1.48	1.09	13.0	0.434	-16.7
2000	1.34	1.06	12.9	0.510	-16.2
2200	2.32	1.30	11.8	0.582	-16.2

MODEL: AC2025 Vcc = +15V Icc = 24.36 mA

LINEAR S-PARAMETERS

FREQ. MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1	0.19	-130.8	4.27	-161.6	0.120	23	0.25	-139.3
10	0.12	-175.4	4.39	-179.7	0.124	2	0.20	-177.4
50	0.12	179.0	4.33	173.3	0.124	-3	0.19	171.6
200	0.11	173.9	4.28	154.9	0.123	-12	0.19	145.5
400	0.09	170.6	4.25	130.1	0.123	-24	0.18	112.9
600	0.08	177	4.25	105.3	0.124	-36	0.17	81.3
800	0.08	-163.7	4.24	80.4	0.126	-48	0.15	50.6
1000	0.12	-161.5	4.26	54.9	0.128	-61	0.12	17.0
1200	0.17	-171.7	4.26	29.4	0.13	-75	0.09	-28.8
1400	0.23	175.6	4.28	2.2	0.133	-89	0.06	-88.5
1600	0.25	153	4.38	-25.6	0.138	-104	0.06	-154.9
1800	0.2	116	4.48	-57.0	0.146	-120	0.04	142.1
2000	0.15	22	4.40	-93.6	0.155	-140	0.03	-1.1
2200	0.4	-64.9	3.89	-135.4	0.155	-165	0.13	-107.4