

**Avantek Products**

# Thin-Film Cascadable Amplifier 10 to 1000 MHz

## Technical Data

**1**
**UTO/UTC 1076 Series**
**Features**

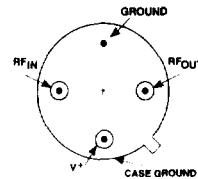
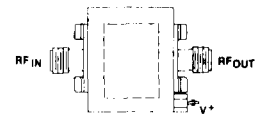
- **Frequency Range: 10 to 1000 MHz**
- **High Reverse Isolation: 49 dB (Typ)**
- **Low VSWR**
- **Temperature Stabilized**

**Applications**

- **IF/RF Amplification**
- **Pre/Post Mixer Amp**
- **Communications Intelligence**
- **Signal Intelligence**

**Description**

The 1076 Series Is a medium-gain bipolar RF amplifier that uses resistive feedback and active bias for temperature stabilization and increased immunity to bias voltage variations. Built on a thin-film substrate, this amplifier is specially designed for high reverse isolation applications. The 1076 Series amplifiers are available in either the TO-8 hermetic case or connected TC-1 package.

**Pin Configuration  
UTO—TO-8U**

**UTC—TC-1**


(See Section 5 for detailed case drawings.)

**Maximum Ratings**

Parameter	Maximum
DC Voltage	+17 Volts
Continuous RF Input Power	+13 dBm
Operating Case Temperature	-55 to +125°C
Storage Temperature	-62 to +150°C
"R" Series Burn-In Temperature	+125°C

**Thermal Characteristics<sup>1</sup>**

Test Conditions	
$\theta_{JC}$	105°C/W
Active Transistor Power Dissipation	150 mW
Junction Temperature Above Case Temperature	16°C

Note 1: For further information, see Reliability Screening, Section 6.

**Weight:** (typical) UTO—2.1 grams; UTC—21.5 grams

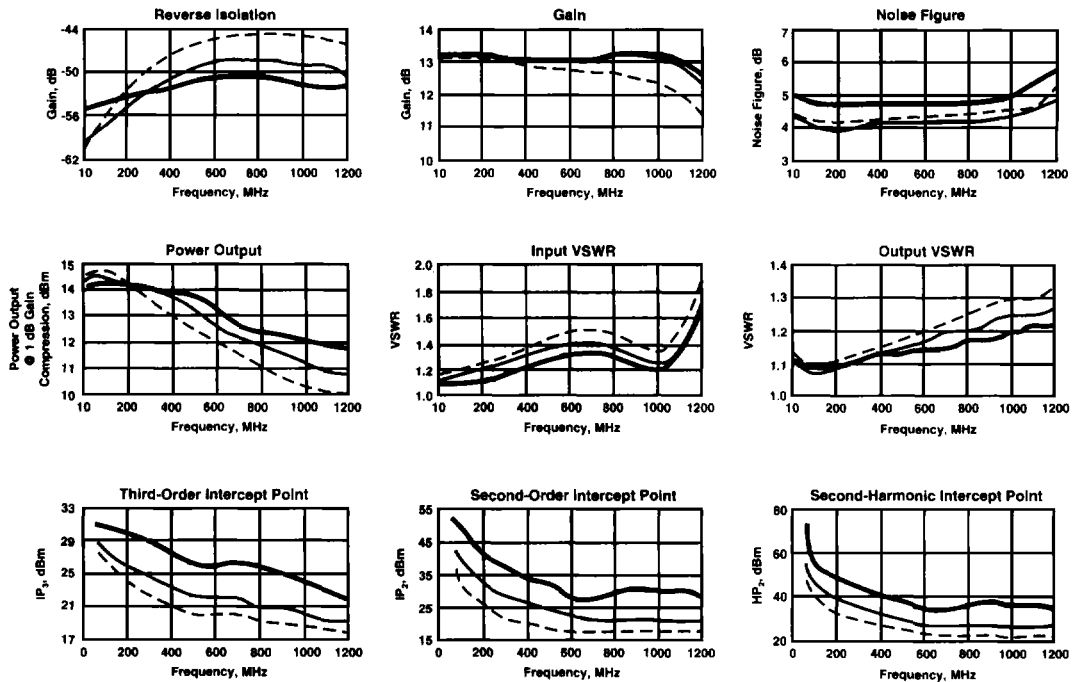
## Electrical Specifications

(Measured in 50  $\Omega$  system @ +15 VDC nominal unless otherwise noted)

Symbol	Characteristic	Typical $T_c = 25^\circ\text{C}$	Guaranteed Specifications		Unit
			$T_c = 0$ to $50^\circ\text{C}$	$T_c = -55$ to $+85^\circ\text{C}$	
BW	Frequency Range	10-1000	10-1000	10-1000	MHz
GP	Small Signal Gain (Min.)	13.0	11.5	11.0	dB
—	Reverse Isolation (Min.)	49.0	43.0	40.0	dB
—	Gain Flatness (Max.)	$\pm 0.2$	$\pm 0.5$	$\pm 0.7$	dB
NF	Noise Figure (Max.)	4.2	5.5	6.0	dB
P <sub>1dB</sub>	Power Output @ +1 dB Comp. (Min.)	+11.5	+10.0	+9.0	dBm
—	Input VSWR (Max.)	1.4:1	1.8:1	2.0:1	—
—	Output VSWR (Max.)	1.4:1	1.8:1	2.0:1	—
IP <sub>3</sub>	Two Tone 3rd Order Intercept Point	+22.0	—	—	dBm
IP <sub>2</sub>	Two Tone 2nd Order Intercept Point	+23.0	—	—	dBm
HP <sub>2</sub>	One Tone 2nd Harmonic Intercept Point	+28.0	—	—	dBm
I <sub>D</sub>	DC Current	34	—	—	mA

## 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)

**S-Parameters and Numerical Readings**

**Bias = 15.00 Volts**

FREQ GHz	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>		GPDEL ns	PHASE DEG
	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang		
5.0	.08	-38.0	13.1	-171.2	-61.5	14.7	.08	-63.68	3.15	—
10.0	.06	-24.5	13.2	-176.8	-59.6	7.1	.05	-46.40	3.15	1.90
25.0	.06	-19.8	13.2	177.7	-59.1	8.8	.03	-18.14	1.01	-.84
50.0	.06	-26.5	13.2	172.3	-58.7	14.1	.03	-.23	.60	-1.67
100.0	.07	-43.7	13.2	163.1	-57.4	23.0	.03	15.31	.51	-1.76
150.0	.08	-59.7	13.2	154.3	-56.1	27.4	.04	22.92	.49	-1.49
200.0	.09	-73.8	13.2	145.6	-54.7	29.1	.04	27.57	.48	-1.07
250.0	.10	-86.0	13.2	137.0	-53.5	28.6	.05	31.61	.48	-.65
300.0	.11	-97.2	13.1	128.3	-52.4	26.4	.05	33.59	.48	-.17
350.0	.12	-107.7	13.1	119.7	-51.6	23.1	.06	34.37	.48	.27
400.0	.14	-117.5	13.1	111.0	-50.8	19.4	.06	35.64	.48	.69
450.0	.15	-127.0	13.1	102.3	-50.1	15.0	.07	35.82	.48	1.08
500.0	.16	-136.3	13.1	93.6	-49.6	10.1	.07	34.60	.49	1.44
550.0	.16	-145.8	13.1	84.7	-49.2	4.8	.08	34.59	.49	1.67
600.0	.17	-155.4	13.1	75.7	-48.8	-.8	.08	34.22	.50	1.79
650.0	.17	-164.9	13.1	66.7	-48.6	-6.8	.08	31.97	.50	1.81
700.0	.17	-175.3	13.1	57.4	-48.4	-12.8	.09	30.84	.51	1.69
750.0	.17	173.5	13.1	48.0	-48.3	-19.3	.09	29.64	.52	1.36
800.0	.16	161.5	13.2	38.4	-48.3	-26.4	.09	26.71	.53	.87
850.0	.14	146.9	13.2	28.6	-48.4	-33.5	.10	24.91	.54	.16
900.0	.13	129.1	13.2	18.5	-48.5	-41.4	.10	23.29	.56	-.91
950.0	.12	106.5	13.1	8.0	-48.8	-49.9	.10	20.08	.58	-2.23
1000.0	.11	76.1	13.1	-2.7	-49.1	-59.1	.11	17.56	.60	-3.92
1100.0	.15	11.3	12.9	-25.4	-50.0	-80.1	.11	11.80	.63	—
1200.0	.26	-32.4	12.3	-49.6	-50.8	-104.5	.12	5.48	.67	—
1300.0	.41	-53.6	11.4	-74.4	-51.2	-131.6	.12	-3.39	.69	—
1400.0	.54	-89.1	10.1	-98.8	-50.3	-156.2	.13	-12.84	.68	—
1500.0	.66	-110.9	8.3	-121.6	-48.0	-175.5	.13	-22.94	.63	—
1600.0	.74	-129.2	6.3	-142.3	-44.9	170.0	.13	-33.89	.57	—
1700.0	.79	-144.8	4.1	-160.9	-41.4	156.4	.13	-44.42	.52	—
1800.0	.82	-158.0	1.8	-177.8	-37.8	142.6	.14	-54.31	.47	—
1900.0	.84	-169.5	-.4	167.0	-34.2	127.1	.15	-54.34	.42	—
2000.0	.85	-179.4	-2.6	153.5	-30.7	109.0	.17	-74.75	.88	—
2100.0	.85	-171.9	-4.9	141.5	-27.4	87.3	.20	-85.62	.33	—
2200.0	.85	164.6	-6.9	130.4	-24.7	61.4	.24	-100.51	.31	—
2300.0	.85	158.3	-8.8	118.6	-22.9	33.5	.27	-118.28	.33	—
2400.0	.86	152.1	-10.9	105.5	-22.1	7.1	.29	-135.45	.37	—
2500.0	.87	145.8	-13.3	91.6	-21.8	-15.4	.30	-150.69	.39	—

LINEARIZATION RANGE: 10.0 to 1000.0 MHz

