

## Avantek Products

# IF/RF Low Cost Cascadable Modules

## Selection Guide

### GPD Series GPM Series

**1**

#### Features

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

#### Applications

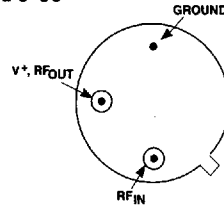
- **Gain Blocks**
- **Mixer Post/Pre-Amp**
- **Prototypes**

#### Description

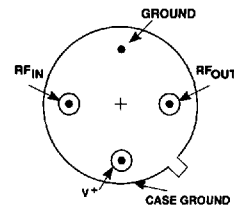
The GPD and GPM amplifiers, available in TO-12 (4-pin) and TO-39 (3-pin) packages, are designed for applications which require the highest performance-to-cost ratio or where size is an important factor. Some versions are equipped with internal coupling and bypass capacitors, however the "60" Series requires 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

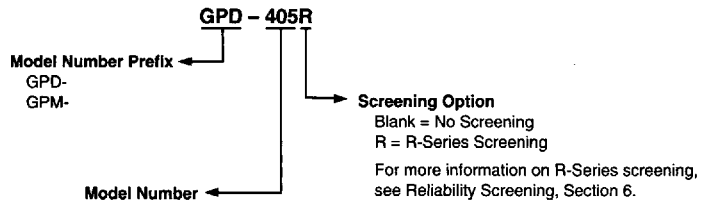


##### TO-12



(See Section 5 for detailed case drawings.)

#### Product Options



## GPD Series Low Cost Amplifiers, TO-39 Package<sup>1</sup>

Typical Specifications at 25°C

Model	Frequency Response (MHz) Minimum	Gain over	Gain <sup>2</sup> over	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.)	
		0° to 50°C (dB) Minimum	-55° to +85°C (dB) Minimum					Voltage (VDC) Typical	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 ( $R_b = [V_{cc} - V_p] / I_p$ ), where  $R_b$  is the value of the bias resistor (Ohms),  $V_{cc}$  is the available source voltage,  $V_p$  is the required device bias voltage (per specification) and  $I_p$  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	Gain <sup>2</sup>	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.)	
		(dB) Minimum	(dB) Minimum					Voltage (VDC) Typical	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 <sup>1</sup>	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 <sup>1</sup>	5-400	13	12	8.0	+8	1.0	+18	+15	24
GPD-403/463 <sup>1</sup>	5-400	9	8	7.5	+16	1.0	+25	+24	65
GPD-404/464 <sup>1</sup>	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 <sup>1</sup>	5-1000	12	11	6.0	0	1.0	+12	+15	15
GPD-1002/1062 <sup>1</sup>	5-1000	12	11	7.0	+6	1.0	+16	+15	27
GPM-1062	5-1000	20	20	7.0	+8	0.3	+20	+15	60
GPD-1003/1063 <sup>1</sup>	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 <sup>1</sup>				
	DC Voltage (Volts)	Continuous RF Input Power (dBm)	Operating Case Temp. (°C)	Storage Temp. (°C)	"R" Series Burn-In Temp. (°C)	$\theta_{JC}$ (°C/W)	Active Transistor Power Dissipation (mW)	Junction Temp. Above Case Temp. (°C)	MTBF MIL-HDBK-217E, AUF @ 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 <sup>2</sup>	242	3 <sup>2</sup>	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	868,341 (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.  
2. For further information, see Reliability Screening, Section 6.

### GPD-201—5 to 200 MHz

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

