

4

The Agilent 83006/017/018/020/050/051A test system amplifiers offer ultra broadband performance up to 50 GHz. With excellent noise figure relative to their broad bandwidth and high gain, these products can be used to significantly reduce test system noise figure. By replacing several amplifiers with a single broadband product, test setups can be greatly simplified. You can place this amplification power where you need it, by using remotely-locatable Agilent power supplies. In addition, the Agilent 87415A provides octave band performance from 2 to 8 GHz.

Agilent 87405B/C preamplifiers provide exceptional gain and flatness. These small preamplifiers are very portable and come with a convenient probe-power bias connection which eliminates the need

for an additional DC power supply, making them an ideal front-end preamplifier for a variety of Agilent instruments.

These amplifiers are supplied with a 2-meter bias cable that has a connector on one end and bare wires on the other (except for the 87405B/C). This bias cable can be used to interface with a power supply provided by the user. Or, for a complete solution, Agilent offers the 87421/422A remotely locatable power supplies. The 87421A power supply is furnished with one 2-meter cable (87422A, two 2-meter cables) for direct connection to an Agilent amplifier as shown in the amplifier power cable cross reference on page 30.

Selection Guide

		Minimum gain (dB)			
		15	20	25	30
Frequency range (GHz)	Up to 4	87405B			
	Up to 8	87415A			
	Up to 18	87405C			
	Up to 20	83018A			83020A
	Up to 26.5	83006A	83018A	83017A	83020A
	Up to 50	83050A	83051A		

Specifications

Model	Frequency range (GHz)	Output power at P _{sat} (dBm)	Output power at P _{1dB} (dBm)	Gain (dB) (min)	Noise figure (dB) (typical)	Bias (nom)	RF connectors (input/output)
Preamplifiers							
87405B	0.01 to 4 GHz	7 at 4 GHz	8 at 4 GHz	22	5 at 4 GHz	+15 V at 105 mA	Type N (m.f)
87405C	0.1 to 18 GHz	17 at 18 GHz	15 at 4 GHz 14 at 18 GHz	25	6 at 4 GHz 4.5 at 18 GHz	+15 V at 140 mA -15 V at 3 mA	Type N (m.f)
87415A	2 to 8 GHz	26 at 8 GHz	23 at 8 GHz	25	13 at 8 GHz	+12 V at 900 mA	SMA (f)
System amplifiers							
83006A	0.01 to 26.5 GHz	18 at 10 GHz 16 at 20 GHz 14 at 26.5 GHz	13 at 20 GHz 10 at 26.5 GHz	20	13 at 0.1 GHz 8 at 18 GHz 13 at 26.5 GHz	+12 V at 450 mA -12 V at 50 mA	3.5 mm (f)
83017A ¹	0.5 to 26.5 GHz	20 at 20 GHz 15 at 26.5 GHz	18 at 20 GHz 13 at 26.5 GHz	25	8 at 20 GHz 13 at 26.5 GHz	+12 V at 700 mA -12 V at 50 mA	3.5 mm (f)
83018A ¹	2 to 26.5 GHz	24 at 20 GHz 21 at 26.5 GHz	22 at 20 GHz 17 at 26.5 GHz	27 dB at 20 GHz 23 dB at 26.5 GHz	10 at 20 GHz 13 at 26.5 GHz	+12 V at 2 mA -12 V at 50 mA	3.5 mm (f)
83020A ¹	2 to 26.5 GHz	30 at 20 GHz 25 at 26.5 GHz	27 at 20 GHz 23 at 26.5 GHz	30 dB at 20 GHz 27 dB at 26.5 GHz	10 at 20 GHz 13 at 26.5 GHz	+15 V at 3.2 mA -15 V at 50 mA	3.5 mm (f)
83050A	2 to 50 GHz	20 at 40 GHz 17 at 50 GHz	15 at 40 GHz 13 at 50 GHz	21	6 at 26.5 GHz 10 at 50 GHz	+12 V at 830 mA -12 V at 50 mA	2.4 mm (f)
83051A	0.045 to 50 GHz	12 at 45 GHz 10 at 50 GHz	8 at 45 GHz 6 at 50 GHz	23	12 at 2 GHz 6 at 26.5 GHz 10 at 50 GHz	+12 V at 425 mA -12 V at 50 mA	2.4 mm (f)

¹ 83017A, 83018A and 83020A include internal directional detectors with BNC (f) DC connectors for external leveling applications.

Net Weights

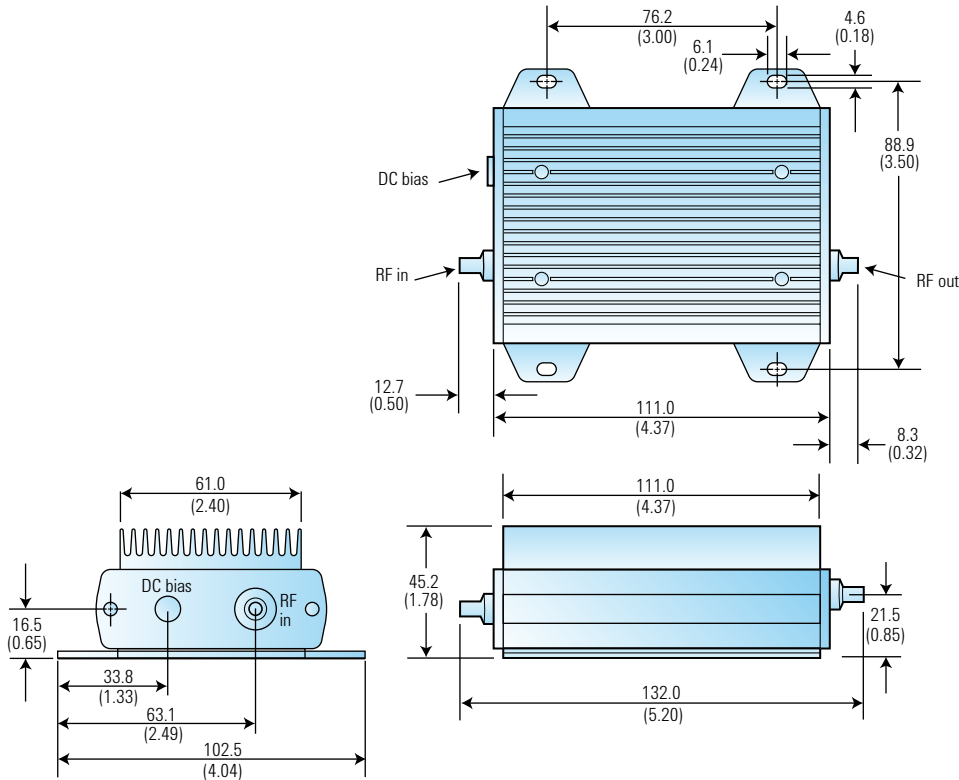
Model	Net weight
83006A	0.64 kg (1.4 lbs)
83017A	0.64 kg (1.4 lbs)
83050A	0.64 kg (1.4 lbs)
83051A	0.64 kg (1.4 lbs)
83018A	1.8 kg (4 lbs)
83020A	3.9 kg (8.5 lbs)
87415A	0.64 kg (1.4 lbs)
87405B	0.23 kg (0.5 lbs)
87405C	0.22 kg (0.485 lbs)

Power Supply Specifications

Model	AC Input voltage	DC output (nom)	Output power	Size (H, W, D)
87421A	100 to 240 VAC 50/60 Hz	+12 V at 2.0 A, -12 V at 200 mA	25 W max	57, 114, 176 mm 2.3, 4.5, 6.9 in
87422A ¹	100 to 240 VAC 50/60 Hz	+15 V at 3.3 A, -15 V at 50 mA +12 V at 2.0 A, -12 V at 200 mA	70 W max	86, 202, 276 mm 3.4, 8.0, 10.9 in

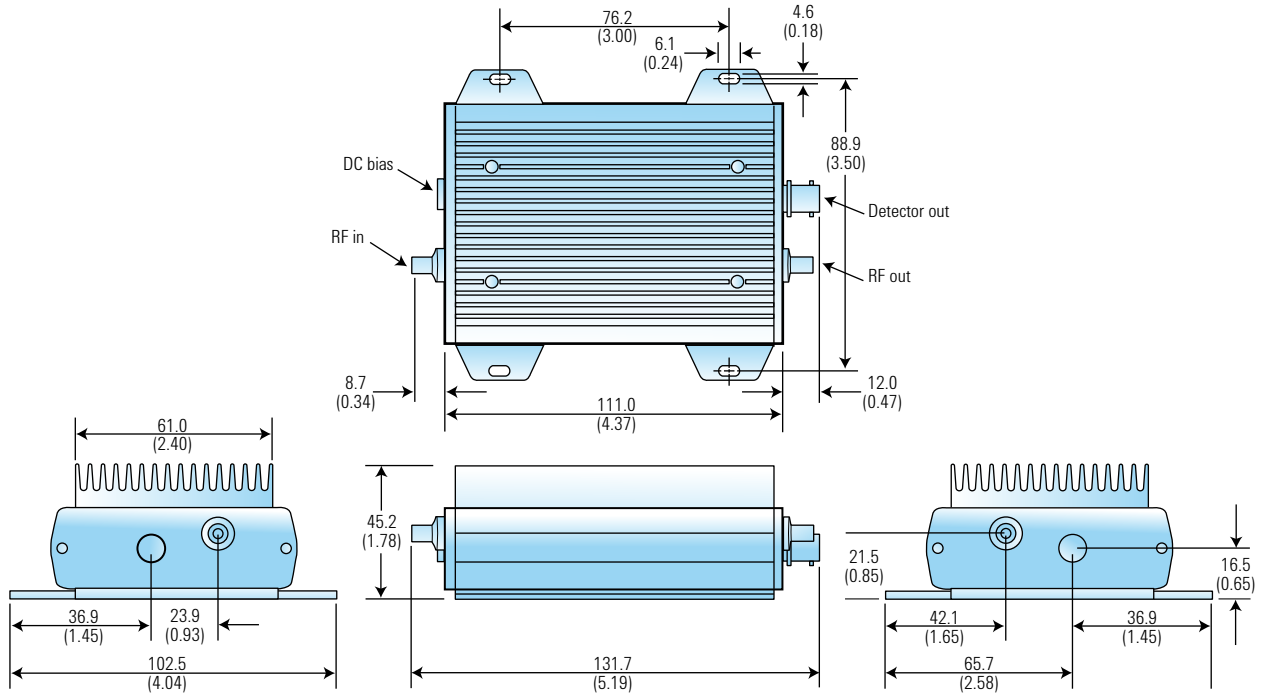
¹ The ±15 V output is designed to power the Agilent 83020A; the ±12 V output can be used to power an additional amplifier.

83006A Microwave System Amplifier, 10 MHz to 26.5 GHz



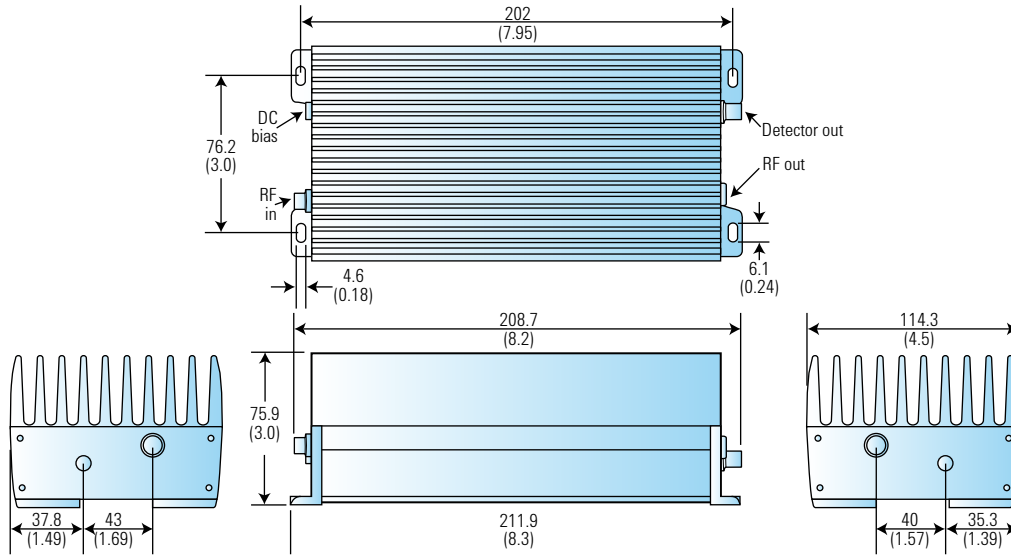
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83017A Microwave System Amplifier, 0.5 to 26.5 GHz

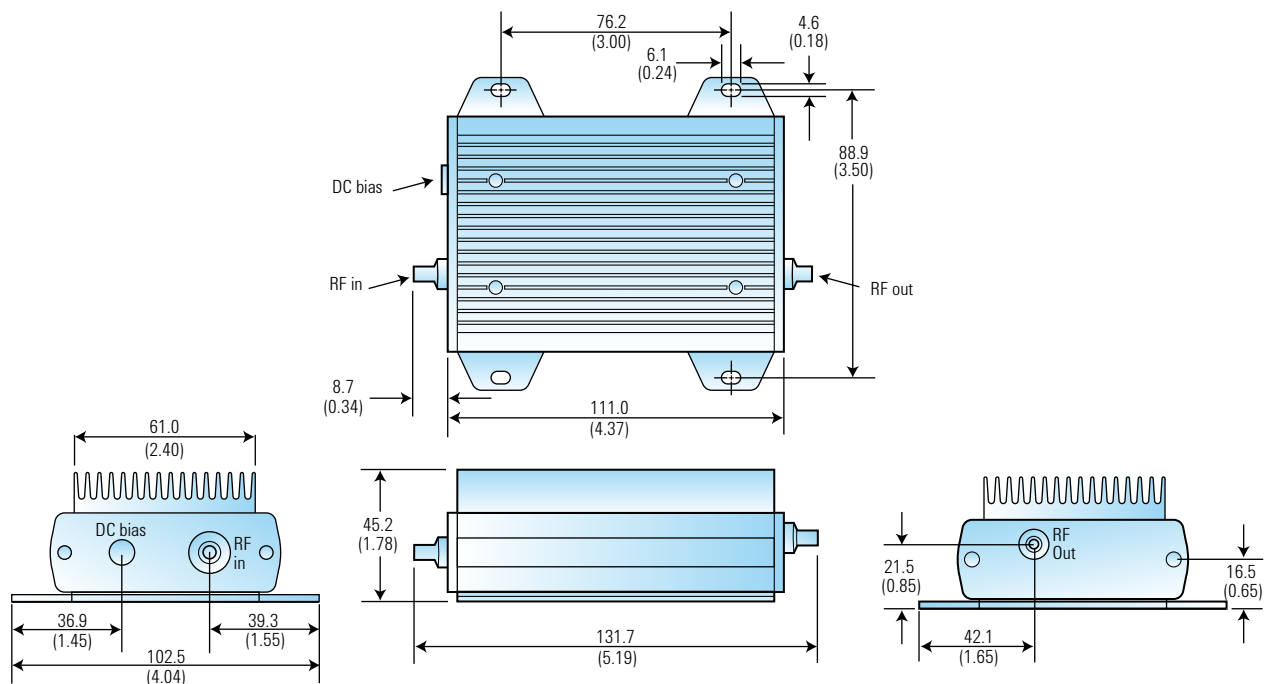


Dimensions are in mm (inches) nominal, unless otherwise specified.

83018A Microwave System Amplifier, 2 to 26.5 GHz

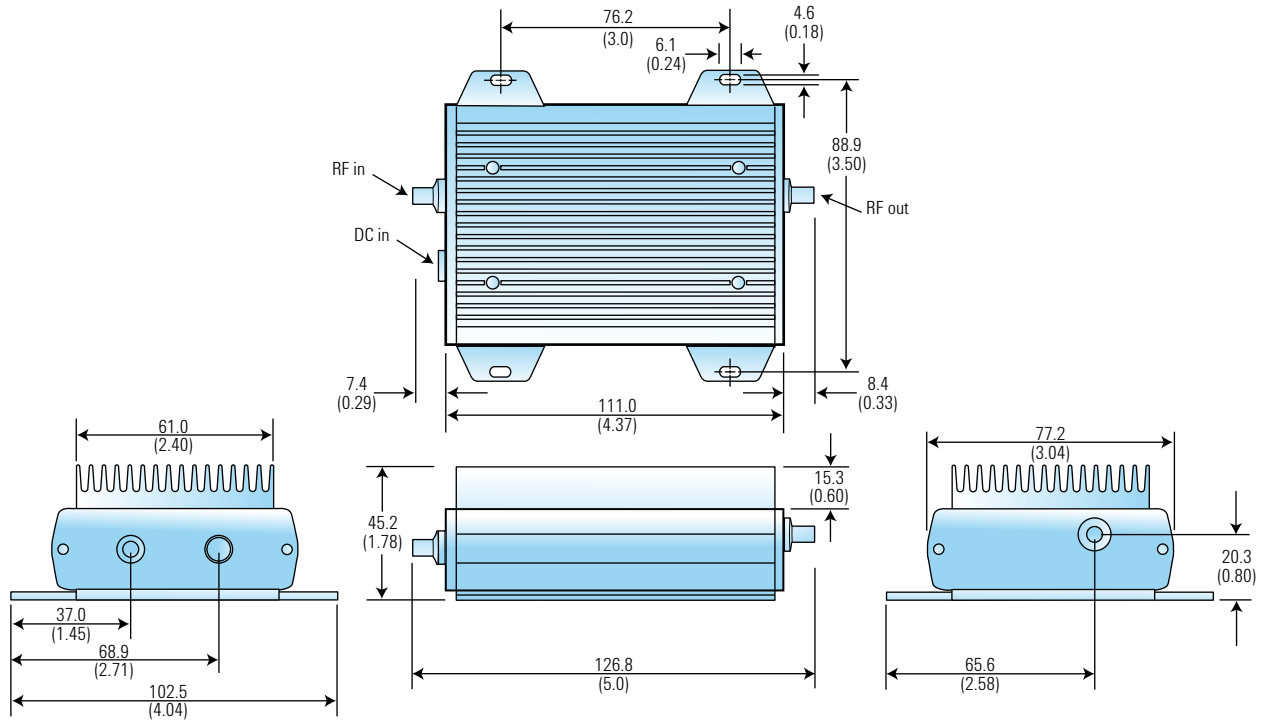


83050A Microwave System Amplifier, 2 to 50 GHz 83051A Microwave System Amplifier, 45 MHz to 50 GHz



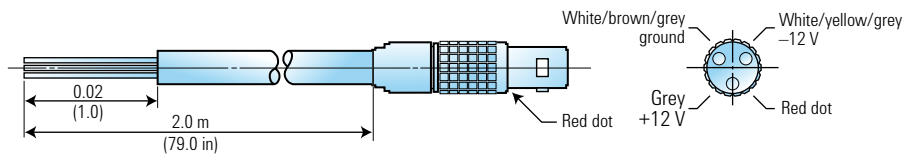
Dimensions are in mm (inches) nominal, unless otherwise specified.

87415A Microwave System Amplifier, 2 to 8 GHz

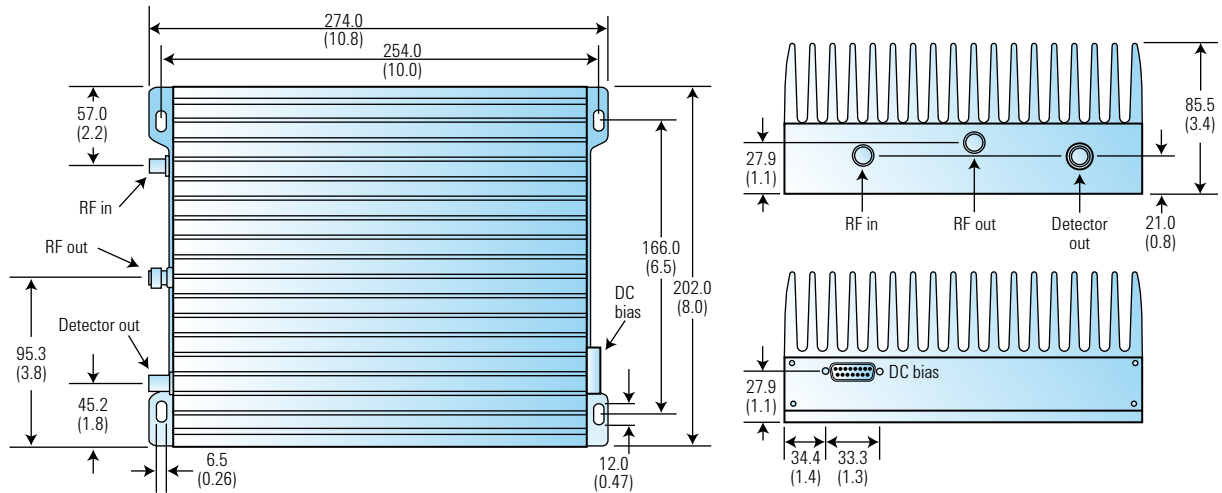


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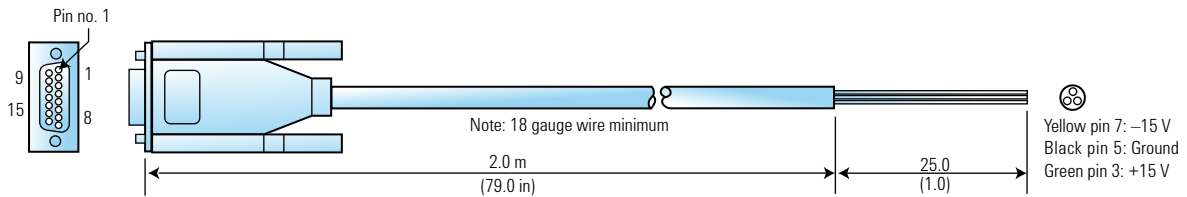
83006-60004 Cable (Shipped with 83006A, 83017A, 83018A, 83050A, 83051A, 87415A)



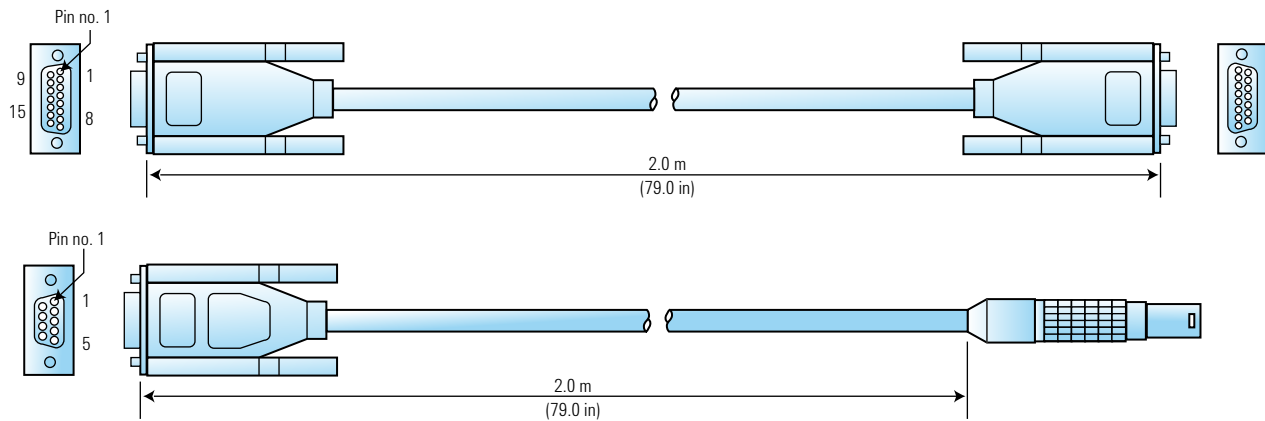
83020A Microwave System Amplifier, 2 to 26.5 GHz



83020-60004 Cable (Shipped with 83020A)

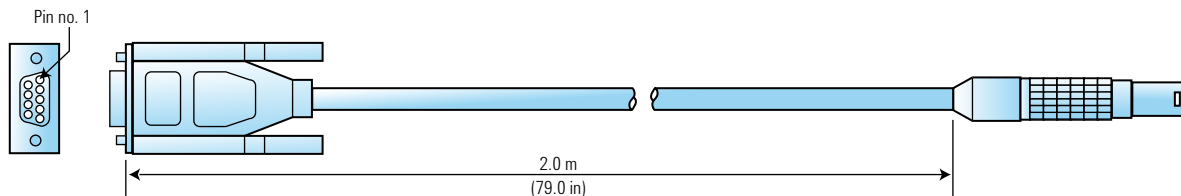


87422-60001 and 83006-60005 Cable (Shipped with 87422A)



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83006-60005 Cable (Shipped with 87421A)



Dimensions are in mm (inches) nominal, unless otherwise specified.

Ordering Information

- 83006A** amplifier, 0.01 to 26.5 GHz, 20 dB gain
- 83017A** amplifier, 0.5 to 26.5 GHz; 25 dB gain
- 83018A** microwave system amplifier, 2 to 26 GHz, 22 dBm
- 83020A** power amplifier; 2 to 26.5 GHz, 27 dB gain
- 83050A** amplifier; 2 to 50 GHz, 20 dBm at 40 GHz
- 83051A** preamplifier; 0.045 to 50 GHz, 23 dB gain
- 87405B** preamplifier, 0.01 to 4 GHz, 22 dB gain, type-N (m) output to type-N (f)
 - 87405B-001** power probe connector to banana plug
- 87405C** pre-amplifier, 0.1 to 18 GHz, type N(M) output to type N(F)
 - 87405C-101** cable assembly – banana plug
 - 87405C-102** cable assembly – power probe cable
 - 87405C-103** cable assembly – 15 pin bias cable
- 87415A** 2 to 8 GHz remote system amplifier

Power Cable Cross Reference ¹

Model	Cable part number ² (supplied with amplifier)	Power supply recommended	Cable part number ³ (supplied with power supply)
83006A	83006-60004	87421A	83006-60005
83017A	83006-60004	87421A	83006-60005
83018A	83006-60004	87421A	83006-60005
83050A	83006-60004	87421A	83006-60005
83051A	83006-60004	87421A	83006-60005
87415A	83006-60004	87421A	83006-60005
83020A	83020-60004	87422A ²	87422-60001 83006-60005
87405B	Integral cable	Spectrum analyzer	
87405C ⁴			
87405C-101	87405-20006	E3631A	No cable supplied
87405C-102	87405-20007	Spectrum analyzer	No cable supplied
87405C-103	87405-20010	87422A	87422-60001 83006-60005

¹ See outline drawings for connector types

² For use with available power supply

³ For use with power supply for direct connection

⁴ Must order one of cable options

Web Link

www.agilent.com/find/mta



87415A microwave component amplifier



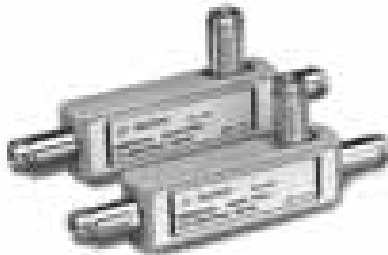
83017A microwave system amplifier



83051A microwave system amplifier



11909A low noise amplifier



86205A/86207A RF bridge



85024A high frequency probe



11867A limiter



87405B preamplifier



U1818A/B active differential probes

87415A Amplifier

The 87415A microwave component amplifier brings compact, reliable gain block performance to systems integrators and microwave designers. With 25 dB minimum gain and over 23 dBm output power from 2 to 8 GHz, this amplifier offers output power where it is needed: at the test port. Refer to Amplifier chapter for more details.

83017A Amplifier

The 83017A microwave system amplifier is a compact, off-the-shelf amplifier designed for systems designers and integrators. This amplifier provides power where you need it to recover system losses and to boost available power in RF and microwave ATE systems. The ultrabroad bandwidth from 500 MHz to 26.5 GHz allows the designer to replace several narrow bandwidth amplifiers with a single Agilent amplifier, eliminating the need for crossover networks or multiple bias supplies. Refer to Amplifier chapter for more details.

83051A Amplifier

The 83051A microwave system amplifier is a compact, off-the-shelf amplifier designed for systems designers and integrators. This amplifier provides power where you need it to recover system losses and to boost available power in RF and microwave ATE systems. The ultrabroad bandwidth from 45 MHz to 50 GHz allows the designer to replace several narrow bandwidth amplifiers with a single Agilent amplifier, eliminating the need for crossover networks or multiple bias supplies.

11909A Low Noise Amplifier (9 kHz to 1 GHz)

The 11909A amplifier improves receiver and spectrum analyzer sensitivity by offering excellent noise figure (1.8 dB typical) and gain (32 dB). Radiated emissions from measurements using a spectrum analyzer and antenna are improved by the increased sensitivity that this unit offers. It is ideally suited for use with the 11940A and 11941A close field probes to detect low level emissions.

11940A/11941A Close Field Probes (9 kHz to 30 MHz/30 MHz to 1 GHz)

These are handheld probes specially designed to measure magnetic field radiation from surface currents, slots, cable, and ICs for EMC diagnostic and troubleshooting measurements. The 11940A covers 9 kHz to 30 MHz, and the 11941A covers 30 MHz to 1 GHz. Their unique design results in a high level of electric field rejection. This significantly reduces errors allowing calibrated and repeatable measurements. Each probe is calibrated and comes with a two-meter, RG-223 coaxial cable, an SMA (f) to type-N (m) adapter, and an SMA (f) to BNC (m) adapter.

86205A RF Bridge (300 kHz to 6 GHz, 50 Ω)

The 86205A high directivity 50 Ω RF bridge offers unparalleled performance in a variety of general-purpose applications. It is ideal for accurate reflection measurements and signal leveling applications.

86207A RF Bridge (300 kHz to 3 GHz, 75 Ω)

This 75 Ω type-N RF bridge has high directivity and excellent port match from 300 kHz to 3 GHz. It is used for external reflection measurements or coupling signals from its main path.

85024A High Frequency Probe

Makes in-circuit measurements easy. Input capacitance of only 0.7 pF shunted by 1 M Ω resistance permits high frequency probing (300 kHz to 3 GHz) without adverse loading of the circuit under test. Excellent frequency response and unity gain guarantee highly accurate swept measurements. High sensitivity and low distortion levels allow measurements that take full advantage of the analyzer's dynamic range. Directly compatible with many Agilent signal/spectrum analyzers including the X-Series, PSA, ESA, and 856xEC Series and network analyzers like the PNA Series, 4395, 871x, 875x and 872x.

U1818A 7 GHz and U1818B 12 GHz Active Differential Probes

The U1818A/B active differential probes makes it easy to perform high frequency (100 kHz to 7/12 GHz) in-circuit measurements using network, spectrum and signal source analyzers. With flat frequency response, low noise floor, and direct power from instrument connection, the U1818A/B allows measurements to be made while taking full advantage of Agilent's RF analyzers dynamic range.

41800A Active Probe

This probe offers high input impedance from 5 Hz to 500 MHz. It works with many Agilent spectrum analyzers to evaluate the quality of circuits by measuring spurious level, harmonics, and noise. Low input capacitance offers probing with negligible circuit loading for precise, in-circuit measurements of audio, video, HF, and VHF bands.

11742A Blocking Capacitor

The 11742A blocking capacitor blocks DC signals below 45 MHz and passes signals up to 26.5 GHz. Ideal for use with high frequency oscilloscopes or in biased microwave circuits, the 11742A suppresses low frequency signals that can damage expensive measuring equipment or affect the accuracy of your RF and microwave measurements.

87405B Preamplifier (10 MHz to 4 GHz)

The 87405B microwave component preamplifier brings compact, reliable gain block performance to system integrators and microwave designers. With 22 dB minimum gain block, 5 dB noise figure, and over 8 dBm output power, this amplifier offers output power where it is needed; at the test port.

11867A Limiters

These limiters can be used to protect the input circuits of signal/spectrum analyzers, counters, amplifiers, and other instruments from high power levels with minimal effect on measurement performance. The 11867A RF limiter (DC to 1800 MHz) reflects signals up to 10 watts average power and 100 watts peak power. Insertion loss is less than 0.75 dB.

11852B 75 Ω Minimum Loss Pad

The 11852B is an instrument-grade, 50 Ω type-N female to 75 Ω type-N male adapter. This product is also available in a 50 Ω type-N male to 75 Ω type-N female configuration. The 11852B Option 004 has a 50 Ω type-N (m) and 75 Ω type-N (f) connector.

Ordering Information/Accessories

11852B 75 Ω minimum-loss pad

11852B-004 50 Ω type-N (m), 75 Ω type-N (f)

11867A DC to 1.8 GHz limiter

11909A 9 kHz to 1 GHz amplifier

11940A close field probe (9 kHz to 30 MHz)

11941A close field probe (30 MHz to 1 GHz)

41800A active probe (5 Hz to 500 MHz)

83017A 0.5 to 26.5 GHz microwave system amplifier

83051A 45 MHz to 50 GHz microwave system amplifier

85024A high-frequency probe (300 kHz to 3 GHz)

86205A 50 Ω RF bridge (300 kHz to 6 GHz)

86207A 75 Ω RF bridge (300 kHz to 3 GHz)

87405B 10 MHz to 4 GHz preamplifier

87415A 2 GHz to 8 GHz microwave system amplifier

U1818A active differential probe (100 kHz to 7 GHz)

U1818B active differential probe (100 kHz to 12 GHz)

Web Link

www.agilent.com/find/mta