



Compact, Wideband Low-Noise Amplifiers 0.5 GHz to 20.0 GHz

- ▶ Solid-State Power Amplifiers from 0.5 to 100 Watts
- ▶ Low-Noise
- ▶ Wide Dynamic Range
- ▶ Low-Cost, Compact Size (AM Series)
- ▶ Drop-In Configurations Available
- ▶ Frequency Coverage from 0.5 GHz to 20.0 GHz



CTT offers a line of compact solid-state low-noise amplifiers (LNAs) for a wide range of applications in wideband and narrowband frequencies through 20 GHz. The “AM” series LNAs are based on GaAs pHEMT devices with input and output impedance matching.

These LNAs offer a blend of good noise-figure performance and wide dynamic range.

Many amplifiers are designed for +8 to +15 VDC operation and are ideal for many portable and battery-powered systems.

The compact LNAs are available with or without SMA connectors.

Wideband Low-Noise Amplifiers

WIDEBAND [AM Series] Model Number	Frequency Response (GHz)	Gain	Gain Flatness (±dB)	Noise Figure (dB)	P1dB (+dBm)	VSWR In/Out	Volts (DC)	DC Current (mA)	CTT Case Outline
		Min	Max	Max	Min	Max	Typ	Typ	
AMM/020-1015	0.5-2.0	15	1.00	1.0	8	2:1	8-15	80	M4
AMM/020-1022	0.5-2.0	22	1.00	1.0	10	2:1	8-15	120	M5
AMM/020-1030	0.5-2.0	30	1.25	1.0	10	2:1	8-15	200	M5
AMM/020-1515	0.5-2.0	15	1.00	1.5	8	2:1	8-15	80	M4
AMM/020-1522	0.5-2.0	22	1.00	1.5	10	2:1	8-15	120	M5
AMM/020-1530	0.5-2.0	30	1.25	1.5	10	2:1	8-15	200	M5
AMO/040-1516	2-4	16	1.00	1.5	8	2:1	8-15	80	M4
AMO/040-1524	2-4	24	1.25	1.5	8	2:1	8-15	120	M5
AMO/040-1532	2-4	32	1.50	1.5	10	2:1	8-15	200	M5
AMO/040-1816	2-4	16	1.00	1.8	8	2:1	8-15	80	M4
AMO/040-1824	2-4	24	1.25	1.8	8	2:1	8-15	120	M5
AMO/040-1832	2-4	32	1.50	1.8	10	2:1	8-15	200	M5
AMM/080-2216	2-8	16	1.00	2.2	8	2:1	8-15	80	M4
AMM/080-2224	2-8	24	1.25	2.2	8	2:1	8-15	120	M5
AMM/080-2232	2-8	32	1.50	2.2	10	2:1	8-15	200	M5
AMO/080-1518	4-8	18	1.00	1.5	6	2:1	8-15	80	M4
AMO/080-1526	4-8	26	1.00	1.5	8	2:1	8-15	120	M5
AMO/080-1534	4-8	34	1.25	1.5	10	2:1	8-15	180	M5
AMX/00510-2516	0.5-10	16	1.00	2.5	8	2:1	8-15	80	M4
AMX/00510-2524	0.5-10	24	1.25	2.5	8	2:1	8-15	120	M5
AMX/00510-2532	0.5-10	32	1.50	2.5	10	2:1	8-15	200	M5
AMW/120-1518	8-12	18	1.00	1.5	6	2:1	8-15	80	M4
AMW/120-1526	8-12	26	1.00	1.5	8	2:1	8-15	120	M5
AMW/120-1534	8-12	34	1.25	1.5	10	2:1	8-15	180	M5
AMW/120-1818	8-12	18	1.00	1.8	6	2:1	8-15	80	M4
AMW/120-1826	8-12	26	1.00	1.8	8	2:1	8-15	120	M5
AMW/120-1834	8-12	34	1.25	1.8	10	2:1	8-15	180	M5

New Products

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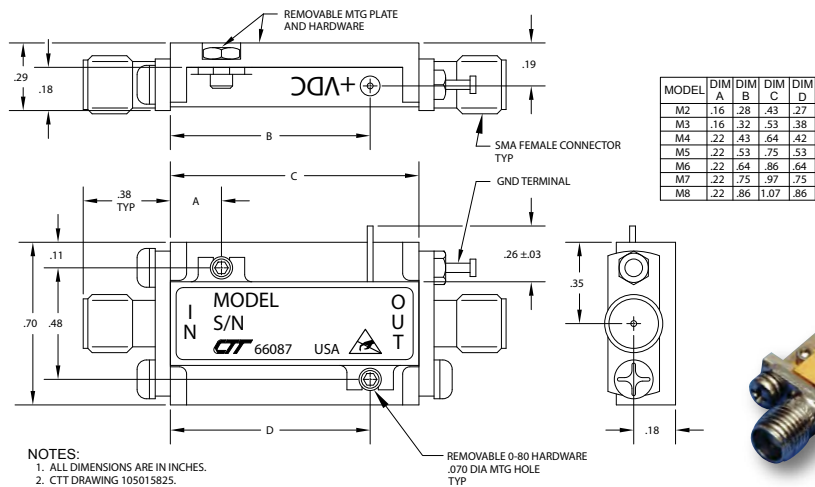


Compact, Wideband Low-Noise Amplifiers 0.5 GHz to 20.0 GHz (continued)

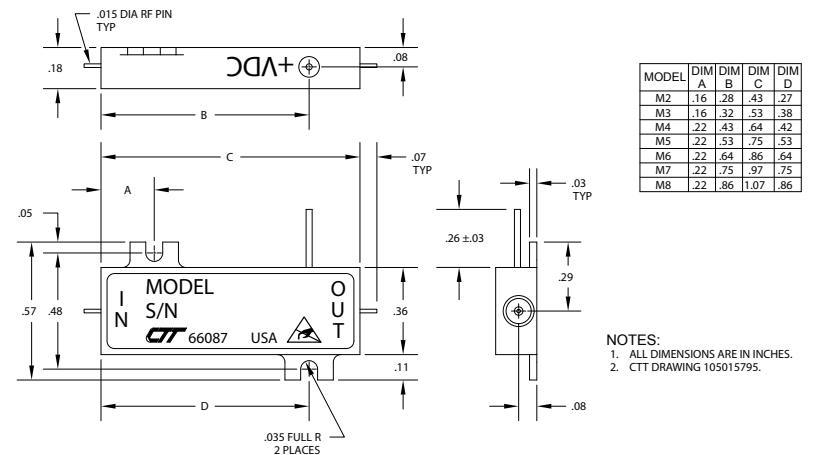
WIDEBAND [AM Series] Model Number	Frequency Response (GHz)	Gain (dB)	Gain Flatness (±dB)	Noise Figure (dB)	P1dB (+dBm)	VSWR In/Out	Volts (DC)	DC Current (mA)	CTT Case Outline
	Min	Min	Max	Max	Min	Max	Typ	Typ	
AMX/00518-3515	0.5-18	15	2.00	3.5	8	2.5:1	8-15	80	M4
AMX/00518-3522	0.5-18	22	2.00	3.5	8	2.5:1	8-15	140	M5
AMX/00518-3530	0.5-18	30	2.50	3.5	10	2.5:1	8-15	200	M5
AMX/0218-3515	2-18	15	2.00	3.5	8	2.5:1	8-15	80	M4
AMX/0218-3522	2-18	22	2.00	3.5	8	2.5:1	8-15	140	M5
AMX/0218-3530	2-18	30	2.50	3.5	10	2.5:1	8-15	200	M5
AMM/180-3016	6-18	16	1.00	3.0	8	2:1	8-15	80	M4
AMM/180-3024	6-18	24	1.00	3.0	10	2:1	8-15	120	M5
AMM/180-3032	6-18	32	1.50	3.0	10	2:1	8-15	180	M5
AMX/0220-4510	2-20	10	2.00	4.5	8	2.5:1	8-15	80	M4
AMX/0220-4520	2-20	20	2.00	4.5	8	2.5:1	8-15	140	M5
AMX/0220-4530	2-20	30	2.50	4.5	10	2.5:1	8-15	200	M5

New Products

AM Series Case Outline



AM Series Drop-In Configuration Outline



For unique subassembly configurations, requiring separate driver and power amplifiers, CTT's **AD Series** offer small size, single voltage, with up to 1 Watt of output power.

Compact, Wideband Low-Noise & Medium Power Amplifiers 0.1 GHz to 20 GHz

- ▶ **AB Series Low-Noise**
- ▶ **AD Series Drivers for TWTAs or GaN Power Amplifiers**
- ▶ **Wide Dynamic Range**
- ▶ **Frequency Coverage from 0.1 GHz to 20.0 GHz**

Wideband Amplifiers

WIDEBAND [AB & AD Series] Model Number	Frequency Response (GHz)	Gain (dB)		Gain Flatness (±dB)		Noise Figure (dB)	P1dB (+dBm)		VSWR In/Out	Volts (DC) Typ	DC Current (mA) Typ	CTT Case Outline
		Min	Max	Min	Max		Min	Max				
ABX/00102-1512	0.1-2.0	12	0.75	1.5	8	2:1	8-15	80	AB2			
ABX/00102-1522	0.1-2.0	22	1.00	1.5	10	2:1	8-15	120	AB2			
ABX/00102-1530	0.1-2.0	30	1.25	1.5	10	2:1	8-15	200	AB2			
ABM/025-1512	0.5-2.5	12	0.75	1.5	8	2:1	8-15	80	AB2			
ABM/025-1522	0.5-2.5	22	1.00	1.5	10	2:1	8-15	120	AB2			
ABM/025-1530	0.5-2.5	30	1.25	1.5	10	2:1	8-15	200	AB2			
ABW/124-2510	8-12.4	10	0.75	2.5	10	2:1	8-15	60	AB2			
ABW/124-2520	8-12.4	20	1.00	2.5	15	2:1	8-15	120	AB2			
ABW/124-2530	8-12.4	30	1.25	2.5	15	2:1	8-15	180	AB3			
ABW/124-5020	8-12.4	20	1.00	5.0	20	2:1	12-15	200	AB2			
ABW/124-4530	8-12.4	30	1.25	4.5	20	2:1	12-15	280	AB3			
ABM/180-5015	6-18	15	1.25	5.0	20	2:1	12-15	200	AB2			
ABM/180-5022	6-18	22	1.25	5.0	20	2:1	12-15	260	AB3			
ABM/180-5032	6-18	32	1.50	5.0	20	2:1	12-15	420	AB4			
ABX/00518-2815	0.5-18	15	2.00	2.8	6	2.2:1	8-15	80	AB2			
ABX/00518-2822	0.5-18	22	2.00	2.8	8	2.2:1	8-15	140	AB2			
ABX/00518-2830	0.5-18	30	2.00	2.8	10	2.2:1	8-15	200	AB3			
ABX/0218-2610	2-18	10	1.25	2.6	6	2.2	8-15	60	AB2			
ABX/0218-2620	2-18	20	1.50	2.6	8	2.2	8-15	120	AB2			
ABX/0218-2630	2-18	30	2.00	2.6	10	2.2	8-15	180	AB3			
ABX/0218-5020	2-18	20	2.00	5.0	20	2.2	12-15	380	AB2			
ABX/0218-5032	2-18	32	2.25	5.0	20	2.2	12-15	460	AB3			
ABX/0218-5040	2-18	40	2.50	5.0	20	2.2	12-15	540	AB4			
ABX/0220-4512	2-20	12	1.75	4.5	8	2.2:1	8-15	80	AB2			
ABX/0220-4520	2-20	20	2.00	4.5	10	2.2:1	8-15	140	AB2			
ABX/0220-4530	2-20	30	2.50	4.5	12	2.2:1	8-15	200	AB3			
ABX/0220-5014	2-20	14	1.50	5.0	20	2.2:1	12-15	400	AB2			
ABX/0220-5020	2-20	20	1.50	5.0	20	2.2:1	12-15	480	AB2			
ADW/124-2729	8-12.4	29	1.25	5.0	27	2:1	12-15	500	AB3			
ADW/124-2740	8-12.4	40	1.25	4.5	27	2:1	12-15	580	AB4			
ADM/180-2723	6-18	23	1.50	6.0	27	2:1	12-15	460	AB4			
ADM/180-2731	6-18	31	1.75	6.0	27	2:1	12-15	540	AB4			
ADM/180-2740	6-18	40	2.00	6.0	27	2:1	12-15	600	AB4			

New Products



Wideband Low-Noise Amplifiers

100 MHz to 20.0 GHz

Low-noise amplifiers (LNAs) are, by design and application, small signal amplifiers, intended to be the primary signal booster in RF subsystems; especially those where link-margins are critical.

Since overall LNA performance is determined largely by the first stage of amplification, CTT has combined its many years of experience in characterizing these devices with its expertise in the design of matching circuits to optimize noise figure performance.

CTT has developed an extensive “Library” of device parameters and compatible matching solutions, which allow predictable, repeatable noise performance. This “Library” is the basis for CTT’s automated module production capability, which has been able to virtually triple module production efficiency.

These amplifiers are high performance, low-cost, GaAs FET amplifiers. Each LNA comes with removable SMA connectors.

- ▶ **Low Cost**
- ▶ **Low-Noise**
- ▶ **Aluminum Package with Removable Connectors**
- ▶ **Tig Welded Aluminum Housing**
- ▶ **Designed to Meet MIL-STD-883**
- ▶ **Custom Engineered Options (CEOs) (See page 36)**



Wideband Low-Noise Amplifiers

WIDEBAND [AF Series] Model Number	Frequency Response (GHz)	Gain	Gain Flatness (±dB)	Noise Figure (dB)	P1dB (+dBm)	VSWR In/Out	Volts (DC)	DC Current (mA)	CTT Case Outline
		Min	Max	Max	Min	Max	Typ	Typ	
AFX/010-1030	0.1-1.0	30	1.50	1.0	10	2:1	8-15	160	FC2
AFX/040-1530	0.1-4.0	30	1.50	1.5	10	2:1	8-15	160	FC2
AFM/020-1015	0.5-2.0	15	0.75	1.0	8	2:1	8-15	80	FC2
AFM/020-1030	0.5-2.0	30	1.00	1.0	10	2:1	8-15	120	FC2
AFM/020-1045	0.5-2.0	45	1.50	1.0	10	2:1	8-15	200	FC2
AFM/020-1515	0.5-2.0	15	0.75	1.5	8	2:1	8-15	80	FC2
AFM/020-1530	0.5-2.0	30	1.00	1.5	10	2:1	8-15	120	FC2
AFM/020-3015	0.5-2.0	15	1.00	3.0	20	2:1	12-15	150	FC2
AFM/020-3026	0.5-2.0	26	1.00	3.0	20	2:1	12-15	180	FC2
AFM/020-3036	0.5-2.0	36	1.50	3.0	20	2:1	12-15	220	FC2
AFM/020-3046	0.5-2.0	46	1.50	3.0	20	2:1	12-15	300	FC2
AFM/040-2510	0.5-4.0	10	0.75	2.5	8	2:1	8-15	70	FC2
AFM/040-2522	0.5-4.0	22	1.00	2.5	12	2:1	8-15	100	FC2
AFM/040-2530	0.5-4.0	30	1.25	2.5	15	2:1	12-15	160	FC2
AFM/040-2540	0.5-4.0	40	1.25	2.5	15	2:1	12-15	200	FC2
AFM/040-5512	0.5-4.0	12	1.00	5.5	20	2:1	12-15	150	FC2
AFM/040-3525	0.5-4.0	25	1.25	3.5	20	2:1	12-15	200	FC2
AFM/040-3535	0.5-4.0	35	1.25	3.5	20	2:1	12-15	250	FC2

New Products

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Wideband Low-Noise Amplifiers 100 MHz to 20.0 GHz (continued)

WIDEBAND [AF Series] Model Number	Frequency Response (GHz)	Gain	Gain Flatness (±dB)	Noise Figure (dB)	P1dB (+dBm)	VSWR In/Out	Volts (DC)	DC Current (mA)	CTT Case Outline
		Min	Max	Max	Max	Min	Max	Typ	
AFM/060-2511	2-6	11	0.75	2.5	8	2:1	8-15	80	FC2
AFM/060-2522	2-6	22	1.00	2.5	12	2:1	8-15	80	FC2
AFM/060-2533	2-6	33	1.25	2.5	12	2:1	8-15	120	FC2
AFM/060-2512	2-6	12	0.75	2.5	8	2:1	8-15	50	FC2
AFM/060-2520	2-6	20	1.25	2.5	12	2:1	8-12	80	FC2
AFM/060-2530	2-6	30	1.50	2.5	12	2:1	8-15	120	FC2
AFM/060-3011	2-6	11	0.75	3.0	20	2:1	12-15	120	FC2
AFM/060-3525	2-6	25	1.25	3.5	20	2:1	12-15	200	FC2
AFM/060-3540	2-6	40	1.50	3.5	20	2:1	12-15	280	FC4
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AFX/080-2611	0.5-8	11	1.00	2.6	8	2:1	8-15	50	FC2
AFX/080-2620	0.5-8	20	1.25	2.6	12	2:1	8-15	80	FC2
AFX/080-2630	0.5-8	30	1.50	2.6	12	2:1	8-15	120	FC2
AFX/080-4512	0.5-8	12	1.00	4.5	20	2:1	12-15	120	FC2
AFX/080-4526	0.5-8	26	1.25	4.5	20	2:1	12-15	200	FC2
AFX/080-4540	0.5-8	40	1.50	4.5	20	2:1	12-15	260	FC4
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AFM/080-2514	2-8	14	0.75	2.5	7	2:1	8-15	60	FC2
AFM/080-2528	2-8	28	1.25	2.5	12	2:1	8-15	120	FC2
AFM/080-2542	2-8	42	1.50	2.5	12	2:1	8-15	180	FC2
AFM/080-2612	2-8	12	0.75	2.6	8	2:1	8-15	50	FC2
AFM/080-2620	2-8	20	1.25	2.6	12	2:1	8-15	80	FC2
AFM/080-2630	2-8	30	1.50	2.6	12	2:1	8-15	120	FC2
AFM/080-2642	2-8	42	1.75	2.6	12	2:1	8-15	200	FC4
AFM/080-4012	2-8	12	0.75	4.0	20	2:1	12-15	120	FC2
AFM/080-4026	2-8	26	1.25	4.0	20	2:1	12-15	200	FC2
AFM/080-4040	2-8	40	1.50	4.0	20	2:1	12-15	280	FC4
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AFO/080-2012	4-8	12	1.00	2.0	10	2:1	8-15	50	FC2
AFO/080-2022	4-8	22	1.00	2.0	15	2:1	12-15	120	FC2
AFO/080-2032	4-8	32	1.00	2.0	15	2:1	12-15	180	FC4
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AFX/00510-2516	0.5-10	16	1.00	2.5	8	2:1	8-15	80	FX2
AFX/00510-2524	0.5-10	24	1.25	2.5	8	2:1	8-15	120	FX2
AFX/00510-2532	0.5-10	32	1.50	2.5	10	2:1	8-15	180	FX4
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AFW/124-1518	8-12.4	18	1.00	1.5	8	2:1	8-15	80	FX2
AFW/124-1526	8-12.4	26	1.00	1.5	8	2:1	8-15	120	FX2
AFW/124-1534	8-12.4	34	1.25	1.5	10	2:1	8-15	180	FX4
AFW/124-2810	8-12.4	10	0.75	2.8	10	2:1	8-15	50	FX2
AFW/124-2820	8-12.4	20	1.00	2.8	15	2:1	12-15	120	FX2
AFW/124-2830	8-12.4	30	1.25	2.8	15	2:1	12-15	180	FX4
AFW/124-4509	8-12.4	9	1.00	4.5	20	2:1	12-15	100	FX2
AFW/124-4520	8-12.4	20	1.00	4.5	20	2:1	12-15	200	FX2
AFW/124-4530	8-12.4	30	1.25	4.5	20	2:1	12-15	280	FX4

New Products

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Wideband Low-Noise Amplifiers 100 MHz to 20.0 GHz (continued)

Low-Noise Amplifier Comments

Applies to all AM,
AF and AL Series amplifiers

- All specifications are guaranteed at +25°C CASE temperature as measured in the linear region.
- CTT can provide replacements for many hard to find amplification products including those formerly produced by Amplica, Inc., AvanteK, Inc., Celeritek and Watkins-Johnson Company (WJ).
- Noise figure will rise 0.015 dB/°C typically as the temperature increases.
- P1dB will drop approximately 1 dB from +25°C to +85°C.
- All units contain internal voltage regulators which can operate from +12 to +15 VDC.
- Proper **heat sinking** is **REQUIRED** to keep the case temperature below +105°C. Otherwise, permanent damage or degradation may occur.
- Consult the factory for additional gain, power, higher frequencies, temperature compensation or any special functions.
- Commercial versions are available with reduced screening and industrial-grade FETs.
- Maximum power without damage is +12 dBm min. Up to +20 dBm option available, contact factory.
- For selected applications, lower noise-figures are available, contact the factory.

WIDEBAND [AF Series] Model Number	Frequency Response (GHz)	Gain (dB)		Gain Flatness (±dB)	Noise Figure (dB)	P1dB (+dBm)	VSWR In/Out		Volts (DC)	DC Current (mA)	CTT Case Outline
		Min	Max				Min	Max			
AFM/150-3510	5.5-15	10	1.25	3.5	8	2:1	8-15	60	FX2		
AFM/150-3520	5.5-15	20	1.25	3.5	10	2:1	8-15	120	FX2		
AFM/150-3530	5.5-15	30	1.50	3.5	10	2:1	8-15	170	FX4		
AFM/150-4509	5.5-15	9	1.00	4.5	18	2:1	12-15	120	FX2		
AFM/150-5520	5.5-15	20	1.25	5.5	18	2:1	12-15	200	FX2		
AFM/150-5530	5.5-15	30	1.50	5.5	18	2:1	12-15	280	FX4		
AFX/00518-2815	0.5-18	15	2.00	2.8	6	2.2	8-15	80	FX2		
AFX/00518-2822	0.5-18	22	2.00	2.8	8	2.2	8-15	140	FX2		
AFX/00518-3515	0.5-18	15	2.00	3.5	6	2.2	8-15	80	FX2		
AFX/00518-3522	0.5-18	22	2.00	3.5	8	2.2	8-15	140	FX2		
AFX/00518-3530	0.5-18	30	2.00	3.5	10	2.2	8-15	200	FX2		
AFX/00518-4010	0.5-18	10	1.50	4.0	8	2.2	8-15	100	FX2		
AFX/00518-4020	0.5-18	20	2.00	4.0	8	2.2	8-15	160	FX2		
AFX/00518-4030	0.5-18	30	2.50	4.0	8	2.2	8-15	250	FX4		
AFX/0218-2610	2-18	10	1.25	2.6	6	2.2	8-15	60	FX2		
AFX/0218-2620	2-18	20	1.50	2.6	8	2.2	8-15	120	FX2		
AFX/0218-2630	2-18	30	2.00	2.6	10	2.2	8-15	180	FX2		
AFX/0218-3515	2-18	15	2.00	3.5	6	2.2	8-15	80	FX2		
AFX/0218-3522	2-18	22	2.00	3.5	8	2.2	8-15	140	FX2		
AFX/0218-3530	2-18	30	2.00	3.5	10	2.2	8-15	160	FX2		
AFX/0218-4520	2-18	20	2.00	4.5	8	2.2	8-15	160	FX2		
AFX/0218-4530	2-18	30	2.50	4.5	8	2.2	8-15	200	FX2		
AFX/0218-5016	2-18	16	1.25	5.0	12	2.2	8-15	140	FX2		
AFX/0218-5021	2-18	21	1.25	5.0	12	2.2	8-15	180	FX2		
AFX/0218-6014	2-18	14	2.00	6.0	20	2.2	12-15	400	FX4		
AFX/0218-6021	2-18	21	2.50	6.0	20	2.2	12-15	500	FX4		
AFM/180-2512	6-18	12	1.00	2.5	8	2:1	8-15	80	FX2		
AFM/180-2522	6-18	22	1.00	2.5	10	2:1	8-15	120	FX2		
AFM/180-2530	6-18	30	1.25	2.5	12	2:1	8-15	180	FX2		
AFM/180-3018	6-18	18	1.00	3.0	10	2:1	8-15	120	FX2		
AFM/180-3030	6-18	30	1.50	3.0	15	2:1	12-15	220	FX4		
AFM/180-3508	6-18	8	1.00	3.5	8	2:1	8-15	50	FX2		
AFM/180-3520	6-18	20	1.00	3.5	15	2:1	12-15	150	FX2		
AFM/180-3530	6-18	30	1.50	3.5	15	2:1	12-15	220	FX4		
AFM/180-5015	6-18	15	1.25	5.0	20	2:1	12-15	200	FX2		
AFM/180-5021	6-18	21	1.25	5.0	20	2:1	12-15	260	FX4		
AFM/180-5032	6-18	32	1.50	5.0	20	2:1	12-15	380	FX4		

New Products



Wideband Low-Noise Amplifiers 100 MHz to 20.0 GHz

- ▶ Low Cost
- ▶ Low-Noise
- ▶ Standard Package (AL Series), Small Size: 0.63 Inches Height
- ▶ Aluminum Package with Removable Connectors
- ▶ Tig Welded Aluminum Housing
- ▶ Designed to Meet MIL-STD-883
- ▶ Custom Engineered Options (CEOs) (See page 36)



Low-noise amplifiers (LNAs) are, by design and application, small signal amplifiers, intended to be the primary signal booster in RF subsystems; especially those where link-margins are critical.

Since overall LNA performance is determined largely by the first stage of amplification, CTT has combined its many years of experience in characterizing these devices with its expertise in the design of matching circuits to optimize noise figure performance.

CTT has developed an extensive “Library” of device parameters and compatible matching solutions, which allow predictable, repeatable noise performance. This “Library” is the basis for CTT’s automated module production capability, which has been able to virtually triple module production efficiency.

These compact amplifiers are high performance, low-cost, GaAs FET amplifiers. Each LNA comes with removable SMA connectors.

Wideband Low-Noise Amplifiers

WIDEBAND [AL Series] Model Number	Frequency Response (GHz)	Gain (dB)		Gain Flatness (±dB)		Noise Figure (dB)		P1dB (+dBm)		VSWR In/Out		Volts (DC)		DC Current (mA)		CTT Case Outline
		Min	Max	Min	Max	Min	Max	Min	Max	Typ	Typ	Typ	Typ			
ALX/010-1030	0.1-1	30	1.50	1.0	10	2:1	8-15	160	HC2							
ALX/040-1530	0.1-4	30	1.50	1.5	10	2:1	8-15	160	HC2							
ALX/020-2810	0.2-2	10	0.75	2.8	8	2:1	8-15	60	HC2							
ALX/020-2822	0.2-2	22	1.25	2.8	12	2:1	8-15	80	HC2							
ALX/020-2830	0.2-2	30	1.25	2.8	15	2:1	12-15	160	HC2							
ALX/020-3012	0.2-2	12	1.00	3.0	20	2:1	12-15	150	HC2							
ALX/020-3525	0.2-2	25	1.25	3.5	20	2:1	12-15	220	HC2							
ALX/020-3535	0.2-2	35	1.50	3.5	20	2:1	12-15	260	HC2							
ALM/020-1015	0.5-2	15	0.75	1.0	15	2:1	12-15	80	HC2							
ALM/020-1030	0.5-2	30	1.00	1.0	15	2:1	12-15	160	HC2							
ALM/020-1045	0.5-2	45	1.50	1.0	15	2:1	12-15	240	HC2							
ALM/020-1515	0.5-2	15	0.75	1.5	15	2:1	12-15	80	HC2							
ALM/020-1530	0.5-2	30	1.00	1.5	15	2:1	12-15	160	HC2							
ALM/020-3015	0.5-2	15	1.00	3.0	20	2:1	12-15	150	HC2							
ALM/020-3026	0.5-2	26	1.00	3.0	20	2:1	12-15	220	HC2							
ALM/020-3036	0.5-2	36	1.50	3.0	20	2:1	12-15	260	HC2							
ALM/020-3046	0.5-2	46	1.50	3.0	20	2:1	12-15	340	HC4							
ALM/040-2210	0.5-4	10	0.75	2.2	8	2:1	8-15	70	HC2							
ALM/040-2222	0.5-4	22	1.00	2.2	12	2:1	8-15	100	HC2							
ALM/040-2230	0.5-4	30	1.25	2.2	15	2:1	12-15	160	HC2							
ALM/040-2240	0.5-4	40	1.25	2.2	15	2:1	12-15	200	HC2							
ALM/040-3512	0.5-4	12	1.00	3.5	20	2:1	12-15	150	HC2							
ALM/040-3525	0.5-4	25	1.25	3.5	20	2:1	12-15	200	HC2							
ALM/040-3535	0.5-4	35	1.25	3.5	20	2:1	12-15	250	HC2							

New Products

Continued on Next Page

Wideband Low-Noise Amplifiers 100 MHz to 20.0 GHz (continued)

WIDEBAND [AL Series] Model Number	Frequency Response (GHz)	Gain	Gain Flatness (±dB)	Noise Figure (dB)	P1dB (+dBm)	VSWR In/Out	Volts (DC)	DC Current (mA)	CTT Case Outline
		Min	Max	Max	Min	Max	Typ	Typ	
ALM/060-2511	2-6	11	0.75	2.5	8	2:1	8~15	50	HC2
ALM/060-2522	2-6	22	1.00	2.5	12	2:1	8~15	80	HC2
ALM/060-2533	2-6	33	1.20	2.5	12	2:1	8~15	120	HC4
ALM/060-2514	2-6	14	0.75	2.5	8	2:1	8~15	50	HC2
ALM/060-2528	2-6	28	1.25	2.5	12	2:1	8~15	120	HC2
ALM/060-2542	2-6	42	1.50	2.5	12	2:1	8~15	200	HC4
ALM/060-3511	2-6	11	0.75	3.5	20	2:1	12~15	120	HC2
ALM/060-3526	2-6	26	1.25	3.5	20	2:1	12~15	200	HC2
ALM/060-3540	2-6	40	1.50	3.5	20	2:1	12~15	280	HC4
ALX/080-2611	.5-8	11	1.00	2.6	8	2:1	8~15	50	HC2
ALX/080-2620	.5-8	20	1.25	2.6	12	2:1	8~15	80	HC2
ALX/080-2630	.5-8	30	1.50	2.6	12	2:1	8~15	120	HC2
ALX/080-2640	.5-8	40	1.50	2.6	12	2:1	8~15	200	HC4
ALX/080-4512	.5-8	12	1.00	4.5	20	2:1	12~15	120	HC2
ALX/080-4526	.5-8	26	1.25	4.5	20	2:1	12~15	200	HC2
ALX/080-4540	.5-8	40	1.50	4.5	20	2:1	12~15	260	HC4
ALM/080-2514	2-8	14	0.75	2.5	7	2:1	8~15	50	HC2
ALM/080-2528	2-8	28	1.25	2.5	12	2:1	8~15	120	HC2
ALM/080-2542	2-8	42	1.50	2.5	12	2:1	8~15	180	HC4
ALM/080-3012	2-8	12	0.75	3.0	8	2:1	8~15	50	HC2
ALM/080-3020	2-8	20	1.25	3.0	12	2:1	8~15	80	HC2
ALM/080-3030	2-8	30	1.50	3.0	12	2:1	8~15	120	HC2
ALM/080-3040	2-8	40	1.50	3.0	12	2:1	8~15	180	HC4
ALM/080-6012	2-8	12	0.75	6.0	20	2:1	12~15	120	HC2
ALM/080-4026	2-8	26	1.25	4.0	20	2:1	12~15	200	HC2
ALM/080-4040	2-8	40	1.50	4.0	20	2:1	12~15	280	HC4
ALM/120-3009	4-12	9	1.00	3.0	5	2:1	8~15	50	HX2
ALM/120-3020	4-12	20	1.25	3.0	10	2:1	8~15	120	HX2
ALM/120-3030	4-12	30	1.50	3.0	10	2:1	8~15	180	HX4
ALM/120-3040	4-12	40	1.50	3.0	10	2:1	8~15	260	HX4
ALM/120-4518	4-12	18	1.00	4.5	20	2:1	12~15	200	HX2
ALM/120-4528	4-12	28	1.50	4.5	20	2:1	12~15	260	HX4
ALM/120-4538	4-12	38	1.50	4.5	20	2:1	12~15	340	HX4

New Products

Continued on Next Page



Wideband Low-Noise Amplifiers 100 MHz to 20.0 GHz (continued)



SWaP
(Size Weight and Power)
SWaP-optimized electronic
systems are critical to
unmanned aerial vehicles.



WIDEBAND [AL Series] Model Number	Frequency Response (GHz)	Gain	Gain Flatness	Noise	P1dB (+dBm)	VSWR In/Out	Volts (DC)	DC Current (mA)	CTT Case Outline
		(dB)	(±dB)	Figure (dB)					
	Min	Min	Max	Max	Min	Max	Typ	Typ	
ALW/124-1511	8-12.4	11	0.75	1.5	8	2:1	8-15	40	HX2
ALW/124-1522	8-12.4	22	1.00	1.5	15	2:1	12-15	120	HX2
ALW/124-1533	8-12.4	33	1.25	1.5	15	2:1	12-15	180	HX4
ALW/124-2510	8-12.4	10	0.75	2.5	10	2:1	12-15	50	HX2
ALW/124-2520	8-12.4	20	1.00	2.5	15	2:1	12-15	120	HX2
ALW/124-2530	8-12.4	30	1.25	2.5	15	2:1	12-15	180	HX4
ALW/124-6009	8-12.4	9	1.00	6.0	20	2:1	12-15	100	HX2
ALW/124-5020	8-12.4	20	1.00	5.0	20	2:1	12-15	200	HX2
ALW/124-4530	8-12.4	30	1.25	4.5	20	2:1	12-15	280	HX4
ALM/150-3510	5.5-15	10	1.25	3.5	8	2:1	8-15	60	HX2
ALM/150-3520	5.5-15	20	1.25	3.5	10	2:1	8-15	120	HX2
ALM/150-3530	5.5-15	30	1.50	3.5	10	2:1	8-15	170	HX4
ALM/150-3540	5.5-15	40	1.50	3.5	10	2:1	8-15	250	HX4
ALM/150-5520	5.5-15	20	1.25	5.5	18	2:1	12-15	200	HX2
ALM/150-5530	5.5-15	30	1.50	5.5	18	2:1	12-15	280	HX4
ALM/150-5540	5.5-15	40	1.50	5.5	18	2:1	12-15	360	HX4
ALX/00518-2815	0.5-18	15	2.00	2.8	6	2.2:1	8-15	80	HX2
ALX/00518-2822	0.5-18	22	2.00	2.8	8	2.2:1	8-15	140	HX2
ALX/00518-2830	0.5-18	30	2.00	2.8	10	2.2:1	8-15	200	HX2
ALX/00518-3515	0.5-18	15	2.00	3.5	6	2.2:1	8-15	80	HX2
ALX/00518-3522	0.5-18	22	2.00	3.5	8	2.2:1	8-15	140	HX2
ALX/00518-3530	0.5-18	30	2.00	3.5	10	2.2:1	8-15	200	HX2
ALX/00518-4013	0.5-18	13	1.50	4.0	5	2.2:1	8-15	60	HX2
ALX/00518-4020	0.5-18	20	2.00	4.0	8	2.2:1	8-15	140	HX2
ALX/00518-4026	0.5-18	26	2.00	4.0	8	2.2:1	8-15	200	HX2
ALX/00518-4033	0.5-18	33	2.25	4.0	8	2.2:1	8-15	260	HX2
ALX/00518-6010	0.5-18	10	1.50	6.0	8	2.2:1	8-15	90	HX2
ALX/00518-5520	0.5-18	20	2.00	5.5	8	2.2:1	8-15	160	HX2
ALX/00518-5530	0.5-18	30	2.25	5.5	10	2.2:1	8-15	250	HX2
ALX/00518-5536	0.5-18	36	2.50	5.5	10	2.2:1	8-15	280	HX4

New Products

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Wideband Low-Noise Amplifiers 100 MHz to 20.0 GHz (continued)



WIDEBAND [AL Series] Model Number	Frequency Response (GHz)	Gain	Gain Flatness	Noise	P1dB (+dBm)	VSWR In/Out	Volts (DC)	DC Current (mA)	CTT Case Outline
		(dB)	(±dB)	Figure (dB)					
	Min	Min	Max	Max	Min	Max	Typ	Typ	
ALX/0218-2610	2-18	10	1.25	2.6	6	2.2	8-15	60	HX2
ALX/0218-2620	2-18	20	1.50	2.6	8	2.2	8-15	80	HX2
ALX/0218-2630	2-18	30	2.00	2.6	10	2.2	8-15	140	HX2
ALX/0218-3513	2-18	13	1.50	3.5	5	2.2	8-15	60	HX2
ALX/0218-3520	2-18	20	2.00	3.5	8	2.2	8-15	140	HX2
ALX/0218-3526	2-18	26	2.00	3.5	8	2.2	8-15	200	HX2
ALX/0218-3533	2-18	33	2.25	3.5	8	2.2	8-15	260	HX2
ALX/0218-4020	2-18	20	2.00	4.0	8	2.2	8-15	160	HX2
ALX/0218-4030	2-18	30	2.50	4.0	8	2.2	8-15	250	HX2
ALX/0218-6016	2-18	16	1.25	6.0	12	2.2	8-15	200	HX2
ALX/0218-6021	2-18	21	1.25	6.0	12	2.2	8-15	270	HX2
ALX/0218-6026	2-18	26	1.25	6.0	12	2.2	8-15	330	HX4
ALX/0218-7015	2-18	15	2.00	7.0	20	2.2	12-15	480	HX4
ALX/0218-7022	2-18	22	2.50	7.0	20	2.2	12-15	560	HX4
ALX/0218-7028	2-18	28	2.50	7.0	20	2.2	12-15	640	HX6
ALM/180-2410	6-18	10	1.00	2.4	8	2:1	8-15	70	HX2
ALM/180-2420	6-18	20	1.00	2.4	10	2:1	8-15	120	HX2
ALM/180-2430	6-18	30	1.25	2.4	12	2:1	8-15	180	HX2
ALM/180-3018	6-18	18	1.00	3.0	10	2:1	8-15	120	HX2
ALM/180-3030	6-18	30	1.50	3.0	15	2:1	12-15	220	HX4
ALM/180-3520	6-18	20	1.00	3.5	15	2:1	12-15	150	HX2
ALM/180-3530	6-18	30	1.50	3.5	15	2:1	12-15	220	HX4
ALM/180-3540	6-18	40	1.50	3.5	15	2:1	12-15	300	HX4
ALM/180-4515	6-18	15	1.25	4.5	20	2:1	12-15	200	HX2
ALM/180-4521	6-18	21	1.25	4.5	20	2:1	12-15	260	HX4
ALM/180-4532	6-18	32	1.50	4.5	20	2:1	12-15	350	HX4
ALM/180-4540	6-18	40	1.50	4.5	20	2:1	12-15	420	HX6
ALX/0220-4512	2-20	12	1.75	4.5	8	2.2:1	8-15	80	HX2
ALX/0220-4520	2-20	20	2.00	4.5	10	2.2:1	8-15	140	HX2
ALX/0220-4530	2-20	30	2.50	4.5	12	2.2:1	8-15	200	HX4
ALX/0220-6514	2-20	14	1.50	6.5	20	2.2:1	12-15	400	HX2
ALX/0220-6520	2-20	20	1.50	6.5	20	2.2:1	12-15	480	HX4

New Products

Ka-Band Low-Noise Amplifiers

17.0 GHz to 40.0 GHz

Satellite communications (SATCOM) has become commonplace worldwide in both commercial and government enterprises. Development of smaller and inexpensive terrestrial stations for two-way voice, video and data is now available where traditional telecommunications networks did not exist or were cost prohibitive.

Advances in very small aperture terminal (VSAT) technology has greatly improved the price-performance ratio of SATCOM service. This is especially true for newer systems at Ka-band frequencies.

The importance of SATCOM to homeland security has also increased significantly. The flow of immediate information to small military units operating in remote locations has driven advances in VSAT designs including fixed site, transportable and SATCOM-on-the-move (SOTM).

CTT's SSPAs offer superior performance when used in uplink applications whether the application is integrated into the block up-converter (BUC) or as an augmenter amplifier.

CTT's wideband LNAs also offer similar advantages in low-noise block (LNB) downconverter operation when combined with mixer, L.O., and I.F. amplifier

Contact CTT with your custom BUC or LNB requirements.

- ▶ **Low-Noise**
- ▶ **Compact GK Series Package**
- ▶ **Aluminum Package with Removable Connectors**
- ▶ **BUC and LNB Configurations**
- ▶ **Designed to Meet MIL-STD-883**
- ▶ **Custom Engineered Options (CEOs) (See page 36)**



Ka-Band Low-Noise Amplifiers

Ka-BAND [AL Series] Model Number	Frequency Response (GHz)	Gain	Gain Flatness (±dB)	Noise Figure (dB)	P1dB (+dBm)	VSWR In/Out	Volts (DC)	DC Current (mA)	CTT Case Outline
		Min	Max	Max	Min	Max	Typ	Typ	
ALW/210-2817	17-21	17	1.00	2.8	12	2:1	8-15	150	SP
ALW/210-2824	17-21	24	1.00	2.8	12	2:1	8-15	220	SP
ALW/210-2830	17-21	30	1.50	2.8	12	2:1	8-15	350	SP
ALW/265-3511	18-26.5	11	1.00	3.5	12	2:1	8-15	130	GK2
ALW/265-3517	18-26.5	17	1.25	3.5	12	2:1	8-15	180	GK4
ALW/265-3522	18-26.5	22	1.50	3.5	12	2:1	8-15	260	GK4
ALW/265-3530	18-26.5	30	2.00	3.5	12	2:1	8-15	350	GK6
APW/265-2017	18-26.5	17	2.50	4.5	20	2:1	12	400	GK4
APW/265-2024	18-26.5	24	2.50	4.5	20	2:1	12	450	GK6
APW/265-2030	18-26.5	30	2.50	4.5	20	2:1	12	540	GK6
ALW/270-2817	21-27	17	1.00	2.8	12	2:1	8-15	150	SP
ALW/270-2824	21-27	24	1.00	2.8	12	2:1	8-15	220	SP
ALW/270-2830	21-27	30	1.50	2.8	12	2:1	8-15	350	SP
ALN/300-3525	27-30	25	1.00	3.5	10	1.8	8-15	200	GK4
ALN/300-3530	27-30	30	1.00	3.5	10	1.8	8-15	270	GK5
ALN/350-3525	32-35	25	1.00	3.5	10	1.8	8-15	200	GK4
ALN/350-3530	32-35	30	1.00	3.5	10	1.8	8-15	220	GK5
ALN/360-3525	34-36	25	1.00	3.5	10	1.8	8-15	200	GK4
ALN/360-3530	34-36	30	1.00	3.5	10	1.8	8-15	270	GK5
ALN/380-3525	36-38	25	1.00	3.5	10	1.8	8-15	200	GK4
ALN/380-3530	36-38	30	1.00	3.5	10	1.8	8-15	270	GK5

New Products

Continued on Next Page

Ka-Band Low-Noise Amplifiers 17.0 GHz to 40.0 GHz (continued)

Ka-BAND [AL Series] Model Number	Frequency Response (GHz)	Gain	Gain Flatness	Noise	P1dB	VSWR	Volts	DC Current	CTT Case Outline
		(dB)	(±dB)	Figure (dB)	(+dBm)	In/Out	(DC)	(mA)	
	Min	Min	Max	Max	Min	Max	Typ	Typ	
ALO/400-5515	18-40	15	1.25	5.5	6	2.5:1	8-15	210	GK4
ALO/400-5520	18-40	20	2.00	5.5	6	2.5:1	8-15	280	GK4
ALO/400-5524	18-40	24	2.25	5.5	6	2.5:1	8-15	350	GK6
ALO/400-5528	18-40	28	2.50	5.5	6	2.5:1	8-15	420	GK6
ALO/400-6010	18-40	10	1.50	6.0	12	2.5:1	8-15	180	GK2
ALO/400-6017	18-40	17	1.50	6.0	12	2.5:1	8-15	280	GK4
ALO/400-6023	18-40	23	2.00	6.0	12	2.5:1	8-15	350	GK6
ALO/400-6029	18-40	29	2.50	6.0	12	2.5:1	8-15	410	GK6
ALO/400-6035	18-40	35	3.00	6.0	12	2.5:1	8-15	470	GK8
ALW/400-5017	26.5-40	17	1.50	5.0	12	2.5:1	8-15	280	GK4
ALW/400-5023	26.5-40	23	2.00	5.0	12	2.5:1	8-15	350	GK6
ALW/400-5029	26.5-40	29	2.50	5.0	12	2.5:1	8-15	410	GK6
ALW/400-5035	26.5-40	35	3.00	5.0	12	2.5:1	8-15	470	GK8
ALW/400-5515	26.5-40	15	1.25	5.5	6	2.5:1	8-15	210	GK4
ALW/400-5520	26.5-40	20	2.00	5.5	6	2.5:1	8-15	280	GK4
ALW/400-5524	26.5-40	24	2.25	5.5	6	2.5:1	8-15	350	GK6
ALW/400-5528	26.5-40	28	2.50	5.5	6	2.5:1	8-15	350	GK6
ALW/400-6010	26.5-40	10	1.50	6.0	12	2.5:1	8-15	180	GK2
ALW/400-6017	26.5-40	17	1.50	6.0	12	2.5:1	8-15	280	GK4
ALW/400-6023	26.5-40	23	2.00	6.0	12	2.5:1	8-15	350	GK6
ALW/400-6029	26.5-40	29	2.50	6.0	12	2.5:1	8-15	410	GK6
ALW/400-6035	26.5-40	35	3.00	6.0	12	2.5:1	8-15	470	GK8
ASW/400-1814	26.5-40	14	1.50	6.5	18*	2.5:1	12	400	GK4
ASW/400-1818	26.5-40	18	2.00	6.5	18*	2.5:1	12	450	GK4
ASW/400-1824	26.5-40	24	2.50	6.5	18*	2.5:1	12	600	GK6
ALN/400-3525	38-40	25	1.00	3.5	10	1.8	8-15	200	GK4
ALN/400-3530	38-40	30	1.00	3.5	10	1.8	8-15	270	GK5

New Products

* = Saturated power.

