
Coaxial GaAs FET Amplifiers

0.5 - 18.0 GHz

MLA 2500/2600 Series

V3.00

Features

- Radar & Communications Bands
- Low Noise Figures
- Wide Dynamic Ranges
- Temperature Compensation
- Miniature Outlines

Description

The MLA 2500-000 series of coaxial GaAs FET Amplifiers from M/A-COM are designed for specific narrowband applications from 0.5 to 18 GHz. Each frequency band includes a wide range of gain levels for both low noise and medium power amplifiers which are available with or without temperature compensation. All amplifiers are available in either a standard or optional miniature outline.

The designs are based on a balanced hybrid approach giving excellent gain flatness and VSWR as well as load independent stability. Construction of the amplifiers is by integration of the FET, MMIC or low noise HEMT devices into either a conventional alumina MIC or a glass MIC (GMIC) with the complete amplifier assembly then hermetically sealed by laser welding. GMIC is a proprietary pseudo-monolithic MIC fabrication technique established by M/A-COM using a thin glass substrate bonded directly to a high conductivity silicon carrier. All the passive components are then photolithographically defined with the discrete FET devices mounted in via holes. The compact, rugged construction of these amplifiers makes them suitable for the most severe environmental conditions encountered in military and hi-rel applications.

These amplifiers cover a wide variety of the most commonly used microwave frequency bands. Applications include airborne, naval and ground based radar receivers and transmitters, radar altimeters, military and commercial up and down links for satellite communications and terrestrial communications. Advances in solid state technology make these amplifiers suitable as direct replacements for TWTAs giving improved reliability at lower cost in such applications as airborne targets and transmitter drivers.

As well as the basic amplifiers described M/A-COM also manufactures devices with additional components integrated within the same housing. Available options include input limiters for passive high power protection, integral PIN attenuators for gain/sensitivity control, coupled outputs, filters, pulsed power supplies and waveguide inputs for LNAs. For details of these options and to discuss other custom requirements, please contact the factory for applications assistance.

Specifications Subject to Change Without Notice.

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Uncompensated Specifications (Guaranteed @ +25° C)

Frequency Range (GHz)	Output Power at 1dB Gain Comp (dBm) Min.	Gain (dB) Min.	Gain Flatness (dB) Max.	Gain Variation with Temp (dB/°C)	Noise Figure (dB) Max.	Input and Output VSWR Max.	DC Current at +15V (mA)	Package Styles	Part Number
7.9 - 8.4	+12	20	±0.40	0.024	1.5	1.8	160	A1	MLA2554-102
		30	±0.50	0.036	1.5	1.8	240	B1	MLA2554-103
		40	±0.50	0.050	1.5	1.8	320	B1	MLA2554-104
	+18	10	±0.30	0.012	4.0	1.6	100	A1,A2	MLA2554-201
		20	±0.40	0.024	4.0	1.6	180	A1,A2	MLA2554-202
		30	±0.50	0.036	4.0	1.6	260	B1,B2	MLA2554-203
	+21	40	±0.50	0.050	4.0	1.6	340	B1,B2	MLA2554-204
		10	±0.30	0.012	5.0	1.6	120	A1,A2	MLA2554-301
		20	±0.40	0.024	4.0	1.6	220	A1,A2	MLA2554-302
	+26	30	±0.50	0.036	4.0	1.6	300	B1,B2	MLA2554-303
		40	±0.50	0.050	4.0	1.6	380	B1,B2	MLA2554-304
		8	±0.30	0.012	6.0	1.8	280	A1,A2	MLA2554-401
	+29	18	±0.40	0.024	5.0	1.8	400	A1,A2	MLA2554-402
		28	±0.50	0.036	4.0	1.8	480	B1,B2	MLA2554-403
		38	±0.50	0.050	4.0	1.8	560	B1,B2	MLA2554-404
	+29	7	±0.50	0.012	8.0	1.8	400	A1,A2	MLA2554-501
		16	±0.75	0.024	6.0	1.8	600	A1,A2	MLA2554-502
		26	±1.00	0.036	5.0	1.8	700	B1,B2	MLA2554-503
		36	±1.00	0.050	4.0	1.8	800	B1,B2	MLA2554-504

Temperature Compensated Specifications (Guaranteed -55°C to +95°C)

Frequency Range (GHz)	Output Power at 1dB Gain Comp (dBm) Min.	Gain (dB) Min.	Gain Flatness (dB) Max.	Gain Variation with Temp (dB) Max.	Noise Figure (dB) Max.	Input and Output VSWR Max.	DC Current at +15V (mA)	Package Styles	Part Number
7.9 - 8.4	+12	26	±0.50	±1.00	2.5	1.8	240	B1	MLA2654-103
		35	±0.50	±1.50	2.5	1.8	320	B1	MLA2654-104
	+18	17	±0.40	±0.75	5.0	1.6	180	A1,A2	MLA2654-202
		26	±0.50	±1.00	5.0	1.6	260	B1,B2	MLA2654-203
		35	±0.50	±1.50	5.0	1.6	340	B1,B2	MLA2654-204
	+21	16	±0.40	±0.75	6.0	1.6	220	A1,A2	MLA2654-302
		25	±0.50	±1.00	5.0	1.6	300	B1,B2	MLA2654-303
		34	±0.50	±1.50	5.0	1.6	380	B1,B2	MLA2654-304
	+26	15	±0.40	±0.75	7.0	1.8	400	A1,A2	MLA2654-402
		24	±0.50	±1.00	6.0	1.8	480	B1,B2	MLA2654-403
		33	±0.50	±1.50	5.0	1.8	560	B1,B2	MLA2654-404
	+29	14	±0.75	±0.75	7.0	1.8	600	A1,A2	MLA2654-502
		22	±1.00	±1.00	6.0	1.8	700	B1,B2	MLA2654-503
		30	±1.00	±1.50	5.0	1.8	800	B1,B2	MLA2654-504

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Uncompensated Specifications (Guaranteed @ +25° C)

Frequency Range (GHz)	Output Power at 1dB Gain Comp (dBm) Min.	Gain (dB) Min.	Gain Flatness (dB) Max.	Gain Variation with Temp (dB/°C)	Noise Figure (dB) Max.	Input and Output VSWR Max.	DC Current at +15V (mA)	Package Styles	Part Number
8.5 - 9.5	+12	20	±0.40	0.024	1.5	1.8	160	A1	MLA2555-102
		30	±0.50	0.036	1.5	1.8	240	B1	MLA2555-103
		40	±0.50	0.050	1.5	1.8	320	B1	MLA2555-104
	+18	10	±0.30	0.012	4.0	1.6	100	A1,A2	MLA2555-201
		20	±0.40	0.024	4.0	1.6	180	A1,A2	MLA2555-202
		30	±0.50	0.036	4.0	1.6	260	B1,B2	MLA2555-203
	+21	40	±0.50	0.050	4.0	1.6	340	B1,B2	MLA2555-204
		10	±0.30	0.012	5.0	1.6	120	A1,A2	MLA2555-301
		20	±0.40	0.024	4.0	1.6	220	A1,A2	MLA2555-302
	+26	30	±0.50	0.036	4.0	1.6	300	B1,B2	MLA2555-303
		40	±0.50	0.050	4.0	1.6	380	B1,B2	MLA2555-304
		8	±0.30	0.012	6.0	1.8	280	A1,A2	MLA2555-401
	+28	18	±0.40	0.024	5.0	1.8	400	A1,A2	MLA2555-402
		28	±0.50	0.036	4.0	1.8	480	B1,B2	MLA2555-403
		38	±0.50	0.050	4.0	1.8	560	B1,B2	MLA2555-404
	+28	7	±0.50	0.012	8.0	1.8	400	A1,A2	MLA2555-501
		16	±0.75	0.024	7.0	1.8	600	A1,A2	MLA2555-502
		26	±1.00	0.036	6.0	1.8	700	B1,B2	MLA2555-503
		36	±1.00	0.050	5.0	1.8	800	B1,B2	MLA2555-504

Temperature Compensated Specifications (Guaranteed -55° C to +95° C)

Frequency Range (GHz)	Output Power at 1dB Gain Comp (dBm) Min.	Gain (dB) Min.	Gain Flatness (dB) Max.	Gain Variation with Temp (dB)	Noise Figure (dB) Max.	Input and Output VSWR Max.	DC Current at +15V (mA)	Package Styles	Part Number	
8.5 - 9.5	+12	26	±0.50	±1.00	2.5	1.8	240	B1	MLA2655-103	
		35	±0.50	±1.50	2.5	1.8	320	B1	MLA2655-104	
	+18	17	±0.40	±0.75	5.0	1.6	180	A1,A2	MLA2655-202	
		26	±0.50	±1.00	5.0	1.6	260	B1,B2	MLA2655-203	
	+21	35	±0.50	±1.50	5.0	1.6	340	B1,B2	MLA2655-204	
		16	±0.40	±0.75	6.0	1.6	220	A1,A2	MLA2655-302	
		25	±0.50	±1.00	5.0	1.6	300	B1,B2	MLA2655-303	
	+26	34	±0.50	±1.50	5.0	1.6	380	B1,B2	MLA2655-304	
		15	±0.40	±0.75	7.0	1.8	400	A1,A2	MLA2655-402	
		24	±0.50	±1.00	6.0	1.8	480	B1,B2	MLA2655-403	
	+28	33	±0.50	±1.50	5.0	1.8	560	B1,B2	MLA2655-404	
		14	±0.75	±0.75	8.0	1.8	600	A1,A2	MLA2655-502	
		24	±1.00	±1.00	7.0	1.8	700	B1,B2	MLA2655-503	
			30	±1.00	±1.50	6.0	1.8	800	B1,B2	MLA2655-504

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Uncompensated Specifications (Guaranteed @ +25° C)

Frequency Range (GHz)	Output Power at 1dB Gain Comp (dBm) Min.	Gain (dB) Min.	Gain Flatness (dB) Max.	Gain Variation with Temp (dB/°C)	Noise Figure (dB) Max.	Input and Output VSWR Max.	DC Current at +15V (mA)	Package Styles	Part Number
9.5 - 10.5	+12	20	±0.40	0.024	1.5	1.8	160	A1	MLA2556-102
		30	±0.50	0.036	1.5	1.8	240	B1	MLA2556-103
		40	±0.50	0.050	1.5	1.8	320	B1	MLA2556-104
	+18	10	±0.30	0.012	4.0	1.6	100	A1,A2	MLA2556-201
		20	±0.40	0.024	4.0	1.6	180	A1,A2	MLA2556-202
		30	±0.50	0.036	4.0	1.6	260	B1,B2	MLA2556-203
		40	±0.50	0.050	4.0	1.6	340	B1,B2	MLA2556-204
	+21	10	±0.30	0.012	5.0	1.6	120	A1,A2	MLA2556-301
		20	±0.40	0.024	4.0	1.6	220	A1,A2	MLA2556-302
		30	±0.50	0.036	4.0	1.6	300	B1,B2	MLA2556-303
		40	±0.50	0.050	4.0	1.6	380	B1,B2	MLA2556-304
	+26	9	±0.30	0.012	6.0	1.8	280	A1,A2	MLA2556-401
		18	±0.40	0.024	5.0	1.8	400	A1,A2	MLA2556-402
		28	±0.50	0.036	4.0	1.8	480	B1,B2	MLA2556-403
		38	±0.50	0.050	4.0	1.8	560	B1,B2	MLA2556-404

Temperature Compensated Specifications (Guaranteed -55°C to +95°C)

Frequency Range (GHz)	Output Power at 1dB Gain Comp (dBm) Min.	Gain (dB) Min.	Gain Flatness (dB) Max.	Gain Variation with Temp (dB) Max.	Noise Figure (dB) Max.	Input and Output VSWR Max.	DC Current at +15V (mA)	Package Styles	Part Number
9.5 - 10.5	+12	27	±0.50	±1.00	2.2	1.8	240	B1	MLA2656-103
		35	±0.50	±1.50	2.2	1.8	320	B1	MLA2656-104
	+18	17	±0.40	±0.75	5.0	1.6	180	B1,B2	MLA2656-202
		26	±0.50	±1.00	5.0	1.6	260	B1,B2	MLA2656-203
		35	±0.50	±1.50	5.0	1.6	340	B1,B2	MLA2656-204
	+21	16	±0.40	±0.75	6.0	1.6	220	B1,B2	MLA2656-302
		25	±0.50	±1.00	5.0	1.6	300	B1,B2	MLA2656-303
		34	±0.50	±1.50	5.0	1.6	380	B1,B2	MLA2656-304
	+26	15	±0.40	±0.75	7.0	1.8	400	B1,B2	MLA2656-402
		24	±0.50	±1.00	6.0	1.8	480	B1,B2	MLA2656-403
		33	±0.50	±1.50	5.0	1.8	560	B1,B2	MLA2656-404

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Notes

1. Other frequency bands are available, please contact the factory with your requirements.
2. Higher output powers for each frequency band are available in non-standard outlines, please contact the factory.
3. Maximum input power without damage +20dBm (CW), higher power handling is available with an optional input limiter, please contact the factory.
4. Third order intercept point is typically 10dB above P1dB.
5. All amplifiers have an integral voltage regulator giving reverse polarity and over voltage power supply protection.
6. Alternative +8V and +12V power supplies are available on selected amplifiers, please contact the factory.
7. All amplifiers are unconditionally stable for any input or output VSWR, any phase.
8. All amplifiers are supplied in the standard coaxial outline (A1, B1, C1) unless the optional miniature outline (A2, A3, B2, B3, C2) is specified.
9. Waveguide inputs are available on selected amplifiers, please contact the factory.
10. Case operating temperature -55°C to +95°C
Storage temperature range -55°C to +125°C.

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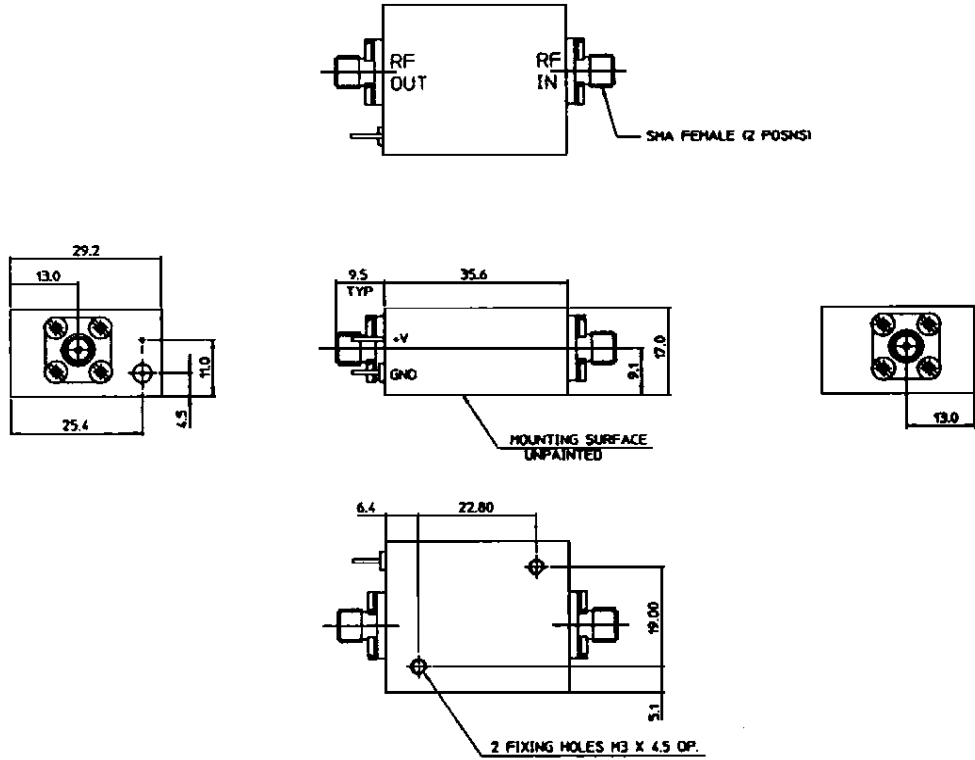
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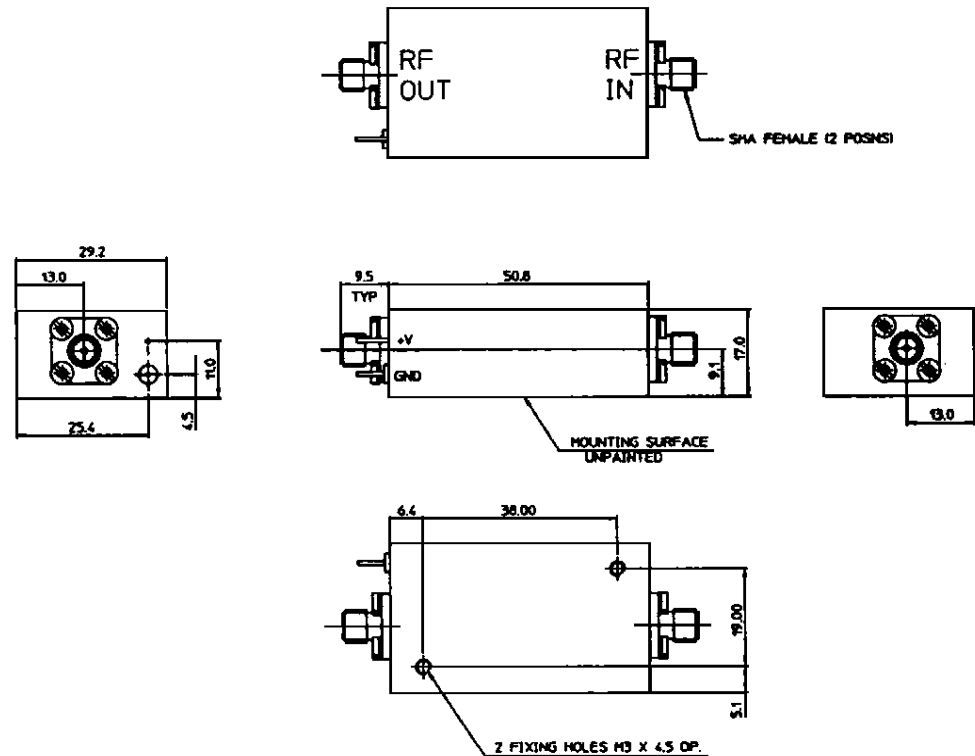
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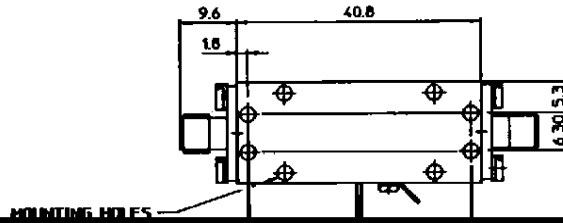
Package Style A1



Package Style B1



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