

RF POWER AMPLIFIERS



Good
Things
Come
In Small
Packages



1 MHz - 2 GHz
1 W - 1 kW

LCFED001

Rack Mount Amplifier Systems

General Specifications

Size:	19"x7"x18" (WxHxL): 47.5 cm x 17.5 cm x 45.0 cm
Weight:	35lbs maximum; 15.9 Kg
Cooling:	Forced air (self-contained fans)
AC Power:	120 VAC-60Hz/230 VAC-50Hz
RF Connectors:	Type N Female
Panel Display:	RF In, RF Out, Current Meter, Blanking, Thermal Shutdown, Power Light Over Current Warning, Fuses

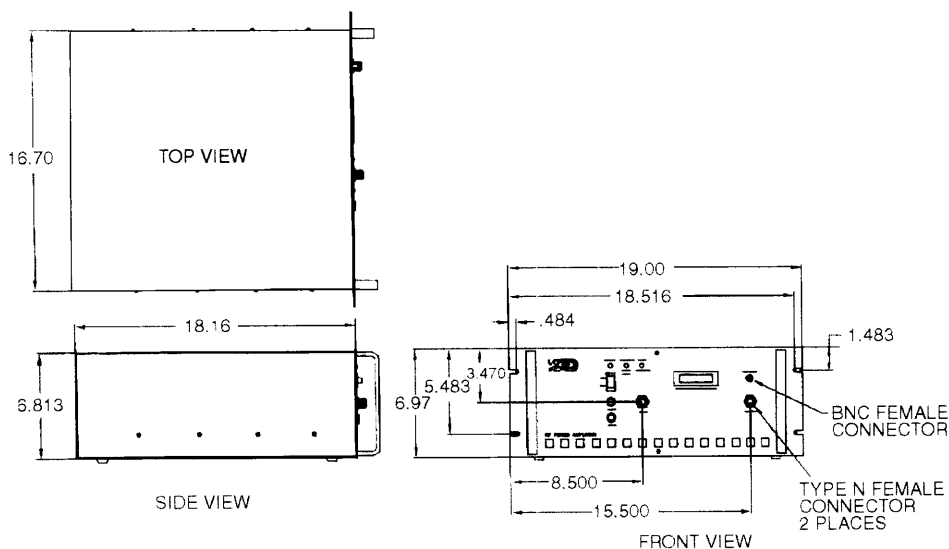
Rugged Protection System

The amplifier rack-mount system has multiple protection features which provide rugged, reliable operation under conditions of amplifier abuse, specifically:

- 1 The amplifier module has been designed to have intrinsic protection against bad loads. Also, the module is operated at 24 VDC instead of its rated 28 VDC for an **extra margin of safety** from voltage breakdown.
- 2 The amplifier system has **automated current limiting**. A current limiting condition may arise when operating into a high VWSR load. The system will not shut down under current limiting conditions and will continue to operate and automatically and transparently recover.
- 3 Electrical **fuse protection** is also provided to protect the amplifier module in the event the system is over driven by a fast pulse which exceeds the response time of the automatic current limiting.

Amplifier Mechanical Outline

Our solid-state amplifier systems are self-contained and fully protected. The system includes a power supply, amplifier module, cooling, additional protection features, front panel indicators and monitors. The system enclosure can stand alone on a bench top or be rack mounted.



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T/R Amplifier SubSystems

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LCF manufactures standard off the shelf amplifier subsystems that can be configured for the customer's application. The basic standard components or elements available for our systems are listed top right. One can select the components with the specific gain and connectors for their applications.

Components

- Power Amplifiers (PA)
- Preamplifier
- Controller Board (CB)
- Power Entry Board (PEB)
- Tx/Rx Switching
- EMI/EMC Filtering (EMC)
- DC to DC Converter

All have power connector
MS3470L14-5P.

Amplifier Module

- 1 Stage/8dB Gain
- 2 Stage/20dB Gain
- 3 Stage/35dB Gain

Connectors

- Type N
- Type TNC
- Type SMA

Technical Specifications

Customization
Available

T/R Amplifier Part No. S049

Components: PA, Preamp, CB, PEB, EMC, Switches Freq.: 225 - 400 MHz PWR: 50 Watt Gain: 8dB
Notes: 1. Current limit set at 6 Amp for AM application.

T/R Amplifier Part No. A032-ESS

Components: PA, CB, EMC, PEB, Switches Freq.: 225 - 400 MHz PWR: 100 Watt Gain: 6dB
Notes: 1. Current limit set at 6 Amp for AM application. 2. 3dB pad in front of power amplifier module. 3. Heat sink with fan included. 4. All connectors on one side of box.

Transmit Amplifier Part No. A052

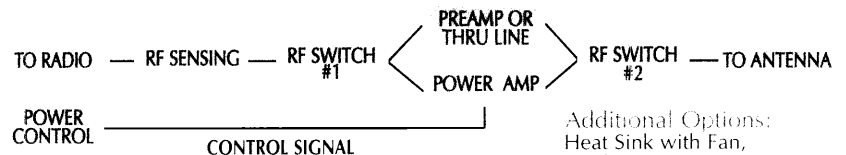
Components: PA (2-stage), CB, PEB, Delay Board Freq.: 375 - 430 MHz PWR: 100 Watt Gain: 20dB
Notes: 1. High speed switching design with external control logic for adjustable Time Delay. 2. Enable & Disable. 3. Current limit set at 9 Amps.

Dual Output/Dual Voltage Amplifier Part No. A056

Components: 2 PA's (2-stage), CB, PEB, DC/DC, Enable/Disable Freq.: 470 - 590 MHz PWR: 75 Watt
Notes: 1. Heat sink and fans included. 2. Quasi-Class C Operation.

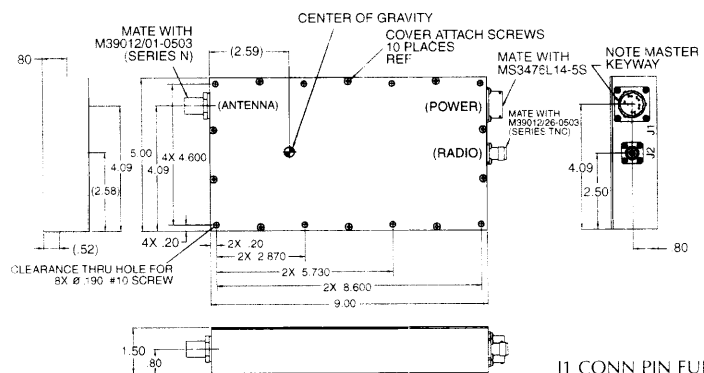
Controller Board

Features: • Thermal Shutdown • Current Limiting • Autoswitch



Additional Options:
Heat Sink with Fan,
Dual Power Output

T/R Amplifier Schematic

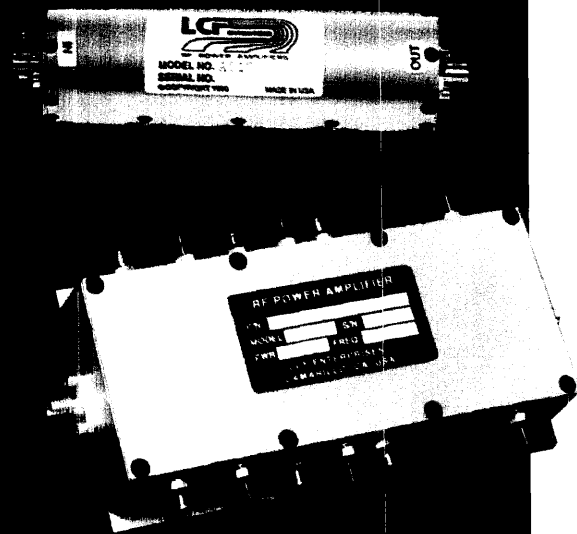


4. WEIGHT 6.0 lbs. MAX.
3. TOTAL HEAT DISSIPATION 120 WATTS.
2. THERMAL PAD: P/N 5300AC, THERMALLOY INC. 214 243-4321
1. TOLERANCES: .XX = ± .02 XXX = ± .010
NOTES: UNLESS OTHERWISE SPECIFIED

J1 CONN PIN FUNCTIONS

A	+ 28VDC RTN
B	+28VDC
C	PTT CONTROL
D	SPARE
E	CHASSIS GROUND

Small Ultra High Efficiency Amplifier Modules



Many applications require an amplifier module alone without an integrated power supply, because of size and weight constraints or for lower cost. LCF has developed a unique design which we call **"OPEN ARCHITECTURE MODULES"** to provide our customers with more flexibility to customize our module to their application.

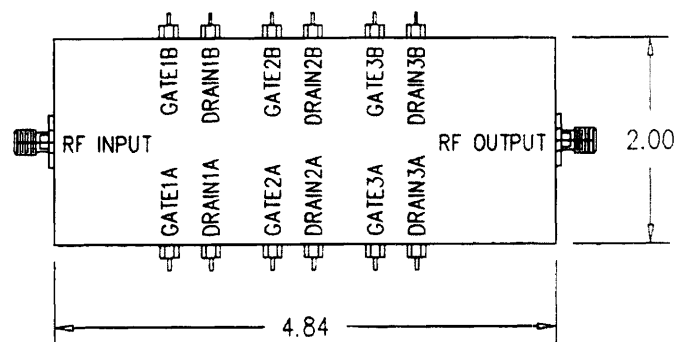
Important Advantages...

- 1 Separate bias control terminals at each MOSFET gate for good flexibility in gain control.
- 2 Separate power supply terminals for each MOSFET drain for effective amplifier protection.
- 3 A low loss output matching network for high efficiency and optimum stability.
- 4 Separate bias inputs and drain feed throughs permit either Class A or Class AB biasing. Turning off the bias disables the amplifier.

Applications...

- Broadband Communications
- Radar Systems
- Antenna & Component Testing
- RF Induction Heating
- Calibration
- Plasma/Ion Sources
- Mobile Radios
- Missile Applications
- MRI/NMR Imaging, Medical Research
- Laboratory Testing
- EMP Testing
- Transmitter Boosters
- Laser Exciters
- Atmospheric Research

Amplifier Module Schematic

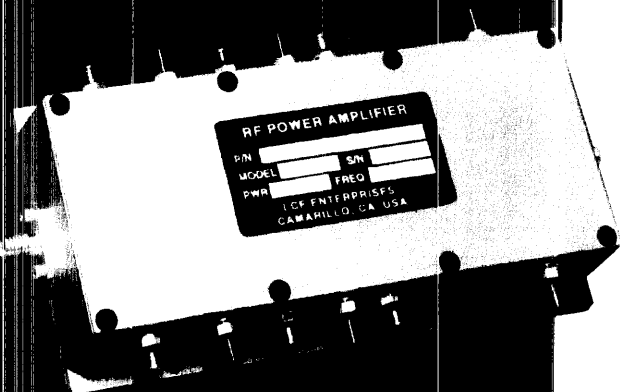


Output Power: 200Watts
Frequency Range: 150 - 250 MHz
Efficiency: 55% **Gain:** 35 dB

Available...

- Standard and Customized Modules
- Minor Customization At No cost
- Higher Powers Through Factory Power Combining
- Inside Wiring with only Input and Output SMA Connectors
- Detailed Application Notes

Module Package Drawings



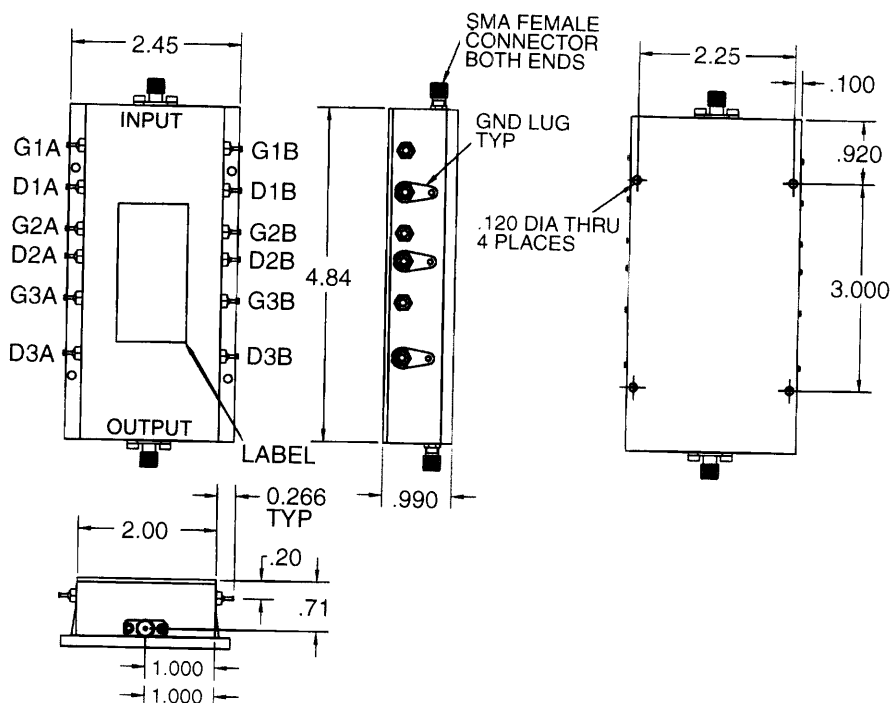
Good Things Come In Small Packages



Technical Information

- Typically Designed for 110G Shock.
- Junction to Baseplate Thermal Resistance Values Available from LCF Technical Support.

Module Package A3

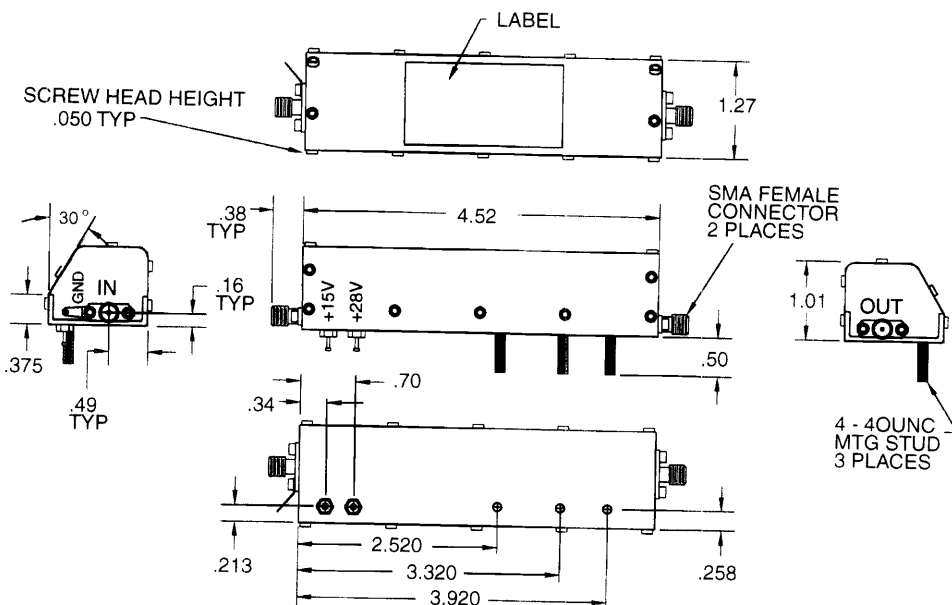


Module Package Specifications

Package Type	Dimensions (Inches)			*Weight
	L	W	Ht.	
A1	3.20	2.0	1.0	< 6oz.
A2	3.58	2.0	1.0	< 10oz.
A3	4.84	2.0	1.0	< 14oz.
B1	4.44	1.27	1.0	< 4oz.
E3	5.84	2.0	1.0	< 1lb.

* Excluding connectors, mounting feet and feedthroughs.

Module Package B3



RF Power Amplifiers

Standard and Custom

- Modules
- Modules on Test Fixtures *
- Rack-mount Systems **

Technical Specifications

	PART NUMBER	OUTPUT POWER WATTS	GAIN dB	DC SUPPLY VOLTS	MODULES PKG.
1 MHz	30-1-50-35	50	35	24/28	A3
30 MHz	30-1-100-35	100	35	28	A3
30 MHz	30-1-150-35	150	35	28	A3
30 MHz	100-30-50-35	50	35	24/28	E3
100 MHz	100-30-100-35	100	35	28	E3
100 MHz	100-30-150-35	150	35	28	E3
50 MHz	150-50-50-35	50	35	28	A3
150 MHz	150-50-100-35	100	35	28	A3
150 MHz	150-50-150-35	150	35	28	A3
100 MHz	200-150-50-35	50	35	28	E3
200 MHz	200-150-100-35	100	35	28	E3
200 MHz	200-100-160-35	160	35	28	E3
50 MHz	250-50-50-35	50	35	24	E3
250 MHz	250-50-100-10	100	10	28	A3
250 MHz	250-50-100-18	100	18	28	A3
250 MHz	250-50-100-35	100	35	28	E3
4 MHz	400-4-4-30	4	30	24/28	A3
400 MHz	400-225-10-35	10	35	24/28	A3
400 MHz	400-225-30-10	30	10	24/28	A1
400 MHz	400-225-30-18	30	18	24/28	A2
225 MHz	400-225-30-35	30	35	24/28	A3
400 MHz	400-225-50-10	50	10	24/28	A1
400 MHz	400-225-50-18	50	18	24/28	A2
400 MHz	400-225-50-35	50	35	24/28	A3
400 MHz	400-225-100-10	100	10	28	A1
400 MHz	400-225-100-18	100	18	28	A2
400 MHz	400-225-100-35	100	35	28	A3

	PART NUMBER	OUTPUT POWER WATTS	GAIN dB	DC SUPPLY VOLTS	MODULES PKG.
290 MHz	320-290-100-35	100	35	28	A3
320 MHz	320-290-30-35	30	35	28	A3/B3
600 MHz	600-225-20-10	20	10	24/28	A1
225 MHz	600-225-20-18	20	18	24/28	A2
600 MHz	600-225-20-35	20	35	24/28	A3
600 MHz	600-225-40-10	40	10	24/28	A1
600 MHz	600-225-40-18	40	18	24/28	A2
600 MHz	600-225-40-35	40	35	24/28	A3
400 MHz	600-400-30-10	30	10	24/28	A1
600 MHz	600-400-30-18	30	18	24/28	A2
600 MHz	600-400-30-35	30	35	24/28	A3
30 MHz	500-30-40-35	40	35	28	E3
500 MHz	500-100-5-30	5	30	24/28	A3
100 MHz	500-100-10-30	10	30	24/28	A3
500 MHz	500-100-50-30	50	30	24/28	A3
500 MHz	500-100-100-30	100	30	28	A3
500 MHz	1000-500-5-30	5	30	24	A3
1000 MHz	1000-500-10-8	10	8	24	A1
1000 MHz	1000-500-10-16	10	16	24	A2
1000 MHz	1000-500-10-25	10	25	28	A3
10 MHz	1200-10-5-30	5	30	24	A3
1200 MHz	1200-10-10-8	10	8	24	A1
1200 MHz	1200-10-10-16	10	16	24	A2
1200 MHz	1200-10-10-25	10	25	28	A3

**All part number's are available as a module or rack-mount system 120VAC-60 Hz /220VAC-50Hz).

*All modules can be mounted on a TEST FIXTURE which includes heat sink, fan, thermal shutdown and electrical fuse protection.



LCF ENTERPRISES

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