

## Model P30FM-17 FM Pallet Amplifier Module

This amplifier module is ideal for driver and final output stages in analog and digital FM broadcast equipment.

- **87.5 – 108MHz**
- **28 Volts**
- **Input/output 50 ohms**
- **Pout: 30W minimum**
- **17dB Gain (30W)**
- **Thermal Tracking Bias**
- **NXP BLF245 Mosfet**

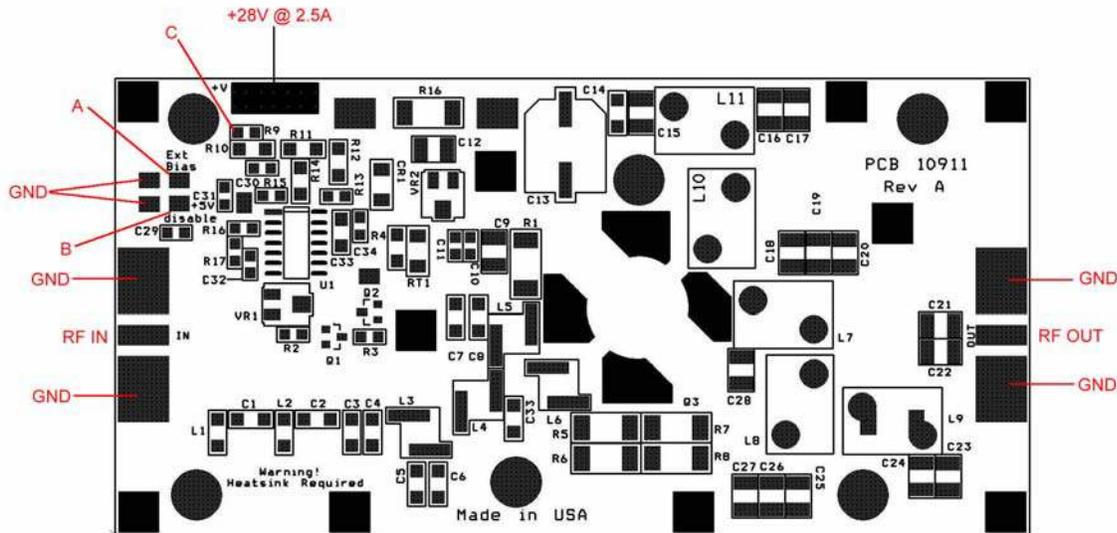


Dimension (L x W x H inch) [4.5" x 2.25" x 0.75"]

Absolute Maximum Ratings (T case = 25C)			
Symbol	Parameter	Value	Unit
Vs	Drain voltage supply	28	V DC
Is	Supply Current	2.5	A dc
VSWR	Load Mismatch (All phase angles, Id=2.5A, TC=+60C)	3 to 1	
Tstg	Storage temperature range	-40 to +85C	Celsius
Tc	Base plate operating temperature	-40 to +60C	Celsius
RF IN	RF Input	0.95	Watts
RF OUT	RF Output	35	Watts

Electrical Specifications (T case = 25C, 50 ohm loaded, VS=28V bias=500ma)				
Characteristics	min	typ	max	unit
Operating Frequency range	87.5		108	MHz
Fundamental output power	30			W
Power Input		0.70	0.85	W
Input VSWR		1.3	1.5	VSWR
Power Gain (30W output)	16	17		dB
Collector Efficiency	50	55		%
Collector Current (30W output)		2.0		A dc
Insertion Phase variation (unit to unit)		+/-3.5		degrees
Power gain (unit to unit)		+/-1.0		dB
F2 Second Harmonic	-25	-30		dB
Base Plate Temperature	-40		+60	Celsius
Transistor Bias Current: Adjustment is not required		500		ma dc
Frequency Response (S21)		+/- 0.2	+/-0.35	dB

Amplifier Drawing



**Electrical Connections:**

The pallet has a bias disable feature which provides partial shutdown of the amplifier. Introducing a TTL high (+3-5V on pad “B”) will disable the bias. If complete amplifier shutdown is desired then +28V main supply should be disconnected or the RF input should be switched off.

Pad “A” is for powering the bias circuits from an external 12 to 32V source. This is called external bias mode. R9 “Note C” must be removed for external bias operation. Any connection to pads A or B should be made with a low impedance shielded coax.

Adjustable pot VR2 is the bias control pot. Adjustment is required only if the BLF245 needs to be replaced. VR1 sets the thermal compensation slope and this pot should never be adjusted.

Ground connection should be made on the heat-sink as close to the pallet as possible. It is not necessary to connect a ground wire directly to the pallet.

**Heatsink Mounting/Hardware**

**Tips for Mechanical Mounting:**

- 1 All 6 holes are clear for #6 Screw; see DXF drawing on main product page. Stainless Steel mounting hardware is recommended, grade 18-8 or better. A lock washer of same material should also be used.
- 2 Ensure mounting surface is flat to better than 0.003” / “
- 3 Use a thin layer of thermal compound on the backside of the PA - no more than 0.001” - 0.002” thickness!
- 4 Torque all screws to 10-12 in-lbs

Warning: Failure to use a proper heat sink will cause the transistors to burn out. This type of failure is not covered by warranty. This product can be ordered with a custom heat sink. Please contact factory for more information.

### Theory of Operation:

The NXP BLF245 is a modern low power VDMOS transistor available for broadcast applications. The transistor is rated for 30W operation on 28V supply. This pallet uses an LM723 voltage regulator to maintain constant bias voltage. The pallet can be operated from 2 to 28V and bias adjustment is not required. In situations where precision RF power output control is desired the supply voltage should be adjusted by a linear voltage regulator while maintaining a constant RF input level.

This amplifier has been optimized to reduce the 2<sup>nd</sup> harmonic. The frequency response of the input and output matching circuits and the Class AB bias point have been tuned to deliver the cleanest output. The main reason we do not have a 4:1 broadband transformer on the output is the 2<sup>nd</sup> harmonic.

The bias setting is 500ma @ 28V. Adjustment is not required.

### Low Pass Filter

A low pass filter should be used on the output of this amplifier to prevent harmonics from entering high power final amplifier stages or an antenna.

### Warning: Solid state amplifiers can be easily destroyed! Pay attention to these precautions.

- Do not over drive the amplifier. Exceeding 35 watts can destroy the transistor.
- Do not run the amplifier into an open circuit. Do not run the amplifier when the SWR is unknown. System integrator must foresee adding VSWR protection if there is a risk that the amplifier will be subjected to high VSWR conditions.
- Do not allow the amplifier to overheat. Do not let the base plate temp exceed 60C.
- Don't attach anything to the bias disable pad if you don't plan to use this control line.