

## Model: PATV1-25-1000 TV Pallet Amplifier Module

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

- **55-88MHz**
- **50Volts**
- **Input/output 50 ohms**
- **25dB Gain typical**
- **Thermal Tracking Bias**
- **NXP BLF188XR Mosfet**
- **1000W analog/350W Digital**

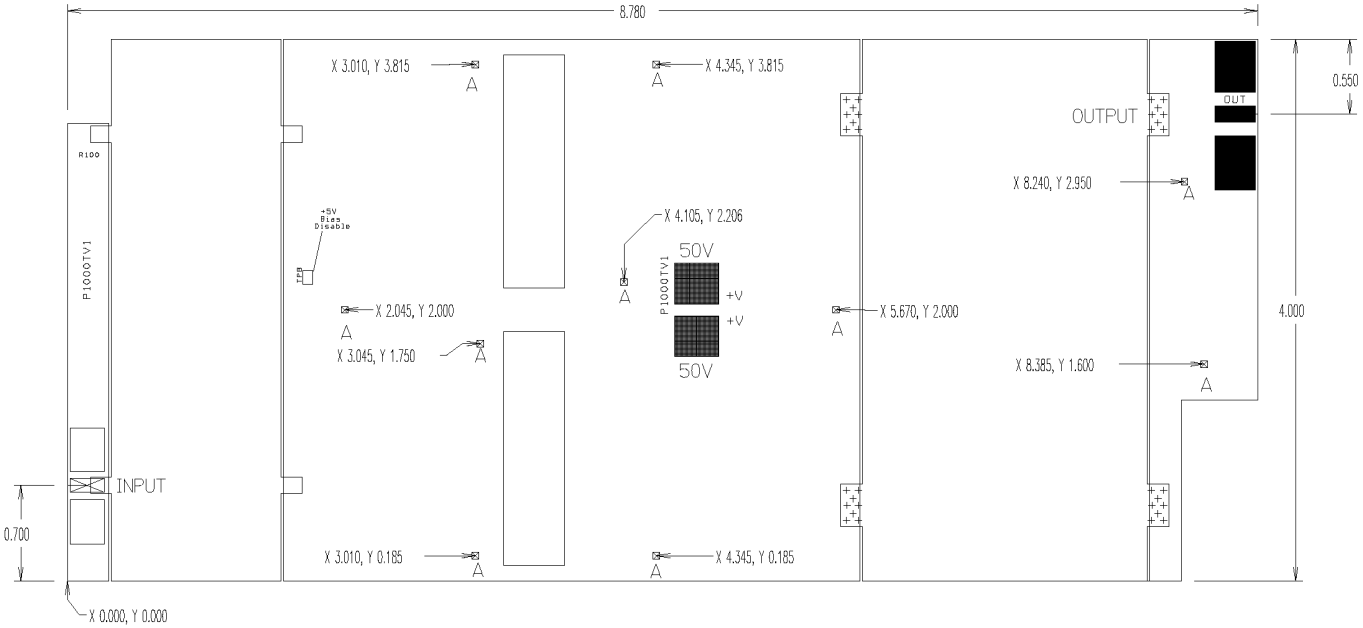


Dimension (L x W x H inch) [8.8" x 4.00" x 1.5"]

Absolute Maximum Ratings (T case = 25C)			
Symbol	Parameter	Value	Unit
Vs	Drain voltage supply	52	V DC
Is	Supply Current	30	A dc
VSWR	Load Mismatch (All phase angles, Id=48A, TC=+55C)	5 to 1	
Tstg	Storage temperature range	-40 to +85C	Celsius
Tc	Base plate operating temperature	-40 to +70C	Celsius

Electrical Specifications (T case = 25C, 50 ohm loaded, VS=50V bias=3.6A)				
Characteristics	min	typ	max	unit
Operating Frequency range	55		88	MHz
Fundamental output power P1dB	n/a	n/a	n/a	W
Power Input	n/a	2.0	3.0	W
Input Return Loss		-23	-20	dB
Power Gain @ maximum power	24	25		dB
Average DC amps at max digital out	-	18	20	A dc
Average DC amps at max analog out	-	22	-	A dc
Insertion Phase variation (unit to unit)		+/-3.5		degrees
ATSC Digital Power with pre-correction	325	350	-	W
Analog TV Peak Sync	900	1000	-	W
Power gain (unit to unit)		+/-0.75		dB
F2 Second Harmonic		-35dB		dB
F3 Third Harmonic		-18dB		dB
Transistor Bias Current: Factory set to 2.7A @50V per fet. Adjustment is not required.		2.7	3.5	Adc

Amplifier Drawing



**Download DXF:** <http://broadcastconcepts.com//80watt/band1/P1000L51.DXF>

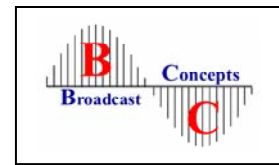
## Heatsink Mounting/Hardware

### Tips for Mechanical Mounting:

- 1 All holes are clear for #6 Screw. 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
- 5 Please use all of the mounting holes.

Use of cooling air on top of pallet to keep output transformers cool is required. Output transformers are rated for continuous operation at 150C. Keep any external circuitry away from input and output transformers to avoid any interference - give at least 0.75 inch clearance to avoid creating feedback paths.

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 BLF188XR is a modern high power LDMOS transistor designed for broadcast and industrial applications. Since TV broadcasting requires linear amplification the devices are optimized to run well below their CW ratings. This amplifier supports all digital and analog modulation types. We do not specify “P1dB” in our television product line as this spec is not helpful in a linear TV amplifier.

The Data sheet specifies ATSC digital output power at 350W maximum. This is the maximum power at -47dBc shoulders with pre-correction. In DVB or ATSC 3.0, the output will be 25 to 30% lower. The pallet can operate at up to 275W minimum in ATSC 1.0 without pre-correction.

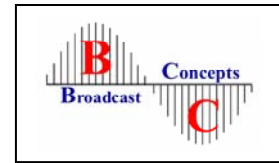
Making good linear power at low frequency (less than 100MHz) is extremely difficult with both LDMOS devices. We get less linear power in Band I compared to Band III with the same transistors. This product required a lot of research and a special hybrid combiner to obtain the maximum performance. Band I TV is less popular than Band III; therefore, Band I amplifiers are more expensive due to higher research and development costs and lower volume sales.

### Electrical notes:

- There are 2 +50V connection points on the amplifier (see drawing page 2). These 2 points are isolated from each other; however, if only 1 power supply is being used both Pads may be shorted together. We recommend direct soldering 2 x #14AWG wires for +50V supply. Ground should be connected directly to the heatsink on which the pallet is installed.
- Suggested power supplies are Meanwell RSP2000 or RSP1500.
- Bias Disable TP8 will disable bias to both mosfets if more than 2.2V is applied to this point. If nothing is connected to this PAD then bias is enabled. (Normal working condition is not-used/no connection)
- A low pass filter in addition to a band pass filter may be necessary to help filter the harmonics. The amount of filtering required depends on regulatory authority in the location where the amplifier is being used.

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

- Do not over drive the amplifier. Exceeding maximum ratings 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 70C.
- Do not adjust the bias settings without a DC ammeter attached and current limited DC supply.
- Do not use an improper heat-sink or install without 6-32 or M3 machine screws. This product can produce 600W of heat in a worst case operating condition. Most aluminum extrusions can not safely dissipate this much heat; therefore, we suggest bonded fin heat-sinks for this product.



### Typical small signal frequency response (S21/S11)

