

Revision 1.e Release Date July 10 2007

Revision Notes

Technical Specifications Summary

Frequency Range:	88 - 108 MHz	Gain:	18 dB
P1dB:	Watts CW	Efficiency:	68%
Class:	C	Temperature Range:	0 to 60°C
Supply Voltage:	50.0V	Max VSWR:	3:1

Amplifier General Description

The **P350-FM-18** is an integrated amplifier building block which requires only power, input and output connections. This highly cost effective amplifier has been designed for FM radio transmitter integrators and gives a great deal of flexibility. This module has been in production for over 9 years, with hundreds of satisfied repeat customers!

- **No RF assembly or Circuit Tuning!**
- **350 Watts Ouput Power!**
- **18dB Typical Gain at 108MHz!**
- **Amp Disable!**
- **Priced below \$1 USD / Watt!**

Amplifier Picture

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Parameter	Min	Typ	Max	Units	Notes
Frequency	88		108	MHz	
P1dB		350		W, CW	
Psat		400		W, CW	
Power Input		5.5		W, CW	
Gain	17	18		dB	
Vsupply	44		52	V, DC	
Drain Current		10	11	A, DC	
Input VSWR		1.5:1	1.7:1		
Insertion Phase Variation		±5		°	Unit to unit
Gain Variation		±1		dB	Unit to unit
F2 Second Harmonic		-25		dBc	
F3 Third Harmonic		-15		dBc	
Baseplate Operating Temperature	0		+60	°C	

Physical Dimensions

All specifications valid for 50 Ω output load, $V_{sup} = +50VDC$, $I_{dq} = .1A$

Absolute Maximum Ratings

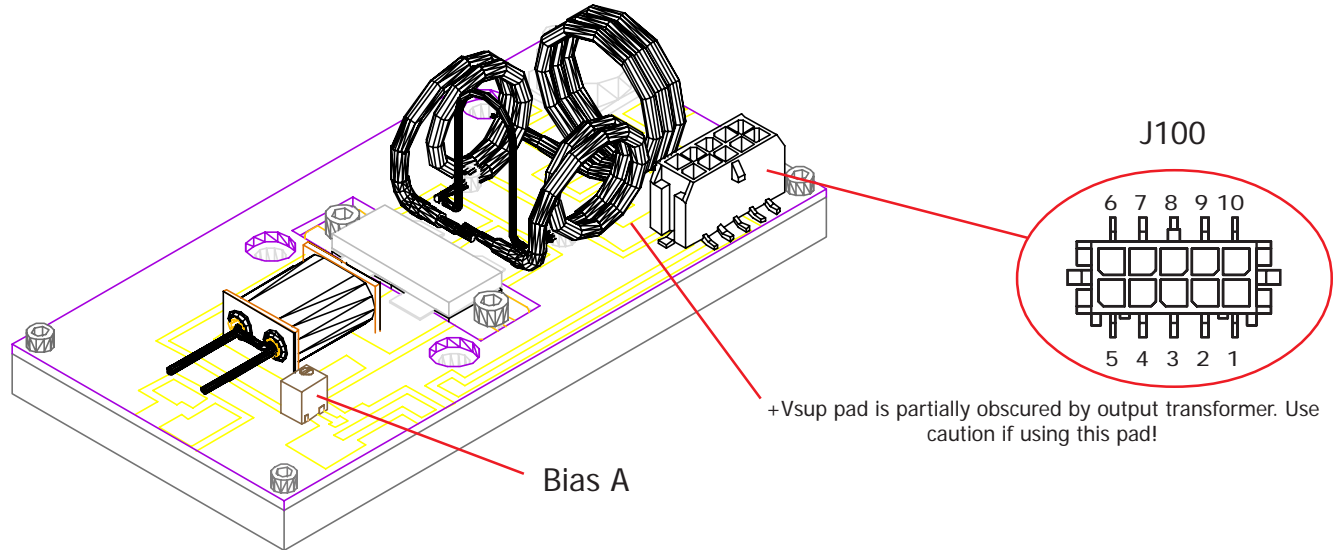
Parameter	Value	Units	Notes
Maximum Operating Voltage	+55.0	VDC	
Stable Operating Voltage	44-52	VDC	
Maximum Bias Current	1.0	A	
Maximum Drain Current	13	A	
Load Mismatch Survival	5:1		
Storage Temperature	-40 to +105	°C	
Maximum Operating Baseplate Temp	+65	°C	

Features, Auxillary Functions

- ◆ Temperature Compensated Bias
- ◆ Temperature Controller - Analog Temperature Output
- ◆ High Temperature Alarm with Selectable Automatic PA Disable
- ◆ High Temperature Alarm Output
- ◆ Amplifier Disable
- ◆ Current Sense, Each Transistor
- ◆ Connectorized Power and I/O
- ◆ Flexible RF Locations



Electrical Connections:



Connections:

Connect amplifier to +Vsup and Ground using either 3.0mm modular 10-position plug (J100) or soldering directly to pads adjacent to connector. If using Single connection, 12 gauge wire is recommended, 12 gauge ground wire. 20 gauge wire is recommended for use in modular connector, and all power connections must be used! In all cases, use of teflon insulated wire is highly recommended. Connect coaxial cable to input and output RF connections (semi rigid or flexible) using best RF practices. Ensure output cable is of sufficient power handling rating. Pads are provided for ground on co-axial connections.

Power			
3.0mm Micro Connector: MOLEX 43025-1000 MOLEX Pin 43030-0001, 43030-0007 AMP 1-794617-0	J100-1,2,8,9,10	GROUND	System Ground
AMP Pin 794610, 794606 -or- Solder directly to pad adjacent to connector	J100-3,4,5,6,7	Vsup	+46.0 TO +55.0 V DC

Amplifier Startup

+Vsup should be applied to amplifier with no drive and the amplifier disabled. The system must allow drain voltage to reach +26V minimum before enabling bias and applying drive or damage will result to the amplifier and void the warranty. This typically takes between 2 - 10 seconds and should be verified by the system integrator.

Bias Current:

Bias has been pre-set at the factory to 0.1A at +50.0V DC. This bias point has been selected to offer the optimum balance between gain and efficiency. This unit is intended for class C operation. If the bias point is changed, take great care not to exceed the maximum bias listed on page 1.

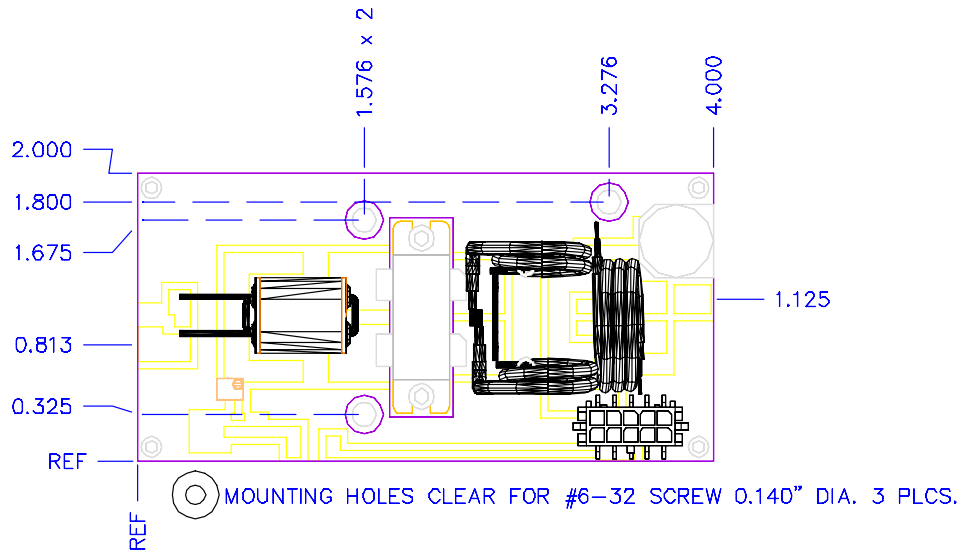
Amplifier Shutdown

To prevent damage to amplifier and surrounding systems, bias and drive should be removed prior to powering down PA. This can be accomplished by applying Ground to DISABLE. Power can safely be removed from PA. Please note that as with any class C amplifier, even when disable is applied, the output of the amplifier can still be active. This should be driven with an open collector circuit so a high impedance is presented to the bias point when the amplifier is enabled. Placing any voltage at this point can alter the bias setting.

Miscellaneous:

Placing noisy analog or digital systems, such as additional control circuitry, directly over the top of transistors or RF path can cause improper operation. Care should be taken to locate these components where they will not cause interference.





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

Use of cooling air on top of pallet to keep output transformers cool is recommended, but not required. Output transformers are rated for continuous operation at 150C.



Ordering Information:

Order Code	Description	DRFT Reference
P350-FM-18	Pallet Amplifier 350 W FM	1744

Options

-A11	SMA Female Connectors In / Out	0201
-A12	Heat Sink Option	0202
-A13	Heat Sink Option with DC Fan, pre wired	0203
-A14	Ruggedized for vibration	0204
-A15	Wire harness, 1' length, 10 wires for pallet amplifier only (NON-FM)	0205
-A16	Wire harness, customer specified length for pallet amplifier only	0206
-T2	Extended Burn In	0271
-T3	Extended Data Collection	0272

Standard Pallet Options:

SMA Female Connectors, Input and Output. Stainless Body, Gold Center pin, 4-hole SMA bolted to pallet amplifier edge through bottom two holes located at amplifiers RF IN and RF OUT locations. All stainless steel hardware.

Enclosure- all aluminum machined enclosure available for most pallet amplifiers. Alodined aluminum, alloy 6061-T6. SMA Female input and output RF connectors. Supply voltage and ground through solder / feedthrough connections. Module must be bolted to appropriate heatsink.

Heat Sink - aluminum extruded heat sink, black anodized. Pallet amplifier or module will be bolted to heatsink. Customer will be required to provide adequate airflow.

Heat sink with fan - aluminum extruded heat sink as above, with included fan bolted to push air through the heat sink. Depending on heat requirements, a second fan may also be provided on the output of the unit.

Ruggedized - all screws have threadlocking compound applied, and all flying components are staked and attached to base. Designed to withstand MIL-STD-810E 514.4 Category 8.

Power Connector - a 10 pin molex connector is used on all standard pallet amplifiers to supply +Vsup and Ground connections, as well as hi-side current shunts for current monitoring. Delta RF offers the mating connector with 1' wires - Red (Vsup), Black (Ground), Yellow (Current monitor). All wires are 18 gauge teflon insulated wires. Customer may optionally specify wire length and wire color.

Testing Options:

Standard - includes power test and brief burn - in under laboratory conditions. Printed test report gives graph of Gain and Input Return Loss at rated P1dB and Voltage Conditions. Report shows pass/fail criteria. All amplifiers include this test.

Extended burn in - 8-hour burn in at P1dB with standard test run at completion. Unit is monitored during test and any discrepancy reported. Standard test data is included.

Extended data collection - Standard data is run and included. Detailed data is taken point by point giving the customer 25 - 70 frequency points, depending on the amplifier model. For each frequency point, data is generated to include gain, input power, input return loss, current, second harmonic, third harmonic, efficiency, audio distortion.

Other tests available - Vibration, Temp cycling, Shock. Please inquire.

The specifications contained herein are subject to change without notice. Delta RF Technology, Inc. assumes no liability for the use of this information.

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