

# Cellular Band Power Amplifier

## High Output Power



**Model PHPA750-100**  
**100W Output Power**

## General Description

The PHPA750-100 has been designed for signal amplifying in a cellular band, covering 729-746 MHz. The unit is controlled by a microprocessor for maximum protection against damage.

The development of the PHPA750-100 is based on LDMOS power transistors for maximum performance and reliability. Due to its robust design and its utilization of the most advanced components, the PHPA750-100 provides high efficiency and reliability.

The PHPA750-100's small dimensions make it suitable for various different applications.

## System Feature

- Design for High Output Power
- LDMOS Based
- Broadband – 729-746 MHz
- Plug & Play

## Circuit Protections

- Thermal Overload
- Over Current
- Over Voltage

## Circuit Control

- Standby (amplifier disable)
- VSWR protection Reset

## Technical Specifications

### Electrical Characteristics

Parameter	Description	Additional Info
Frequency Range	729-746 MHz	
Gain	50±1dB	@0 dBm Input
Gain Flatness Open Loop	±1dB (Typ.)	Over Freq. Range
Gain Variation Open Loop	±1dB (Typ.)	Over Temp. Range
Gain Flatness Close Loop	±0.5dB (Typ.)	Over Freq., VSWR & Temp.
Output Power P1dB	+50dBm (Min.)	3.5:1
Output Power Stat	+51dBm (Min.)	
Input / Output VSWR	≤1.2 (Max.)	
Noise Figure	14dB (Max.)	
Harmonics	Better than -40dBc	@50dBm Output
Spurious	Better than -70dBc	
HPA Enable/Disable	TTL "5V" → Disable TTL "0V or Open" → Enable	
Output IP3	+63 dBm (Min.)	Two Tones measured at +44 dBm per Tone; 1 MHz Spacing
IMD	Better than -34dBc	Two Tones measured at +44 dBm per Tone; 1 MHz Spacing
Broadband Noise	-85dBm/MHz	During TX OFF
ACLR 6 dB Back off +/-10MHz, 1 carrier test	Better than -40dBc	Single - Carrier LTE, 3GPP E- Test Model 1.1, 50RB 10MHz, Input Signal PAR = 9.6 dB @ 0.01% Probability on CCDF
ACLR	Better than -52dBc	Single - Carrier LTE, 3GPP E-

<b>6 dB Back off +/-20MHz, 1 carrier test</b>		Test Model 1.1, 50RB 10MHz, Input Signal PAR = 9.6 dB @ 0.01% Probability on CCDF
<b>Efficiency</b>	Better than 35%	
<b>Indicators</b>		
<b>Forward Coupling</b>	30dB $\pm$ 0.5 dB Over Entire Freq. Range	$\geq$ 30 dB Directivity
<b>Reverse Coupling</b>	30dB $\pm$ 0.5 dB Over Entire Freq. Range	$\geq$ 20 dB Directivity
<b>Current Sensor</b>	VT+100mV/Amp	Pin 2 on DB-9
<b>Temp. Sensor</b>	VT $\pm$ 10mV/ $^{\circ}$ C	Pin 1 on DB-9
<b>DC Input Voltage/Current</b>	+28VDC/10A (Max.)	DC Input Voltage / Current @ 50dBm
<b>Protections</b>		
<b>Thermal Shutdown</b>	+85 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C	Auto Recover at +70 $^{\circ}$ C +/-5 $^{\circ}$ C
<b>VSWR Protection</b>	Isolator Included	$\geq$ 20 dB Isolation
<b>Reverse Power Handling</b>	150 Watts (Max.)	
<b>Input / Output Impedance</b>	50 $\Omega$	
<b>Max. Input Power without Damage</b>	+15 dBm	

## Mechanical Characteristics

Parameter	Description	Additional Info
Monitoring Connector	DB9 Male	4 – 40 Screw
RF IN/OUT Connector	SMA(F) / N-Type(F)	
Forward Coupling Connector	SMA(F)	
Reverse Coupling Connector	SMA(F)	
DC Input	Pin 4,5,6 on DB9	
Dimensions	178 x 127 x 35mm	
Maximum Weight	1225 g (approx.)	
Screws Type	Philips	
Paint Except for Base Plate Surface (Chemical Conversion Coating on Base Plate)	Epoxy Gray F63A33	Mil-DTL-24441D

## Environmental Characteristics

Parameter	Description	Additional Info
Operating Temperature	-20°C to +80°C	Base Plate
Storage Temperature	-40°C to +85°C	
Cooling	External Heatsink	
Humidity (non-condensing)	5-95% (Max.)	Designed for IAW MIL-STD-810F Non-condensing
Operating Altitude	10,000 Feet (Min.)	
Vibration and Shock	Vibration 6.06 gRMS	Designed for IAW MIL-STD-202F Method 214
Salt Fog	5%, 35°C, 96 hours	Designed for IAW MIL-STD-810F
Fungus		Designed for IAW MIL-STD-810F Method 508.5

## DB9 Pin Description

Pin No.	Parameter	Description
1	Temperature Sensor	VT±10 mV/°C
2	Current Sensor	100 mV/Amp
3	Enable/Disable	Disable: TTL High Enable: TTL Low or Open
4,5,6	+28 VDC	
7,8,9	Ground	

Ver. 1.00.11.15

\* Specifications are subject to change without prior notice