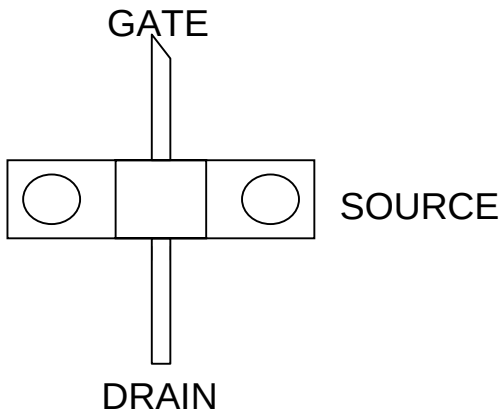
# Filtronic LP6872P100

Solid State

**Packaged 0.5W Power PHEMT**

## FEATURES

- +27 dBm Typical Power at 15 GHz
- 11 dB Typical Power Gain at 15 GHz
- Low Intermodulation Distortion
- 50% Power-Added-Efficiency
- Color-coded by $I_{DSS}$ range




## DESCRIPTION AND APPLICATIONS

The LP6872P100 is a packaged Aluminum Gallium Arsenide / Indium Gallium Arsenide (AlGaAs/InGaAs) Pseudomorphic High Electron Mobility Transistor (PHEMT), utilizing an Electron-Beam direct-write 0.25 µm by 720 µm Schottky barrier gate. The recessed "mushroom" gate structure minimizes parasitic gate-source and gate resistances. The epitaxial structure and processing have been optimized for reliable high-power applications. The LP6872 also features $Si_3N_4$ passivation and is available in die form.

Typical applications include commercial and military high-performance power amplifiers, including SATCOM uplink transmitters, and medium-haul digital radio transmitters. Space level screening to FSS JANS grade is also available.

The LP6872-P100 may be procured in a variety of grades, depending upon specific user requirements. Standard lot screening is patterned after MIL-STD-19500, JANC grade.

## PERFORMANCE SPECIFICATIONS ($T_A$ = 25°C)

| SYMBOLS | PARAMETERS | | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|
| $I_{DSS}$ | Saturated Drain-Source Current<br>$V_{DS}$ = 2V $V_{GS}$ = 0V | LP6872-P100-1 BLUE<br>LP6872-P100-2 GREEN<br>LP6872-P100-3 RED | 180<br>207<br>234 | 195<br>220<br>245 | 206<br>233<br>260 | mA |
| $P_{1dB}$ | Output Power at 1dB Gain Compression<br>$V_{DS}$ = 8.0V, $I_{DS}$ = 50% $I_{DSS}$ | *f* = 15 GHz | 25.5 | 27.0 | | dBm |
| $G_{1dB}$ | Power Gain at 1dB Gain Compression<br>$V_{DS}$ = 8.0V, $I_{DS}$ = 50% $I_{DSS}$ | *f* = 15 GHz | 8.0 | 9.5 | | dB |
| $\eta_{ADD}$ | Power-Added Efficiency | | | 50 | | % |
| $I_{MAX}$ | Maximum Drain-Source Current | $V_{DS}$ = 2V $V_{GS}$ = +1V | | 385 | | mA |
| $G_M$ | Transconductance | $V_{DS}$ = 2V $V_{GS}$ = 0V | 170 | 220 | | mS |
| $V_P$ | Pinch-Off Voltage | $V_{DS}$ = 2V $I_{DS}$ = 4mA | -0.25 | -1.2 | -2.0 | V |
| $I_{GSO}$ | Gate-Source Leakage Current | $V_{GS}$ = -5V | | 10 | 50 | µA |
| $BV_{GS}$ | Gate-Source Breakdown Voltage | $I_{GS}$ = 4mA | -12 | -15 | | V |
| $BV_{GD}$ | Gate-Drain Breakdown Voltage | $I_{GD}$ = 4mA | -12 | -16 | | V |

Get Package Model

**DSS-033 WF**

**Phone:** (408) 988-1845 **Internet:** http://www.filtronicsolidstate.com **Fax:** (408) 970-9950

# Filtronic LP6872P100

Solid State

**Packaged 0.5W Power PHEMT**

| ABSOLUTE MAXIMUM RATINGS (25°C) | | |
|---|---|---|
| **SYMBOL** | **PARAMETER** | **RATING[1]** |
| $V_{DS}$ | Drain-Source Voltage | 12V |
| $V_{GS}$ | Gate-Source Voltage | -4V |
| $I_{DS}$ | Drain-Source Current | 2 x $I_{DSS}$ |
| $I_G$ | Gate Current | 30 mA |
| $P_{IN}$ | RF Input Power | 300 mW |
| $T_{CH}$ | Channel Temperature | 175°C |
| $T_{STG}$ | Storage Temperature | -65/175°C |
| $P_T$ | Power Dissipation | 1.7W[3,4] |

| RECOMMENDED CONTINUOUS OPERATING LIMITS | | |
|---|---|---|
| **SYMBOL** | **PARAMETER** | **RATING[2]** |
| $V_{DS}$ | Drain-Source Voltage | 8V |
| $V_{GS}$ | Gate-Source Voltage | -1V |
| $I_{DS}$ | Drain-Source Current | 0.8 x $I_{DSS}$ |
| $I_G$ | Gate Current | 8 mA |
| $P_{IN}$ | RF Input Power | 150 mW |
| $T_{CH}$ | Channel Temperature | 150°C |
| $T_{STG}$ | Storage Temperature | -20/50°C |
| $P_T$ | Power Dissipation | 1.4 W[3,4] |
| $G_{XdB}$ | Gain Compression | 8 dB |

**NOTES:**

1. Operating conditions that exceed the Absolute Maximum Ratings could result in permanent damage to the device.
2. Recommended Continuous Operating Limits should be observed for reliable device operation.
3. Power Dissipation defined as: $P_T \equiv (P_{DC} + P_{IN}) - P_{OUT}$, where: $P_{DC}$ = DC bias power, $P_{OUT}$ = RF output power, and $P_{IN}$ = RF input power.
4. Power Dissipation to be de-rated as follows above 25°C:
   Absolute Maximum: $P_T = 1.7W - (11mW/°C) \times T_{HS}$
   Recommended Continuous Operating: $P_T = 1.4W - (11mW/°C) \times T_{HS}$
   where $T_{HS}$ = heatsink or ambient temperature.
5. Specifications subject to change without notice.

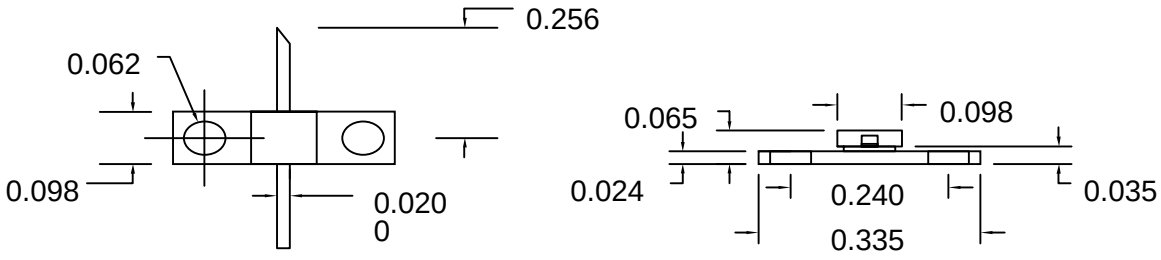
**HANDLING PRECAUTIONS:**

Care should be exercised during handling to avoid damage to the devices. Proper Electrostatic Discharge (ESD) precautions should be observed at all stages of storage, handling, assembly, and testing. These devices should be treated as Class 1A (0-500V), and further information on ESD control measures can be found in MIL-STD-1686 and MIL-HDBK-263.

**APPLICATIONS NOTES AND DESIGN DATA:**

Applications Notes are available from your local FSS Sales Representative, or directly from the factory. Complete design data, including S-parameters, Noise data, and Large-Signal models, is available on 3.5" diskette, or may be down-loaded from our Web Page.

**PACKAGE OUTLINE**: (DIMENSIONS IN INCHES)




Get Package Model

**DSS-033 WF**

**Phone:** (408) 988-1845 **Internet:** http://www.filtronicsolidstate.com **Fax:** (408) 970-9950