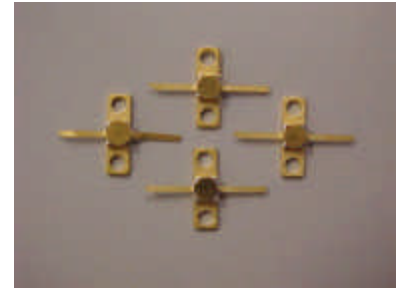


• FEATURES

- ◆ 41 dBm IP₃ at 12 GHz
- ◆ 27.5 dBm P-1dB at 12 GHz
- ◆ 10.5 dB Power Gain at 12 GHz
- ◆ 2.5 dB Noise Figure at 12 GHz
- ◆ 60% Power-Added-Efficiency



• DESCRIPTION AND APPLICATIONS

The LP750P100 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 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/low-noise applications. The LP750 also features Si₃N₄ passivation and is available in die form or in surface-mount packages.

The LP750P100 is designed for medium-power, linear amplification. This device is suitable for applications in commercial and military environments, and it is appropriate to be used as a medium power transistor in SATCOM uplink transmitters, medium-haul digital radio transmitters, PCS high efficiency amplifiers, and WLL systems.

• ELECTRICAL SPECIFICATIONS @ T_{Ambient} = 22 ± 3 °C

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
|---|-------------------|--|------|------|-------|-------|
| Output Power @ 1 dB Compression | P _{1dB} | f = 12GHz; V _{DS} = 8V; I _{DS} = 50% I _{DSS} | 26.0 | 27.5 | | dBm |
| Power Gain @ 1 dB Compression | G _{1dB} | f = 12GHz; V _{DS} = 8V; I _{DS} = 50% I _{DSS} | 9.0 | 10.5 | | dB |
| Maximum Available Gain | MAG | f = 12GHz; V _{DS} = 8V; I _{DS} = 50% I _{DSS} | | 14.0 | | dB |
| Noise Figure | NF | f = 12GHz; V _{DS} = 5V; I _{DS} = 33% I _{DSS} | | 2.5 | | dB |
| Power-Added Efficiency | η | f = 12GHz; V _{DS} = 5V; I _{DS} = 50% I _{DSS} ; P _{OUT} = 25dBm | | 60 | | % |
| Output Intercept Point | IP ₃ | f = 12GHz; V _{DS} = 8V; I _{DS} = 50% I _{DSS} ; P _{OUT} = 10dBm | | 41 | | dBm |
| Saturated Drain-Source Current | I _{DSS} | V _{DS} = 2V; V _{GS} = 0V | 180 | | 265 | mA |
| Transconductance | G _M | V _{DS} = 2V; V _{GS} = 0V | 230 | 280 | | mS |
| Pinch-Off Voltage | V _P | V _{DS} = 2V; I _{DS} = 4mA | -2.0 | -1.2 | -0.25 | V |
| Gate-Drain Breakdown Voltage Magnitude | V _{BDGD} | I _{GD} = 4mA | 12 | 15 | | V |
| Gate-Source Breakdown Voltage Magnitude | V _{BDGS} | I _{GS} = 4mA | 12 | 16 | | V |
| Gate-Source Leakage Current Magnitude | I _{GSL} | V _{GS} = -5V | | 5 | 45 | μA |

- RECOMMENDED CONTINUOUS OPERATING LIMITS

| Parameter | Symbol | Nominal | Units |
|-------------------------------|-----------|---------------|-------|
| Drain-Source Voltage | V_{DS} | 8 | V |
| Gate-Source Voltage | V_{GS} | -1.2 | V |
| Drain-Source Current | I_{DS} | $0.8 I_{DSS}$ | mA |
| RF Input Power | P_{IN} | 150 | mW |
| Channel Operating Temperature | T_{CH} | 150 | °C |
| Ambient Temperature | T_{STG} | -20/50 | °C |

Notes: Device should be operated at or below Recommended Continuous Operating Limits for reliable performance.

- ABSOLUTE RATINGS

| Parameter | Symbol | Test Conditions | Min | Max | Units |
|-------------------------------|-----------|---|-----|-----------------|-------|
| Drain-Source Voltage | V_{DS} | $T_{Ambient} = 22 \pm 3 \text{ }^{\circ}\text{C}$ | | 12 | V |
| Gate-Source Voltage | V_{GS} | $T_{Ambient} = 22 \pm 3 \text{ }^{\circ}\text{C}$ | | -4 | V |
| Drain-Source Current | I_{DS} | $T_{Ambient} = 22 \pm 3 \text{ }^{\circ}\text{C}$ | | $200\% I_{DSS}$ | mA |
| Gate Current | I_G | $T_{Ambient} = 22 \pm 3 \text{ }^{\circ}\text{C}$ | | 35 | mA |
| RF Input Power | P_{IN} | $T_{Ambient} = 22 \pm 3 \text{ }^{\circ}\text{C}$ | | 250 | mW |
| Channel Operating Temperature | T_{CH} | $T_{Ambient} = 22 \pm 3 \text{ }^{\circ}\text{C}$ | | 175 | °C |
| Storage Temperature | T_{STG} | — | -65 | 175 | °C |

Notes: Even temporary operating conditions that exceed the Absolute Maximum Ratings could result in permanent damage to the device.

- APPLICATIONS NOTES & DESIGN DATA

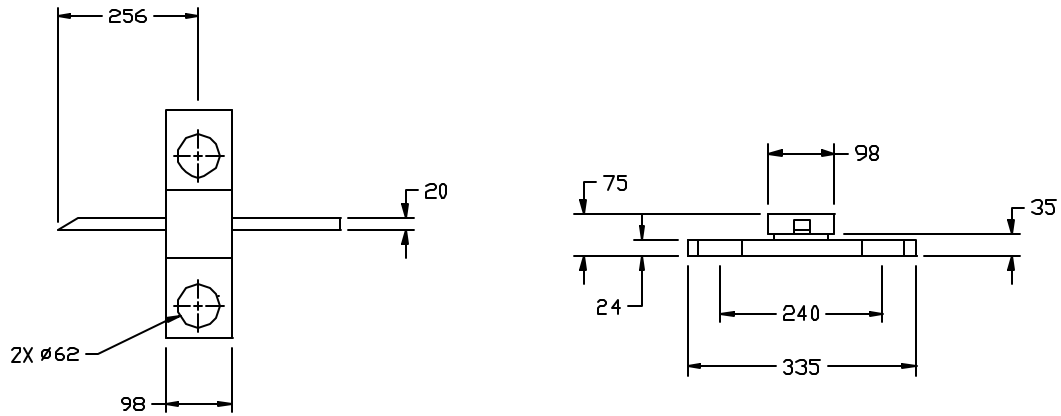
Applications Notes are available from your local Filtronic Sales Representative or directly from the factory. Complete design data, including S-parameters, noise data, and large-signal models are available on the Filtronic web site.

- HANDLING PRECAUTIONS

To avoid damage to the devices care should be exercised during handling. 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 (0-500 V). Further information on ESD control measures can be found in MIL-STD-1686 and MIL-HDBK-263.

- PACKAGE OUTLINE

dimensions in mils, tolerance = ± 2 mils



All information and specifications are subject to change without notice.

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