

FEATURES

- 33 dBm Output Power at 1-dB Compression at 15 GHz
- 8 dB Power Gain at 15 GHz
- 60% Power-Added Efficiency



DESCRIPTION AND APPLICATIONS

The LP3000P100 is a packaged Aluminum Gallium Arsenide / Indium Gallium Arsenide (AlGaAs/InGaAs) pseudomorphic High Electron Mobility Transistor (pHEMT). It utilizes a 0.25 μ m x 3000 μ m Schottky barrier gate, defined by electron-beam photolithography. The recessed "mushroom" gate structure minimizes parasitic gate-source and gate resistance. The epitaxial structure and processing have been optimized for reliable high-power applications. The LP3000 also features Si3N4 passivation and is available in die form or in other packages.

The LP3000P100 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.

Parameter	Symbol	Test Conditions	Min	Тур	Max	Units
Saturated Drain-Source Current	I _{DSS}	$V_{DS} = 2 V; V_{GS} = 0 V$	800	975	1100	mA
Power at 1-dB Compression	P-1dB	$V_{DS} = 8 V; I_{DS} = 50\% I_{DSS}$	31.5	33		dBm
Power Gain at 1-dB Compression	G-1dB	$V_{DS} = 8 \text{ V}; \text{ I}_{DS} = 50\% \text{ I}_{DSS}$	7	8		dB
Power-Added Efficiency	PAE	$V_{DS} = 8 \ V; \ I_{DS} = 50\% \ I_{DSS}; \\ P_{IN} = 17 \ dBm$		45		%
Maximum Drain-Source Current	I _{MAX}	$V_{DS} = 2 V; V_{GS} = 1 V$		1700		mA
Transconductance	G _M	$V_{DS} = 2 \text{ V}; V_{GS} = 0 \text{ V}$	700	900		mS
Gate-Source Leakage Current	I _{GSO}	$V_{GS} = -5 V$		15	130	μA
Pinch-Off Voltage	VP	$V_{DS} = 2 \text{ V}; \text{ I}_{DS} = 5 \text{ mA}$	-0.25	-1.2	-2.0	V
Gate-Source Breakdown Voltage Magnitude	V _{BDGS}	$I_{GS} = 8 \text{ mA}$	-12	-15		V
Gate-Drain Breakdown Voltage Magnitude	V _{BDGD}	$I_{GD} = 8 \text{ mA}$	-12	-16		V

• ELECTRICAL SPECIFICATIONS @ T_{Ambient} = 25°C

frequency=15 GHz



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Test Conditions	Min	Max	Units
Drain-Source Voltage	V _{DS}	$T_{Ambient} = 22 \pm 3 \ ^{\circ}C$		12	V
Gate-Source Voltage	V _{GS}	$T_{Ambient} = 22 \pm 3 \ ^{\circ}C$		-4	V
Drain-Source Current	I _{DS}	$T_{Ambient} = 22 \pm 3 \ ^{\circ}C$		2xI _{DSS}	mA
Gate Current	I _G	$T_{Ambient} = 22 \pm 3 \ ^{\circ}C$		30	mA
RF Input Power	P _{IN}	$T_{Ambient} = 22 \pm 3 \ ^{\circ}C$		700	mW
Channel Operating Temperature	T _{CH}	$T_{Ambient} = 22 \pm 3 \ ^{\circ}C$		175	°C
Storage Temperature	T _{STG}	_	-65	175	°C
Total Power Dissipation	P _{TOT}	$T_{Ambient} = 22 \pm 3 \ ^{\circ}C$		3.0	W

Notes:

- Operating conditions that exceed the Absolute Maximum Ratings could result in permanent damage to the device.
- Power Dissipation defined as: $P_{TOT} \equiv (P_{DC} + P_{IN}) P_{OUT}$, where
 - P_{DC}: DC Bias Power P_{IN}: RF Input Power

P_{OUT}: RF Output Power

Absolute Maximum Power Dissipation to be de-rated as follows above 25°C:

 $P_{TOT} = 3.0W - (0.020W/^{\circ}C) \times T_{HS}$

where T_{HS} = heatsink or ambient temperature.

• This PHEMT is susceptible to damage from Electrostatic Discharge. Proper precautions should be used when handling these devices.

• HANDLING PRECAUTIONS

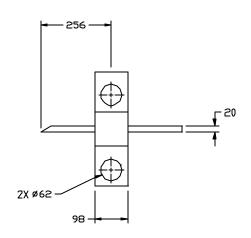
To avoid damage to the devices care should be exercised during handling. Proper Electrostatic Discharge (ESD) precautions should be observed at all stages of storage, handling, assembly, and testing. These devices should be treated as Class 1A (0-500 V). Further information on ESD control measures can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

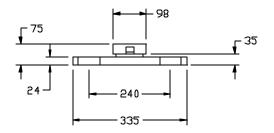
APPLICATIONS NOTES & DESIGN DATA

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.



• PACKAGE OUTLINE (dimensions in mils)





All information and specifications are subject to change without notice.