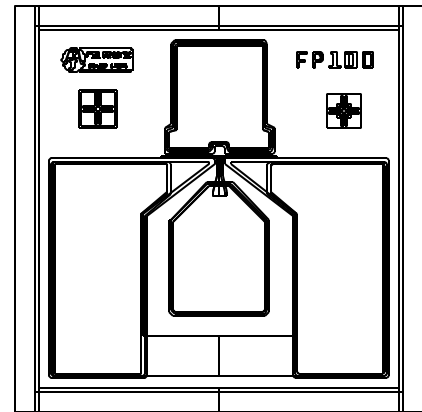


- FEATURES

- ◆ 14 dBm P-1dB at 12 GHz
- ◆ 9 dB Power Gain at 12 GHz
- ◆ 3.0 dB Noise Figure at 12 GHz



DIE SIZE: 16.5 x 16.5 mils (420 x 420 μm)
 DIE THICKNESS: 3.9 mils (100 μm typ.)
 BONDING PADS: 3.3 x 3.5 mils (85 x 90 μm typ.)

- DESCRIPTION AND APPLICATIONS

The FP100 is an Aluminum Gallium Arsenide / Indium Gallium Arsenide (AlGaAs/InGaAs) Pseudomorphic High Electron Mobility Transistor (PHEMT), utilizing an Electron-Beam direct-write 0.25 μm by 100 μm Schottky barrier gate. The recessed “mushroom” gate structure minimizes parasitic gate-source and gate resistances. The FP100 features Si₃N₄ passivation.

Typical applications include general purpose, low noise and broadband amplifiers in the 2-20 GHz range. The device is well-suited for telecommunication applications.

- ELECTRICAL SPECIFICATIONS @ T_{Ambient} = 22 \pm 3 °C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Output Power @ 1 dB Compression	P _{1dB}	f = 12 GHz; V _{DS} = 5V; I _{DS} = 50% I _{DSS}	13	14		dBm
Power Gain @ 1 dB Compression	G _{1dB}	f = 12 GHz; V _{DS} = 5V; I _{DS} = 50% I _{DSS}	8	9		dB
Maximum Available Gain	MAG	f = 12 GHz; V _{DS} = 5V; I _{DS} = 50% I _{DSS}	14.5	15.5		dB
Noise Figure	NF	f = 12 GHz; V _{DS} = 5V; I _{DS} = 50% I _{DSS}		3.0		dB
Power-Added Efficiency	η	f = 12 GHz; V _{DS} = 5V; I _{DS} = 50% I _{DSS} ; P _{OUT} = 15.5 dBm	20	25		%
Saturated Drain-Source Current	I _{DSS}	V _{DS} = 2 V; V _{GS} = 0 V	15		30	mA
Transconductance	G _M	V _{DS} = 2 V; V _{GS} = 0 V	15	20		mS
Pinch-Off Voltage	V _P	V _{DS} = 2 V; I _{DS} = 1 mA	-0.50		-2.5	V
Gate-Drain Breakdown Voltage Magnitude	V _{BGD}	I _{GS} = 1 mA	8	10.5		V
Gate-Source Breakdown Voltage Magnitude	V _{BDS}	I _{GS} = 1 mA	7	10		V
Gate-Source Leakage Current Magnitude	I _{GSL}	V _{GS} = -5 V		4	10	μA

- RECOMMENDED CONTINUOUS OPERATING LIMITS

Parameter	Symbol	Nominal	Units
Drain-Source Voltage	V_{DS}	5	V
Gate-Source Voltage	V_{GS}	-0.8	V
Drain-Source Current	I_{DS}	$0.5 I_{DSS}$	mA
RF Input Power	P_{IN}	30	mW
Channel Operating Temperature	T_{CH}	150	°C
Ambient Temperature	T_{STG}	-20/50	°C

Note: 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}	$T_{Ambient} = 22 \pm 3 \text{ }^\circ\text{C}$		7	V
Gate-Source Voltage	V_{GS}	$T_{Ambient} = 22 \pm 3 \text{ }^\circ\text{C}$		-3	V
Drain-Source Current	I_{DS}	$T_{Ambient} = 22 \pm 3 \text{ }^\circ\text{C}$		I_{DSS}	mA
Gate Current	I_G	$T_{Ambient} = 22 \pm 3 \text{ }^\circ\text{C}$		2.5	mA
RF Input Power	P_{IN}	$T_{Ambient} = 22 \pm 3 \text{ }^\circ\text{C}$		60	mW
Channel Operating Temperature	T_{CH}	$T_{Ambient} = 22 \pm 3 \text{ }^\circ\text{C}$		175	°C
Storage Temperature	T_{STG}	—	-65	175	°C

Note: 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.

All information and specifications are subject to change without notice.



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