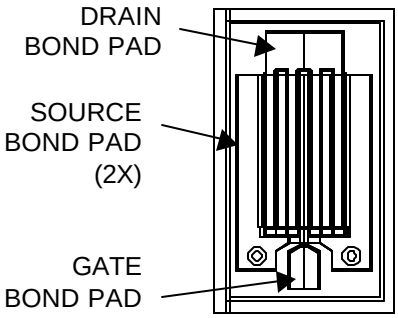
- **FEATURES**

  - ♦ 48 dBm IP3 at 2 GHz
  - ♦ 34 dBm P-1dB at 2 GHz
  - ♦ 14 dB Power Gain at 2 GHz



- **DESCRIPTION AND APPLICATIONS**

The FP4050 is an Aluminum Gallium Arsenide / Indium Gallium Arsenide (AlGaAs/InGaAs) Pseudomorphic High Electron Mobility Transistor (PHEMT), utilizing an Electron-Beam direct-write 0.50 um by 400 um Schottky barrier gate. The recessed "mushroom" gate structure minimizes parasitic gate-source and gate resistances. The FP4050 features Si3N4 passivation.

Typical applications include commercial and military high-performance power amplifiers, including SATCOM uplink transmitters, PCS/Cellular low-voltage high-efficiency output amplifiers, and medium-haul digital radio transmitters. This device is also suitable as a power stage for WLAN and ISM band spread spectrum applications.

- **ELECTRICAL SPECIFICATIONS @ $T_{Ambient}$ = 22 ±3 °C**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Output Power @ 1dB Compression	P_{1dB}	f = 2 GHz; V_{DS} = 8V; I_{DS} = 50% I_{DSS}		34		dBm
Power Gain @ 1dB Compression	G_{1dB}	f = 2 GHz; V_{DS} = 8V; I_{DS} = 50% I_{DSS}		14		dB
Saturated Drain-Source Current	I_{DSS}	V_{DS} = 2V; V_{GS} = 0V	950	1100	1300	mA
Maximum Drain-Source Current	I_{MAX}	V_{DS} = 2V; V_{GS} = 1V		2200		mA
Transconductance	G_M	V_{DS} = 2 V; V_{GS} = 0 V		880		mS
Pinch-Off Voltage	V_P	V_{DS} = 2 V; I_{DS} = 10 mA		-1.2		V
Gate-Drain Breakdown Voltage Magnitude	$\|V_{BDGD}\|$	I_{GS} = 20 mA	12	15		V
Gate-Source Breakdown Voltage Magnitude	$\|V_{BDGS}\|$	I_{GS} = 20 mA	12	15		V
Gate-Source Leakage Current Magnitude	$\|I_{GSL}\|$	V_{GS} = -5 V			0.2	mA
Thermal Resistivity	Θ_{JC}			15		°C/W

• RECOMMENDED CONTINUOUS OPERATING LIMITS

Parameter	Symbol	Nominal	Units
Drain-Source Voltage	V_{DS}	8	V
Gate-Source Voltage	V_{GS}	-1.0	V
Drain-Source Current	I_{DS}	500	mA
RF Input Power	P_{IN}	800	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}	$T_{Ambient} = 22 \pm 3$ °C		10	V
Gate-Source Voltage	V_{GS}	$T_{Ambient} = 22 \pm 3$ °C		-5	V
Drain-Source Current	I_{DS}	$T_{Ambient} = 22 \pm 3$ °C		800	mA
Gate Current	I_G	$T_{Ambient} = 22 \pm 3$ °C		180	mA
RF Input Power	P_{IN}	$T_{Ambient} = 22 \pm 3$ °C		TBD	mW
Channel Operating Temperature	T_{CH}	$T_{Ambient} = 22 \pm 3$ °C		175	ºC
Storage Temperature	T_{STG}	—	-65	175	ºC

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

• 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.