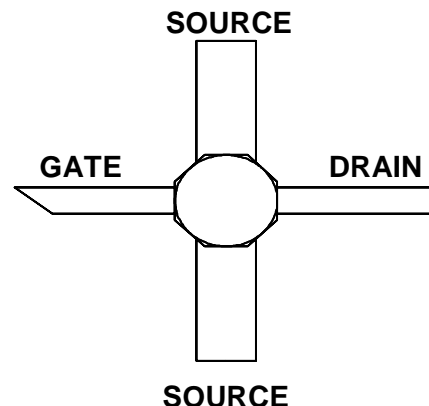


FEATURES

- 0.7 dB Typical Noise Figure at 12 GHz
- 12 dB Typical Associated Gain at 12 GHz
- 0.6 / 14 dB Typical NF/G_A at 2 GHz
- Low DC Power Consumption
- Color-Coded by I_{DSS} range


DESCRIPTION AND APPLICATIONS

The LPS200-P70 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 200 μm Schottky barrier gate. The recessed "mushroom" Ti/Pt/Au gate structure minimizes parasitic gate-source and gate resistances. The epitaxial structure and processing have been optimized for high dynamic range. The LPS200's active areas are passivated with Si₃N₄, and the P70 ceramic package is ideal for low-cost, high-performance applications that require a surface-mount package. Packages are color-coded by I_{DSS} range.

Typical applications include low noise receiver preamplifiers for commercial applications including Cellular/PCS systems, broad bandwidth commercial instrumentation, and commercial Space applications.

The LPS200 wafer 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 V _{DS} = 2V V _{GS} = 0V	15 31	25 40	30 50	mA mA
NF _{MIN}	Minimum Noise Figure V _{DS} = 2V, I _{DS} = 25% I _{DSS} f = 12 GHz		0.7	1.3	dB
G _A	Associated Gain at Minimum Noise Figure V _{DS} = 2V, I _{DS} = 25% I _{DSS} f = 12 GHz	10.5	12.0		dB
G _M	Transconductance V _{DS} = 2V V _{GS} = 0V	60	90		mS
V _P	Pinch-Off Voltage V _{DS} = 2V I _{DS} = 1mA	-0.25	-0.8	-1.5	V
I _{GSO}	Gate-Source Leakage Current V _{GS} = -3V		1	15	μA

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ABSOLUTE MAXIMUM RATINGS (25°C)		
SYMBOL	PARAMETER	RATING ¹
V _{DS}	Drain-Source Voltage	4V
V _{GS}	Gate-Source Voltage	-2V
I _{DS}	Drain-Source Current	I _{DSS}
I _G	Gate Current	5 mA
P _{IN}	RF Input Power	50 mW
T _{CH}	Channel Temperature	175°C
T _{STG}	Storage Temperature	-65/175°C
P _T	Power Dissipation	300mW ^{3,4}

RECOMMENDED CONTINUOUS OPERATING LIMITS		
SYMBOL	PARAMETER	RATING ²
V _{DS}	Drain-Source Voltage	3V
V _{GS}	Gate-Source Voltage	-0.6V
I _{DS}	Drain-Source Current	0.50 x I _{DSS}
I _G	Gate Current	2 mA
P _{IN}	RF Input Power	25 mW
T _{CH}	Channel Temperature	150°C
T _{STG}	Storage Temperature	-20/50°C
P _T	Power Dissipation	225 mW ^{3,4}
G _{XdB}	Gain Compression	4 dB

NOTES:

- Operating conditions that exceed the Absolute Maximum Ratings could result in permanent damage to the device.
- Recommended Continuous Operating Limits should be observed for reliable device operation.
- Power Dissipation defined as: $P_T = (P_{DC} + P_{IN}) - P_{OUT}$, where: P_{DC} = DC bias power, P_{OUT} = RF output power, and P_{IN} = RF input power.
- Power Dissipation to be de-rated as follows above 25°C:
 Absolute Maximum: $P_T = 300\text{mW} - (3.5\text{mW}/^\circ\text{C}) \times T_{HS}$
 Recommended Continuous Operating: $P_T = 225\text{mW} - (3.8\text{mW}/^\circ\text{C}) \times T_{HS}$
 where T_{HS} = heatsink or ambient temperature.

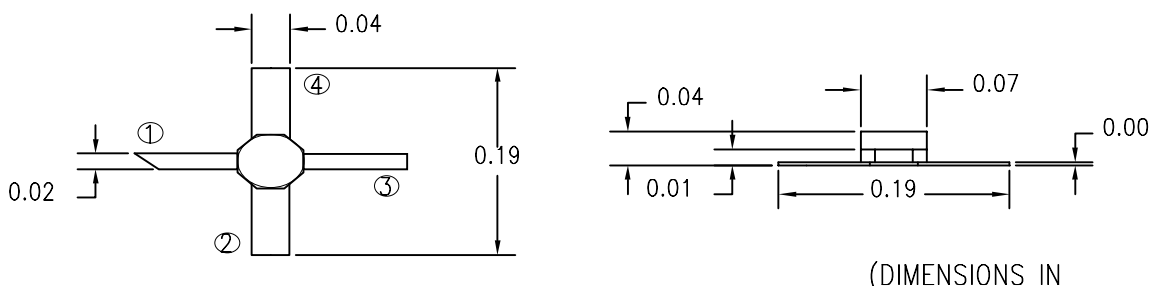
HANDLING PRECAUTIONS:

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.

PACKAGE CHARACTERISTICS:

The P70 package is available with a standard gold over nickel finish. The package lids are epoxy sealed and are capable of passing MIL-STD hermeticity (Gross Leak).

PACKAGE OUTLINE:



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