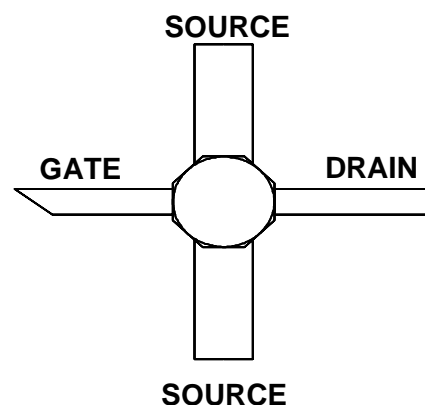


FEATURES

- 0.4 dB Typical Noise Figure at 2 GHz
- 0.7 dB Typical Noise Figure at 12 GHz
- 18.0 dB Typical Associated Gain at 2 GHz
- 12.0 dB Typical Associated Gain at 12 GHz
- Low DC Power Consumption: 30 mW
- Color-coded by I_{DSS} range



DESCRIPTION AND APPLICATIONS

The LP7512P70 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 optimum low noise performance. The LP7512's active areas are passivated with Si_3N_4 , 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 military EW amplifiers, and commercial Space applications.

Standard LP7512 quality screening is patterned after MIL-STD-19500, Grade JANC (unencapsulated die). For other screening requirements, contact FSS directly.

PERFORMANCE SPECIFICATIONS ($T_A = 25^\circ\text{C}$)

SYMBOLS	PARAMETERS	MIN	TYP	MAX	UNITS
I_{DSS}	Saturated Drain-Source Current $V_{DS} = 2V$ $V_{GS} = 0V$	15 16		30 50	mA mA
NF_{MIN}	Minimum Noise Figure at $f = 12$ GHz $V_{DS} = 2.0V$, $I_{DS} = 25\% I_{DSS}$		0.7	1.0	dB
G_{1dB}	Associated Gain at Minimum Noise Figure at $f = 12$ GHz $V_{DS} = 2.0V$, $I_{DS} = 25\% I_{DSS}$	11.0	12.0		dB
G_M	Transconductance $V_{DS} = 2V$ $V_{GS} = 0V$	60	90		mS
V_P	Pinch-Off Voltage $V_{DS} = 2V$ $I_{DS} = 1mA$	-0.2	-0.4	-1.5	V
I_{GSO}	Gate-Source Leakage Current $V_{GS} = -3V$		1	15	μA
I_{GDO}	Gate-Drain Leakage Current $V_{GD} = -3V$		1	15	μA

DSS-035 WF

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 _{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 _{STG}	Storage Temperature	-20/50°C
P _T	Power Dissipation	225 mW ^{3,4}
G _{XdB}	Gain Compression	4 dB

NOTES:

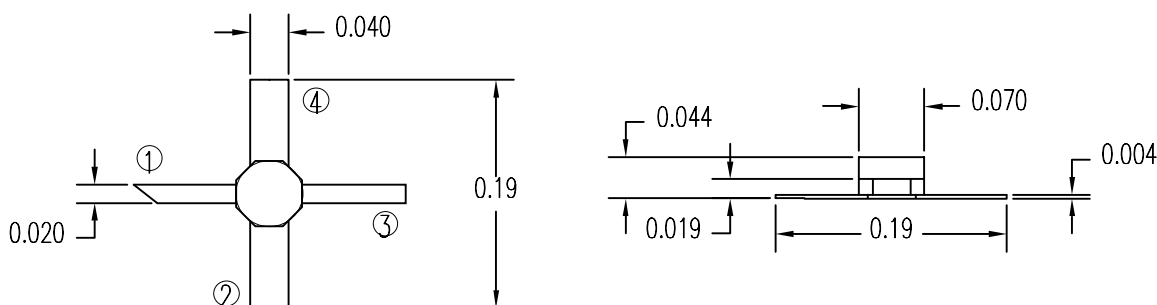
- Operating conditions that exceed the Absolute Maximum Ratings could result in permanent damage to the device.
- Recommended Continuous Operating Limits should be observed for reliable device operation.
- Power Dissipation defined as: $P_T \equiv (P_{DC} + P_{IN}) - P_{OUT}$, where: P_{DC} = DC bias 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.
- Specifications subject to change without notice.

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 P70-52 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: (DIMENSIONS IN INCHES)

DSS-035 WF

Filtronic

LP7512P70

Solid State

PACKAGED ULTRA LOW NOISE PHEMT