



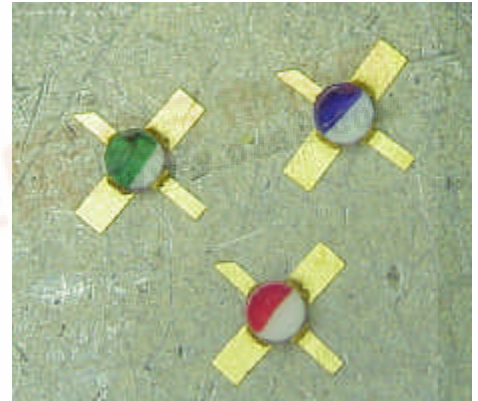
**Filtronic**

**LP6836P70**

PACKAGED MEDIUM POWER PHEMT

## FEATURES

- ◆ 23 dBm Output Power at 1-dB Compression at 15 GHz
- ◆ 11.5 dB Power Gain at 15 GHz
- ◆ 50% Power-Added Efficiency



## DESCRIPTION AND APPLICATIONS

The LP6836P70 is a packaged AlGaAs/InGaAs/AlGaAs pseudomorphic high electron mobility transistor (pHEMT) intended for applications requiring medium output power and/or high dynamic range. It utilizes a  $0.25\ \mu\text{m} \times 360\ \mu\text{m}$  Schottky barrier gate, defined by electron-beam photolithography.

Typical applications include pre-drivers in commercial wireless infrastructure and radio link high-performance power amplifiers.

## ELECTRICAL SPECIFICATIONS @ $T_{\text{Ambient}} = 25^{\circ}\text{C}^*$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Saturated Drain-Source Current**	$I_{\text{DSS}}$	$V_{\text{DS}} = 2\ \text{V}; V_{\text{GS}} = 0\ \text{V}$	80		125	mA
Power at 1-dB Compression	P-1dB	$V_{\text{DS}} = 5\ \text{V}; I_{\text{DS}} = 50\% I_{\text{DSS}}$	22	23		dBm
Power Gain at 1-dB Compression	G-1dB	$V_{\text{DS}} = 5\ \text{V}; I_{\text{DS}} = 50\% I_{\text{DSS}}$	10.5	12		dB
Power-Added Efficiency	PAE	$V_{\text{DS}} = 5\ \text{V}; I_{\text{DS}} = 50\% I_{\text{DSS}};$ $P_{\text{IN}} = 20\ \text{dBm}$		50		%
Maximum Drain-Source Current	$I_{\text{MAX}}$	$V_{\text{DS}} = 2\ \text{V}; V_{\text{GS}} = 1\ \text{V}$		190		mA
Transconductance	$G_{\text{M}}$	$V_{\text{DS}} = 2\ \text{V}; V_{\text{GS}} = 0\ \text{V}$	70	95		mS
Gate-Source Leakage Current	$I_{\text{GSO}}$	$V_{\text{GS}} = -5\ \text{V}$		1	15	$\mu\text{A}$
Pinch-Off Voltage	$V_{\text{P}}$	$V_{\text{DS}} = 2\ \text{V}; I_{\text{DS}} = 2\ \text{mA}$	-0.25	-0.8	-2.0	V
Gate-Source Breakdown Voltage Magnitude	$ V_{\text{BDGS}} $	$I_{\text{GS}} = \text{mA}$	-11	-15		V
Gate-Drain Breakdown Voltage Magnitude	$ V_{\text{BDGD}} $	$I_{\text{GD}} = 2\ \text{mA}$	-12	-16		V

\*frequency=15 GHz, unless otherwise noted

\*\*Formerly binned as: LP6836P70-1 = 80-95 mA, LP6836P70-2 = 96-105 mA, and LP6836P70-3 = 106-125 mA



## • ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Test Conditions	Min	Max	Units
Drain-Source Voltage	$V_{DS}$	$T_{Ambient} = 22 \pm 3^{\circ}C$		7	V
Gate-Source Voltage	$V_{GS}$	$T_{Ambient} = 22 \pm 3^{\circ}C$		-4	V
Drain-Source Current	$I_{DS}$	$T_{Ambient} = 22 \pm 3^{\circ}C$		$I_{DSS}$	mA
Gate Current	$I_G$	$T_{Ambient} = 22 \pm 3^{\circ}C$		18	mA
RF Input Power	$P_{IN}$	$T_{Ambient} = 22 \pm 3^{\circ}C$		150	mW
Channel Operating Temperature	$T_{CH}$	$T_{Ambient} = 22 \pm 3^{\circ}C$		175	$^{\circ}C$
Storage Temperature	$T_{STG}$	—	-65	175	$^{\circ}C$
Total Power Dissipation	$P_{TOT}$	$T_{Ambient} = 22 \pm 3^{\circ}C$		1.0	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  $25^{\circ}C$ :  
 $P_{TOT} = 1.0W - (.0036W/^{\circ}C) \times T_{HS}$   
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

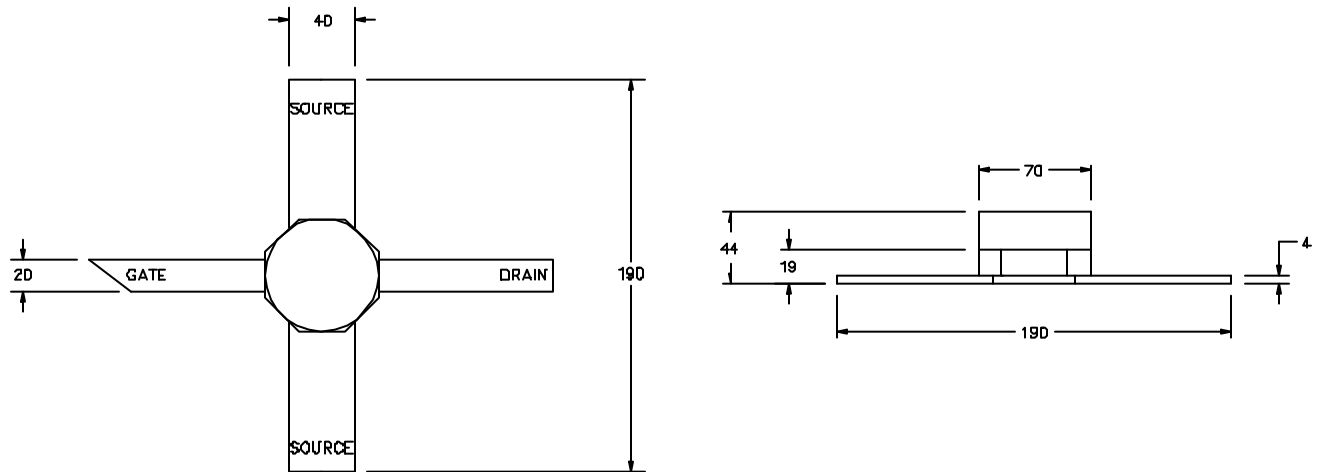
To avoid damage to the devices care should be exercised during handling. Proper Electrostatic Discharge (ESD) precautions should be observed at all stages of storage, handling, assembly, and testing. These devices should be treated as Class 1A (0-500 V). Further information on ESD control measures can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