

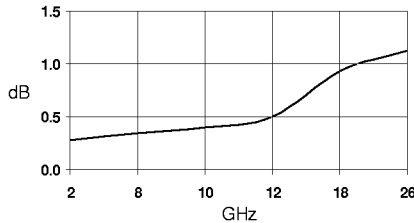
Product Description

Stanford Microdevices' SPF-1676 is a PHEMT gallium arsenide FET housed in a low cost, stripline mount ceramic package. Screened for optimum noise figure, these devices are ideal for use as the first stage of ultra low noise cascades operating in the 2-26 GHz frequency range.

This device has a 0.25 micron gate length with a total gate periphery of 200 microns. These rugged devices have proven gold metallization and nitride passivation. The devices are ideal for Ku-Band DBS systems as well as other low-noise amplifiers up to 26 GHz.

The SPF series of ceramic PHEMT FET's are available in tape and reel form and in different package styles.

Optimum Noise Figure vs. Frequency
V_{ds}=2.0V, I_{ds}=15mA



Electrical Specifications at Ta = 25C

Symbol	Parameters: Test Conditions	Units	Min.	Typ.	Max.
NF _{opt}	Optimum Noise Figure: V _{ds} = 2.0V, I _{ds} = 15mA	f = 12 GHz f = 18 GHz	dB	0.5 0.9	0.6 1.1
G _a	Gain at NF _{opt} : V _{ds} = 2.0V, I _{ds} = 15mA	f = 12 GHz f = 18 GHz	dB dB	9 7	10 8
I _{DSS}	Saturated Drain Current: V _{ds} = 2.0V, V _{gs} = 0V		mA	15	35 70
G _m	Transconductance: V _{ds} = 2.0V, I _{ds} = 15mA		mmho	45	75
V _p	Pinch-off Voltage: V _{ds} = 2.0V, I _{ds} = 1mA		V	-0.6	
V _{bgs}	Gate-to-Source Breakdown Voltage		V	-3.0	
V _{bqd}	Gate-to-Drain Breakdown Voltage		V	-3.0	

The information provided herein is believed to be reliable at press time. Stanford Microdevices assumes no responsibility for inaccuracies or omissions. Stanford Microdevices assumes no responsibility for the use of this information, and all such information shall be entirely at the user's own risk. Prices and specifications are subject to change without notice. No patent rights or licenses to any of the circuits described herein are implied or granted to any third party. Stanford Microdevices does not authorize or warrant any Stanford Microdevices product for use in life-support devices and/or systems.
Copyright 1999 Stanford Microdevices, Inc. All worldwide rights reserved.

522 Almanor Ave., Sunnyvale, CA 94086

Phone: (800) SMI-MMIC

<http://www.stanfordmicro.com>

SPF-1676

2-26 GHz, Low Noise PHEMT GaAs FET



Product Features

- Pseudomorphic HEMT Technology
- Low Noise Figure: 0.5dB Typical at 12 GHz
- High Associated Gain: 10dB typical at 12 GHz
- Low Cost Stripline Mount Ceramic Package
- Tape and Reel Packaging Available

Applications

- Ultra Low Noise Cascades
- VSAT Receivers

LOW NOISE FETs

SPF-1676 2-26 GHz Low Noise PHEMT GaAs FET

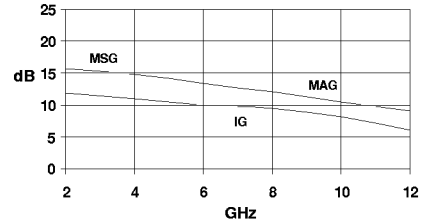
Absolute Maximum Ratings at 25C

Parameter	Absolute Maximum
Drain-Source Voltage (V _{ds})	+5 V
Gate-Source Voltage (V _{gs})	-3 V
Drain Current (I _{ds})	I _{dss}
Forward Gate Current (I _{gsf})	10 mA
RF Input Power (P _{in})	30 mW
Channel Temperature (T _{ch})	+175 C
Operating Temperature	-45 C to +85 C
Storage Temperature	-65 C to +150 C
Power Dissipation	180 mW

Notes:

- Operation of this device above any one of these parameters may cause permanent damage.
- Mounting Surface Temperature = 25° C

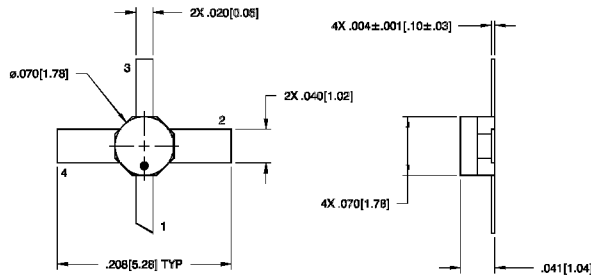
Maximum Stable Gain, Maximum Available Gain and Insertion Gain vs. Frequency


Low Noise FETs

Typical Noise Parameters (V_{ds}=2.0V, I_{ds}=15mA)

Freq. GHz	NF _{OPT} dB	Gamma Opt Mag	Gamma Opt Ang	R _n /50
2.0	0.4	0.81	13	0.23
4.0	0.4	0.68	24	0.23
6.0	0.5	0.64	37	0.22
8.0	0.5	0.57	52	0.19
10.0	0.5	0.51	66	0.17
12.0	0.5	0.47	81	0.16
14.0	0.8	0.47	95	0.14
16.0	0.9	0.42	112	0.11
18.0	0.9	0.43	128	0.09

76 Ceramic Package



Pin Designation	
1	Gate
2	Source
3	Drain
4	Source

Typical S-Parameters V_{ds}= 2.0V, I_{ds}= 15mA

Freq GHz	S ₁₁	S ₁₁ Ang	S ₂₁	S ₂₁ Ang	S ₁₂	S ₁₂ Ang	S ₂₂	S ₂₂ Ang
2.00	.960	-29	6.177	156	.039	73	.664	-18
4.00	.877	-42	4.951	146	.065	70	.523	-27
6.00	.805	-51	4.417	139	.084	69	.496	-28
8.00	.717	-62	4.209	132	.103	67	.455	-28
10.00	.588	-79	4.009	123	.121	65	.366	-34
12.00	.473	-113	3.594	114	.127	62	.263	-58
14.00	.597	-136	3.241	100	.132	52	.226	-105
16.00	.673	-146	2.652	93	.122	50	.247	-123
18.00	.696	-145	2.288	89	.118	50	.266	-122
20.00	.685	-139	2.022	88	.120	51	.267	-113
22.00	.688	-137	1.910	86	.126	50	.262	-107
24.00	.431	-113	1.870	90	.137	52	.135	-79
26.00	.445	-156	1.935	62	.164	43	.155	-128

(S-Parameters include the effects of two 1.0 mil diameter bond wires, each 30 mils long, connected to the gate and drain pads on the die)