Features

- **Pseudomorphic HEMT Technology**
- **Low Noise Figure: 0.5dB Typical at 2 GHz**
- **High Associated Gain: 16dB Typical at 2 GHz**
- **Low Cost Plastic Package**
- **Tape and Reel Packaging Available**

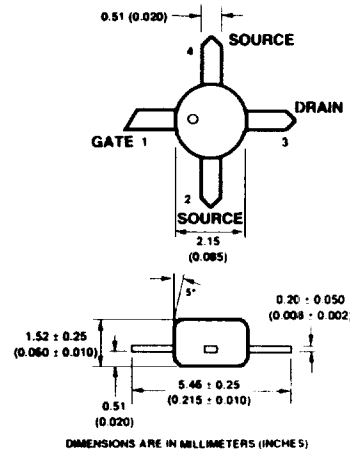
Description

Stanford Microdevices' SPF-284 and -484 are high performance PHEMT gallium arsenide field effect transistors housed in low-cost plastic packages. Differentiated by noise performance, these devices are ideal for use as the first or second stage of low noise cascades operating in the 1-6 GHz frequency range.

This device has a 0.3 micron gate length with a total gate periphery of 200 microns. These rugged devices have gold metallization and nitride passivation. Stanford's proprietary low-loss, low-dielectric constant plastic compound minimizes losses and noise contribution associated with most plastic compounds.

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

84 Plastic Package



Electrical Specifications at Ta = 25c

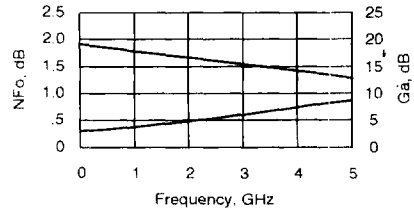
Symbol	Parameters: Test Conditions		Model	Units	Min	Typ	Max
NF Opt	Optimum Noise Figure:	f = 1.0 GHz	SPF-284	dB		0.5	
	Vds = 3.0 V, Ids = 20 mA	f = 2.0 GHz		dB		0.8	1.0
NF Opt	Optimum Noise Figure:	f = 1.0 GHz	SPF-484	dB		0.3	
	Vds = 3.0 V, Ids = 20 mA	f = 2.0 GHz		dB		0.5	0.7
Ga	Gain at NF Opt :	f = 1.0 GHz		dB		18	
	Vds = 3.0 V, Ids = 20 mA	f = 2.0 GHz		dB	14	16	
P1dB	Output Power at 1dB Gain Compression:	f = 2.0 GHz		dBm		12	
	Vds = 3.0 V, Ids = 20 mA						
G1dB	1dB Compressed Gain:	f = 2.0 GHz		dB		16	
	Vds = 3.0 V, Ids = 20 mA						
Idss	Saturated Drain Current: Vds=3.0V, Vgs=0V			mA	8	35	70
Gm	Transconductance: Vds=3.0V, Vgs=0V			mmho	25	50	
Vp	Pinch-off Voltage: Vds=3.0V, Ids=1mA			V		-1.5	-4.0
Vbgs	Gate-to-Source Breakdown Voltage			V		-6.0	
Vbgd	Gate-to-Drain Breakdown Voltage			V		-6.0	

Noise Parameters

(Vds=3.0V, Id=20mA)

Freq	NFo (dB)		Gamma Opt		Rn/50
GHz	-284	-484	Mag	Ang	
1.0	0.5	0.3	0.91	10	1.3
2.0	0.8	0.5	0.85	24	1.2
3.0	1.0	0.6	0.80	39	1.1
4.0	1.2	0.7	0.75	56	1.0
5.0	1.4	0.8	0.70	74	0.9
6.0	1.6	1.0	0.66	94	0.8

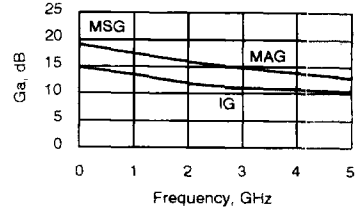
Noise Figure and Associated Gain Vs. Frequency
Vds=3.0V, Ids=20mA



Absolute Maximum Ratings

Parameter	Absolute Max
Drain-Source Voltage (Vds)	+6V
Gate-Source Voltage (Vgs)	-5V
Drain Current (Ids)	Idss
RF Input Power (Pin)	180mW
Channel Temperature (Tch)	175c
Storage Temperature (Tst)	-65c to +175c

Maximum Stable Gain, Maximum Available Gain and Insertion Gain vs. Frequency
Vds=3.0V, Ids=20mA



S PARAMETERS

(Vds=3.0V, Id=20mA)

Freq	S 11		S 21		S 12		S 22	
GHz	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
1.0	0.99	-20	4.45	170	0.02	70	0.86	-20
2.0	0.99	-40	3.98	150	0.03	57	0.81	-34
3.0	0.98	-58	3.76	132	0.05	46	0.77	-48
4.0	0.97	-74	3.55	116	0.07	37	0.73	-60
5.0	0.92	-88	3.35	102	0.09	28	0.70	-72
6.0	0.91	-102	3.16	88	0.11	20	0.68	-82