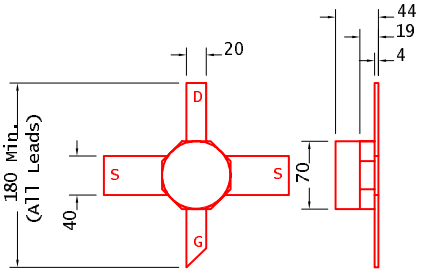
Excelics EPB018A5/A7/A9-70

DATA SHEET
Super Low Noise High Gain Heterojunction FET

- **NON-HERMETIC LOW COST CERAMIC 70 mil PACKAGE**
- **TYPICAL 0.50~0.90dB NOISE FIGURE AND 11.5~13.0dB ASSOCIATED GAIN AT 12GHz**
- **0.3 X 180 MICRON RECESSED " MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES SUPER LOW NOISE, HIGH GAIN AND HIGH RELIABILITY**



All Dimensions In mils.

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

SYMBOLS	PARAMETERS/TEST CONDITIONS		MIN	TYP	MAX	UNIT
NF	Noise Figure, f=12GHz	**EPB018A5-70**		0.50	0.60	dB
		EPB018A7-70		0.65	0.80	
	Vds=2V, Ids=15mA	**EPB018A9-70**		0.95	1.20	
Ga	Associated Gain, f=12GHz	**EPB018A5-70**	11.5	13.0		dB
		EPB018A7-70	11.0	12.5		
	Vds=2V, Ids=15mA	**EPB018A9-70**	10.5	11.5		
P_{1dB}	Output Power at 1dB Compression	f=12GHz		15.0		dBm
	Vds=3V, Ids=25mA	f=18GHz		15.0		
G_{1dB}	Gain at 1dB Compression	f=12GHz		14.0		dB
	Vds=3V, Ids=25mA	f=18GHz		11.5		
Idss	Saturated Drain Current Vds=2V, Vgs=0V		15	45	80	mA
Gm	Transconductance Vds=2V, Vgs=0V		50	90		mS
Vp	Pinch-off Voltage Vds=2V, Ids=1.0mA			-0.8	-2.5	V
BVgd	Drain Breakdown Voltage Igd=10uA		-3	-6		V
BVgs	Source Breakdown Voltage Igs=10uA		-3	-6		V
Rth	Thermal Resistance			480*		°C/W

***Overall Rth depands on case mounting.**

MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	ABSOLUTE[1]	CONTINUOUS[2]
Vds	Drain-Source Voltage	5V	4V
Vgs	Gate-Source Voltage	-3V	-2V
Ids	Drain Current	Idss	60mA
Igsf	Forward Gate Current	2mA	0.3mA
Pin	Input Power	12dBm	@1dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	Total Power Dissipation	285mW	240mW

Note: 1. Exceeding any of the above ratings may result in permanent damage.
2. Exceeding any of the above ratings may reduce MTTF below design goals.

Excelics Semiconductor, Inc., 2908 Scott Blvd., Santa Clara, CA 95054
Phone: (408) 970-8664 Fax: (408) 970-8998 Web Site: www.excelics.com

EPB018A5/A7/A9-70

DATA SHEET

Super Low Noise High Gain Heterojunction FET

EPB018A5-70
S-PARAMETERS
2V, 15mA

FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.983	-18.6	6.245	162.2	0.019	78.9	0.530	-13.5
2.0	0.944	-37.5	5.964	144.3	0.036	65.2	0.507	-28.8
3.0	0.896	-55.5	5.582	127.7	0.050	53.6	0.485	-42.6
4.0	0.849	-72.6	5.327	112.4	0.063	43.6	0.464	-54.2
5.0	0.797	-89.2	5.111	97.6	0.074	33.1	0.421	-65.4
6.0	0.747	-103.7	4.799	83.4	0.081	23.4	0.370	-78.6
7.0	0.691	-118.6	4.503	69.9	0.085	13.9	0.344	-90.7
8.0	0.642	-132.8	4.277	57.0	0.088	4.7	0.303	-100.7
9.0	0.600	-155.6	4.189	42.7	0.093	-5.1	0.271	-111.2
10.0	0.567	-178.3	4.012	27.8	0.096	-16.3	0.228	-126.9
11.0	0.534	170.3	3.846	15.5	0.094	-26.5	0.193	-145.5
12.0	0.515	155.6	3.758	2.9	0.093	-33.1	0.177	-161.2
13.0	0.555	128.7	3.569	-12.5	0.091	-44.2	0.137	176.3
14.0	0.596	106.0	3.317	-27.1	0.088	-55.6	0.114	151.4
15.0	0.592	91.3	3.214	-41.3	0.087	-66.9	0.141	123.9
16.0	0.597	74.3	3.086	-56.8	0.083	-81.1	0.158	94.5
17.0	0.619	59.2	2.756	-69.5	0.071	-90.3	0.134	68.1
18.0	0.670	49.9	2.668	-79.4	0.071	-97.3	0.136	64.0
19.0	0.668	33.0	2.623	-95.4	0.069	-115.9	0.169	51.0
20.0	0.708	17.3	2.551	-111.1	0.064	-131.4	0.172	37.8
21.0	0.757	8.2	2.447	-125.1	0.061	-144.1	0.159	18.7
22.0	0.743	-2.5	2.325	-139.4	0.063	-159.2	0.135	14.7
23.0	0.726	-21.1	2.224	-158.5	0.065	179.4	0.115	-1.3
24.0	0.747	-39.6	2.063	-178.1	0.067	158.8	0.102	-39.6
25.0	0.709	-52.6	2.024	167.9	0.072	144.7	0.136	-56.6
26.0	0.683	-70.6	2.006	150.2	0.083	132.8	0.117	-71.3

EPB018A7-70
S-PARAMETERS
2V, 15mA

FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.985	-18.9	5.754	162.0	0.021	77.1	0.677	-13.7
2.0	0.949	-38.2	5.495	143.9	0.040	63.1	0.650	-28.9
3.0	0.903	-56.2	5.137	127.2	0.055	50.5	0.622	-42.7
4.0	0.860	-73.6	4.914	111.8	0.067	39.1	0.595	-54.1
5.0	0.812	-90.4	4.726	96.9	0.079	28.5	0.549	-65.4
6.0	0.765	-104.9	4.461	82.4	0.086	17.8	0.495	-78.6
7.0	0.713	-119.9	4.189	68.6	0.092	7.3	0.464	-90.5
8.0	0.664	-134.3	3.982	55.4	0.093	-3.6	0.411	-100.6
9.0	0.621	-157.1	3.908	40.9	0.096	-12.9	0.374	-108.6
10.0	0.591	-179.4	3.759	25.7	0.098	-24.5	0.328	-121.7
11.0	0.564	169.0	3.644	12.8	0.099	-33.4	0.295	-140.0
12.0	0.541	153.2	3.551	-0.8	0.098	-43.3	0.266	-157.6
13.0	0.574	126.2	3.360	-16.6	0.096	-54.9	0.210	-174.2
14.0	0.609	103.6	3.093	-31.7	0.090	-66.7	0.173	167.6
15.0	0.598	88.8	2.985	-46.4	0.090	-78.4	0.187	139.8
16.0	0.597	71.4	2.857	-62.2	0.085	-92.9	0.194	109.8
17.0	0.612	55.7	2.548	-75.5	0.072	-102.8	0.155	89.8
18.0	0.661	46.6	2.472	-85.8	0.076	-105.2	0.183	89.7
19.0	0.657	29.0	2.381	-102.1	0.076	-126.2	0.221	68.8
20.0	0.697	13.2	2.286	-118.1	0.071	-141.6	0.240	56.1
21.0	0.740	4.4	2.173	-131.8	0.068	-155.3	0.221	40.9
22.0	0.728	-5.8	2.067	-145.9	0.070	-167.9	0.210	36.8
23.0	0.717	-24.4	1.958	-164.5	0.071	172.5	0.188	21.8
24.0	0.743	-41.8	1.807	176.3	0.071	151.8	0.154	-5.5
25.0	0.710	-53.5	1.757	161.7	0.075	138.3	0.174	-28.1
26.0	0.689	-69.1	1.759	145.4	0.084	124.1	0.152	-47.5

EPB018A7-70
Noise Parameters
Vds=2V, Ids=15mA

Freq.	Gamma Opt		Nfmin	
(GHz)	(MAG)	(ANG)	(dB)	Rn/50
2	0.76	25	0.37	0.26
4	0.65	56	0.43	0.22
6	0.51	84	0.48	0.16
8	0.41	118	0.55	0.11
10	0.26	159	0.61	0.08
12	0.26	-144	0.68	0.08
14	0.32	-82	0.89	0.18
16	0.40	-46	1.10	0.29
18	0.40	-26	1.30	0.45
20	0.51	8	1.45	0.55
22	0.41	27	1.69	0.61
24	0.48	75	1.83	0.59
26	0.52	108	2.05	0.40