



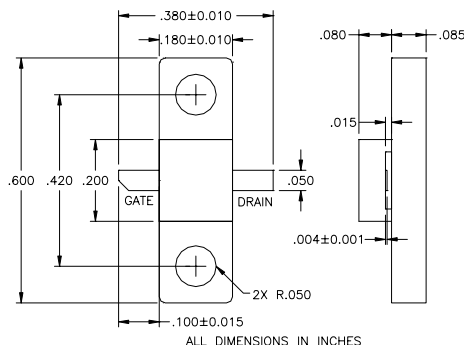
# EFE960BVR-5759

UPDATED 10/26/2006

## 5.70-5.90GHz 4-Watt Partially Matched Power FET

### FEATURES

- 5.70-5.90 GHz Bandwidth
- +36.0 dBm Output Power at 1dB Compression
- 9.0 dB Power Gain at 1dB Compression
- 25% Power Added Efficiency
- -46 dBc IM3 at  $P_o = 24.5$  dBm SCL
- Non-Hermetic 180 Mil Metal Flange Package
- 100% Tested for DC, RF, and  $R_{TH}$



### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )



Caution! ESD sensitive device.

SYMBOL	PARAMETERS/TEST CONDITIONS <sup>1</sup>	MIN	TYP	MAX	UNITS
$P_{1dB}$	Output Power at 1dB Compression $f = 5.8\text{GHz}$ $V_{DS} = 10\text{V}$ , $I_{DSQ} \approx 1100\text{mA}$	35.0	36.0		dBm
$G_{1dB}$	Gain at 1dB Compression $f = 5.8\text{GHz}$ $V_{DS} = 10\text{V}$ , $I_{DSQ} \approx 1100\text{mA}$	8.0	9.0		dB
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 10\text{V}$ , $I_{DSQ} \approx 1100\text{mA}$ $f = 5.8\text{GHz}$		25		%
$I_{d1dB}$	Drain Current at 1dB Compression $f = 5.8\text{GHz}$		1300	1400	mA
IM3	Output 3rd Order Intermodulation Distortion $\Delta f = 10\text{MHz}$ 2-Tone Test; $P_{out} = 24.5\text{dBm S.C.L.}^2$ $V_{DS} = 10\text{V}$ , $I_{DSQ} \approx 65\% I_{DSS}$ $f = 5.8\text{GHz}$	-43	-46		dBc
$I_{DSS}$	Saturated Drain Current $V_{DS} = 3\text{V}$ , $V_{GS} = 0\text{V}$		2000	2500	mA
$V_P$	Pinch-off Voltage $V_{DS} = 3\text{V}$ , $I_{DS} = 20\text{mA}$		-2.5	-4.0	V
$R_{TH}$	Thermal Resistance <sup>3</sup>		5.5	6.0	$^\circ\text{C/W}$

- Notes: 1. FET TO BE TESTED IN EXCELICS EVALUATION BOARD. DATA REFERS TO EDGES OF PACKAGE.  
2. S.C.L. = Single Carrier Level.  
3. OVERALL  $R_{th}$  DEPENDS ON CASE MOUNTING.

### MAXIMUM RATINGS AT $25^\circ\text{C}$

SYMBOLS	PARAMETERS	ABSOLUTE <sup>1</sup>	CONTINUOUS <sup>2</sup>
$V_{DS}$	Drain-Source Voltage	15V	10V
$V_{GS}$	Gate-Source Voltage	-5V	-4.5V
$I_{gf}$	Forward Gate Current	43.2 mA	14.4 mA
$I_{gr}$	Reversed Gate Current	-7.2 mA	-2.4 mA
$P_{in}$	Input Power	33 dBm	@ 3dB Compression
$T_{ch}$	Channel Temperature	175 $^\circ\text{C}$	175 $^\circ\text{C}$
$T_{stg}$	Storage Temperature	-65/175 $^\circ\text{C}$	-65/175 $^\circ\text{C}$
$P_t$	Total Power Dissipation	25W	25W

- Notes:  
1. Operating the device beyond any of the above ratings may result in permanent damage or reduction of MTTF.  
2. Bias conditions must also satisfy the following equation  $P_T < (T_{CH} - T_{PKG})/R_{TH}$ ; where  $T_{PKG}$  = temperature of package, and  $P_T = (V_{DS} * I_{DS}) - (P_{OUT} - P_{IN})$ .

Specifications are subject to change without notice.

Excelics Semiconductor, Inc. 310 De Guigne Drive, Sunnyvale, CA 94085  
Phone: 408-737-1711 Fax: 408-737-1868 Web: [www.excelics.com](http://www.excelics.com)

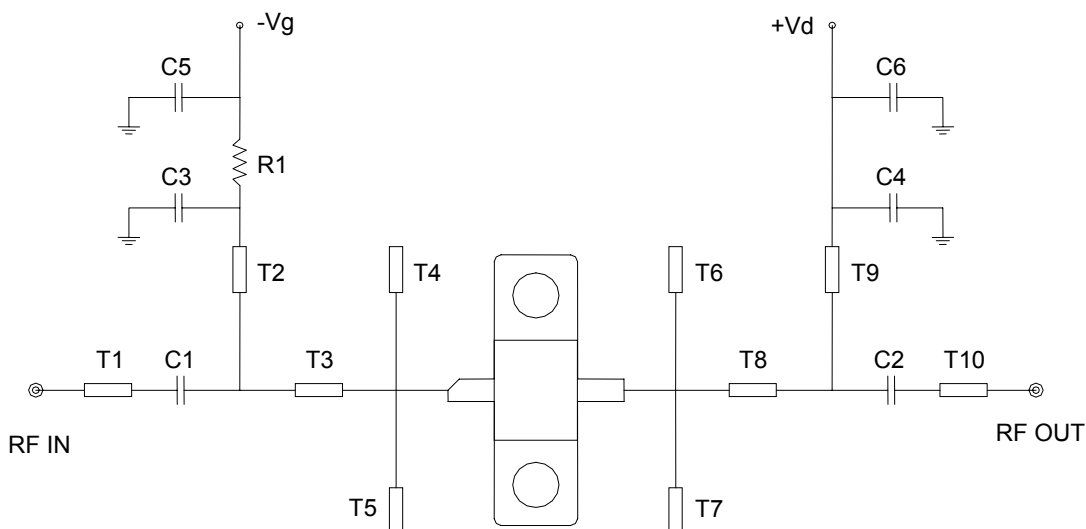
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Revised November 2006

UPDATED 10/26/2006

## 5.70-5.90GHz 4-Watt Partially Matched Power FET

### TEST CIRCUITS

Evaluation Board Schematic ( $V_{DS} = 10\text{ V}$ ,  $I_{DSQ} \approx 1100\text{ mA}$ )

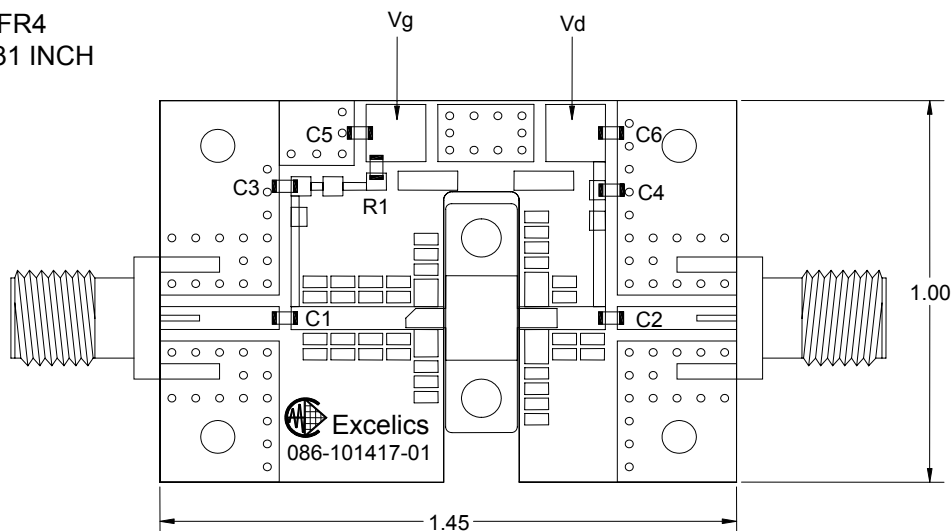


C1, C2: 8.2 pF chip capacitor  
 C3, C4: 1000 pF chip capacitor  
 C5, C6: 1 uF chip capacitor  
 R1: 50  $\Omega$  chip resistor

### Evaluation Board

(should be mounted on appropriate heatsink)

PCB MATERIAL: FR4  
 THICKNESS: 0.031 INCH  
 Er: 4.6



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# EFE960BVR-5759

UPDATED 10/26/2006

## 5.70-5.90GHz 4-Watt Partially Matched Power FET

### S-PARAMETERS

$V_{DS} = 10\text{ V}$ ,  $I_{DSQ} \approx 1100\text{mA}$

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
4.0	0.914	153.5	1.242	8.8	0.024	-26.2	0.647	173.9
4.2	0.899	149.7	1.308	2.2	0.025	-32.7	0.650	171.8
4.4	0.881	145.0	1.388	-4.9	0.026	-39.2	0.652	169.5
4.6	0.864	139.8	1.486	-12.7	0.030	-49.6	0.663	166.6
4.8	0.834	134.1	1.594	-21.3	0.032	-60.2	0.677	163.5
5.0	0.796	127.8	1.725	-31.2	0.034	-72.4	0.697	160.0
5.2	0.745	121.4	1.892	-41.9	0.039	-83.4	0.726	156.5
5.4	0.674	115.1	2.076	-54.0	0.043	-98.6	0.769	152.0
5.6	0.579	110.0	2.272	-68.5	0.047	-116.3	0.818	146.4
5.8	0.464	110.3	2.432	-85.5	0.052	-136.0	0.864	139.3
6.0	0.383	123.0	2.490	-104.4	0.055	-161.4	0.892	130.9
6.2	0.442	142.2	2.368	-122.7	0.055	176.1	0.896	125.7
6.4	0.563	148.8	2.171	-142.4	0.053	150.2	0.861	115.8
6.6	0.680	146.7	1.890	-159.6	0.051	129.3	0.804	106.7
6.8	0.769	141.0	1.623	-174.5	0.047	107.9	0.740	99.2
7.0	0.815	135.4	1.387	173.7	0.044	90.2	0.698	92.6
7.2	0.855	130.0	1.224	163.1	0.044	77.1	0.662	85.1
7.4	0.883	124.9	1.080	152.2	0.044	63.9	0.634	77.5
7.6	0.899	120.3	0.944	142.8	0.044	51.1	0.608	69.3
7.8	0.909	116.0	0.854	133.7	0.045	40.4	0.594	61.4
8.0	0.917	111.2	0.762	124.8	0.046	31.0	0.583	53.6

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