

FLL21E180IU

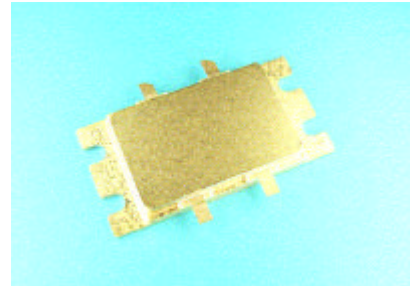
High Voltage - High Power GaAs FET

FEATURES

- High Voltage Operation : $V_{DS}=28V$
- High Gain: 15.0dB(typ.) at $P_{out}=46dBm(Avg.)$
- Broad Frequency Range : 2100 to 2200MHz
- Proven Reliability

DESCRIPTION

The FLL21E180IU is a high power GaAs FET that offers high efficiency, ease of matching, greater consistency and broad bandwidth for high power L-band amplifiers. This device is target for high voltage, low current operation in digitally modulated base station. This product is ideally suited for W-CDMA base station amplifiers while offering high gain long term reliability and ease for use.



ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	VDS	$T_c=25\text{ }^\circ\text{C}$	32	V
Gate-Source Voltage	VGS		-3	V
Total Power Dissipation	Pt		230	W
Storage Temperature	Tstg		-65 to +175	$^\circ\text{C}$
Channel Temperature	Tch		200	$^\circ\text{C}$

RECOMMENDED OPERATING CONDITION(Case Temperature $T_c=25\text{ }^\circ\text{C}$)

Item	Symbol	Condition	Limit	Unit
DC Input Voltage	VDS		<28	V
Forward Gate Current	IGF	$R_G=1\ \Omega$	<705	mA
Reverse Gate Current	IGR	$R_G=1\ \Omega$	>-64	mA
Channel Temperature	Tch		155	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS (Case Temperature $T_c=25\text{ }^\circ\text{C}$)

Item	Symbol	Condition	Limit			Unit
			min.	Typ.	Max.	
Pinch-Off Voltage	Vp	$V_{DS}=5V\ I_{DS}=150mA$	-0.1	-0.2	-0.5	V
Gate-Source Breakdown Voltage	VGSO	$I_{GS}=-1.5mA$	-5			V
3rd Order Inter modulation Distortion	IM3	$V_{DS}=28V$	-	-34	-30	dBc
Power Gain	Gp	$I_{DS}(DC)=1.7A$	14.0	15.0	-	dB
Drain Efficiency	η_d	$P_{out}=46dBm(Avg.)$	-	26.0	-	%
Adjacent Channel Leakage Power Ratio	ACLR	note	-	-35	-	dBc
Thermal Resistance	Rth	Channel to Case	-	0.55	0.65	$^\circ\text{C}/W$

Note 1 : IM3 ACLR and Gain test condition as follows:

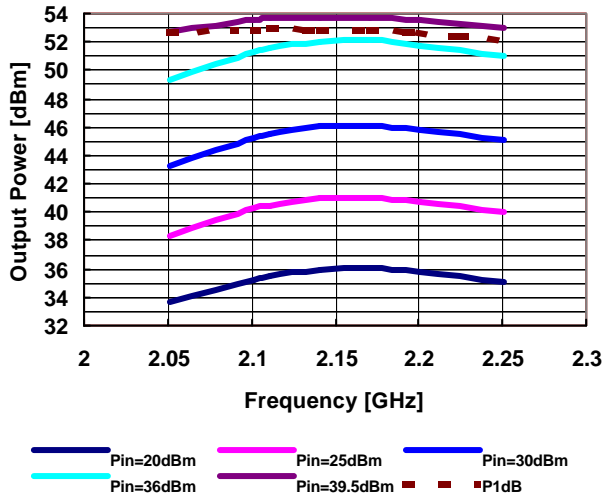
IM3 & Gain : $f_0=2.1325GHz$, $f_1=2.1475GHz$ W-CDMA(3GPP3.4 12-00) BS-164ch non clipping modulation measured over 3.84MHz at $f_0-15MHz$ and $f_1+15MHz$.

ACLR : $f_0=2.1325GHz$ W-CDMA(3GPP3.4 12-00) BS-1 64ch non clipping modulation, measured over 3.84MHz at $f_0\pm 5MHz$.

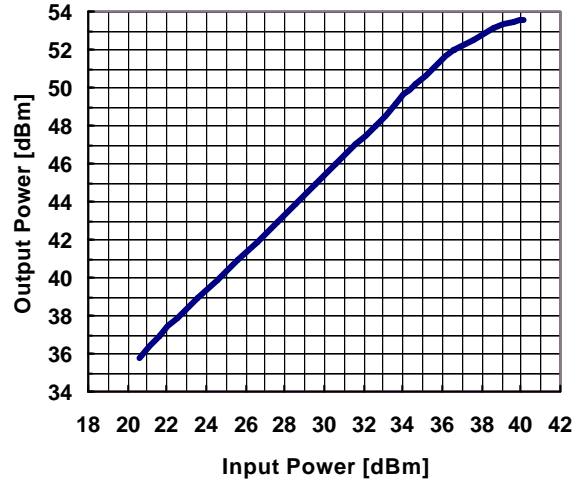
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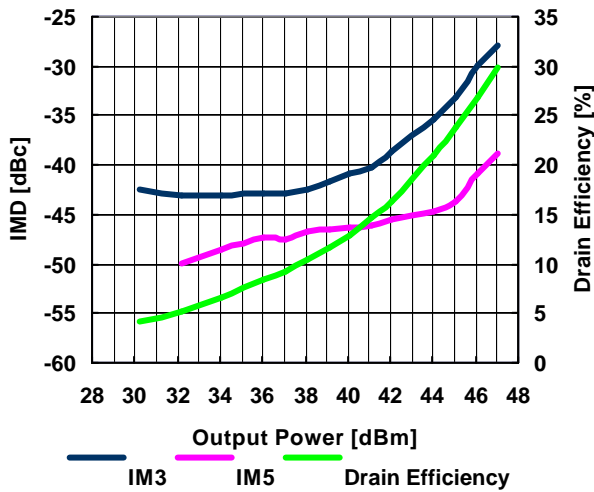
Output Power vs. Frequency
 @VDS=28V IDS=1.7A
 Pulse RF Test : P.W. 1msec ,duty=10%



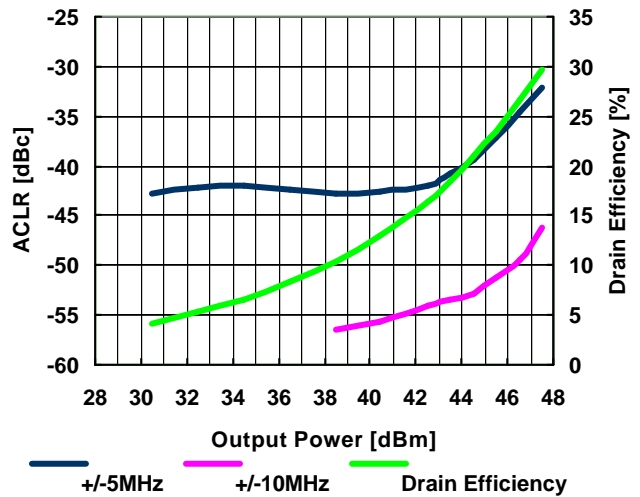
Output Power vs. Input Power
 @VDS=28V IDS=2A f=2.14GHz
 Pulse RF Test : P.W. 1msec ,duty=10%



Two-Carrier IMD(ACLR), Drain Efficiency vs. Output Power
 @VDS=28V IDS=1.7A fo=2.1325, f1=2.1475GHz
 W-CDMA 3-GPP BS-1 64ch Modulation



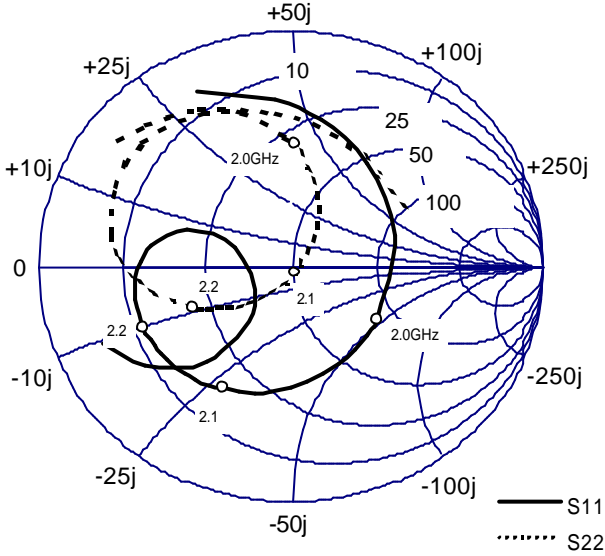
Single-Carrier ACLR, Drain Efficiency vs. Output Power
 @VDS=28V IDS=1.7A fo=2.1325GHz
 W-CDMA 3GPP BS-1 64ch Modulation



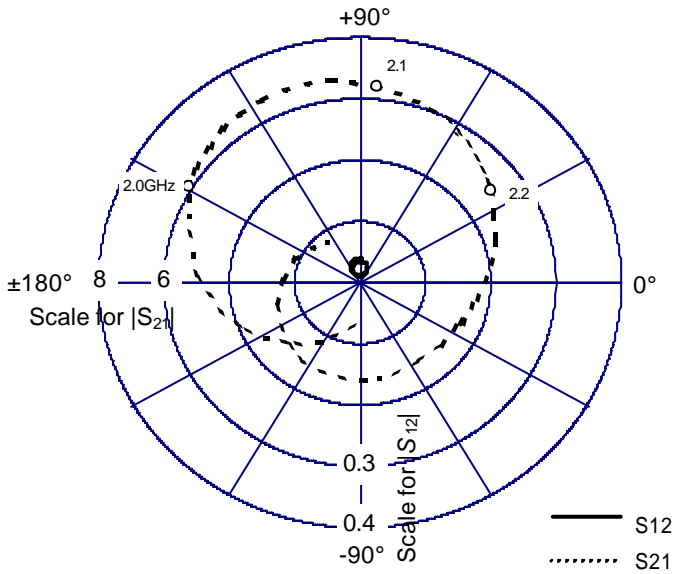
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S-Parameters @VDS=28V IDS=850mA f=1.7 to 3 GHz 1port Parameters



f(freq)(GHz)	S11(mag)	S11(ang)	S21(mag)	S21(ang)	S12(mag)	S12(ang)	S22(mag)	S22(ang)
0.1	0.967	177.2	1.369	157.7	0.001	51.2	0.774	-165.8
0.2	0.941	175.5	1.739	115.0	0.002	32.4	0.912	-173.7
0.3	0.942	175.3	1.321	68.1	0.003	10.1	0.907	-178.7
0.4	0.949	173.9	0.882	40.6	0.002	19.4	0.913	179.1
0.5	0.952	171.9	0.611	21.9	0.001	-28.8	0.921	177.3
1	0.945	161.9	0.314	-21.0	0.002	35.5	0.934	167.6
1.1	0.946	158.7	0.325	-28.5	0.002	45.3	0.929	165.1
1.2	0.945	155.4	0.359	-35.4	0.004	26.5	0.930	162.7
1.3	0.937	151.4	0.413	-43.8	0.005	40.8	0.931	160.1
1.4	0.927	146.0	0.511	-53.2	0.005	37.8	0.926	157.0
1.5	0.911	139.6	0.670	-64.5	0.007	20.0	0.911	152.9
1.6	0.879	130.2	0.931	-79.0	0.009	1.8	0.886	147.9
1.7	0.823	116.8	1.409	-97.0	0.012	-9.9	0.858	142.1
1.8	0.709	95.2	2.294	-122.0	0.017	-34.6	0.821	133.6
1.9	0.528	55.1	3.916	-158.4	0.023	-71.4	0.755	119.0
1.95	0.430	18.6	5.021	177.5	0.024	-102.7	0.672	106.4
2	0.411	-33.4	6.086	148.8	0.025	-136.5	0.520	88.9
2.05	0.493	-82.7	6.662	116.6	0.023	-175.4	0.273	65.9
2.1	0.584	-117.8	6.406	85.6	0.017	142.4	0.030	-60.7
2.11	0.596	-122.9	6.314	79.7	0.016	126.0	0.071	-108.9
2.12	0.608	-128.2	6.184	74.2	0.015	120.0	0.119	-122.9
2.13	0.615	-132.7	6.062	68.9	0.014	110.5	0.166	-129.9
2.14	0.624	-136.9	5.921	63.5	0.012	101.8	0.212	-135.5
2.15	0.627	-140.7	5.726	58.8	0.013	93.5	0.254	-139.5
2.16	0.632	-144.4	5.583	53.8	0.012	80.1	0.294	-143.5
2.17	0.636	-147.8	5.431	49.2	0.012	71.6	0.332	-147.1
2.18	0.634	-150.7	5.226	45.0	0.012	56.2	0.366	-150.2
2.19	0.640	-153.5	5.122	40.7	0.011	57.9	0.397	-152.7
2.2	0.638	-156.1	4.975	36.8	0.012	39.2	0.428	-155.8
2.25	0.632	-167.2	4.354	18.1	0.011	3.8	0.545	-167.2
2.3	0.618	-175.7	3.859	1.9	0.014	-21.7	0.626	-176.1
2.35	0.594	177.2	3.517	-12.8	0.015	-37.4	0.687	175.7
2.4	0.560	170.7	3.317	-26.9	0.017	-58.6	0.725	168.6
2.5	0.442	159.1	3.140	-54.8	0.021	-90.4	0.771	154.2
2.6	0.238	158.4	3.187	-87.1	0.025	-120.5	0.783	138.0
2.7	0.225	-130.2	3.095	-124.9	0.029	-159.7	0.736	118.1
2.8	0.521	-129.2	2.670	-164.1	0.027	163.0	0.648	95.0
2.9	0.713	-143.9	2.123	159.6	0.023	131.1	0.568	66.3
3	0.811	-156.1	1.664	126.9	0.018	104.2	0.515	26.4

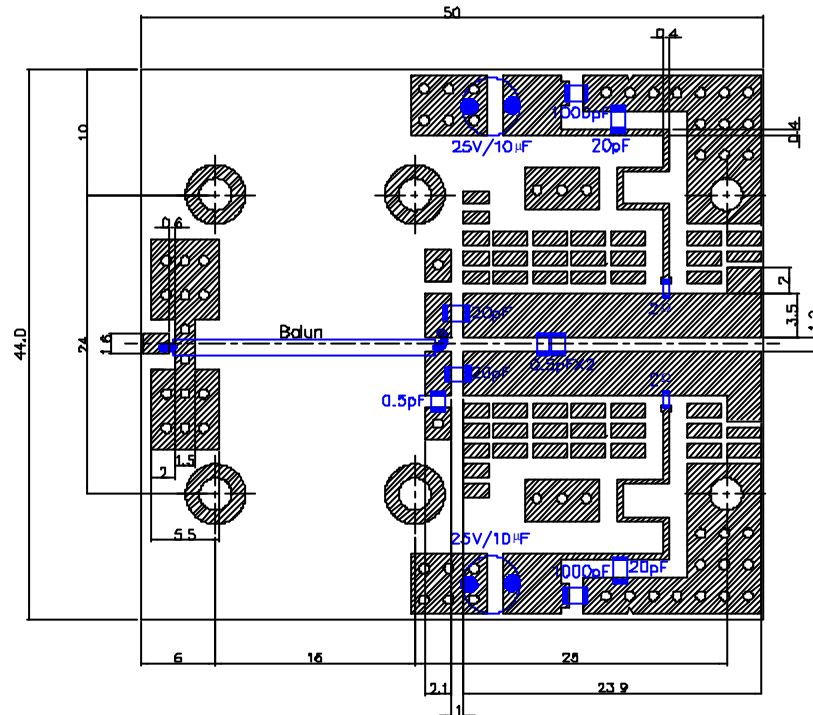


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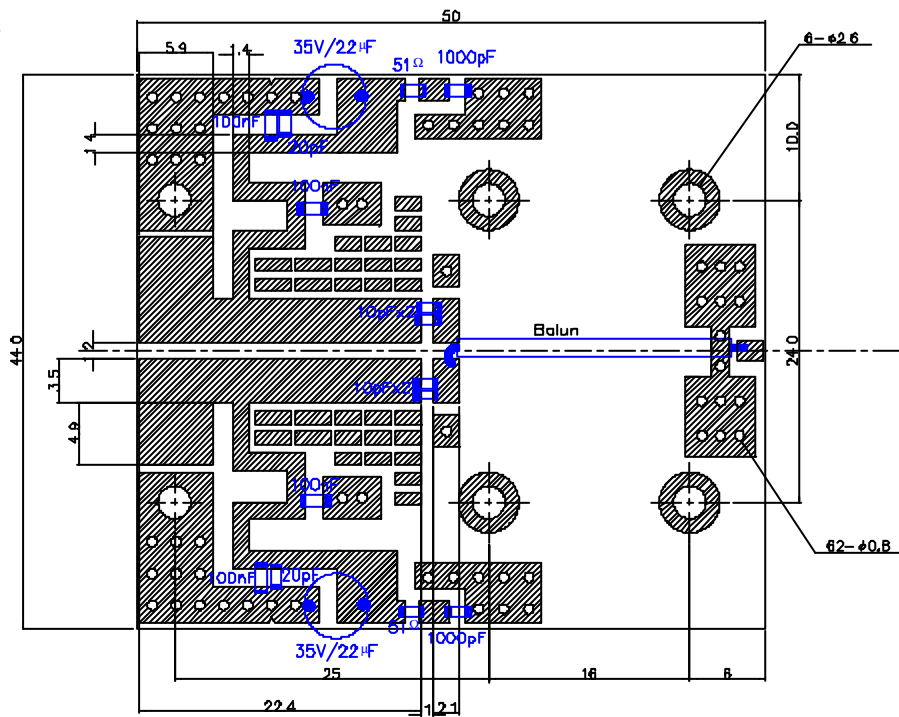
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BOARD LAYOUT

<INPUT SIDE>



<OUTPUT SIDE>

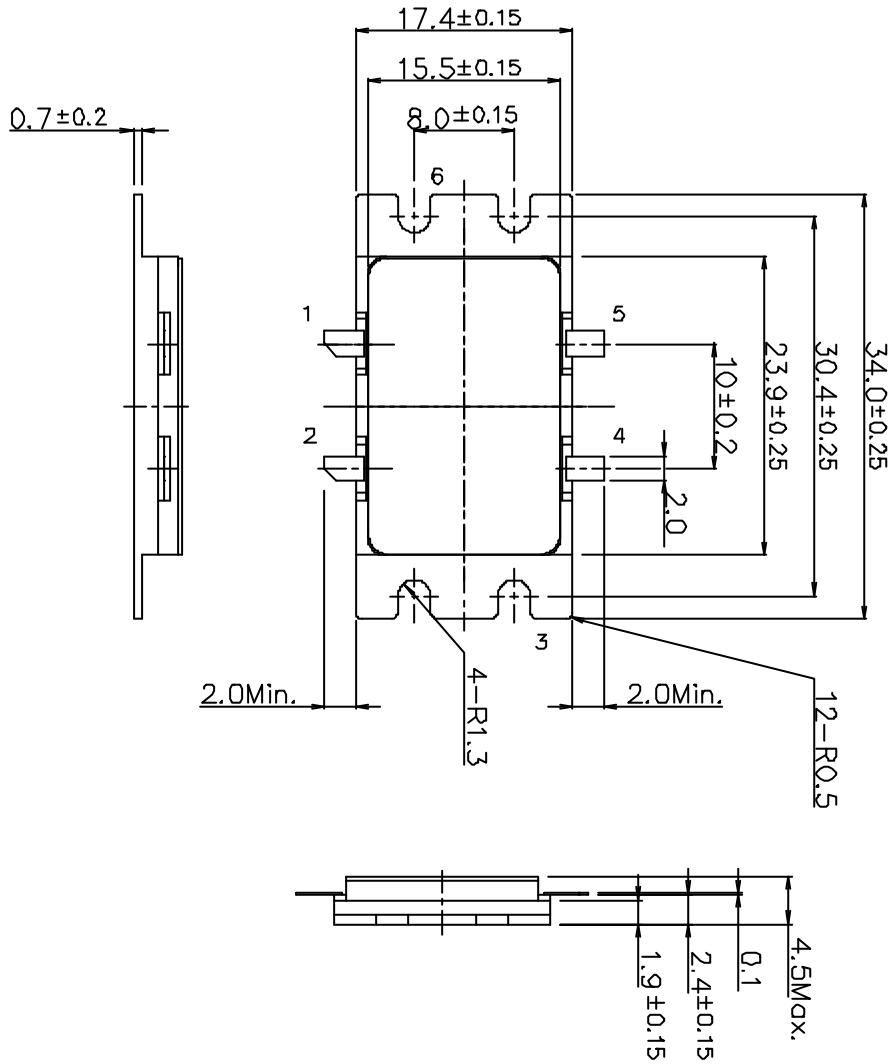


$\epsilon_r=3.5$ $t=0.6\text{mm}$

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IU Package Outline
Metal-Ceramic Hermetic Package



PIN ASSIGNMENT

- 1,2 : GATE
- 3 : SOURCE
- 4,5 : DRAIN
- 6 : SOURCE

Unit : mm

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CAUTION

Fujitsu Compound Semiconductor Products contain **gallium arsenide (GaAs)** which can be hazardous to the human body and the environment.

For safety, observe the following procedures:

Do not put these products into the mouth.

Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.

Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

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