

FLL21E180IU

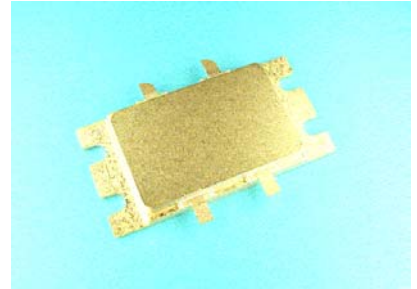
High Voltage - High Power GaAs FET

FEATURES

- High Voltage Operation : VDS=28V
- High Gain: 15.0dB(typ.) at Pout=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 of use.



ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	VDS	Tc=25 °C	32	V
Gate-Source Voltage	VGS		-3	V
Total Power Dissipation	Pt		230	W
Storage Temperature	Tstg		-65 to +175	°C
Channel Temperature	Tch		200	°C

RECOMMENDED OPERATING CONDITION (Case Temperature Tc=25°C)

Item	Symbol	Condition	Limit	Unit
DC Input Voltage	VDS		<28	V
Forward Gate Current	IGF	RG=1 Ω	<705	mA
Reverse Gate Current	IGR	RG=1 Ω	>-64	mA
Channel Temperature	Tch		155	°C

ELECTRICAL CHARACTERISTICS (Case Temperature Tc=25°C)

Item	Symbol	Condition	Limit			Unit
			min.	Typ.	Max.	
Pinch-Off Voltage	Vp	VDS=5V IDS=150mA	-0.1	-0.2	-0.5	V
Gate-Source Breakdown Voltage	VGS0	IGS=-1.5mA	-5	-	-	V
3rd Order Inter modulation Distortion	IM3	VDS=28V	-	-34	-30	dBc
Power Gain	Gp	IDS(DC)=1.7A	14.0	15.0	-	dB
Drain Efficiency	ηd	Pout=46dBm(Avg.)	-	26.0	-	%
Adjacent Channel Leakage Power Ratio	ACLRL	note	-	-35	-	dBc
Thermal Resistance	Rth	Channel to Case	-	0.55	0.65	°C /W

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

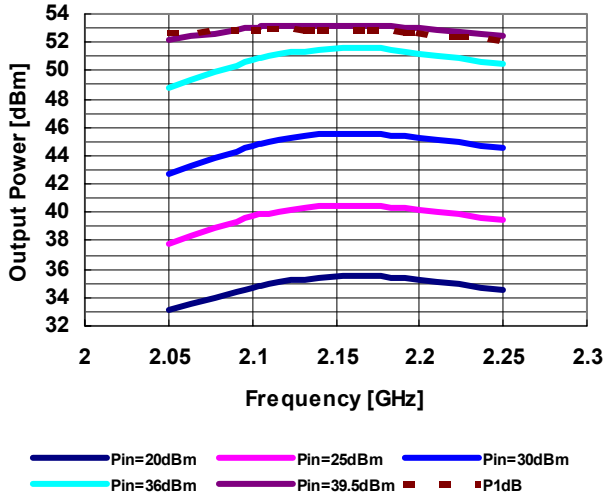
IM3 & Gain : fo=2.1325GHz, f1=2.1475GHz W-CDMA(3GPP3.4 12-00) BS-164ch non clipping modulation measured over 3.84MHz at fo-15MHz and f1+15MHz.

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

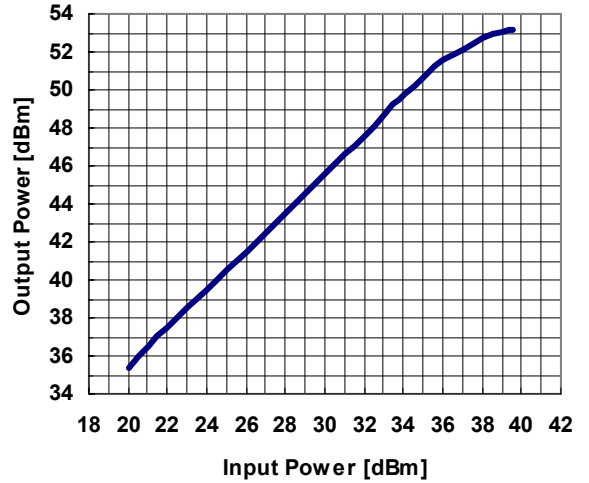
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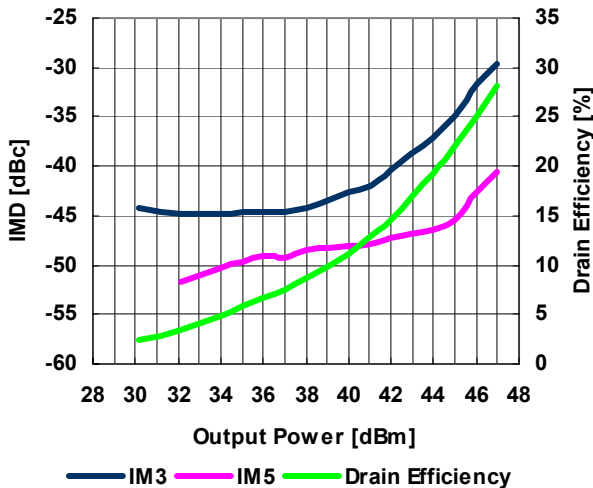
Output Power vs. Frequency
 @VDS=28V, IDS=1.7A
 Pulse RF Test : P.W. 1msec, duty=10%



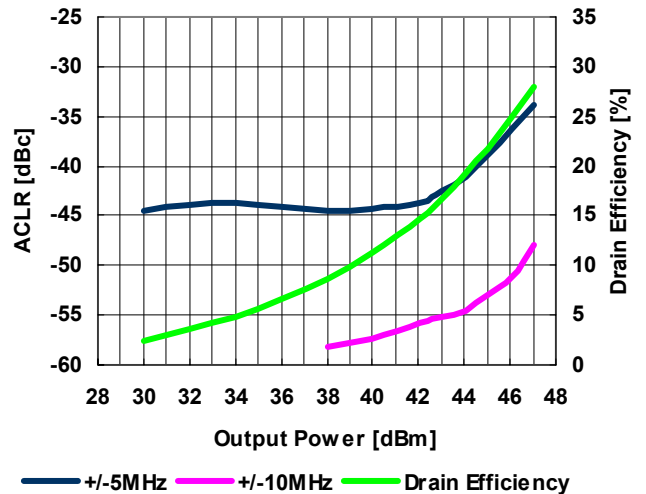
Output Power vs. Input Power
 @VDS=28V, IDS=2A, f=2.14GHz
 Pulse RF Test : P.W. 1msec, duty=10%



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



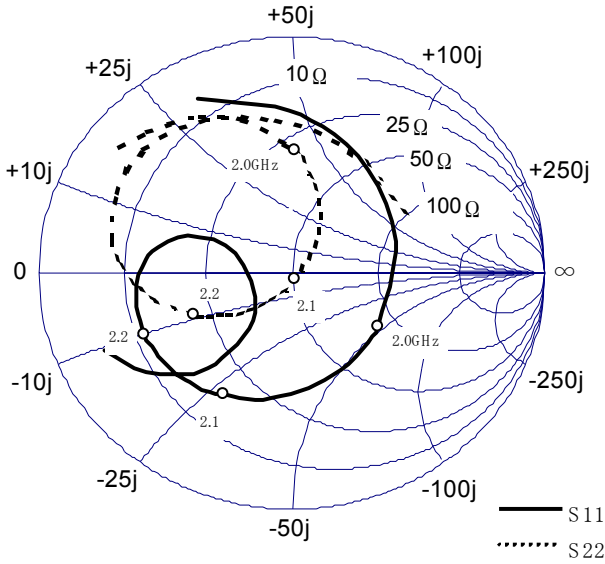
Single-Carrier ACLR, Drain Efficiency vs. Output Power
 @VDS=28V, IDS=1.7A, fo=2.1325GHz
 W-CDMA 3GPP BS-1 64ch Modulation



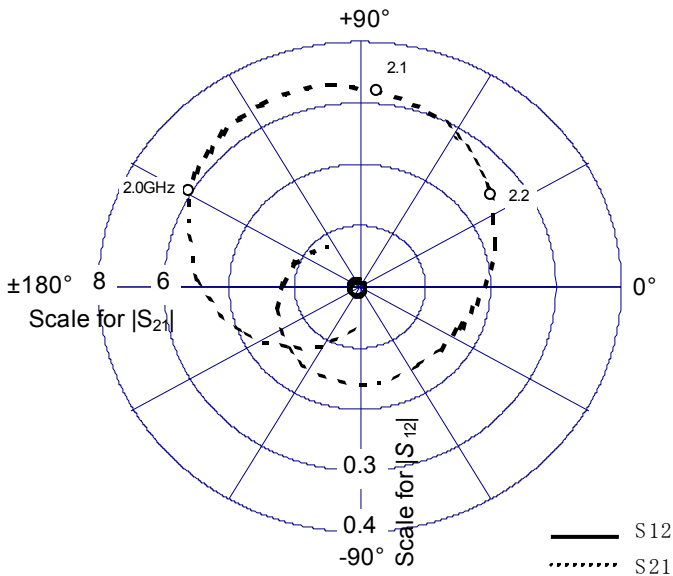
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S-Parameters @VDS=28V, IDS=850mA, f=1.7 to 3 GHz 1port Parameters



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

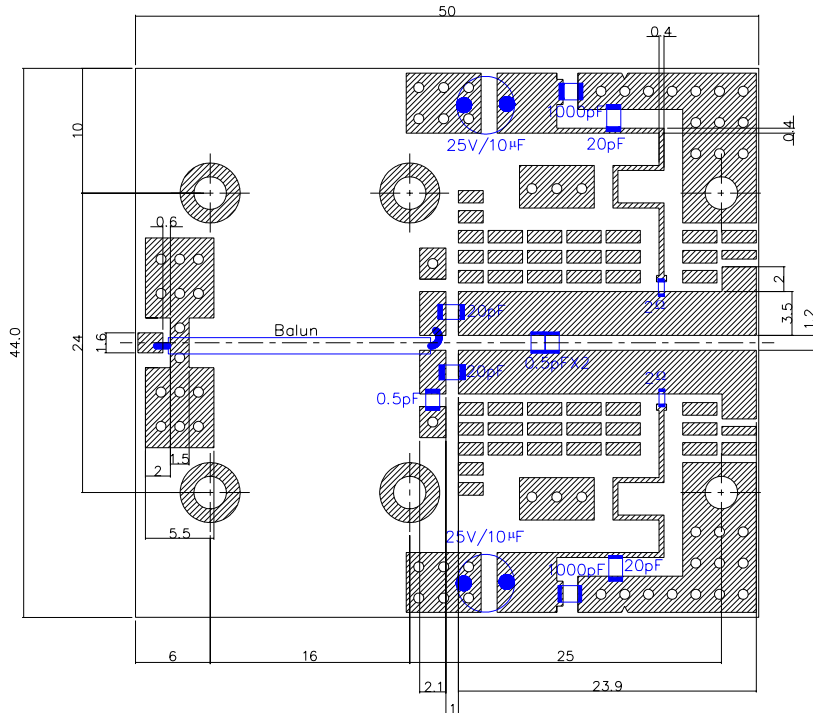


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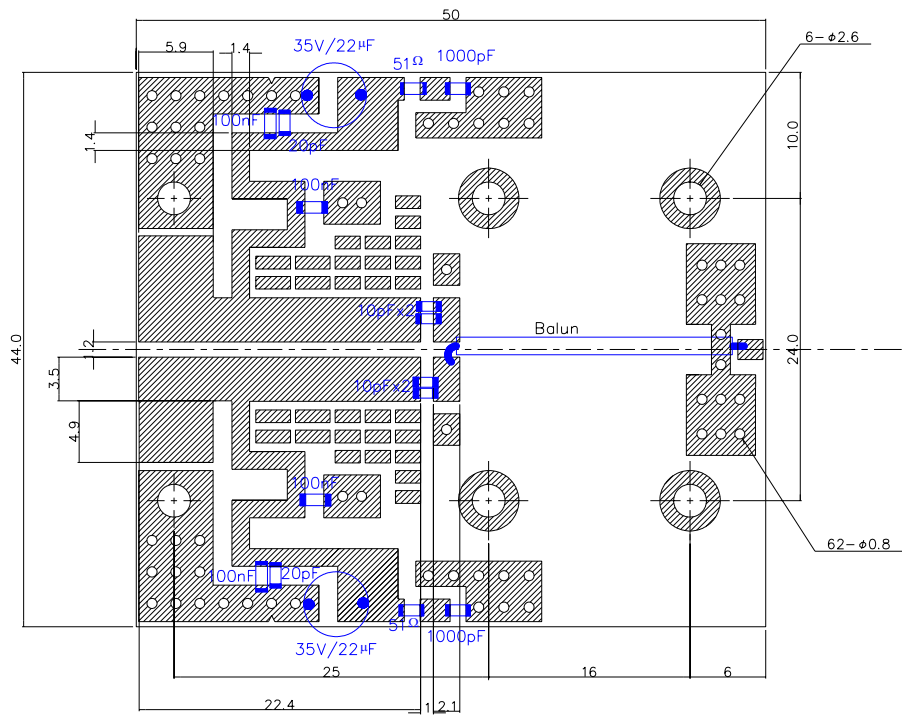
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BOARD LAYOUT

<INPUT SIDE>



<OUTPUT SIDE>

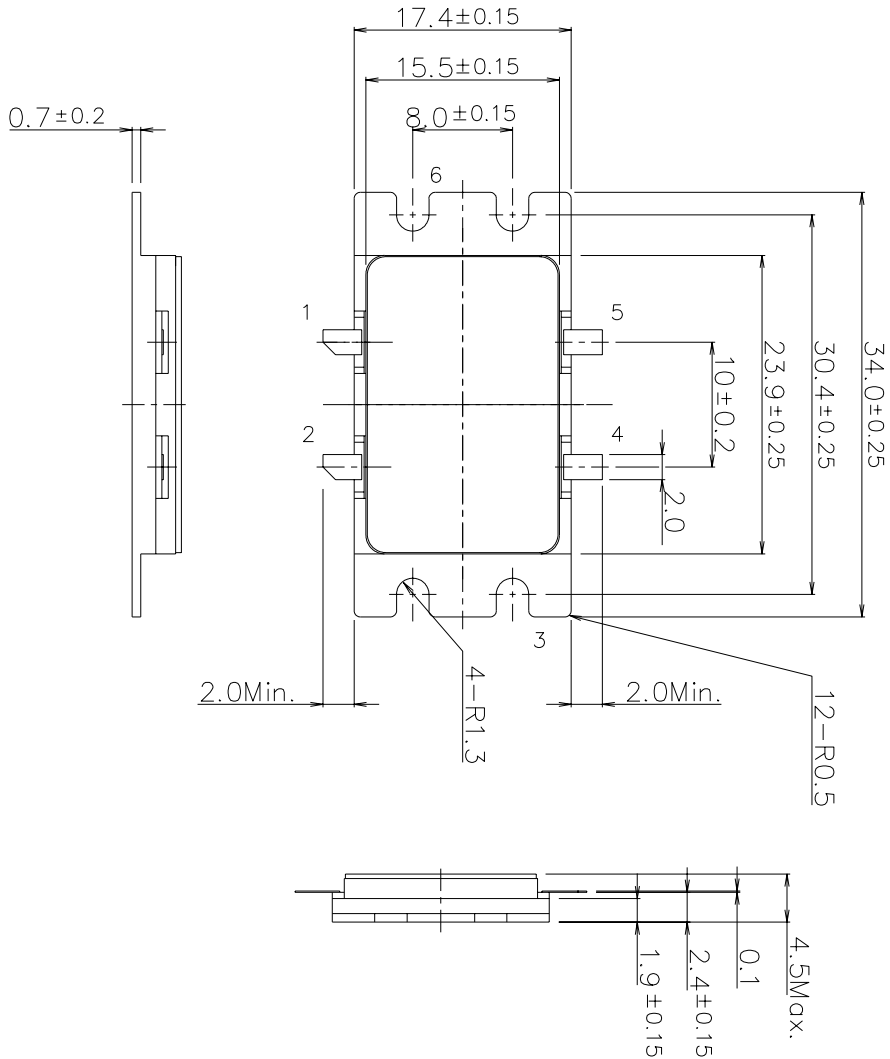


$\epsilon_r=3.5$ $t=0.6\text{mm}$

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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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- 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.
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