

FLL21E090IK

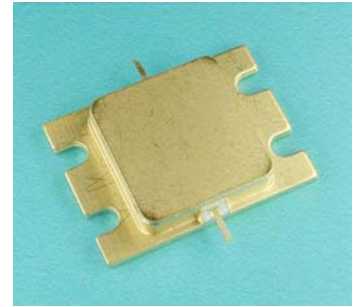
High Voltage - High Power GaAs FET

FEATURES

- High Voltage Operation : $V_{DS}=28V$
- High Gain: 15dB(typ.) at $P_{out}=43dBm(Avg.)$
- Broad Frequency Range : 2100 to 2200MHz
- Proven Reliability

DESCRIPTION

The FLL21E090IK 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 targeted for high voltage, low current operation in digitally modulated base station amplifiers. 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	$T_c=25^\circ C$	32	V
Gate-Source Voltage	VGS		-3	V
Total Power Dissipation	Pt		125	W
Storage Temperature	Tstg		-65 to +175	$^\circ C$
Channel Temperature	Tch		200	$^\circ C$

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

Item	Symbol	Condition	Limit	Unit
DC Input Voltage	VDS		<28	V
Forward Gate Current	IGF	$R_G=2\ \Omega$	<352	mA
Reverse Gate Current	IGR	$R_G=2\ \Omega$	>-31	mA
Channel Temperature	Tch		155	$^\circ C$

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

Item	Symbol	Condition	Limit			Unit
			min.	Typ.	Max.	
Pinch-Off Voltage	V_p	$V_{DS}=5V, I_{DS}=150mA$	-0.1	-0.2	-0.5	V
Gate-Source Breakdown Voltage	V_{GSO}	$I_{GS}=-1.5mA$	-5			V
3rd Order Inter modulation Distortion	IM3	$V_{DS}=28V$	-	-35	-30	dBc
Power Gain	G_p	$I_{DS}(DC)=700mA$	14.0	15.0	-	dB
Drain Efficiency	η_d	$P_{out}=43dBm(Avg.)$	-	26	-	%
Adjacent Channel Leakage Power Ratio	ACLR	note	-	-36	-	dBc
Thermal Resistance	R_{th}	Channel to Case	-	1.1	1.2	$^\circ C/W$

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

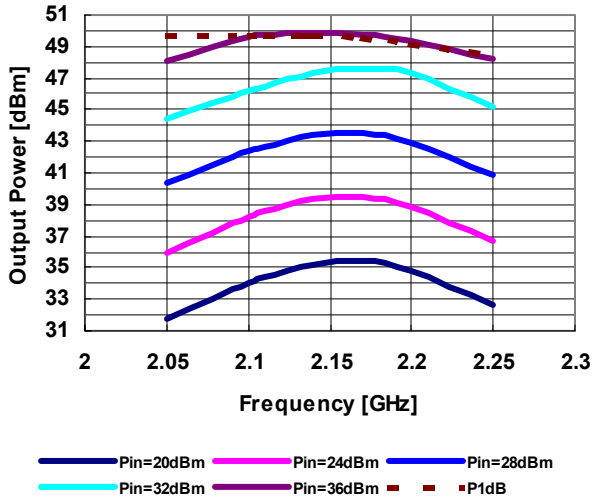
IM3 & Gain : $f_0=2.1325GHz, f_1=2.1475GHz$ W-CDMA(3GPP3.4 12-00) BS-1 64ch non clipping modulation measured over 3.84MHz at $f_0-15MHz$ and $f_1+15MHz$.

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

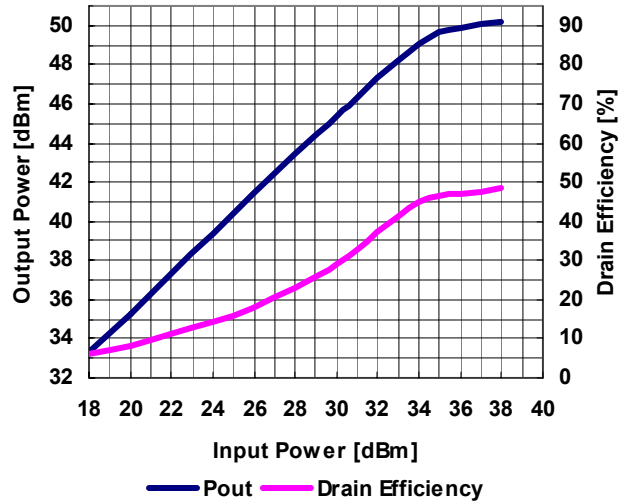
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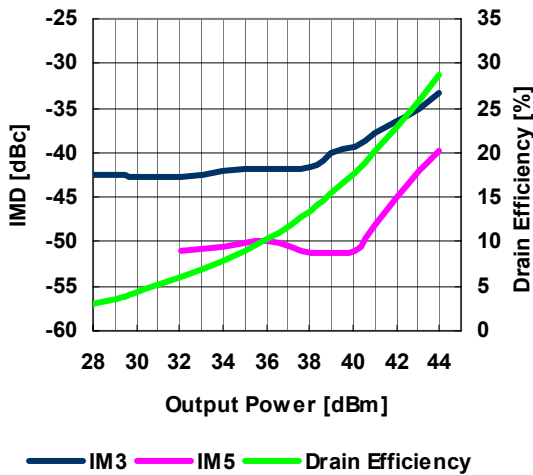
Output Power vs. Frequency
@VDS=28V, IDS=700mA



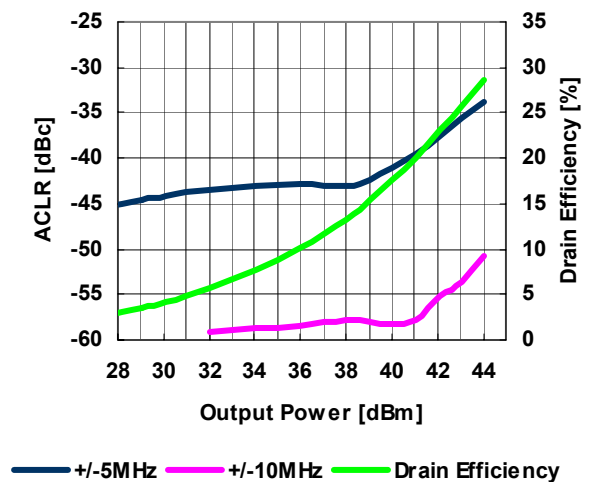
Output Power , Drain Efficiency vs. Input Power
@VDS=28V, IDS=700mA, f=2.14GHz



Two-Carrier IMD(ACLR)& Drain Efficiency vs. Output Power
@VDS=28V IDS=700mA fo=2.1325, f1=2.1475GHz
W-CDMA 3-GPP BS-1 64ch Modulation



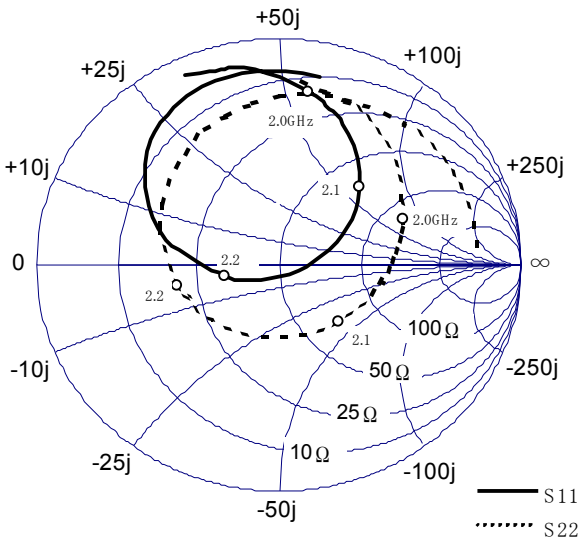
Single-Carrier ACLR & Drain Efficiency vs. Output Power
@VDS=28V IDS=700mA fo=2.1325GHz
W-CDMA 3GPP BS-1 64ch Modulation



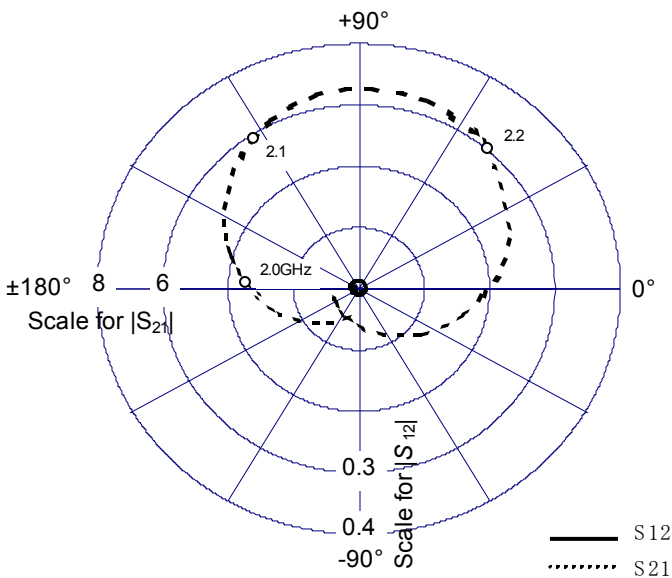
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S-Parameters @VDS=28V, IDS=700mA, f=1.7 to 3 GHz



!freq(GHz)	S11(mag)	S11(ang)	S21(mag)	S21(ang)	S12(mag)	S12(ang)	S22(mag)	S22(ang)
0.1	0.973	175.6	0.958	161.9	0.000	34.8	0.711	-168.4
0.2	0.953	171.7	1.370	136.9	0.001	94.1	0.876	-175.4
0.3	0.934	169.7	1.433	95.6	0.003	50.0	0.931	174.7
0.4	0.932	167.0	1.182	61.6	0.003	12.2	0.922	167.3
0.5	0.940	164.2	0.890	33.5	0.002	3.7	0.908	162.4
1	0.947	147.8	0.390	-31.8	0.003	18.2	0.928	137.9
1.1	0.952	143.8	0.381	-41.2	0.003	14.1	0.921	132.4
1.2	0.958	139.8	0.394	-50.1	0.004	7.2	0.922	126.4
1.3	0.948	135.8	0.423	-59.3	0.004	7.5	0.921	120.0
1.4	0.951	131.5	0.480	-69.3	0.004	13.5	0.910	112.6
1.5	0.952	126.7	0.571	-80.6	0.005	-1.2	0.893	104.1
1.6	0.935	121.3	0.715	-93.2	0.007	-19.0	0.857	94.5
1.7	0.924	114.9	0.952	-108.0	0.008	-35.4	0.820	83.3
1.8	0.896	107.1	1.356	-126.3	0.010	-48.1	0.776	69.2
1.9	0.866	96.5	2.101	-150.4	0.012	-78.7	0.692	50.7
1.95	0.832	89.8	2.692	-165.2	0.014	-102.2	0.631	38.1
2	0.775	80.9	3.492	-176.7	0.016	-121.5	0.553	21.5
2.05	0.675	67.3	4.599	-153.2	0.017	-152.8	0.454	-3.0
2.1	0.478	46.0	5.845	123.1	0.020	161.6	0.352	-45.7
2.11	0.422	40.4	6.094	115.8	0.020	151.9	0.338	-57.6
2.12	0.360	34.3	6.273	108.9	0.020	141.1	0.327	-70.7
2.13	0.293	27.1	6.451	101.3	0.020	130.2	0.323	-84.5
2.14	0.222	18.7	6.549	93.5	0.020	123.6	0.325	-98.7
2.15	0.149	6.2	6.559	85.9	0.021	111.2	0.333	-112.3
2.16	0.083	-18.5	6.563	78.2	0.020	97.2	0.347	-125.6
2.17	0.052	-87.3	6.512	70.6	0.020	88.0	0.364	-137.7
2.18	0.100	-139.9	6.332	63.2	0.019	72.8	0.385	-148.7
2.19	0.166	-156.8	6.214	56.0	0.020	69.5	0.403	-158.2
2.2	0.228	-166.8	6.005	49.2	0.019	53.5	0.425	-167.4
2.25	0.479	166.4	4.860	18.9	0.016	8.9	0.513	160.9
2.3	0.624	151.2	3.765	-4.5	0.015	-20.0	0.577	141.9
2.35	0.710	141.0	2.960	-22.9	0.015	-45.9	0.626	127.9
2.4	0.764	133.4	2.395	-38.2	0.014	-65.6	0.665	116.9
2.5	0.822	121.6	1.673	-62.5	0.013	-95.6	0.723	98.1
2.6	0.848	112.1	1.293	-83.3	0.011	-118.3	0.767	80.6
2.7	0.858	103.8	1.066	-101.3	0.011	-142.2	0.790	63.4
2.8	0.860	96.0	0.936	-119.0	0.011	-154.2	0.818	45.2
2.9	0.856	88.1	0.866	-137.8	0.012	-174.4	0.825	25.3
3	0.846	78.8	0.849	-157.1	0.012	168.1	0.829	3.5

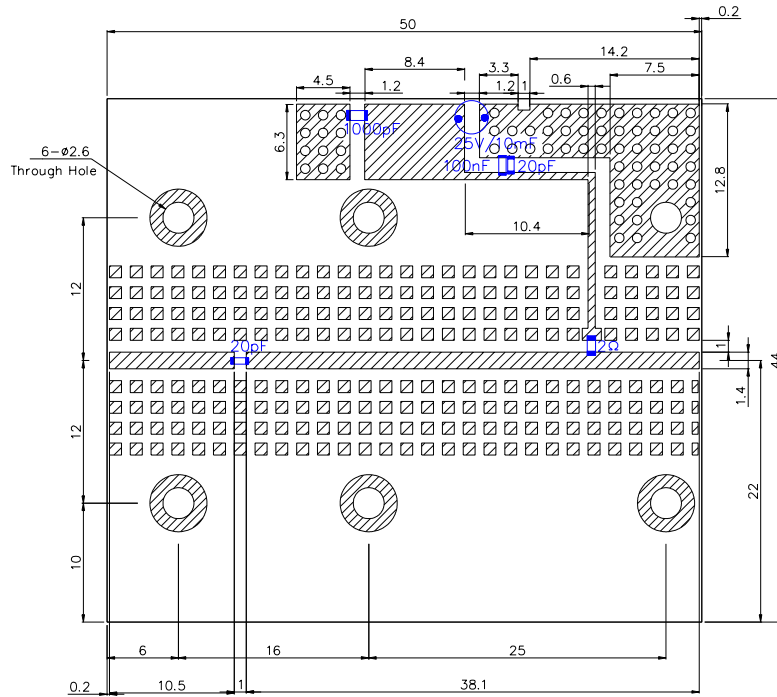


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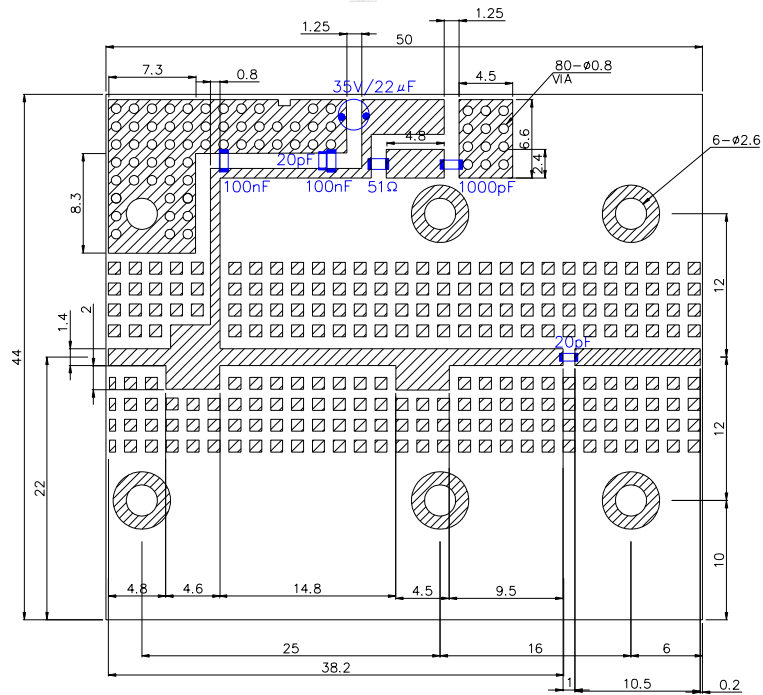
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BOARD LAYOUT

<INPUT SIDE>



<OUTPUT SIDE>

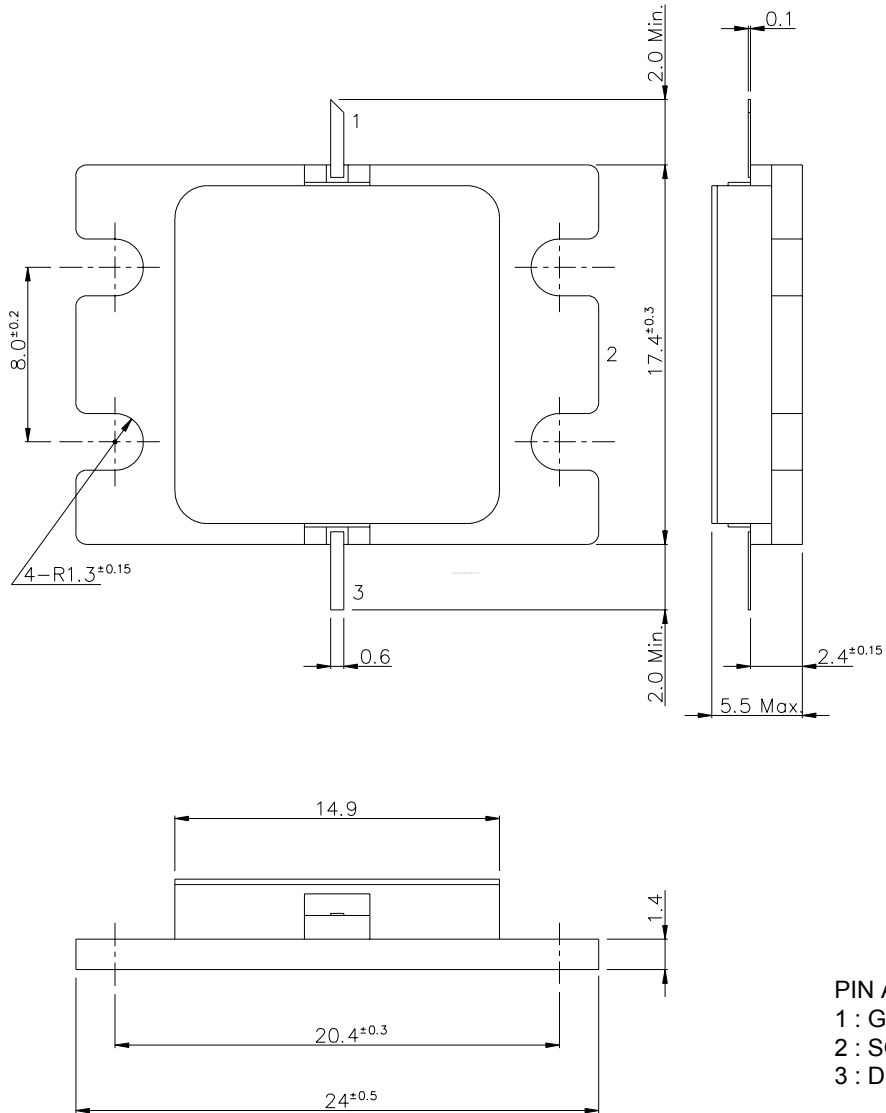


$\epsilon_r=3.5$ $t=0.6\text{mm}$

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IK Package Outline
Metal-Ceramic Hermetic Package



PIN ASSIGMENT
1 : GATE
2 : SOURCE(Flange)
3 : DRAIN

Unit:mm

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- 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.
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