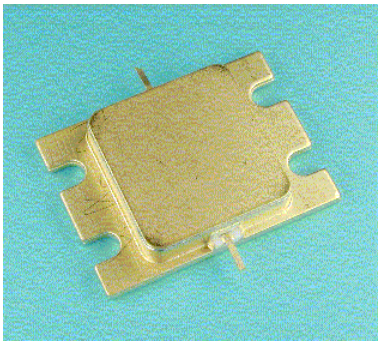
FLL21E040IK

High Voltage - High Power GaAs FET

FEATURES

- High Voltage Operation : VDS=28V
- High Gain: 15dB(typ.) at Pout=40dBm(Avg.)
- Broad Frequency Range : 2100 to 2200MHz
- Proven Reliability



DESCRIPTION

The FLL21E040IK 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 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		32	V
Gate-Source Voltage	VGS	Tc=25ºC	-3	V
Total Power Dissipation	Pt		83.3	W
Storage Temperature	Tstg		-65 to +175	ºC
Channel Temperature	Tch		200	ºC

RECOMMENDED OPERATING CONDITION (Case Temperature Tc=25ºC)

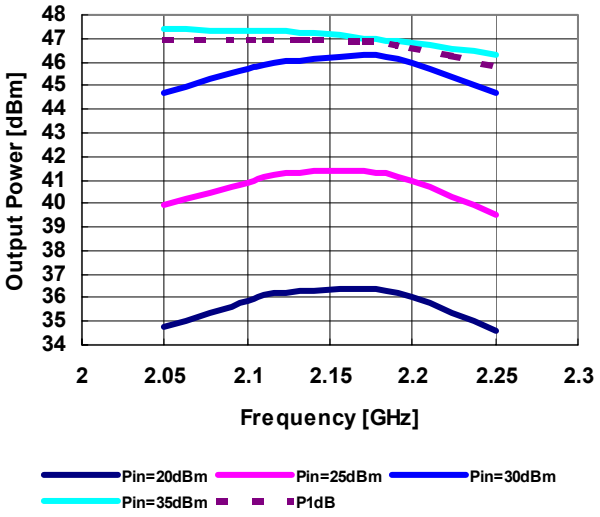
Item	Symbol	Condition	Limit	Unit
DC Input Voltage	VDS		<28	V
Forward Gate Current	IGF	RG=2 Ω	<176	mA
Reverse Gate Current	IGR	RG=2 Ω	>-15.9	mA
Channel Temperature	Tch		155	ºC

ELECTRICAL CHARACTERISTICS (Case Temperature Tc=25ºC)

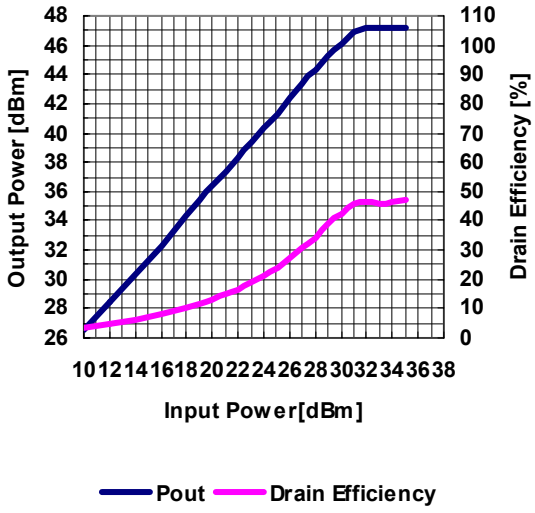
Item	Symbol	Condition	Limit			Unit
			min.	Typ.	Max.	
Pinch-Off Voltage	Vp	VDS=5V IDS=150mA	-0.1	-0.2	-0.5	V
Gate-Source Breakdown Voltage	VGSO	IGS=-1.5mA	-5	-	-	V
3rd Order Intermodulation Distortion	IM3	VDS=28V	-	-35	-31	dBc
Power Gain	Gp	IDS(DC)=500mA	14.0	15.0	-	dB
Drain Efficiency	ηd	Pout=40dBm(Avg.)	-	26	-	%
Adjacent Channel Leakage Power Ratio	ACLR	note	-	-36	-	dBc
Thermal Resistance	Rth	Channel to Case	-	1.6	1.8	ºC/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-1 64ch non clipping modulation measured over 3.84MHz at fo-15MHz and fl+15MHz.
ACLR : fo=2.1325GHz W-CDMA(3GPP3.4 12-00) BS-1 64ch non clipping modulation, measured over 3.84MHz at fo+/-5MHz.

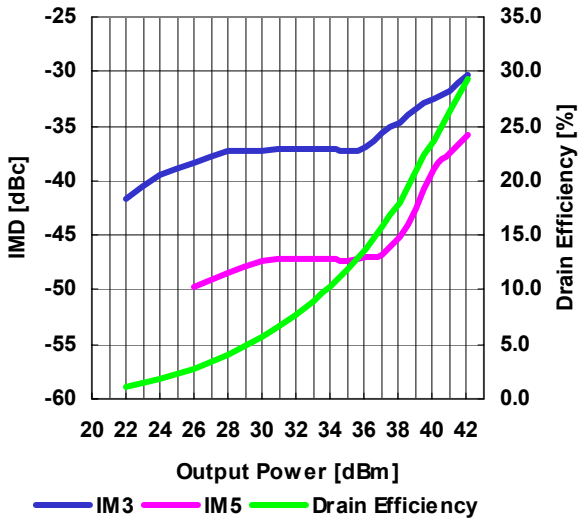
Output Power vs. Frequency
@VDS=28V, IDS=500mA



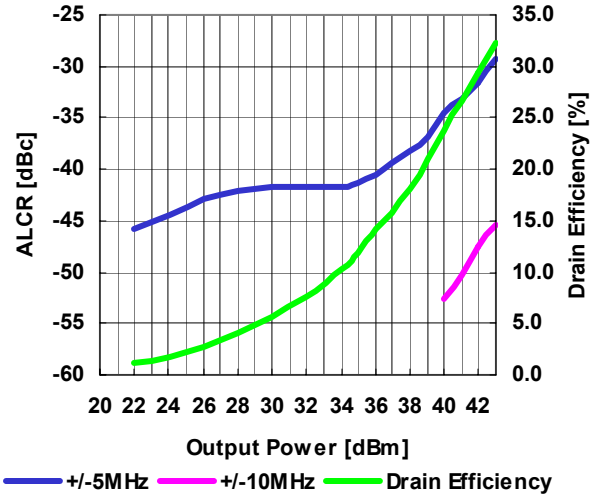
Output Power & Drain Efficiency vs. Input Power
@VDS=28V, IDS=500mA f=2.14GHz



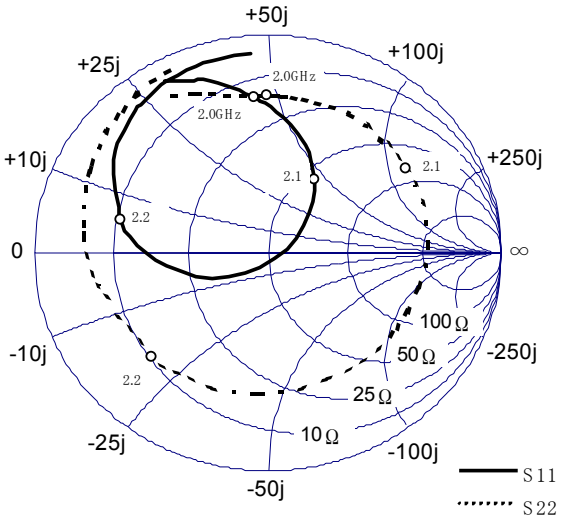
Two-Carrier IMD(ACLR) & Drain Efficiency vs. Output Power
@VDS=28V IDS=500mA fo=2.1325, f1=2.1475GHz
W-CDMA 3-GPP BS-1 64ch Modulation

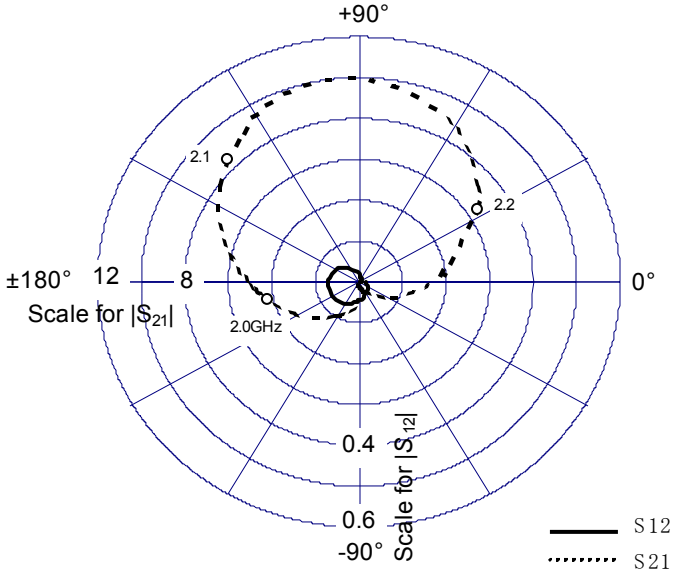


Single-Carrier ACLR & Drain Efficiency vs. Output Power
@VDS=28V IDS=500mA fo=2.1325GHz
W-CDMA 3GPP BS-1 64ch Modulation



S-Parameters @VDS=28V, IDS=500mA, 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	0.953	174.7	2.608	176.3	0.001	70.7	0.565	-153.1
0.2	0.889	171.9	4.640	130.1	0.002	65.7	0.851	-165.1
0.3	0.895	172.6	3.664	71.9	0.004	20.9	0.850	-178.9
0.4	0.931	169.8	2.268	39.5	0.002	22.6	0.838	177.2
0.5	0.938	166.2	1.511	20.1	0.002	10.9	0.855	173.8
1	0.948	149.4	0.614	-29.3	0.004	27.4	0.913	153.8
1.1	0.953	146.0	0.588	-37.3	0.005	32.1	0.906	149.7
1.2	0.952	142.3	0.597	-44.5	0.006	24.5	0.907	145.6
1.3	0.948	138.4	0.624	-52.9	0.006	31.8	0.907	141.3
1.4	0.944	133.8	0.689	-61.7	0.007	28.9	0.903	136.8
1.5	0.943	129.6	0.799	-72.1	0.009	13.0	0.889	131.4
1.6	0.920	124.8	0.964	-83.5	0.011	5.0	0.855	125.8
1.7	0.905	119.3	1.243	-97.0	0.014	-4.4	0.828	119.6
1.8	0.858	112.8	1.718	-114.1	0.018	-21.8	0.794	112.9
1.9	0.807	105.3	2.575	-136.9	0.026	-41.4	0.743	104.5
1.95	0.768	101.1	3.263	-151.0	0.030	-57.4	0.727	98.8
2	0.714	94.9	4.253	-168.2	0.038	-74.7	0.721	90.1
2.05	0.625	83.9	5.890	169.2	0.050	-97.1	0.722	73.3
2.1	0.388	59.6	8.431	135.3	0.066	-132.4	0.706	33.0
2.11	0.304	50.9	9.088	125.7	0.069	-141.9	0.698	19.4
2.12	0.199	38.9	9.530	115.7	0.072	-152.1	0.684	3.3
2.13	0.082	11.6	9.900	104.5	0.071	-163.8	0.665	-14.6
2.14	0.076	-116.4	9.952	92.4	0.073	-174.9	0.652	-35.0
2.15	0.204	-147.0	9.710	80.5	0.068	172.1	0.641	-55.9
2.16	0.328	-161.3	9.243	68.8	0.064	160.5	0.640	-76.1
2.17	0.438	-172.0	8.617	58.1	0.059	151.0	0.647	-94.5
2.18	0.523	179.6	7.824	48.7	0.051	140.7	0.662	-111.0
2.19	0.598	172.6	7.157	40.2	0.047	132.6	0.673	-124.3
2.2	0.648	166.5	6.453	32.8	0.040	124.9	0.691	-135.8
2.25	0.788	147.2	3.966	5.9	0.023	96.9	0.753	-171.7
2.3	0.836	137.6	2.609	-10.9	0.014	75.7	0.796	170.6
2.35	0.862	130.9	1.839	-24.0	0.010	64.0	0.828	159.6
2.4	0.877	126.5	1.364	-34.2	0.006	43.1	0.853	151.9
2.5	0.901	119.0	0.826	-49.5	0.003	10.9	0.883	141.3
2.6	0.910	112.6	0.558	-62.6	0.004	17.9	0.899	133.6
2.7	0.913	107.8	0.401	-73.0	0.002	-3.1	0.909	127.7
2.8	0.917	103.2	0.305	-81.7	0.001	-5.4	0.925	122.5
2.9	0.918	99.0	0.243	-90.1	0.002	-12.9	0.934	117.9
3	0.920	94.8	0.206	-96.9	0.002	-25.9	0.937	114.2

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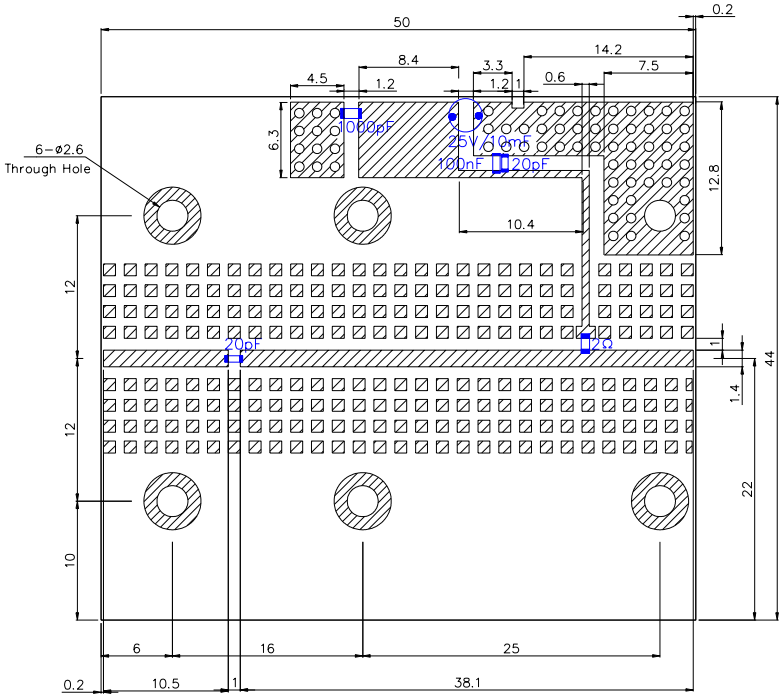
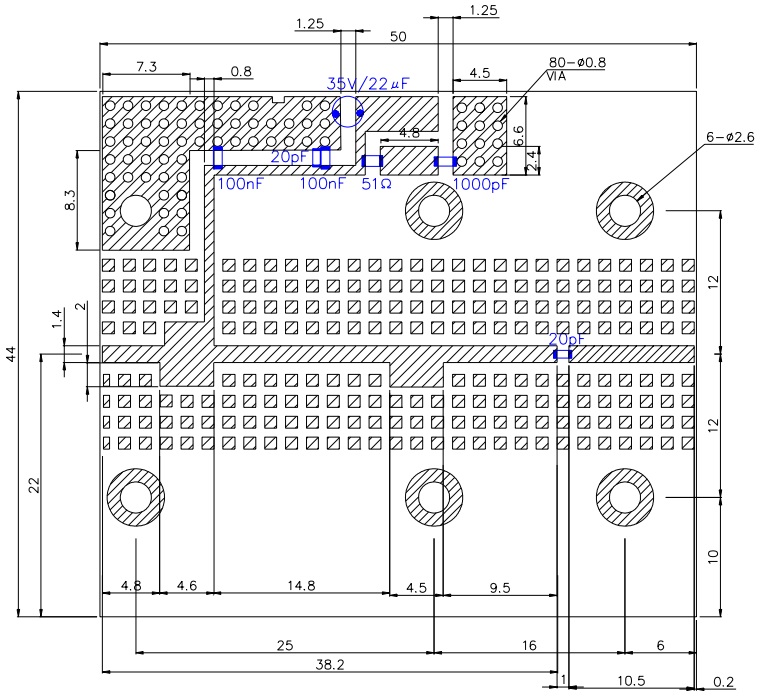
BOARD LAYOUT

<INPUT SIDE>

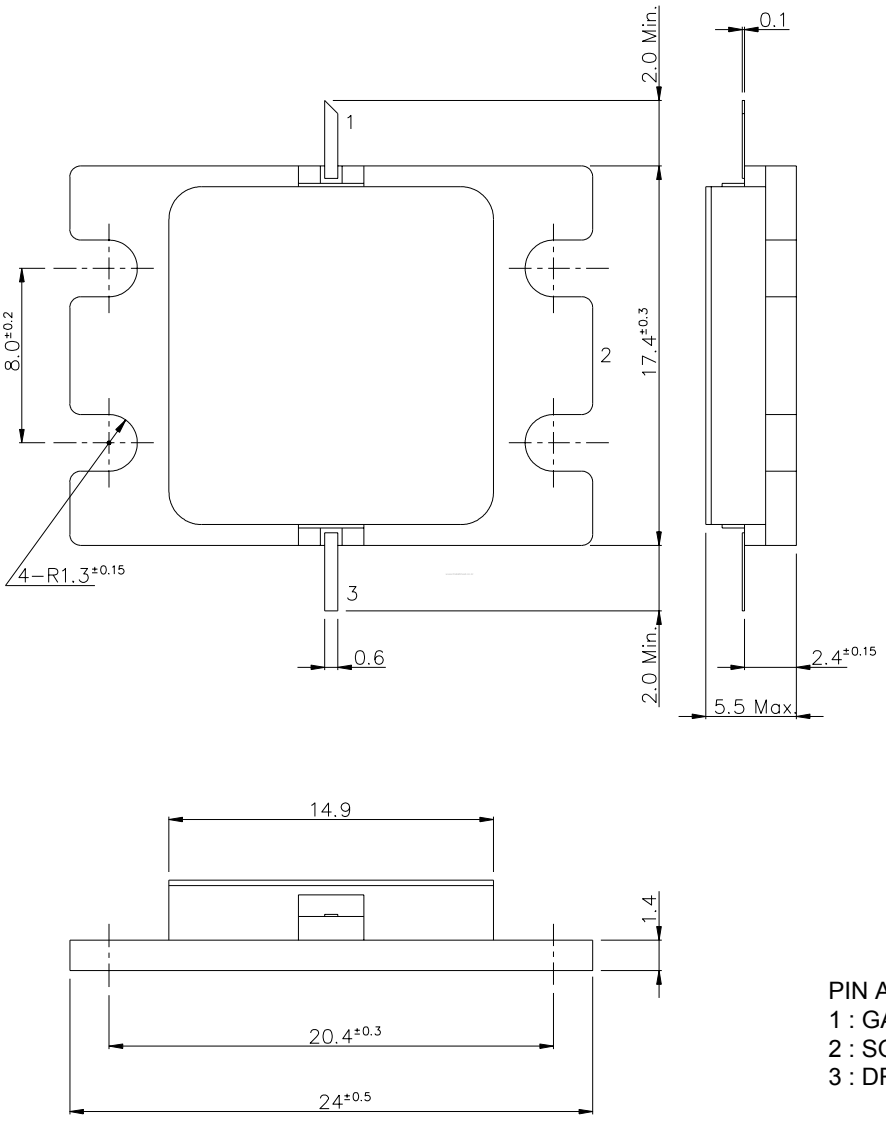


<OUTPUT SIDE>



εr=3.5 t=0.6mm

IK Package Outline
Metal-Ceramic Hermetic Package



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

Unit:mm

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CAUTION

Eudyna Devices Inc. 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.