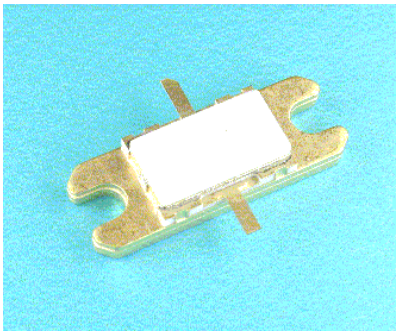
FLL21E010MK

High Voltage - High Power GaAs FET

FEATURES

- High Voltage Operation : VDS=28V
- High Power : P1dB=40dBm(typ.) at f=2.17GHz
- High Gain: G1dB=14dB(typ.) at f=2.17GHz
- Broad Frequency Range : 2100 to 2200MHz
- Proven Reliability



DESCRIPTION

The FLL21E010MK 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 amplification. This product is ideally suited for W-CDMA and Multi-carrier PCS 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	V_{DS}		32	V
Gate-Source Voltage	V_{GS}	Tc=25°C	-3	V
Total Power Dissipation	Pt		41.5	W
Storage Temperature	Tstg		-65 to +175	°C
Channel Temperature	Tch		200	°C

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

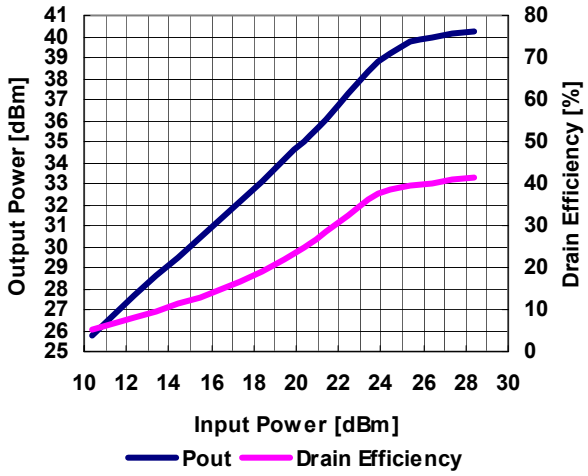
Item	Symbol	Condition	Limit	Unit
DC Input Voltage	V_{DS}		<28	V
Forward Gate Current	I_{GF}	R_G=50 Ω	<47	mA
Reverse Gate Current	I_{GR}	R_G=50 Ω	>-2.5	mA
Channel Temperature	Tch		155	°C

ELECTRICAL CHARACTERISTICS (Case Temperature Tc=25°C)

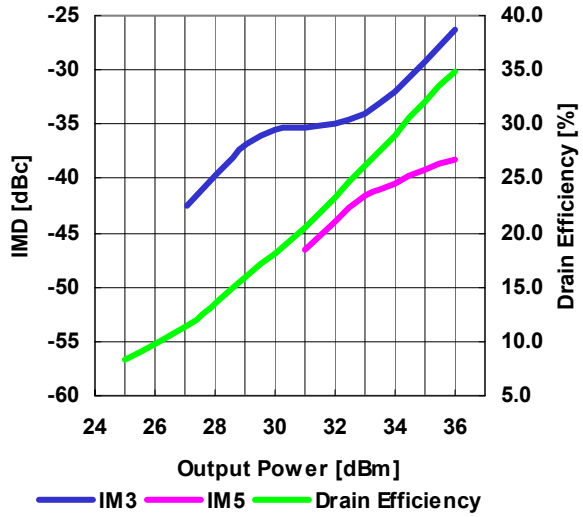
Item	Symbol	Condition	Limit			Unit
			min.	Typ.	Max.	
Pinch-Off Voltage	Vp	V_{DS}=5V I_{DS}=1.5mA	-0.1	-0.2	-0.5	V
Gate-Source Breakdown Voltage	V_{GSO}	I_{GS}=-15μA	-5	-	-	V
Output Power at 1dB G.C.P.	P1dB	V_{DS}=28V f=2.17GHz	39.0	40.0	-	dBm
Power Gain at 1dB G.C.P.	G1dB	$I_{DS(DC)}$=125mA	13.0	14.0	-	dB
Drain Efficiency	ηd		-	40	-	%
Thermal Resistance	Rth	Channel to Case	-	3.1	3.6	°C /W

G.C.P.:Gain Compression Point

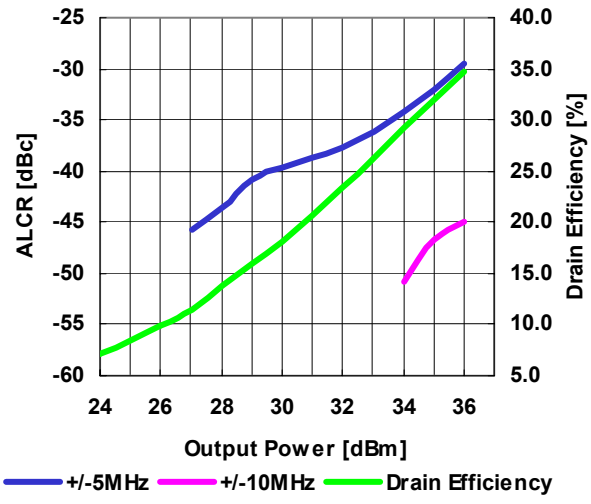
Output Power & Drain Efficiency vs. Input Power
@VDS=28V IDS=125mA f=2.17GHz



Two-Carrier IMD(ACLR) & Drain Efficiency vs. Output Power
@VDS=28V IDS=125mA fo=2.1325GHz f1=2.1475GHz
W-CDMA 3-GPP BS-1 64ch Modulation



Single-Carrier ACLR & Drain Efficiency vs. Output Power
@VDS=28V IDS=125mA f=2.1325GHz
W-CDMA 3GPP BS-1 64ch Modulation



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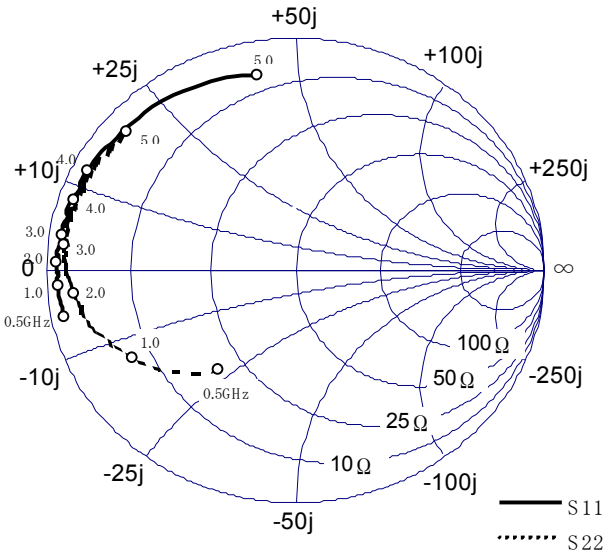
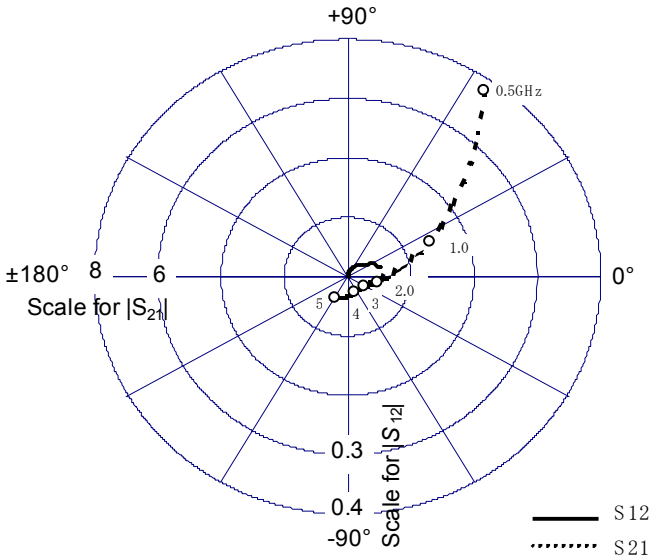
S-Parameters @VDS=28V IDS=300mA f=0.5 to 5.0 GHz





!freq(GHz)	S11(mag)	S11(ang)	S21(mag)	S21(ang)	S12(mag)	S12(ang)	S22(mag)	S22(ang)
0.1	0.958	-120.1	38.897	110.3	0.005	17.9	0.226	-81.4
0.2	0.948	-148.0	20.943	88.1	0.005	-1.4	0.291	-101.0
0.3	0.945	-158.9	13.801	74.6	0.005	-11.9	0.375	-111.0
0.4	0.946	-164.3	9.953	64.0	0.004	-12.0	0.459	-119.0
0.5	0.945	-167.8	7.598	55.3	0.004	-7.9	0.531	-125.8
1	0.956	-175.7	2.880	24.4	0.002	29.6	0.756	-150.1
1.1	0.953	-176.5	2.487	19.5	0.002	32.1	0.778	-153.5
1.2	0.955	-177.5	2.153	15.5	0.002	52.9	0.806	-156.5
1.3	0.956	-177.9	1.906	11.7	0.003	50.6	0.826	-159.6
1.4	0.954	-178.8	1.688	7.8	0.003	60.6	0.839	-162.2
1.5	0.956	-179.6	1.526	4.5	0.005	65.7	0.854	-164.2
1.6	0.952	-179.7	1.391	1.3	0.004	61.6	0.869	-166.4
1.7	0.955	179.8	1.255	-1.7	0.004	74.9	0.873	-168.7
1.8	0.955	178.8	1.154	-4.5	0.006	80.3	0.879	-170.1
1.9	0.959	178.3	1.070	-7.3	0.006	73.5	0.889	-172.1
1.95	0.953	178.1	1.023	-9.2	0.007	80.8	0.888	-173.0
2	0.956	177.8	0.984	-9.9	0.007	77.8	0.890	-173.7
2.05	0.960	177.6	0.961	-11.6	0.007	77.2	0.897	-174.2
2.1	0.952	177.4	0.920	-13.1	0.008	71.8	0.902	-175.1
2.11	0.959	177.2	0.920	-13.4	0.007	79.5	0.899	-175.5
2.12	0.960	177.5	0.910	-13.5	0.007	76.2	0.901	-175.5
2.13	0.957	176.9	0.908	-13.9	0.008	74.8	0.906	-175.7
2.14	0.958	177.1	0.902	-13.4	0.011	61.1	0.900	-175.8
2.15	0.955	176.9	0.891	-14.4	0.008	74.9	0.905	-176.0
2.16	0.952	176.7	0.889	-15.2	0.007	74.5	0.904	-176.3
2.17	0.957	176.8	0.878	-14.8	0.007	79.2	0.910	-176.5
2.18	0.959	176.8	0.873	-15.0	0.008	69.0	0.905	-176.6
2.19	0.961	176.7	0.869	-15.2	0.007	72.9	0.906	-176.5
2.2	0.954	176.5	0.855	-15.9	0.007	77.2	0.904	-177.0
2.25	0.956	176.7	0.832	-16.7	0.007	78.7	0.909	-177.4
2.3	0.953	175.9	0.810	-17.5	0.008	74.9	0.909	-178.0
2.35	0.956	175.4	0.784	-19.7	0.009	80.0	0.920	-178.4
2.4	0.958	175.4	0.771	-20.7	0.009	75.0	0.919	-179.3
2.5	0.950	174.6	0.731	-22.7	0.010	75.0	0.920	179.5
2.6	0.951	174.0	0.701	-25.0	0.011	78.1	0.922	178.6
2.7	0.947	173.6	0.673	-27.7	0.012	74.2	0.931	177.0
2.8	0.953	172.5	0.652	-30.1	0.011	75.5	0.924	175.7
2.9	0.944	171.6	0.635	-33.1	0.013	74.0	0.927	174.9
3	0.949	170.8	0.609	-35.5	0.014	70.5	0.930	173.5

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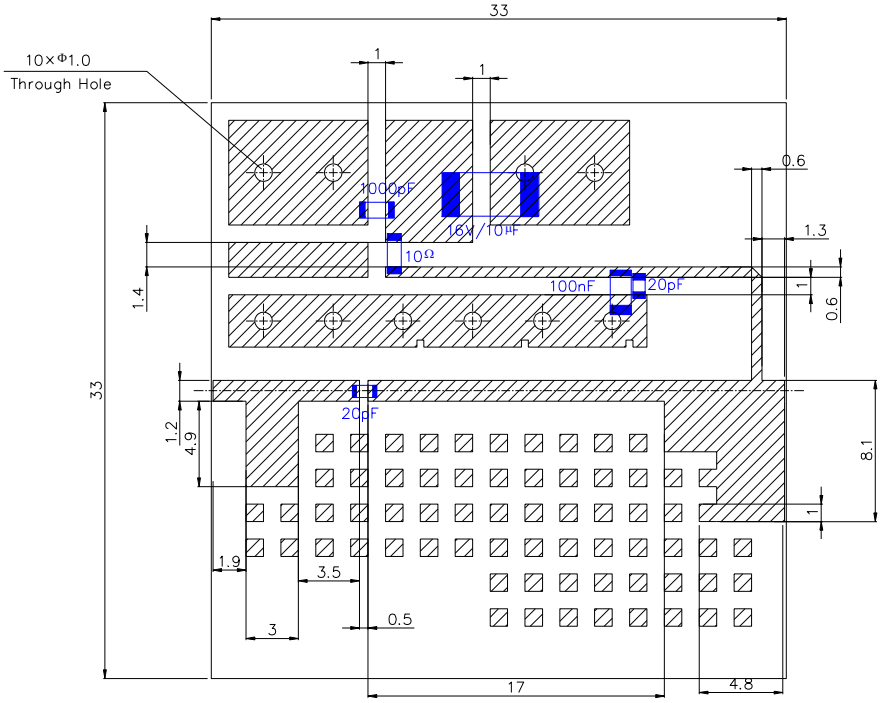
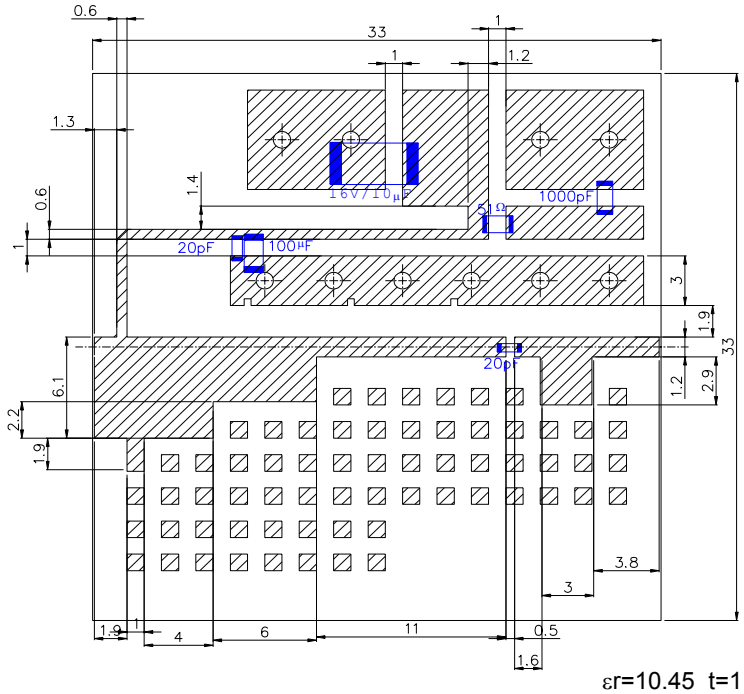
BOARD LAYOUT

<INPUT SIDE>

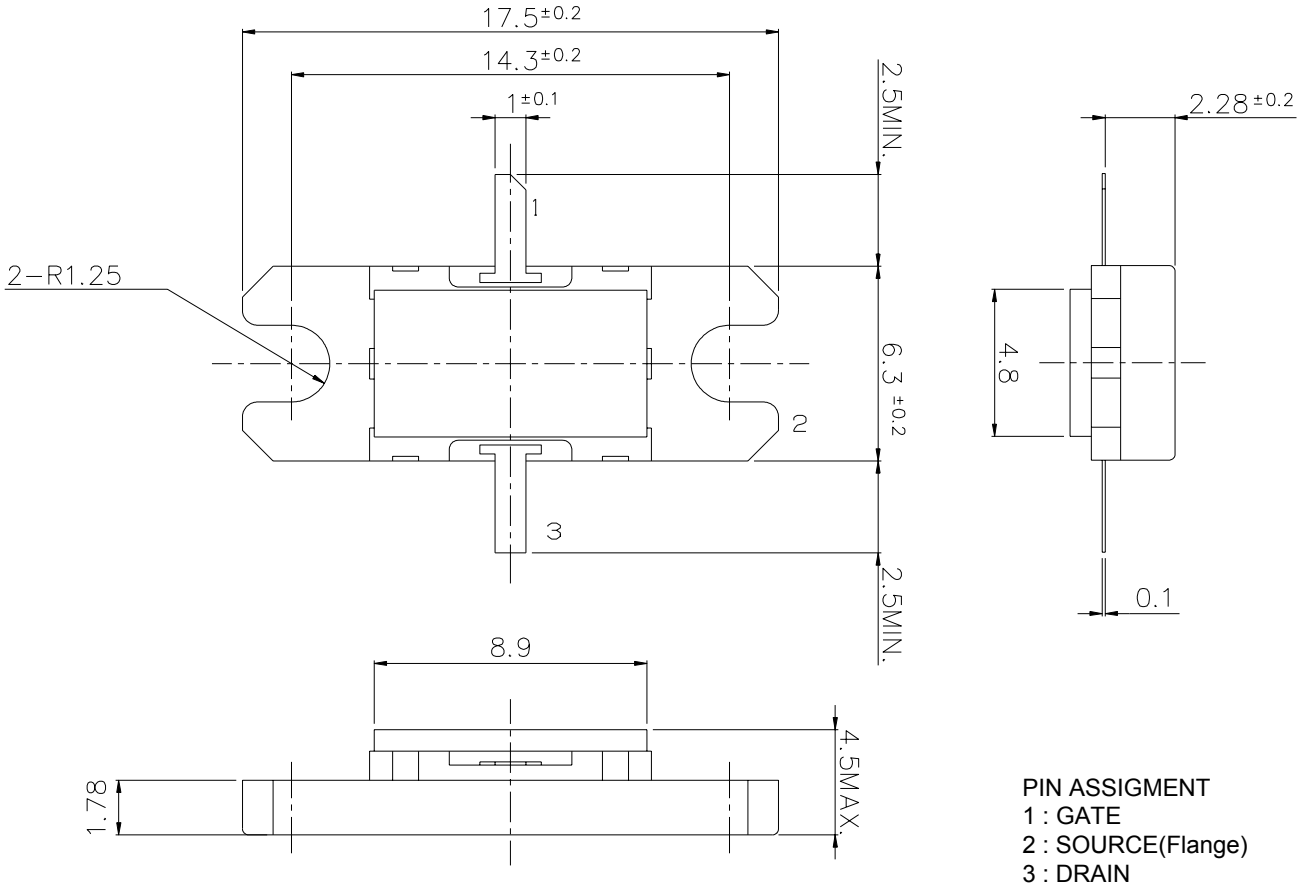


<OUTPUT SIDE>



εr=10.45 t=1.2mm

MK 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.