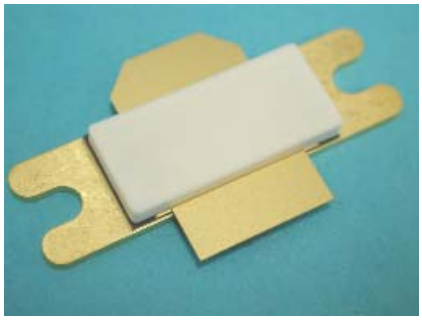
FLL21E060IY

L,S-band High Power GaAs FET



FEATURES

- High Voltage Operation (VDS=28V) GaAs FET
- High Gain: 15.5dB(typ.) at Pout=41.8dBm(Avg.)
- Broad Frequency Range : 2110 to 2170MHz
- High Reliability

DESCRIPTION

The FLL21E060IY 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 and Multi-carrier PCS base station amplifiers while offering high gain, long term reliability and ease of use.

ABSOLUTE MAXIMUM RATING

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	V_{DS}	Tc=25°C (Case Temperature)	32	V
Gate-Source Voltage	V_{GS}		-3	V
Total Power Dissipation	P_T		102	W
Storage Temperature	T_{stg}	-	65 to +175	°C
Channel Temperature	T_{ch}	-	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=2Ω	<113.6	mA
Reverse Gate Current	I_{GR}	R_G=2Ω	>-22.1	mA
Channel Temperature	T_{ch}		155	°C

ELECTRICAL CHARACTERISTICS (Case Temperature Tc=25°C)

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-Off Voltage	V_P	V_{DS}=5V I_{DS}=94.3mA	-0.1	-0.2	-0.5	V
Gate-Source Breakdown Voltage	V_{GSO}	I_{GS}=-943uA	-5	-	-	V
3rd Order Intermodulation Distortion	IM_3	V_{DS}=28V	-	-33	-31	dBc
Power Gain	G_P	I_{DS}(DC)=630mA	14.5	15.5	-	dB
Drain Efficiency	η_D	P_{out}=41.8dBm(Avg.)	-	26	-	%
Adjacent Channel Leakage Power Ratio	ACLR	Note 1	-	-35	-	dBc
Themal Resistance	R_{th}	Channel to Case	-	1.5	1.7	°C/W

Note 1 : IM_3, ACLR and Gain test conditions as follows

IM_3 & Gain : f_0=2.1325GHz, f_1=2.1475GHz W-CDMA(3GPP3.4 12-0) BS-1 64ch non clipping modulation measured over 3.84MHz at f_0-15MHz and f_1+15MHz.

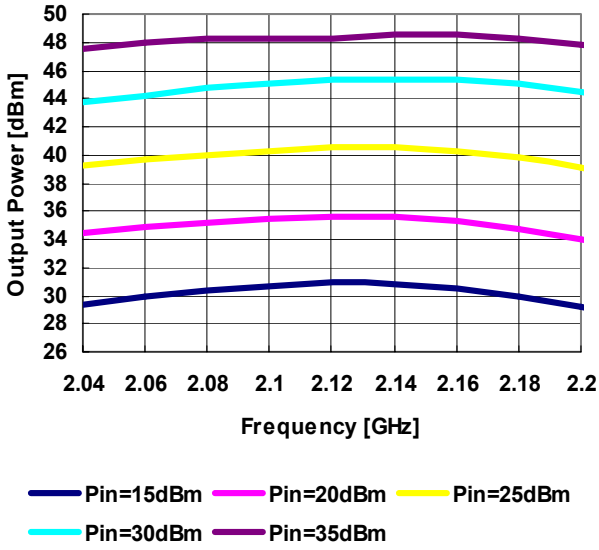
ACLR : f_0=2.1325GHz W-CDMA (3GPP3.4 12-00) BS-1 64ch non clipping modulation, measured over 3.84MHz at f_0+/-5MHz

ESD	CLASS III	2000V ~

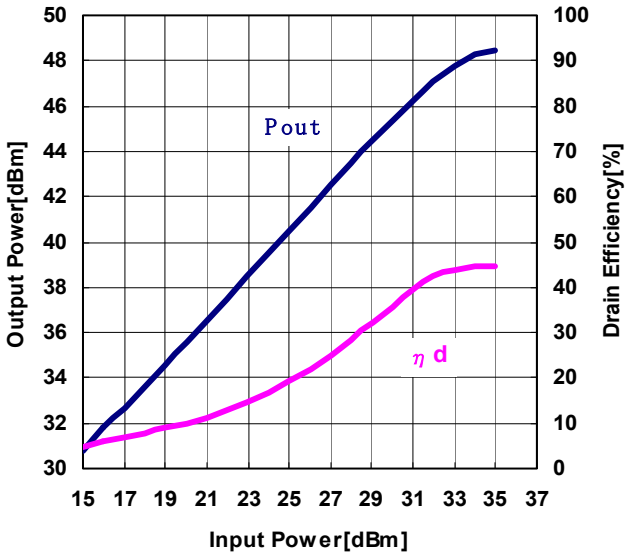
Note : Based on EIAJ ED-4701 C-111A(C=100pF, R=1.5kΩ)

CASE STYLE : IY

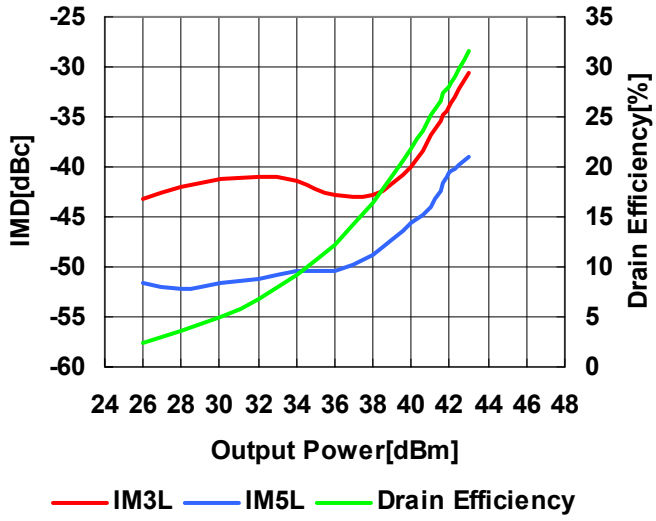
Output Power vs. Frequency
VDS=28V, IDS=630mA



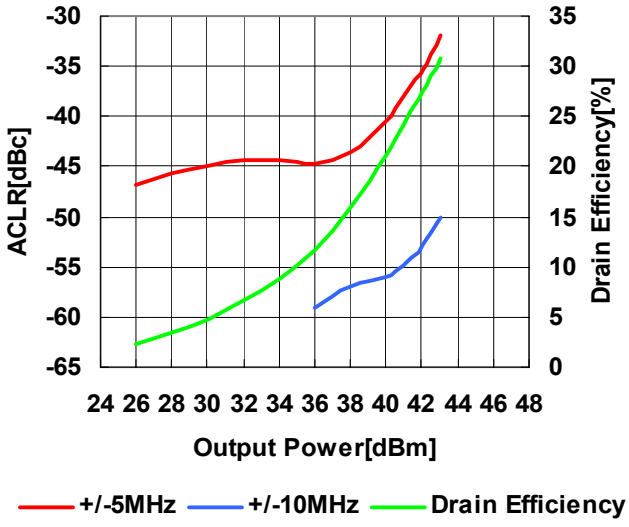
Output Power & Drain Efficiency vs. Input Power
VDS=28V, IDS=630mA, f=2.14GHz



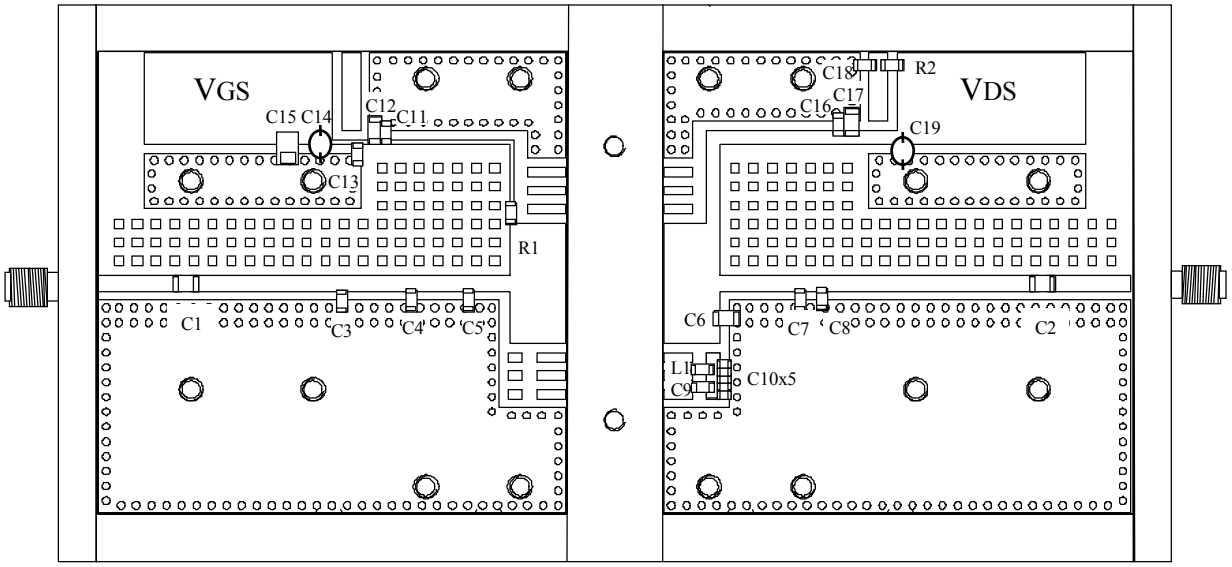
Two-Carrier IMD(ACLR) vs. Output Power
VDS=28V IDS=630mA f_0=2.135, f_1=2.145GHz
W-CDMA 3-GPP BS-1 64ch Modulation



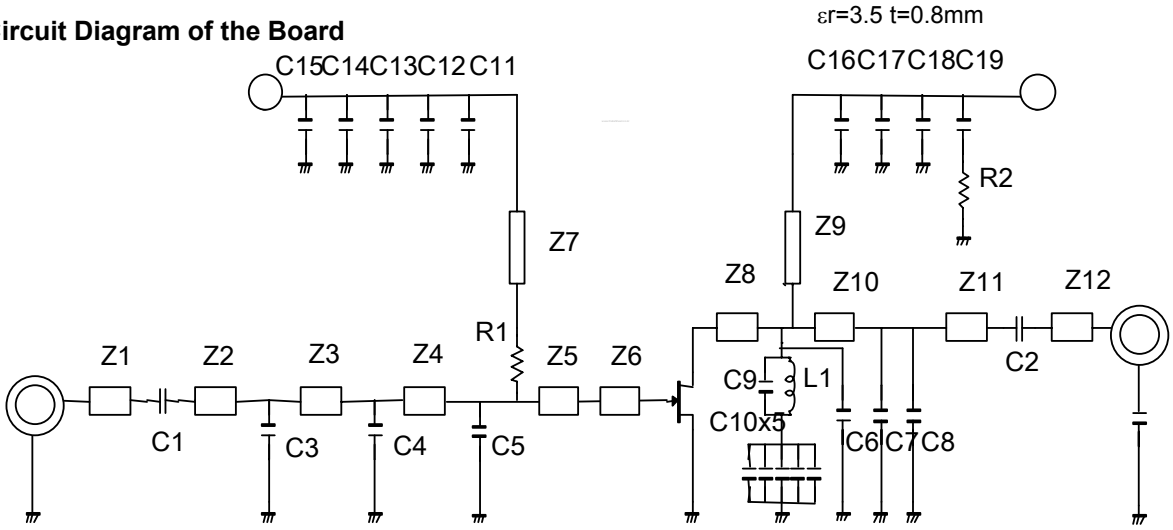
Single-Carrier ACLR vs. Output Power
VDS=28V IDS=630mA fo=2.1325GHz
W-CDMA 3GPP BS-1 64ch Modulation



■Board Layout



■ Circuit Diagram of the Board



Z1, Z12	9.00mm x 1.78mm Transmission Line
Z2	16.3mm x 1.78mm Transmission Line
Z3	7.00mm x 1.78mm Transmission Line
Z4	6.00mm x 13.0mm Transmission Line
Z5	3.50mm x 0.50mm Transmission Line
Z6	6.00mm x 13.0mm Transmission Line
Z7	23.0mm x 0.50mm Transmission Line
Z8	6.00mm x 25.0mm Transmission Line
Z9	23.0mm x 1.50mm Transmission Line
Z10	9.50mm x 13.0mm Transmission Line
Z11	23.3mm x 1.78mm Transmission Line

C1,C2	10pF
C3,C7	1.0pF
C4,C6	0.75pF
C5,C9	1.5pF
C8	0.5pF
C10	0.1uF
C11,C16	20pF
C12,C17	100nF
C13,C18	1000pF
C14,C15	10uF

C18	22uF
L1	3.3nF
R1	2.0ohm
R2	51ohm

Board
input size εr=3.5 t=0.8mm
50mm x 50mm
output size εr=3.5 t=0.8mm
50mm x 50mm

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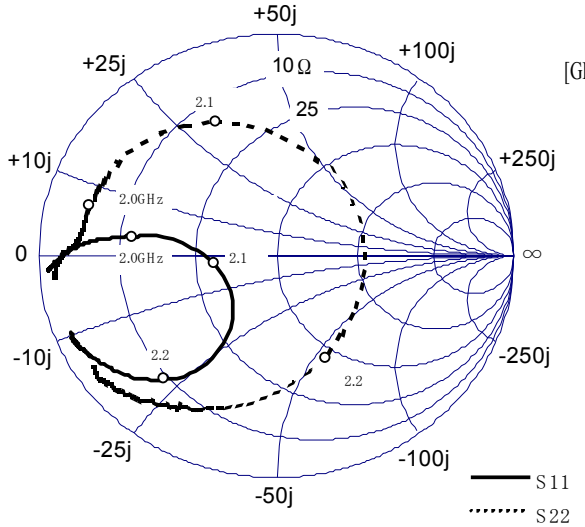
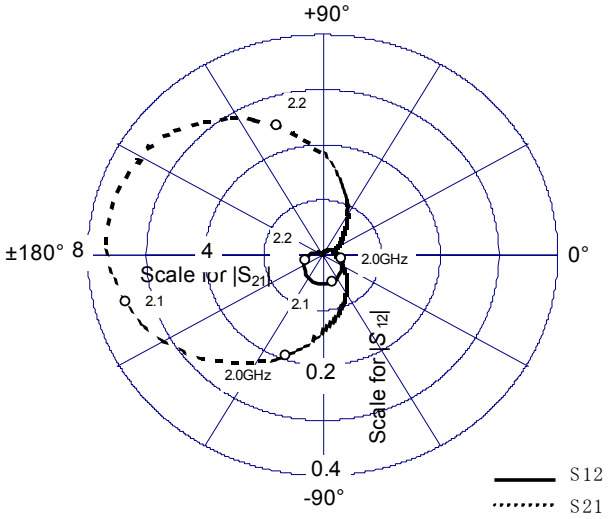
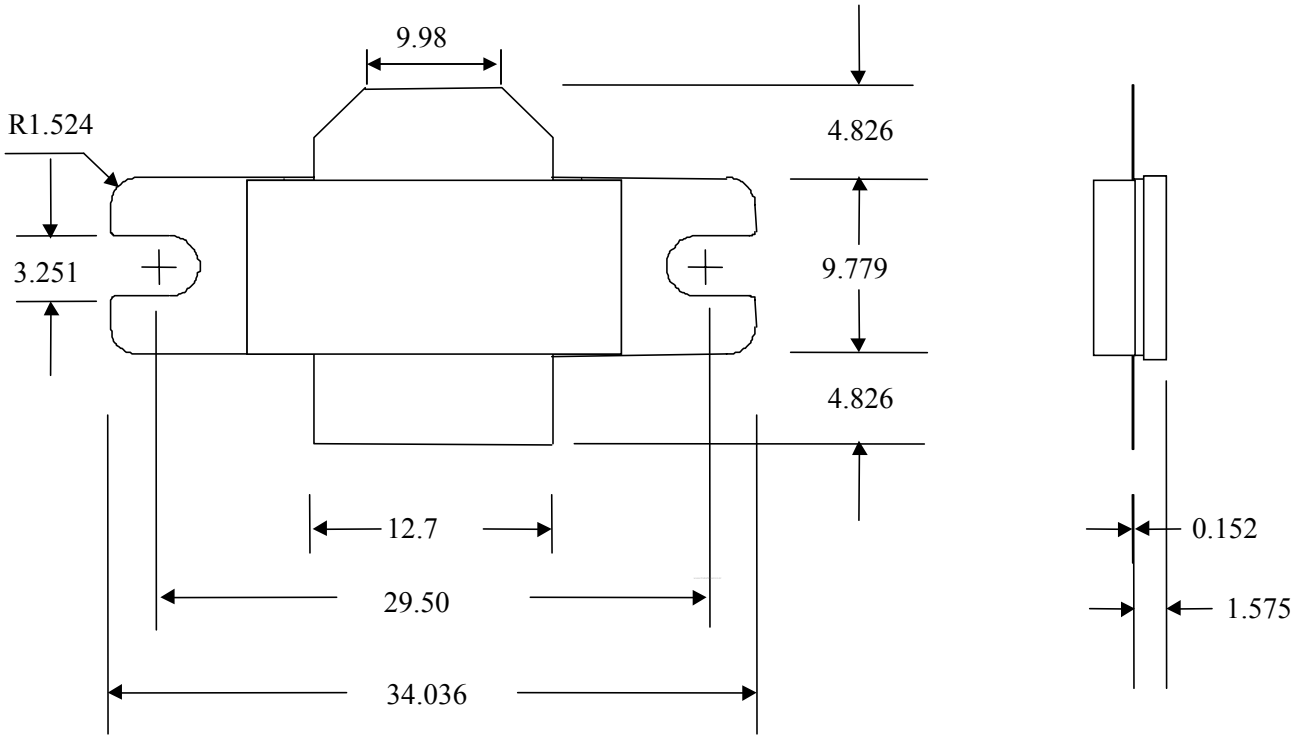
■**S-Parameters @ VDS=28V, IDS=630mA, f=1.0 to 3.0 GHz**





[GHz]	S11(mag)	S11(ang)	S21(mag)	S21(ang)	S12(mag)	S12(ang)	S22(mag)	S22(ang)
1	0.961	-176.42	0.480	4.24	0.002	70.01	0.933	-173.72
1.1	0.957	-176.29	0.468	-0.94	0.003	71.76	0.935	-174.51
1.2	0.953	-176.44	0.479	-5.13	0.003	69.92	0.930	-175.43
1.3	0.949	-176.61	0.512	-10.30	0.005	75.49	0.932	-176.11
1.4	0.943	-177.14	0.571	-16.29	0.005	71.35	0.928	-177.11
1.5	0.933	-178.20	0.665	-22.90	0.007	66.87	0.915	-177.79
1.6	0.911	-179.23	0.830	-31.26	0.009	58.53	0.908	-179.13
1.7	0.881	179.01	1.091	-42.42	0.011	49.89	0.885	178.94
1.8	0.833	177.08	1.532	-57.22	0.015	36.71	0.850	177.15
1.9	0.749	174.48	2.331	-78.13	0.022	17.53	0.829	173.66
2	0.609	171.95	3.889	-108.90	0.034	-13.62	0.815	163.99
2.1	0.263	-172.76	6.931	-165.59	0.052	-71.77	0.654	113.03
2.11	0.242	-156.52	7.194	-174.60	0.053	-80.54	0.599	100.93
2.12	0.252	-140.46	7.389	176.42	0.053	-89.96	0.541	86.80
2.13	0.306	-126.52	7.360	166.64	0.052	-99.95	0.478	69.57
2.14	0.378	-120.67	7.291	156.88	0.051	-110.43	0.419	48.81
2.15	0.457	-119.30	7.041	146.98	0.048	-119.43	0.382	25.67
2.16	0.531	-120.31	6.706	137.94	0.044	-129.46	0.373	1.34
2.17	0.596	-122.55	6.274	129.48	0.041	-137.37	0.388	-20.78
2.18	0.645	-124.52	5.836	121.87	0.037	-146.92	0.421	-39.36
2.19	0.696	-127.28	5.392	114.90	0.035	-152.94	0.461	-53.66
2.2	0.730	-130.24	4.968	108.68	0.030	-159.30	0.503	-65.54
2.3	0.859	-143.77	2.285	69.86	0.012	156.65	0.754	-113.65
2.4	0.894	-148.81	1.271	50.96	0.006	130.95	0.838	-127.60
2.5	0.916	-151.41	0.835	38.99	0.002	108.48	0.884	-134.62
2.6	0.923	-153.20	0.595	29.68	0.001	102.28	0.905	-138.74
2.7	0.927	-154.54	0.459	22.97	0.001	157.08	0.918	-141.00
2.8	0.936	-155.53	0.384	16.60	0.002	118.47	0.925	-143.07
2.9	0.932	-157.09	0.332	11.02	0.003	119.75	0.925	-145.09
3	0.928	-158.33	0.311	6.31	0.003	121.74	0.918	-146.72

■IY Package Outline



Unit : mm

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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.