

FLL21E060IY

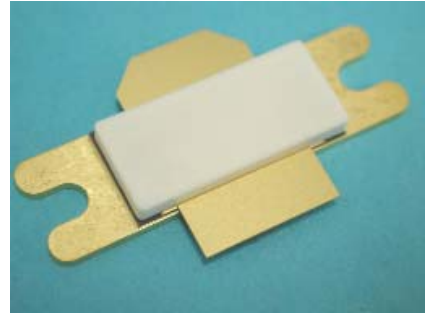
L,S-band High Power GaAs FET

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}	T _c =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 T_c=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 T_c=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
Thermal Resistance	R _{th}	Channel to Case	-	1.5	1.7	°C/W

Note 1 : IM₃, ACLR and Gain test conditions as follows

IM₃ & Gain : f₀=2.1325GHz, f₁=2.1475GHz W-CDMA(3GPP3.4 12-0) BS-1 64ch non clipping modulation measured over 3.84MHz at f₀-15MHz and f₁+15MHz.

ACLR : f₀=2.1325GHz W-CDMA (3GPP3.4 12-0) BS-1 64ch non clipping modulation, measured over 3.84MHz at f₀+/-5MHz

ESD	CLASS III	2000V ~
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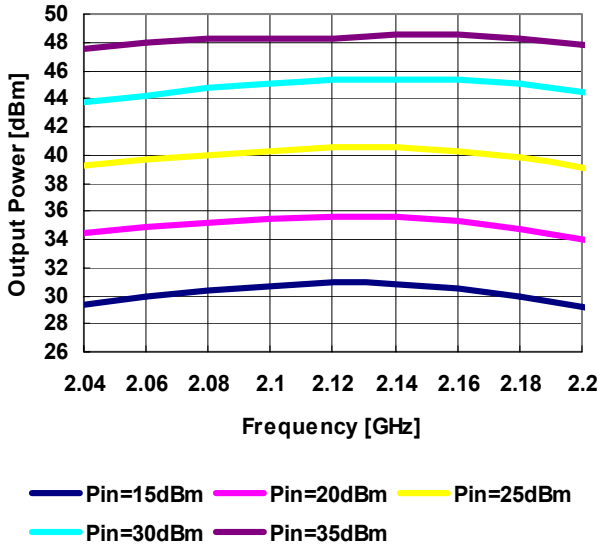
Note : Based on EIAJ ED-4701 C-111A(C=100pF, R=1.5kΩ)

CASE STYLE : IY

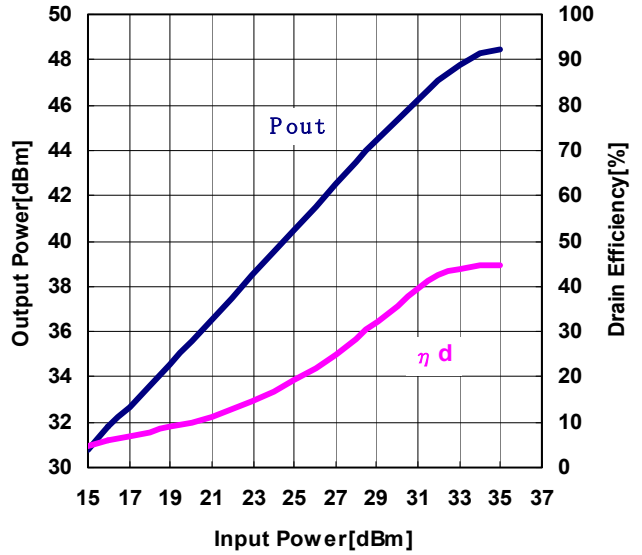
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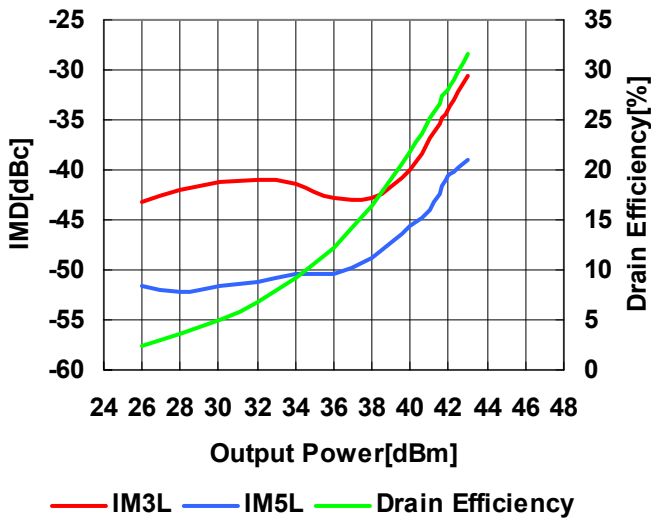
Output Power vs. Frequency
VDS=28V, IDS=630mA



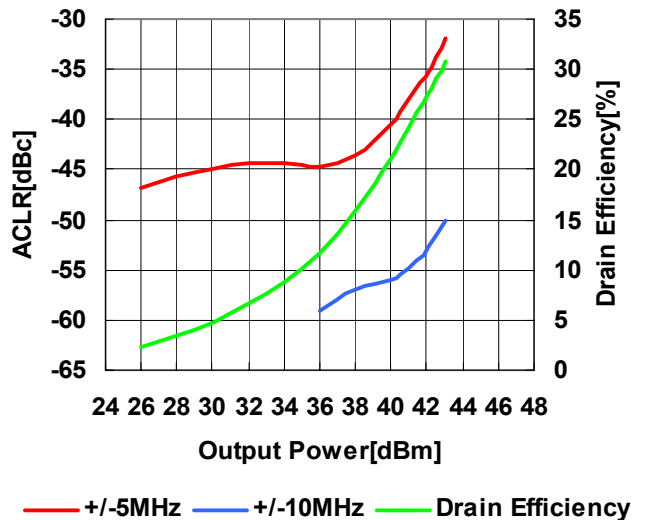
Output Power & Drain Efficiency vs. Input Power
VDS=28V, IDS=630mA, f=2.14GHz



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



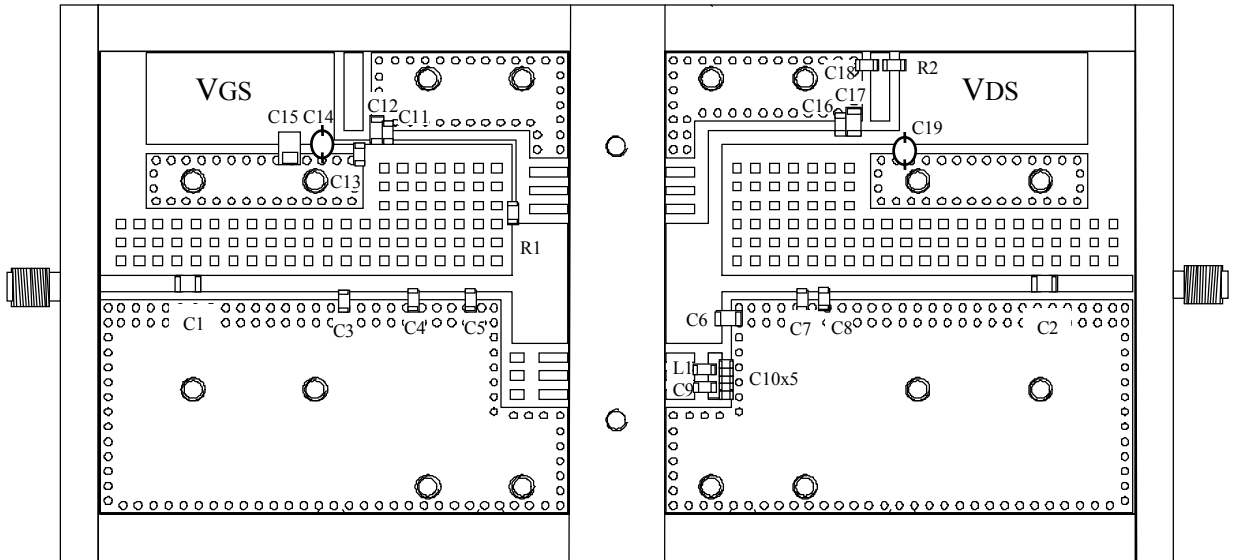
Single-Carrier ACLR vs. Output Power
VDS=28V IDS=630mA $f_0=2.1325$ GHz
W-CDMA 3GPP BS-1 64ch Modulation



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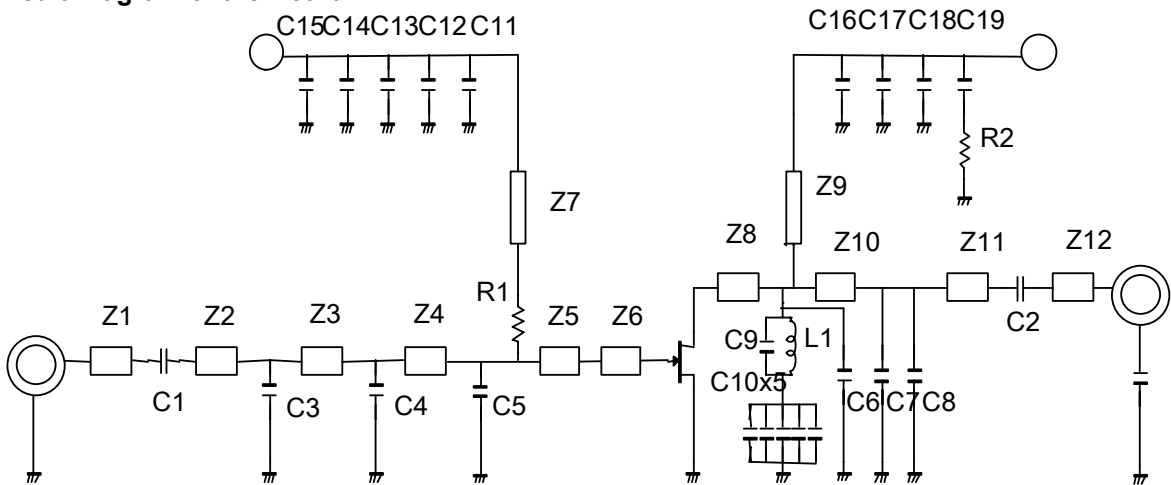
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Board Layout



Circuit Diagram of the Board

$\epsilon_r=3.5$ $t=0.8\text{mm}$



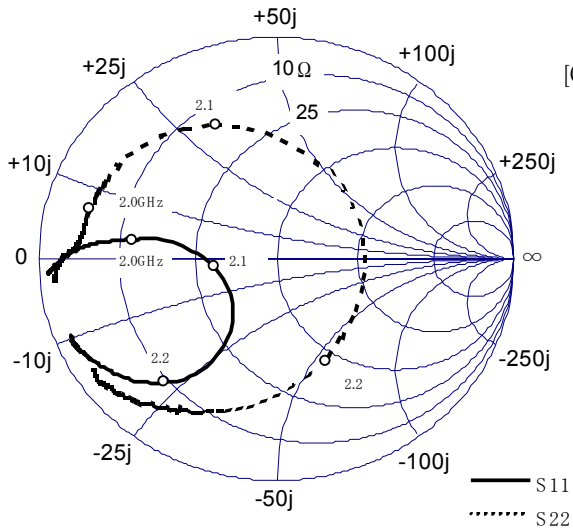
Z1, Z12	9.00mm x 1.78mm	Transmission Line
Z2	16.3mm x 1.78mm	Transmission Line
Z3	7.00mm x 1.78mm	Transmission Line
Z4	6.00mm x 13.0mm	Transmission Line
Z5	3.50mm x 0.50mm	Transmission Line
Z6	6.00mm x 13.0mm	Transmission Line
Z7	23.0mm x 0.50mm	Transmission Line
Z8	6.00mm x 25.0mm	Transmission Line
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	C18	22uF
C3,C7	1.0pF	L1	3.3nF
C4,C6	0.75pF	R1	2.0ohm
C5,C9	1.5pF	R2	51ohm
C8	0.5pF		
C10	0.1uF	Board	
C11,C16	20pF	input size	$\epsilon_r=3.5$ $t=0.8\text{mm}$
C12,C17	100nF		50mm x 50mm
C13,C18	1000pF	output size	$\epsilon_r=3.5$ $t=0.8\text{mm}$
C14,C15	10uF		50mm x 50mm

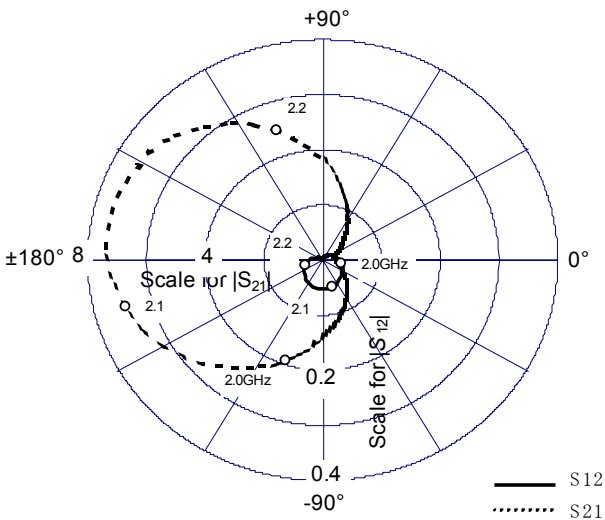
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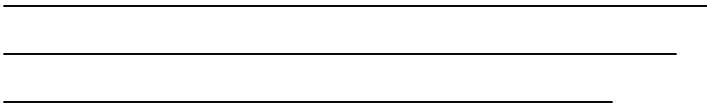
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■S-Parameters @ VDS=28V, IDS=630mA, f=1.0 to 3.0 GHz



[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

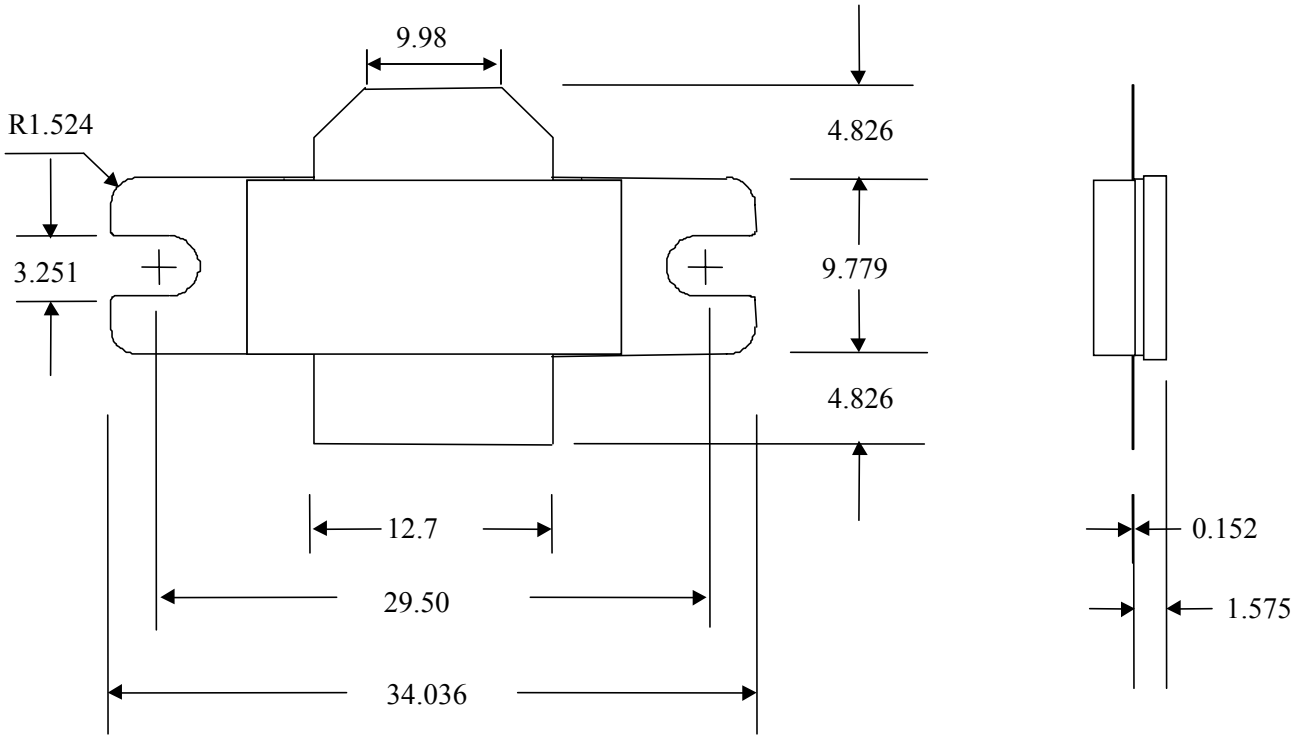




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■IY Package Outline



Unit : mm

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