

Eudyna GaN-HEMT 30W

ES/EGN35A030MK

Preliminary

High Voltage - High Power GaN-HEMT

FEATURES

- High Voltage Operation : $V_{DS}=50V$
- High Power : 46.0dBm (typ.) @ P3dB
- High Efficiency: 55%(typ.) @ P3dB
- Linear Gain : 13.0dB(typ.) @ $f=3.5GHz$
- Proven Reliability



DESCRIPTION

Eudyna's GaN-HEMT offers high efficiency, ease of matching, greater consistency and broad bandwidth for high power L-band amplifiers with 50V operation, and gives you higher gain.

This device target applications are low current and wide band applications for high voltage.

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	V_{DS}	$T_c=25^\circ C$	120	V
Gate-Source Voltage	V_{GS}		-5	V
Total Power Dissipation	P_t		75	W
Storage Temperature	T_{stg}		-65 to +175	$^\circ C$
Channel Temperature	T_{ch}		250	$^\circ C$

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

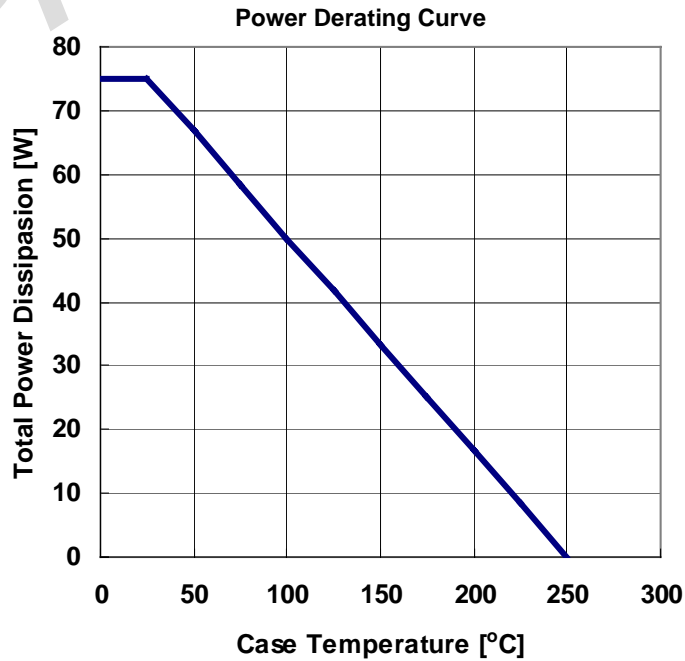
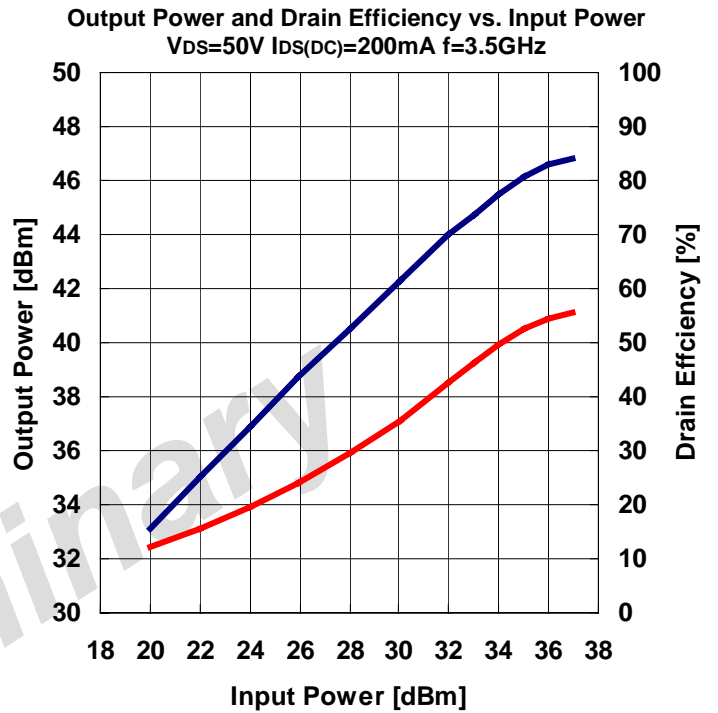
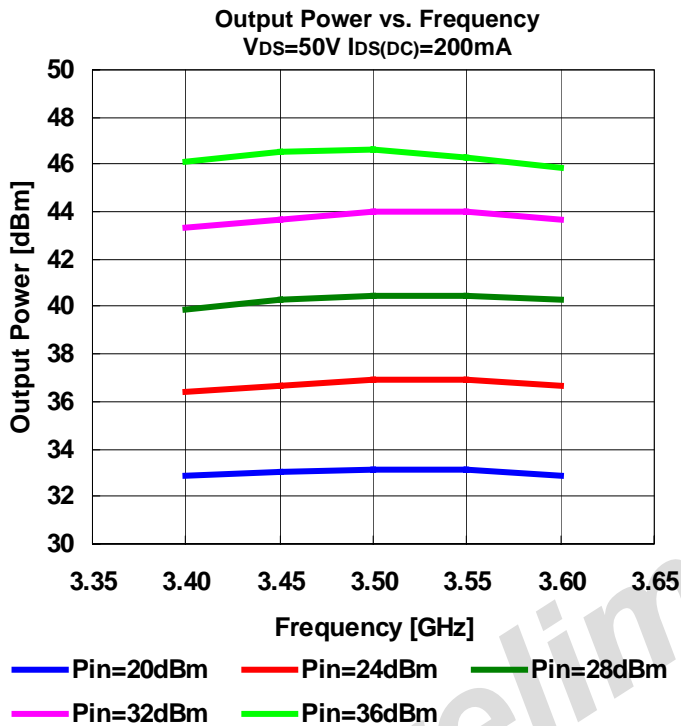
Item	Symbol	Condition	Limit	Unit
DC Input Voltage	V_{DS}		50	V
Forward Gate Current	I_{GF}	$R_G=15 \Omega$	<TBD	mA
Reverse Gate Current	I_{GR}	$R_G=15 \Omega$	>-2.2	mA
Channel Temperature	T_{ch}		200	$^\circ C$

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

Item	Symbol	Condition	Limit			Unit
			min.	Typ.	Max.	
Pinch-Off Voltage	V_p	$V_{DS}=50V$ $I_{DS}=11mA$	-1.0	-2.0	-3.5	V
Gate-Drain Breakdown Voltage	V_{GDO}	$I_{GS}=-5.6 mA$	-	-350	-	V
3dB Gain Compression Power	P_{3dB}	$V_{DS}=50V$	TBD	46.0	-	dBm
Drain Efficiency	η_d	$I_{DS}(DC)=200mA$	-	55	-	%
Linear Gain	GL	$f=3.5GHz$	TBD	13.0	-	dB
Thermal Resistance	R_{th}	Channel to Case	-	2.5	3.0	$^\circ C/W$

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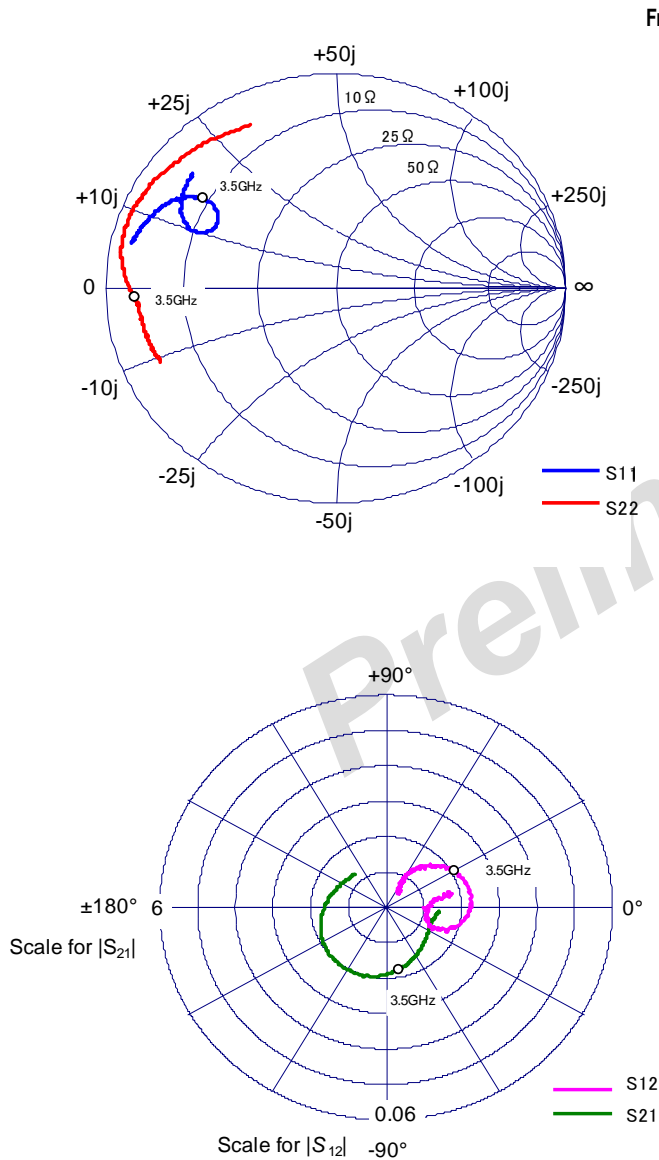
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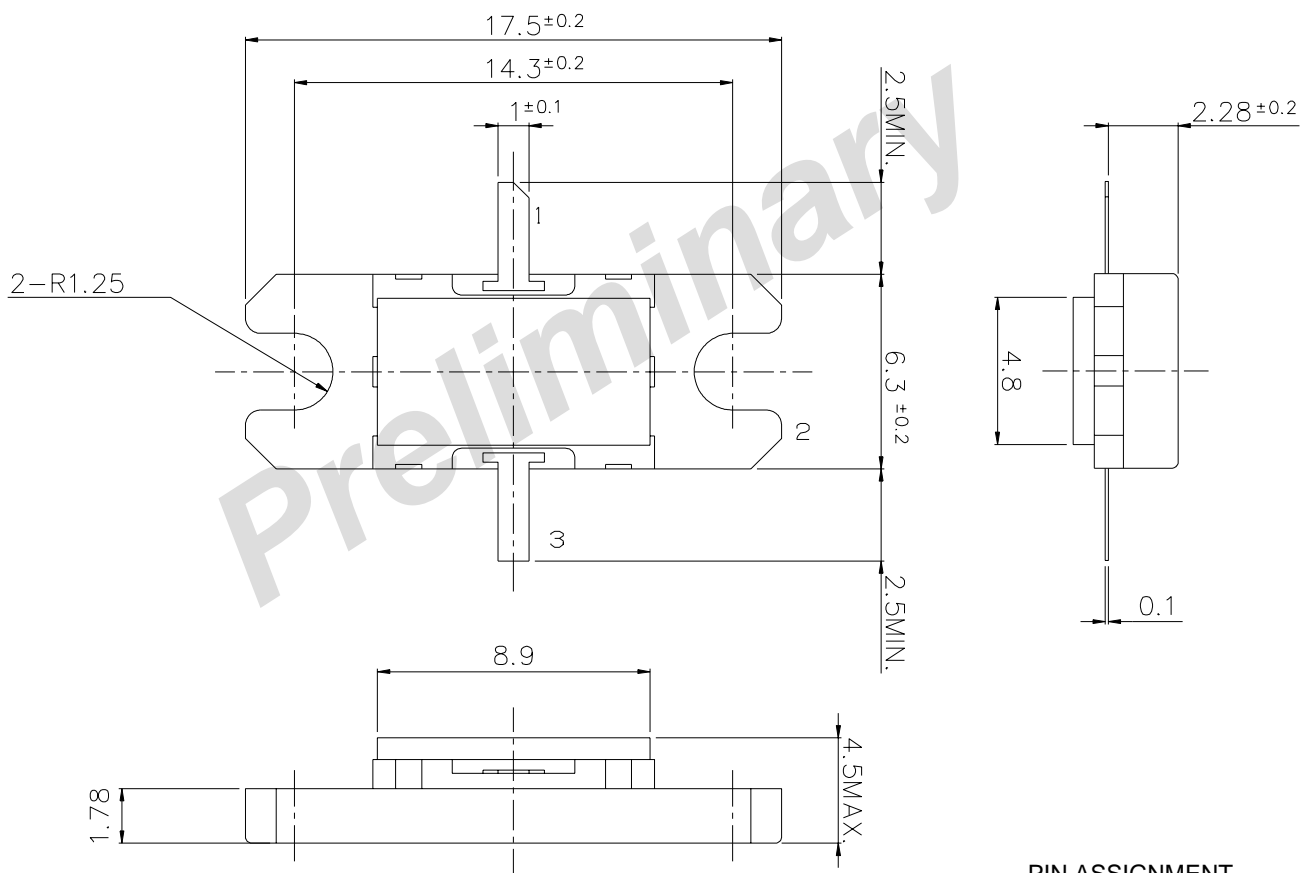
S-Parameters @V_{DS}=50V, I_{DS}=200mA, f=2 to 5 GHz,
Z_I = Z_S = 50 ohm



Freq [GHz]	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2.0	0.912	166.9	1.387	-4.8	0.005	52.2	0.832	-155.8
2.1	0.908	165.8	1.348	-8.3	0.006	56.0	0.838	-157.4
2.2	0.902	164.6	1.313	-11.5	0.006	55.6	0.841	-158.7
2.3	0.899	163.5	1.297	-14.9	0.007	60.4	0.845	-160.2
2.4	0.892	162.1	1.280	-18.4	0.007	60.8	0.847	-161.6
2.5	0.886	160.7	1.279	-22.1	0.009	59.6	0.851	-162.8
2.6	0.877	159.3	1.277	-25.8	0.009	61.8	0.849	-164.1
2.7	0.869	157.5	1.303	-29.6	0.010	60.8	0.851	-165.2
2.8	0.861	155.9	1.332	-34.1	0.011	58.0	0.852	-166.8
2.9	0.847	154.1	1.362	-38.8	0.013	58.2	0.852	-167.8
3.0	0.835	152.2	1.415	-44.3	0.014	52.6	0.855	-169.4
3.1	0.820	150.2	1.469	-49.8	0.015	49.4	0.853	-170.5
3.2	0.797	148.4	1.533	-55.8	0.017	45.5	0.858	-172.1
3.3	0.773	146.8	1.620	-62.5	0.018	41.2	0.858	-173.8
3.4	0.742	145.2	1.692	-69.9	0.019	34.1	0.864	-175.2
3.5	0.708	144.0	1.789	-78.7	0.021	29.3	0.876	-177.0
3.6	0.670	143.7	1.875	-88.6	0.022	20.7	0.887	-178.7
3.7	0.633	144.7	1.963	-98.7	0.023	12.7	0.899	-179.3
3.8	0.609	147.1	2.022	-110.4	0.023	4.0	0.919	-176.5
3.9	0.598	150.3	2.029	-121.9	0.022	-4.2	0.931	-173.5
4.0	0.603	153.6	2.018	-134.2	0.020	-11.0	0.948	-170.0
4.1	0.630	155.9	1.948	-146.4	0.019	-18.7	0.953	-165.7
4.2	0.666	156.6	1.859	-157.9	0.017	-22.3	0.952	-161.8
4.3	0.701	156.1	1.762	-168.6	0.014	-23.1	0.952	-157.0
4.4	0.731	154.5	1.647	-178.3	0.013	-22.1	0.940	-152.2
4.5	0.754	152.5	1.548	-172.5	0.011	-16.1	0.937	-147.6
4.6	0.773	150.0	1.455	-163.5	0.011	-10.1	0.915	-142.3
4.7	0.786	147.4	1.382	-155.3	0.011	1.9	0.902	-137.4
4.8	0.803	144.7	1.331	-146.9	0.013	9.9	0.886	-131.0
4.9	0.816	142.2	1.281	-139.4	0.015	9.3	0.866	-123.9
5.0	0.822	139.3	1.262	-131.3	0.018	12.1	0.846	-115.8

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MK Package Outline Metal-Ceramic Hermetic Package



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

Unit : mm