

Eudyna GaN-HEMT 180W

ES/EGN35A180IV

Preliminary

High Voltage - High Power GaN-HEMT

FEATURES

- High Voltage Operation : $V_{DS}=50V$
- High Power : 53.0dBm (typ.) @ P3dB
- High Efficiency: 50%(typ.) @ P3dB
- Linear Gain : 12.0dB(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}		120	V
Gate-Source Voltage	V_{GS}	$T_c=25^\circ C$	-5	V
Total Power Dissipation	P_t		281.25	W
Storage Temperature	T_{stg}		-65 to +175	$^\circ C$
Channel Temperature	T_{ch}		250	$^\circ C$

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

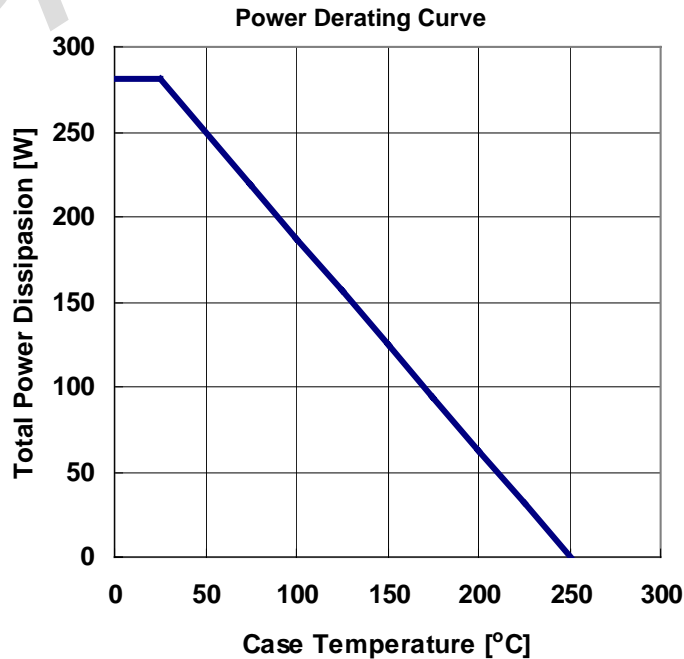
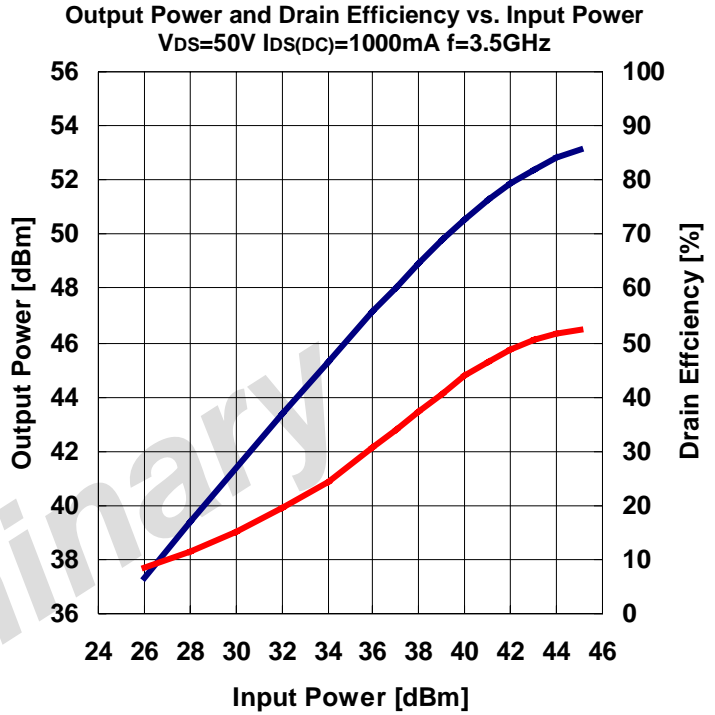
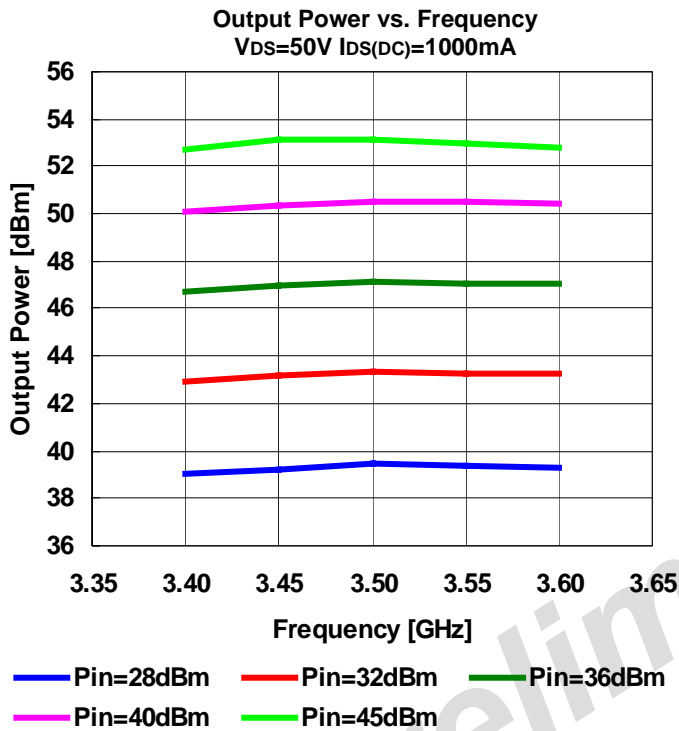
Item	Symbol	Condition	Limit	Unit
DC Input Voltage	V_{DS}		50	V
Forward Gate Current	I_{GF}	$R_G=2 \Omega$	<TBD	mA
Reverse Gate Current	I_{GR}	$R_G=2 \Omega$	>-7.2	mA
Channel Temperature	T_{ch}		200	$^\circ C$

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

Item	Symbol	Condition	Limit			Unit
			min.	Typ.	Max.	
Pinch-Off Voltage	V_p	$V_{DS}=50V$ $I_{DS}=72mA$	-1.0	-2.0	-3.5	V
Gate-Drain Breakdown Voltage	V_{GDO}	$I_{GS}=-36mA$	-	-350	-	V
3dB Gain Compression Power	P_{3dB}	$V_{DS}=50V$	TBD	53.0	-	dBm
Drain Efficiency	η_d	$I_{DS}(DC)=1000mA$	-	50	-	%
Linear Gain	GL	$f=3.5GHz$	TBD	12.0	-	dB
Thermal Resistance	R_{th}	Channel to Case	-	0.65	0.8	$^\circ C/W$

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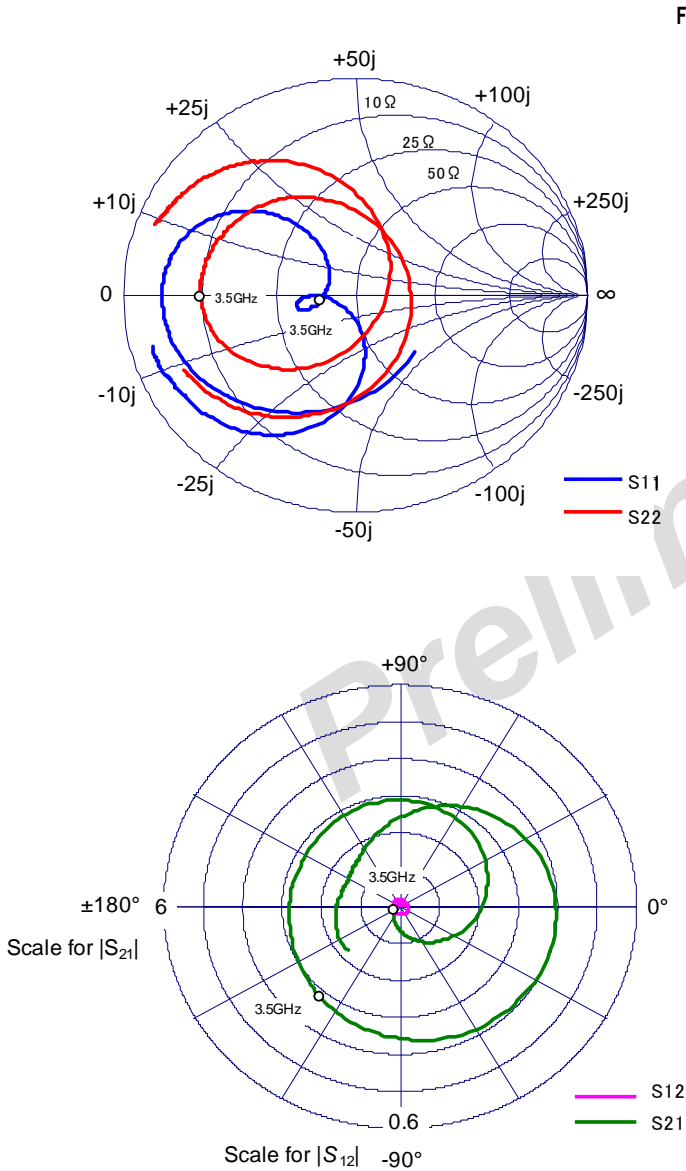
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S-Parameters @V_{DS}=50V, I_{DS}=1000mA, f=2 to 5 GHz,
Z_I = Z_S = 50 ohm

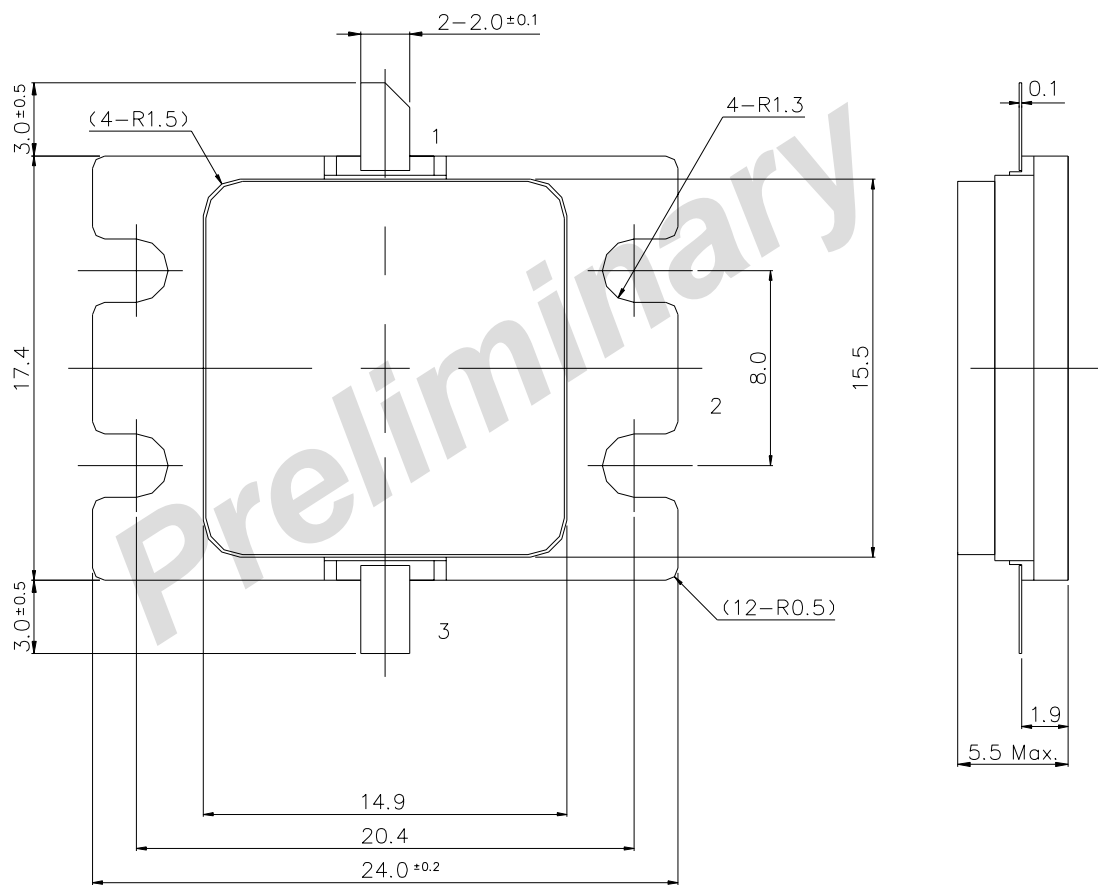


Freq [GHz]	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2.0	0.368	-45.9	1.763	-138.1	0.006	165.3	0.923	159.2
2.1	0.556	-106.1	1.693	-165.4	0.007	138.9	0.910	156.4
2.2	0.698	-134.7	1.573	173.9	0.007	122.0	0.897	153.3
2.3	0.775	-151.5	1.514	157.5	0.007	108.8	0.883	148.9
2.4	0.812	-163.2	1.538	143.6	0.008	95.7	0.859	143.3
2.5	0.828	-172.5	1.663	129.2	0.009	80.0	0.827	136.4
2.6	0.834	179.4	1.900	113.8	0.011	70.1	0.768	126.8
2.7	0.824	171.3	2.294	95.8	0.013	54.7	0.670	113.9
2.8	0.795	162.6	2.808	73.5	0.016	33.5	0.506	94.3
2.9	0.737	153.0	3.413	46.0	0.020	7.9	0.271	60.6
3.0	0.644	143.1	3.854	14.6	0.022	-22.2	0.143	-51.4
3.1	0.524	134.0	3.989	-17.8	0.023	-51.6	0.353	-115.8
3.2	0.388	126.6	3.897	-47.9	0.022	-79.5	0.520	-141.1
3.3	0.242	125.0	3.700	-76.7	0.021	-107.5	0.610	-158.0
3.4	0.133	148.2	3.434	-103.9	0.020	-131.3	0.652	-170.0
3.5	0.153	-169.3	3.173	-129.6	0.019	-153.6	0.667	-179.4
3.6	0.221	-161.9	2.950	-153.3	0.018	-174.1	0.666	172.6
3.7	0.254	-167.2	2.820	-176.3	0.018	169.0	0.660	164.9
3.8	0.234	-175.7	2.758	160.1	0.019	151.3	0.645	156.4
3.9	0.154	-178.9	2.807	135.3	0.019	133.3	0.616	146.9
4.0	0.079	-114.2	2.892	106.2	0.021	110.2	0.578	134.1
4.1	0.265	-81.4	2.845	73.3	0.021	85.6	0.500	115.7
4.2	0.502	-94.7	2.577	37.0	0.018	60.0	0.380	87.2
4.3	0.677	-111.4	2.076	0.8	0.013	35.6	0.251	33.6
4.4	0.779	-125.4	1.530	-32.9	0.008	30.0	0.288	-41.3
4.5	0.833	-136.5	1.056	-62.0	0.006	55.1	0.449	-84.4
4.6	0.862	-144.3	0.709	-85.8	0.008	57.6	0.589	-109.6
4.7	0.883	-150.7	0.480	-104.7	0.009	53.8	0.683	-126.1
4.8	0.896	-155.9	0.326	-120.0	0.010	40.2	0.747	-138.2
4.9	0.902	-160.6	0.233	-132.9	0.007	34.1	0.788	-148.0
5.0	0.907	-164.8	0.167	-143.4	0.008	28.4	0.817	-155.3

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IV Package Outline
Metal-Ceramic Hermetic Package



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

Unit : mm