

# Eudyna GaN-HEMT 180W

## ES/EGN26A180IV

**Preliminary**

**High Voltage - High Power GaN-HEMT**

### FEATURES

- High Voltage Operation :  $V_{DS}=50V$
- High Power : 53.0dBm (typ.) @ P3dB
- High Efficiency: 55%(typ.) @ P3dB
- Linear Gain : 14.0dB(typ.) @  $f=2.6GHz$
- 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 $T_c= 25^{\circ}C$ )

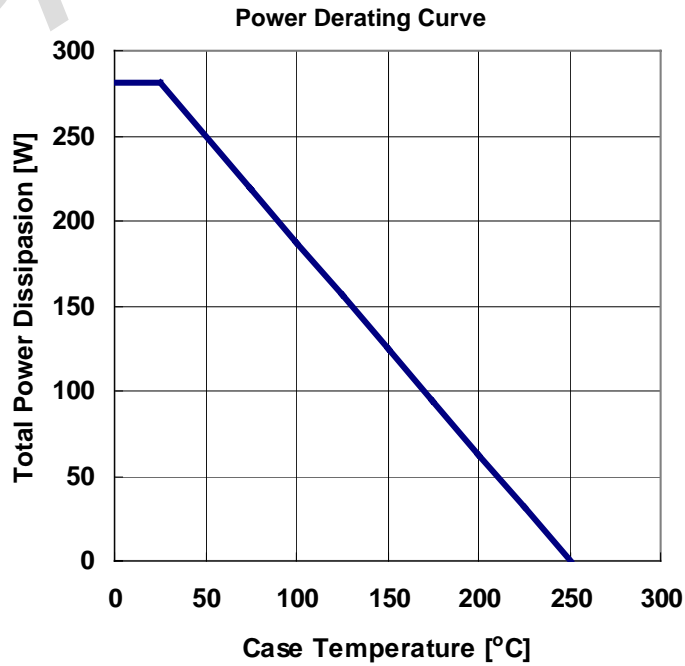
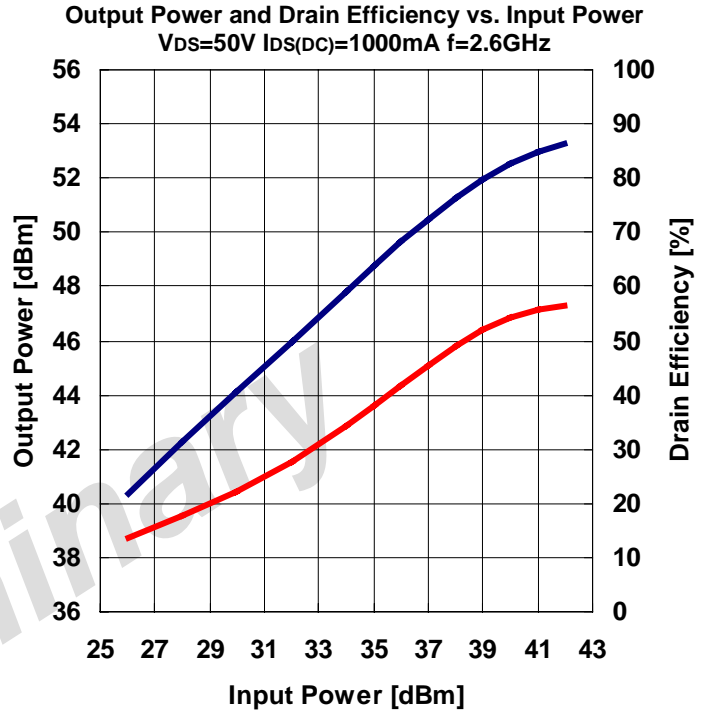
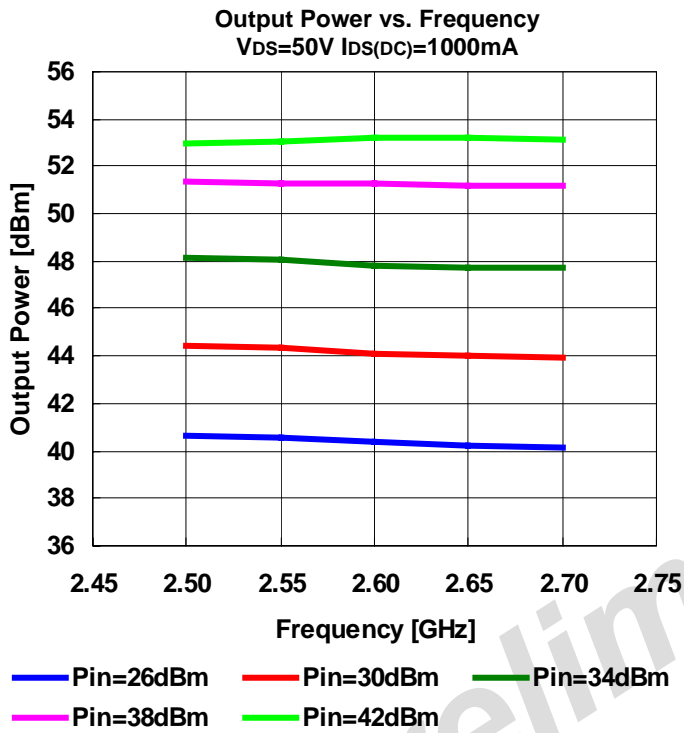
Item	Symbol	Condition	Limit	Unit
DC Input Voltage	$V_{DS}$		50	V
Forward Gate Current	$I_{GF}$	$R_G=2 \Omega$	<TBD	mA
Reverse Gate Current	$I_{GR}$	$R_G=2 \Omega$	>-7.2	mA
Channel Temperature	$T_{ch}$		200	$^{\circ}C$

### 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	$\eta_d$	$I_{DS}(DC)=1000mA$	-	55	-	%
Linear Gain	GL	$f=2.6GHz$	TBD	14.0	-	dB
Thermal Resistance	$R_{th}$	Channel to Case	-	0.65	0.8	$^{\circ}C/W$

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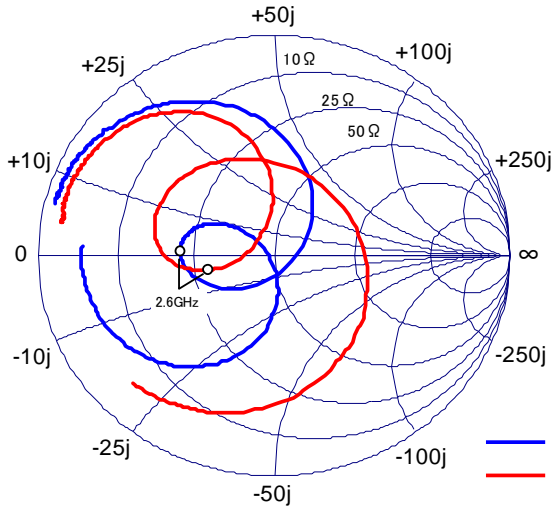
High Voltage - High Power GaN-HEMT



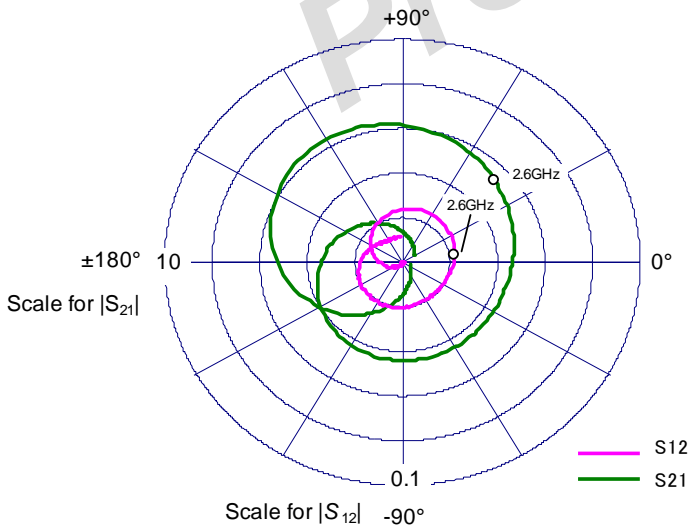
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## High Voltage - High Power GaN-HEMT

S-Parameters @V<sub>DS</sub>=50V, I<sub>DS</sub>=1000mA, f=1 to 4 GHz,  
Z<sub>I</sub> = Z<sub>S</sub> = 50 ohm



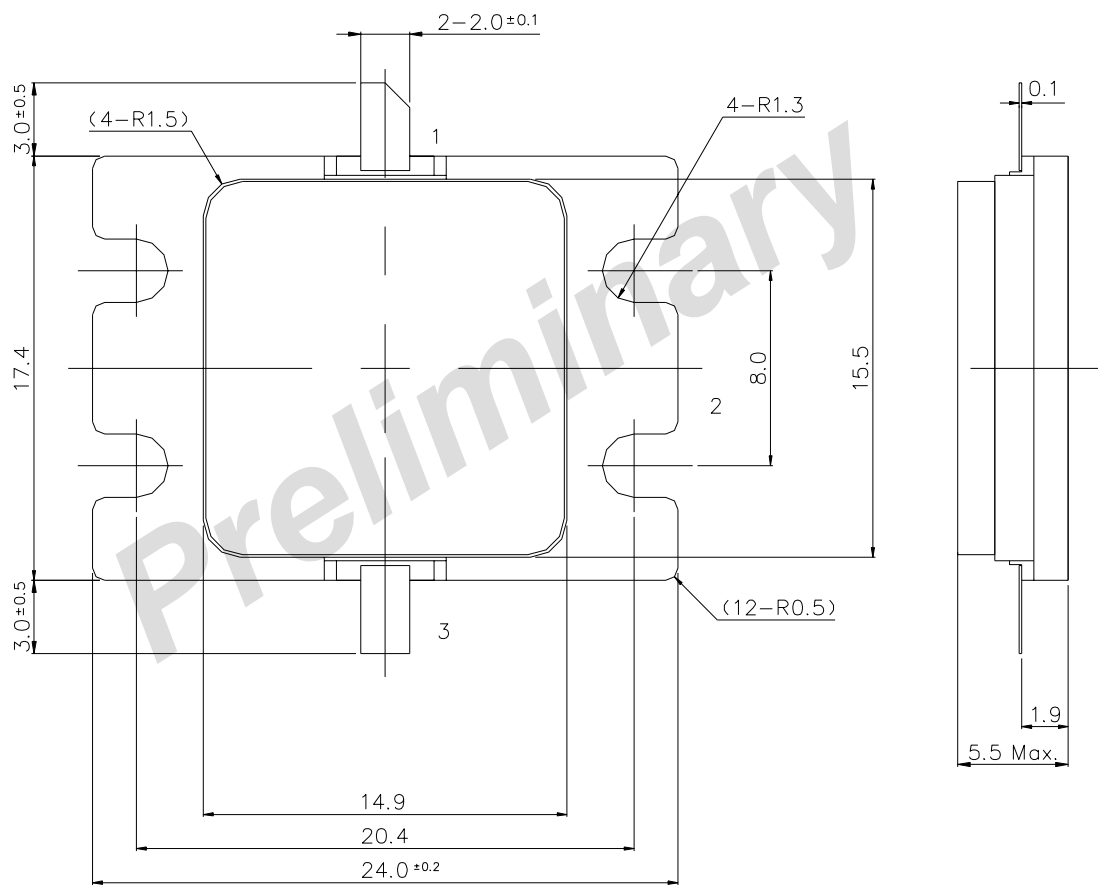
Freq [GHz]	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.957	165.6	0.367	-14.0	0.001	-13.4	0.915	170.5
1.1	0.956	163.6	0.357	-19.3	0.001	-41.8	0.913	169.7
1.2	0.956	161.5	0.359	-24.4	0.001	-55.6	0.912	168.5
1.3	0.954	159.0	0.378	-30.2	0.001	-37.1	0.917	167.0
1.4	0.951	156.6	0.415	-35.8	0.000	-22.2	0.918	165.0
1.5	0.944	153.0	0.469	-42.4	0.000	-60.3	0.920	162.7
1.6	0.936	148.9	0.556	-50.1	0.001	-86.6	0.917	159.8
1.7	0.918	144.4	0.685	-59.1	0.001	-110.0	0.913	156.4
1.8	0.900	138.3	0.895	-69.4	0.002	-116.6	0.905	152.4
1.9	0.864	130.4	1.223	-81.8	0.003	-128.9	0.898	147.4
2.0	0.801	119.3	1.764	-98.8	0.004	-154.1	0.876	140.7
2.1	0.685	103.0	2.704	-121.5	0.008	-174.2	0.833	131.3
2.2	0.461	76.9	4.175	-153.4	0.014	156.9	0.731	117.6
2.3	0.127	19.7	5.757	163.9	0.021	118.8	0.517	100.1
2.4	0.225	-137.7	6.357	118.3	0.025	76.0	0.228	92.5
2.5	0.363	-167.4	5.961	78.0	0.024	38.1	0.114	173.0
2.6	0.398	177.4	5.343	43.8	0.022	8.6	0.284	-165.8
2.7	0.386	167.3	4.844	14.6	0.020	-16.2	0.418	-174.2
2.8	0.343	157.7	4.522	-12.6	0.019	-38.7	0.496	173.4
2.9	0.258	147.1	4.398	-39.2	0.019	-61.9	0.533	159.2
3.0	0.123	137.9	4.404	-67.6	0.020	-86.6	0.531	141.2
3.1	0.069	-85.7	4.384	-99.0	0.021	-112.8	0.482	117.1
3.2	0.282	-91.9	4.180	-133.5	0.020	-142.0	0.407	81.9
3.3	0.470	-108.2	3.645	-168.8	0.019	-168.8	0.364	30.5
3.4	0.606	-123.5	2.923	157.5	0.017	169.6	0.425	-22.0
3.5	0.694	-136.2	2.205	127.9	0.014	150.7	0.549	-59.7
3.6	0.747	-146.9	1.641	102.7	0.013	136.1	0.657	-85.1
3.7	0.783	-156.2	1.222	82.1	0.012	127.1	0.735	-103.4
3.8	0.800	-165.4	0.942	64.4	0.011	119.5	0.782	-117.1
3.9	0.810	-174.0	0.752	49.5	0.011	106.6	0.814	-127.5
4.0	0.810	177.1	0.632	35.4	0.011	95.0	0.834	-136.2



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IV Package Outline  
Metal-Ceramic Hermetic Package



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

Unit : mm