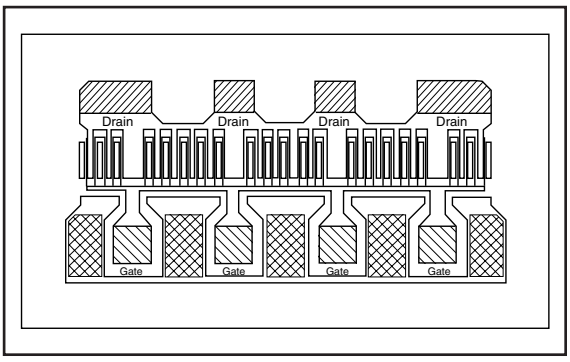
FLK107XV

GaAs FET & HEMT Chips

FEATURES

- High Output Power: P_{1dB} = 30.0dBm(Typ.)
- High Gain: G_{1dB} = 6.5dB(Typ.)
- High PAE: η_{add} = 31%(Typ.)
- Proven Reliability



DESCRIPTION

The FLK107XV chip is a power GaAs FET that is designed for general purpose applications in the Ku-Band frequency range as it provides superior power, gain, and efficiency.

Eudynas stringent Quality Assurance Program assures the highest reliability and consistent performance.

ABSOLUTE MAXIMUM RATING (Ambient Temperature Ta=25°C)

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	V_{DS}		15	V
Gate-Source Voltage	V_{GS}		-5	V
Total Power Dissipation	P_{tot}	T_c = 25°C	7.50	W
Storage Temperature	T_{stg}		-65 to +175	°C
Channel Temperature	T_{ch}		175	°C

Eudyna recommends the following conditions for the reliable operation of GaAs FETs:

1. The drain-source operating voltage (V_{DS}) should not exceed 10 volts.
2. The forward and reverse gate currents should not exceed 8.8 and -0.5 mA respectively with gate resistance of 500Ω.
3. The operating channel temperature (T_{ch}) should not exceed 145°C.

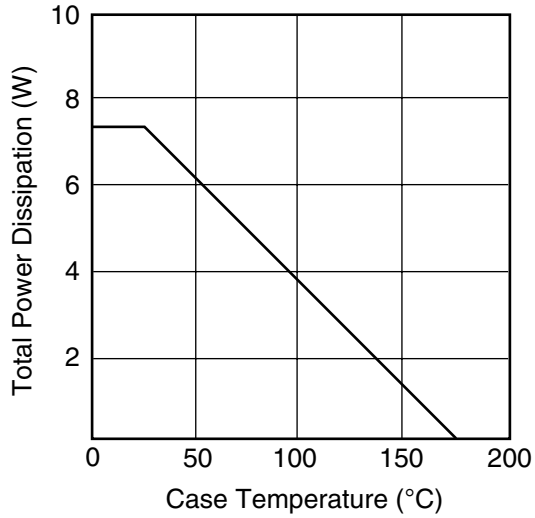
ELECTRICAL CHARACTERISTICS (Ambient Temperature Ta=25°C)

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I_{DSS}	V_{DS} = 5V, V_{GS} = 0V	-	400	600	mA
Transconductance	g_m	V_{DS} = 5V, I_{DS} = 250mA	-	200	-	mS
Pinch-off Voltage	V_p	V_{DS} = 5V, I_{DS} = 20mA	-1.0	-2.0	-3.5	V
Gate Source Breakdown Voltage	V_{GSO}	I_{GS} = -20μA	-5	-	-	V
Output Power at 1dB Gain Compression Point	P_{1dB}	V_{DS} = 10V $I_{DS} \approx 0.6I_{DSS}$ f = 14.5GHz	29	30	-	dBm
Power Gain at 1dB Gain Compression Point	G_{1dB}		5.5	6.5	-	dB
Power-added Efficiency	η_{add}		-	31	-	%
Thermal Resistance	R_{th}	Channel to Case	-	15	20	°C/W

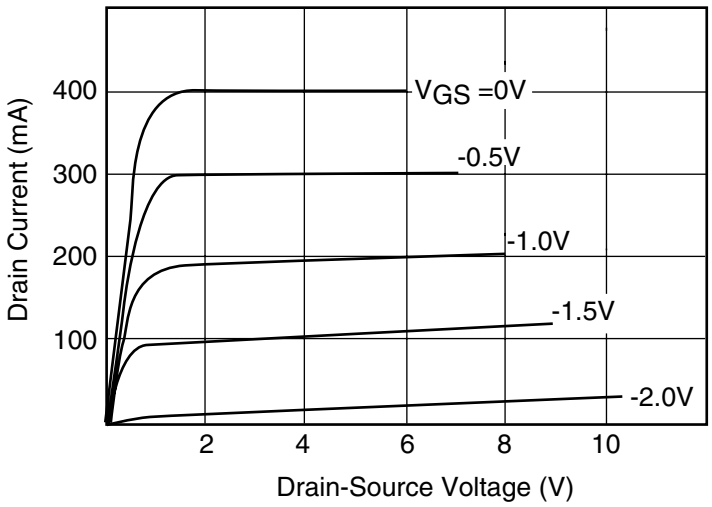
Note: RF parameter sample size 10pcs. criteria (accept/reject)=(2/3)

The chip must be enclosed in a hermetically sealed environment for optimum performance and reliability.

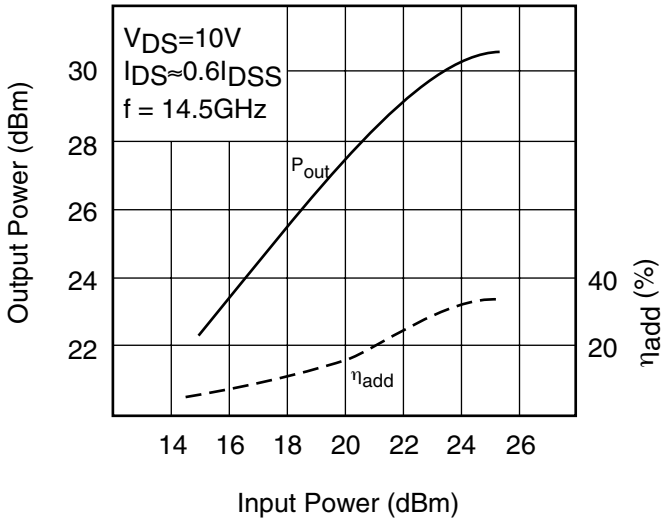
POWER DERATING CURVE



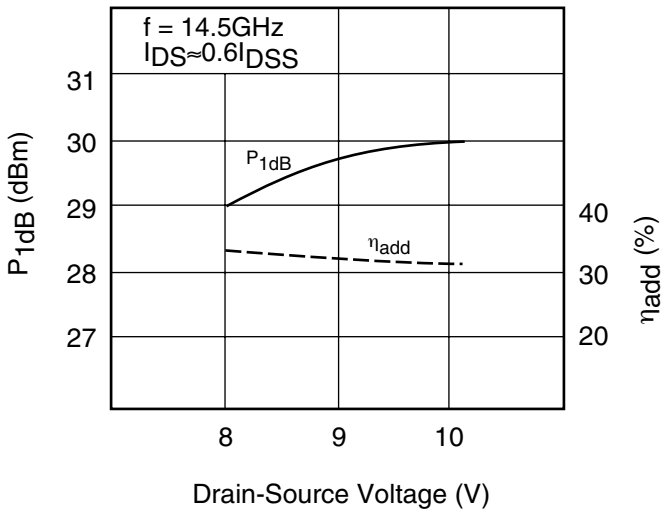
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



OUTPUT POWER vs. INPUT POWER



P1dB & ηadd vs. VDS



S-PARAMETERS

V_{DS} = 10V, I_{DS} = 240mA

FREQUENCY	S11		S21		S12		S22	
(MHZ)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	.998	-14.5	11.209	171.6	.007	82.1	.214	-15.0
500	.972	-65.3	9.441	142.2	.031	54.8	.227	-64.9
1000	.941	-105.2	6.826	118.3	.045	33.6	.246	-98.3
1500	.926	-127.5	5.082	103.5	.050	21.4	.263	-113.5
2000	.919	-141.3	3.976	93.0	.052	13.5	.282	-121.0
2500	.915	-150.7	3.236	84.7	.053	7.8	.302	-125.1
3000	.913	-157.5	2.713	77.6	.053	3.3	.324	-127.7
3500	.913	-162.9	2.325	71.3	.053	-0.4	.346	-129.6
4000	.912	-167.3	2.026	65.6	.053	-3.6	.370	-131.1
4500	.913	-171.0	1.789	60.2	.053	-6.4	.394	-132.6
5000	.913	-174.2	1.596	55.1	.052	-8.9	.418	-134.0
5500	.914	-177.1	1.436	50.2	.052	-11.3	.441	-135.4
6000	.915	-179.7	1.301	45.5	.051	-13.5	.465	-136.8
6500	.916	177.9	1.186	41.0	.051	-15.5	.487	-138.3
7000	.917	175.6	1.086	36.6	.050	-17.4	.509	-139.8
7500	.918	173.5	1.000	32.3	.050	-19.2	.530	-141.2
8000	.919	171.5	.923	28.2	.049	-20.9	.551	-142.7
8500	.920	169.6	.856	24.2	.048	-22.5	.570	-144.2
9000	.921	167.7	.795	20.3	.048	-24.0	.589	-145.7
9500	.923	165.9	.741	16.5	.047	-25.5	.607	-147.2
10000	.924	164.2	.692	12.7	.046	-26.8	.624	-148.7
10500	.925	162.5	.648	9.1	.046	-28.2	.640	-150.1
11000	.926	160.9	.608	5.6	.045	-29.4	.655	-151.6
11500	.927	159.3	.572	2.1	.044	-30.6	.669	-153.0
12000	.928	157.7	.538	-1.2	.044	-31.8	.683	-154.4
12500	.929	156.2	.508	-4.5	.043	-32.9	.696	-155.8
13000	.930	154.7	.479	-7.8	.042	-33.9	.708	-157.1
13500	.932	153.2	.453	-10.9	.042	-34.9	.720	-158.5
14000	.933	151.7	.429	-14.0	.041	-35.9	.731	-159.8
14500	.934	150.3	.407	-17.0	.040	-36.8	.741	-161.1
15000	.935	148.9	.386	-19.9	.040	-37.7	.751	-162.3
15500	.936	147.5	.367	-22.8	.039	-38.6	.760	-163.6
16000	.937	146.1	.349	-25.6	.039	-39.4	.769	-164.8
16500	.937	144.8	.333	-28.4	.038	-40.2	.777	-166.0
17000	.938	143.5	.317	-31.1	.038	-41.0	.785	-167.1
17500	.939	142.1	.302	-33.7	.037	-41.7	.793	-168.3
18000	.940	140.8	.289	-36.3	.037	-42.5	.800	-169.4
18500	.941	139.6	.276	-38.8	.036	-43.2	.806	-170.5
19000	.942	138.3	.264	-41.3	.036	-43.8	.813	-171.6
19500	.943	137.1	.252	-43.8	.035	-44.5	.819	-172.7
20000	.944	135.8	.241	-46.2	.035	-45.1	.824	-173.8

NOTE:* The data includes bonding wires.
n: number of wires Gate n=4 (0.2mm length, 25μm Dia Au wire)
Drain n=4 (0.2mm length, 25μm Dia Au wire)

CHIP OUTLINE