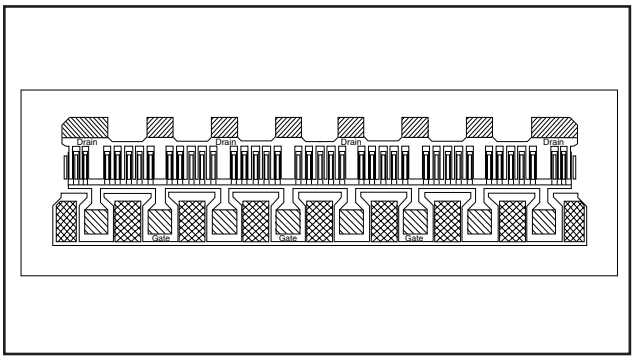
FLK207XV

GaAs FET & HEMT Chips

FEATURES

- High Output Power: P_{1dB} = 32.5dBm(Typ.)
- High Gain: G_{1dB} = 6.0dB(Typ.)
- High PAE: η_{add} = 27%(Typ.)
- Proven Reliability



DESCRIPTION

The FLK207XV 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.

Eudyna 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	12.5	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 17.8 and -1.0 mA respectively with gate resistance of 250Ω.
3. The operating channel temperature (T_{ch}) should not exceed 145°C.

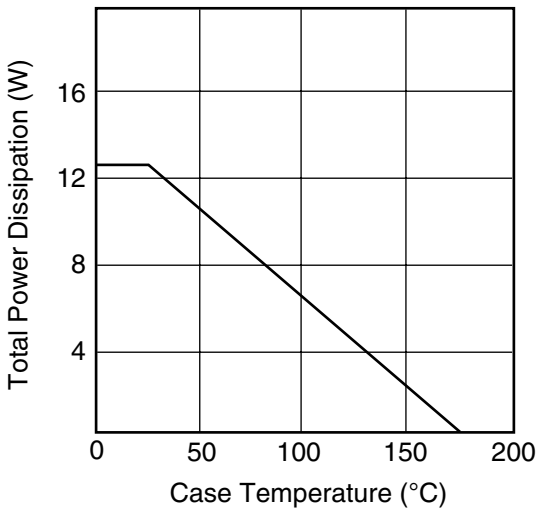
ELECTRICAL CHARACTERISTICS (Ambient Temperature Ta=25°C)

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I_{DSS}	V_{DS} = 5V, V_{GS} = 0V	-	800	1200	mA
Transconductance	g_m	V_{DS} = 5V, I_{DS} = 500mA	-	400	-	mS
Pinch-off Voltage	V_p	V_{DS} = 5V, I_{DS} = 40mA	-1.0	-2.0	-3.5	V
Gate Source Breakdown Voltage	V_{GSO}	I_{GS} = -40μA	-5	-	-	V
Output Power at 1dB Gain Compression Point	P_{1dB}	V_{DS} = 10V $I_{DS} \approx 0.6I_{DSS}$ f = 14.5GHz	31.5	32.5	-	dBm
Power Gain at 1dB Gain Compression Point	G_{1dB}		5	6	-	dB
Power-added Efficiency	η_{add}		-	27	-	%
Thermal Resistance	R_{th}	Channel to Case	-	10	12	°C/W

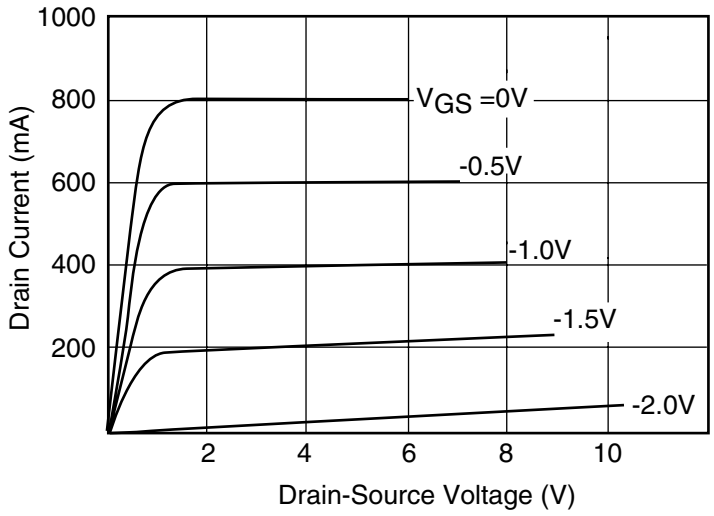
Note: RF parameter sample size 10pcs. criteria (accept/reject)=(2/3)

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

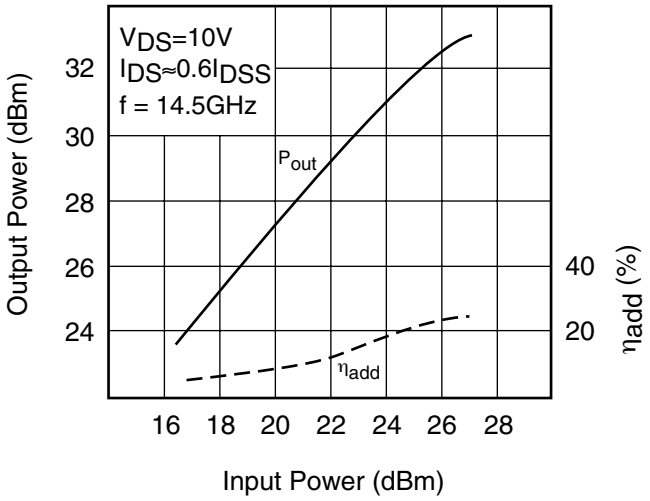
POWER DERATING CURVE



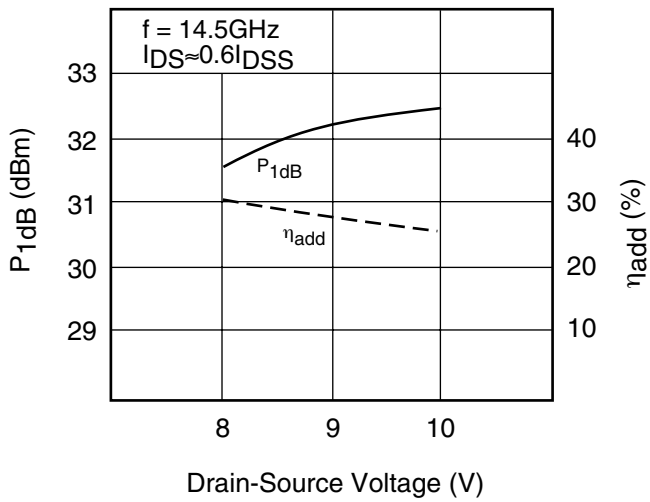
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



OUTPUT POWER vs. INPUT POWER



P_{1dB} & η_{add} vs. V_{DS}



S-PARAMETERS

V_{DS} = 10V, I_{DS} = 480mA

FREQUENCY	S11		S21		S12		S22	
(MHZ)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	.994	-32.9	16.981	162.0	.008	72.9	.177	-152.4
500	.947	-111.8	9.690	118.1	.023	32.8	.361	-153.8
1000	.932	-142.9	5.469	98.1	.026	17.4	.414	-158.5
1500	.929	-155.1	3.712	87.3	.026	11.5	.442	-158.4
2000	.928	-161.6	2.775	79.5	.026	8.5	.469	-157.3
2500	.928	-165.6	2.195	73.0	.025	7.0	.497	-156.1
3000	.929	-168.4	1.799	67.2	.024	6.3	.526	-155.2
3500	.930	-170.6	1.512	61.9	.024	6.4	.556	-154.7
4000	.932	-172.2	1.293	57.1	.023	7.0	.585	-154.5
4500	.933	-173.6	1.122	52.5	.022	8.2	.613	-154.6
5000	.934	-174.7	.984	48.3	.022	9.8	.639	-154.8
5500	.935	-175.8	.870	44.3	.021	12.0	.664	-155.3
6000	.937	-176.7	.776	40.5	.020	14.6	.688	-155.8
6500	.938	-177.5	.696	37.0	.020	17.5	.709	-156.5
7000	.939	-178.3	.628	33.7	.020	20.8	.729	-157.1
7500	.940	-179.0	.569	30.6	.020	24.3	.748	-157.9
8000	.941	-179.6	.518	27.7	.020	27.8	.764	-158.6
8500	.942	179.7	.474	25.0	.020	31.5	.780	-159.4
9000	.943	179.1	.435	22.4	.020	35.0	.794	-160.1
9500	.944	178.5	.400	20.0	.020	38.4	.806	-160.8
10000	.945	178.0	.369	17.8	.021	41.6	.818	-161.5
10500	.945	177.4	.342	15.7	.022	44.6	.829	-162.2
11000	.946	176.9	.317	13.7	.022	47.4	.838	-162.9
11500	.947	176.4	.295	11.9	.023	49.9	.847	-163.6
12000	.947	175.9	.275	10.2	.024	52.2	.856	-164.2
12500	.948	175.4	.257	8.6	.025	54.2	.863	-164.8
13000	.948	174.9	.241	7.2	.026	56.1	.870	-165.4
13500	.949	174.5	.226	5.9	.027	57.7	.876	-166.0
14000	.949	174.0	.212	4.7	.028	59.2	.882	-166.5
14500	.949	173.5	.199	3.6	.029	60.5	.887	-167.1
15000	.950	173.1	.188	2.6	.030	61.6	.892	-167.6
15500	.950	172.7	.177	1.7	.031	62.7	.897	-168.1
16000	.950	172.2	.167	1.0	.033	63.6	.901	-168.6
16500	.951	171.8	.158	0.3	.034	64.4	.905	-169.0
17000	.951	171.4	.149	-0.2	.035	65.1	.909	-169.5
17500	.951	170.9	.141	-0.6	.036	65.8	.912	-169.9
18000	.951	170.5	.134	-0.9	.037	66.3	.915	-170.4
18500	.952	170.1	.127	-1.1	.039	66.9	.918	-170.8
19000	.952	169.7	.121	-1.2	.040	67.3	.921	-171.2
19500	.952	169.3	.115	-1.1	.041	67.7	.923	-171.6
20000	.952	168.9	.109	-1.0	.042	68.0	.925	-171.9

NOTE:* The data includes bonding wires.
n: number of wires Gate n=8 (0.2mm length, 25μm Dia Au wire)
Drain n=8 (0.2mm length, 25μm Dia Au wire)

CHIP OUTLINE