

# FLX257XV

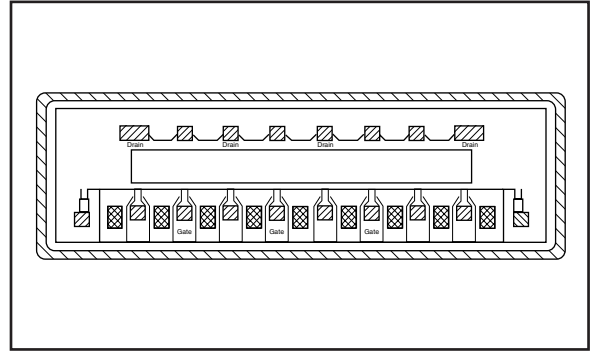
## GaAs FET & HEMT Chips

### FEATURES

- High Output Power:  $P_{1dB} = 33.5dBm(Typ.)$
- High Gain:  $G_{1dB} = 7.5dB(Typ.)$
- High PAE:  $\eta_{add} = 31%(Typ.)$
- Proven Reliability

### DESCRIPTION

The FLX257XV chip is a power GaAs FET that is designed for general purpose applications in the X-Band frequency range as it provides superior power, gain, and efficiency.



Eudyna's stringent Quality Assurance Program assures the highest reliability and consistent performance.

### ABSOLUTE MAXIMUM RATING (Ambient Temperature $T_a=25^\circ C$ )

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	$V_{DS}$		15	V
Gate-Source Voltage	$V_{GS}$		-5	V
Total Power Dissipation	$P_{tot}$	$T_c = 25^\circ C$	15.0	W
Storage Temperature	$T_{stg}$		-65 to +175	$^\circ C$
Channel Temperature	$T_{ch}$		175	$^\circ C$

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 -1.2 mA respectively with gate resistance of 200 $\Omega$ .
3. The operating channel temperature ( $T_{ch}$ ) should not exceed 145 $^\circ C$ .

### ELECTRICAL CHARACTERISTICS (Ambient Temperature $T_a=25^\circ C$ )

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 5V, V_{GS} = 0V$	-	1000	1500	mA
Transconductance	$g_m$	$V_{DS} = 5V, I_{DS} = 600mA$	-	600	-	mS
Pinch-off Voltage	$V_p$	$V_{DS} = 5V, I_{DS} = 50mA$	-1.0	-2.0	-3.5	V
Gate Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -50\mu A$	-5	-	-	V
Output Power at 1dB Gain Compression Point	$P_{1dB}$	$V_{DS} = 10V$ $I_{DS} \approx 0.6I_{DSS}$ $f = 10GHz$	32.5	33.5	-	dBm
Power Gain at 1dB Gain Compression Point	$G_{1dB}$		6.5	7.5	-	dB
Power-added Efficiency	$\eta_{add}$		-	31	-	%
Thermal Resistance	$R_{th}$	Channel to Case	-	8	10	$^\circ C/W$

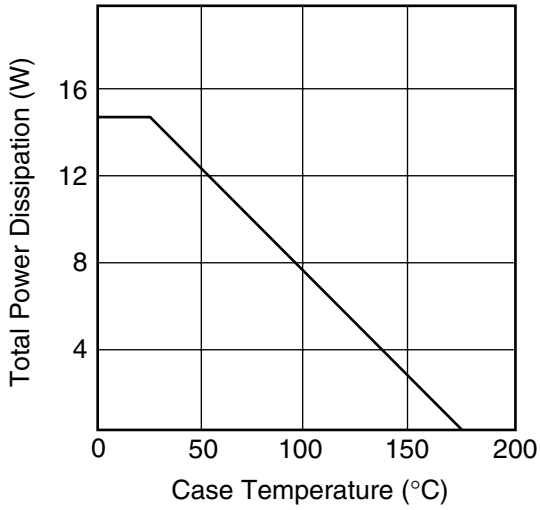
Note: RF parameter sample size 10pcs. criteria (accept/reject)=(2/3)

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

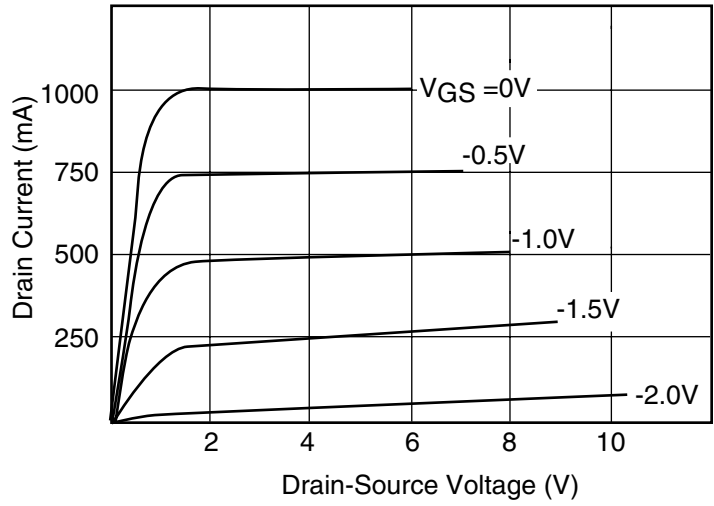
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## GaAs FET & HEMT Chips

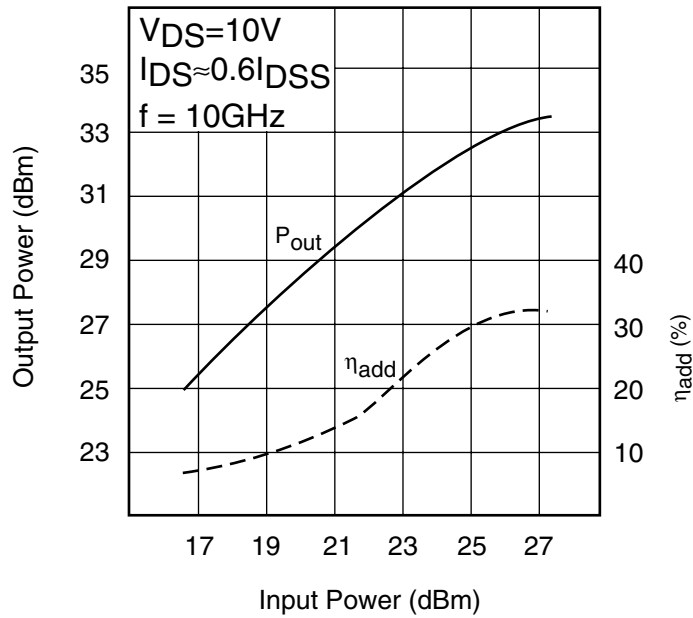
POWER DERATING CURVE



DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



OUTPUT POWER vs. INPUT POWER



**S-PARAMETERS**

$V_{DS} = 10V, I_{DS} = 600mA$

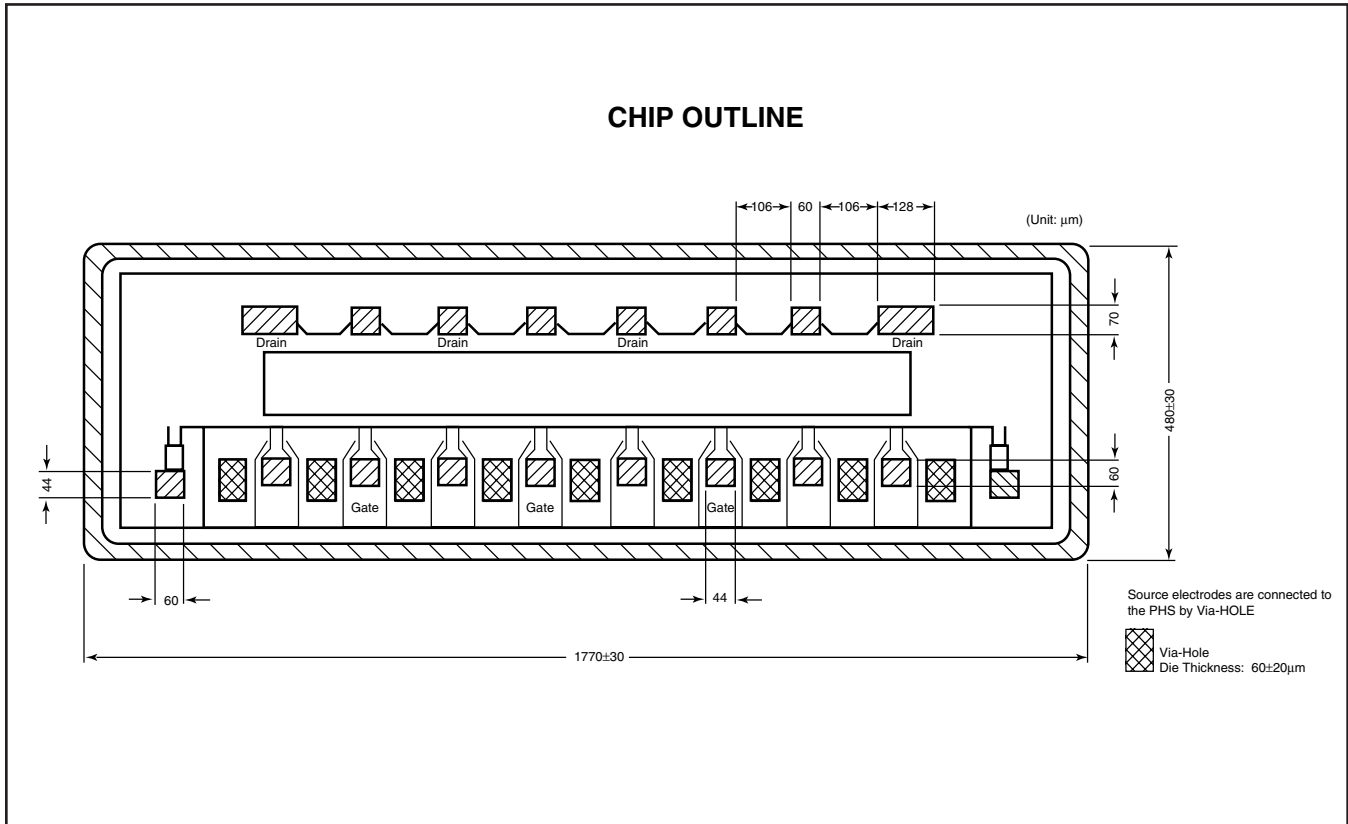
FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	.995	-35.2	14.385	161.0	.007	72.1	.390	-171.2
500	.963	-115.7	7.909	117.0	.020	32.2	.516	-168.2
1000	.953	-145.3	4.423	98.0	.022	18.4	.552	-170.1
2000	.951	-162.8	2.259	80.7	.022	11.8	.579	-169.1
3000	.951	-169.0	1.487	69.1	.022	11.3	.607	-167.1
4000	.953	-172.4	1.089	59.4	.021	13.3	.638	-165.5
5000	.955	-174.6	.846	50.6	.020	16.9	.671	-164.6
6000	.957	-176.3	.681	42.7	.019	22.1	.704	-164.2
7000	.959	-177.6	.562	35.5	.019	28.3	.735	-164.2
8000	.961	-178.8	.472	28.9	.019	35.2	.763	-164.5
9000	.963	-179.8	.402	22.9	.020	42.0	.789	-165.0
10000	.964	179.3	.345	17.5	.021	48.3	.811	-165.7
11000	.966	178.4	.300	12.6	.023	53.8	.831	-166.4
12000	.967	177.6	.262	8.3	.025	58.4	.849	-167.2
13000	.968	176.8	.230	4.4	.027	62.1	.864	-168.0
14000	.969	176.1	.202	1.0	.029	65.1	.878	-168.8
15000	.970	175.4	.179	-1.9	.032	67.5	.889	-169.6
16000	.971	174.7	.158	-4.4	.034	69.3	.900	-170.3
17000	.972	174.0	.140	-6.4	.037	70.8	.909	-171.0
18000	.972	173.3	.124	-7.8	.039	72.0	.916	-171.7

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)

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### CAUTION

Eudyna Devices Inc. products contain **gallium arsenide (GaAs)** which can be hazardous to the human body and the environment. For safety, observe the following procedures:

- Do not put this product into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

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