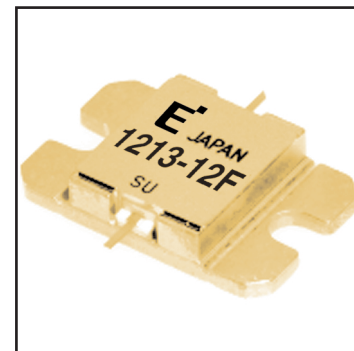


# FLM1213-12F

X, Ku-Band Internally Matched FET

## FEATURES

- High Output Power:  $P_{1dB} = 40.5\text{dBm}$  (Typ.)
- High Gain:  $G_{1dB} = 5.5\text{dB}$  (Typ.)
- High PAE:  $\eta_{add} = 24\%$  (Typ.)
- $IM_3 = -45\text{dBc}@P_o = 28\text{dBm}$
- Broad Band: 12.7 ~ 13.2GHz
- Impedance Matched  $Z_{in}/Z_{out} = 50\Omega$
- Hermetically Sealed



## DESCRIPTION

The FLM1213-12F is a power GaAs FET that is internally matched for standard communication bands to provide optimum power and gain in a 50 ohm system.

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

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

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	$V_{DS}$		15	V
Gate-Source Voltage	$V_{GS}$		-5	V
Total Power Dissipation	$P_T$	$T_C = 25^\circ\text{C}$	57.6	W
Storage Temperature	$T_{stg}$		-65 to +175	$^\circ\text{C}$
Channel Temperature	$T_{ch}$		175	$^\circ\text{C}$

Fujitsu 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 34.0 and -5.0 mA respectively with gate resistance of  $50\Omega$ .

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

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 5\text{V}, V_{GS} = 0\text{V}$	-	6000	9000	mA
Transconductance	$g_m$	$V_{DS} = 5\text{V}, I_{DS} = 3600\text{mA}$	-	5000	-	mS
Pinch-off Voltage	$V_p$	$V_{DS} = 5\text{V}, I_{DS} = 300\text{mA}$	-0.5	-1.5	-3.0	V
Gate Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -340\mu\text{A}$	-5	-	-	V
Output Power at 1dB G.C.P.	$P_{1dB}$	$V_{DS} = 10\text{V}$ $f = 12.7 \sim 13.2 \text{GHz}$ $I_{DS} = 0.6 I_{DSS}(\text{Typ.})$ $Z_S = Z_L = 50\Omega$	39.5	40.5	-	dBm
Power Gain at 1dB G.C.P.	$G_{1dB}$		4.5	5.5	-	dB
Drain Current	$I_{dsr}$		-	3600	4500	mA
Power-Added Efficiency	$\eta_{add}$		-	24	-	%
Gain Flatness	$\Delta G$		-	-	$\pm 0.6$	dB
3rd Order Intermodulation Distortion	$IM_3$	$f = 13.2\text{GHz}, \Delta f = 10\text{MHz}$ 2-Tone Test $P_{out} = 28\text{dBm S.C.L.}$	-42	-45	-	dBc
Thermal Resistance	$R_{th}$	Channel to Case	-	2.3	2.6	$^\circ\text{C}/\text{W}$
Channel Temperature Rise	$\Delta T_{ch}$	$10\text{V} \times I_{dsr} \times R_{th}$	-	-	80	$^\circ\text{C}$

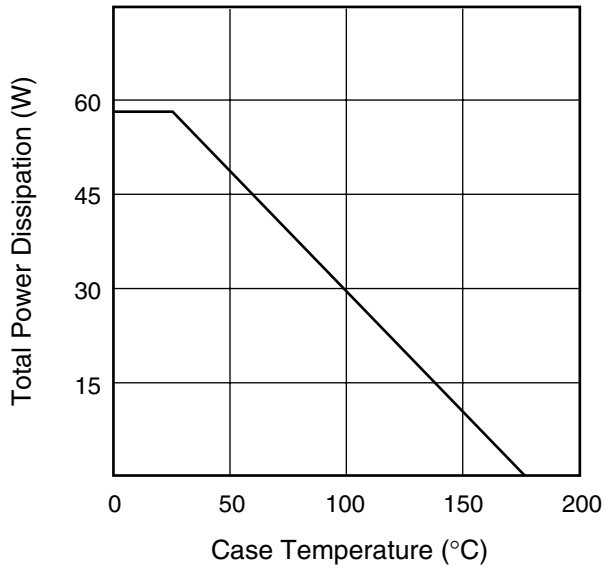
CASE STYLE: IB

G.C.P.: Gain Compression Point

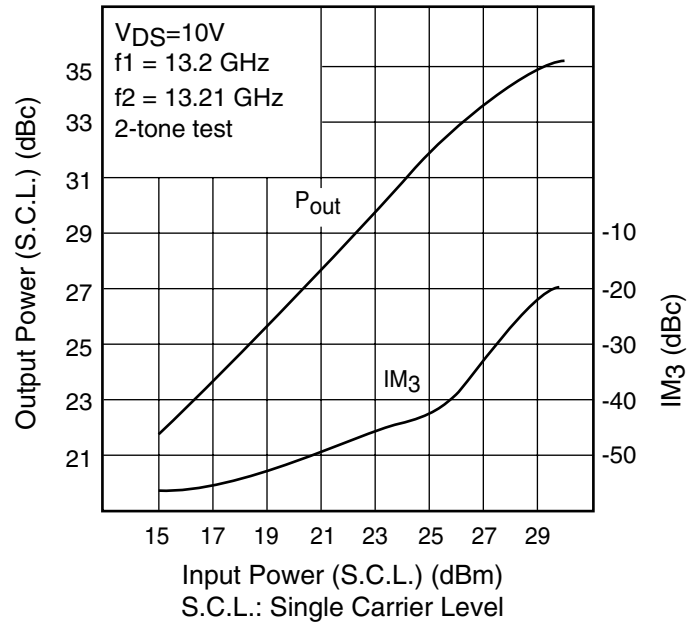
# FLM1213-12F

X, Ku-Band Internally Matched FET

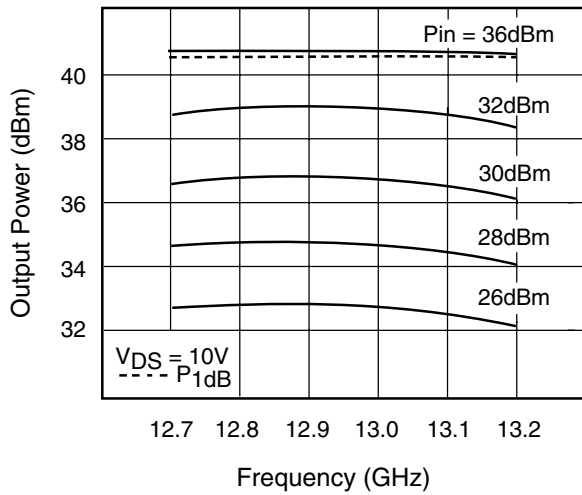
**POWER DERATING CURVE**



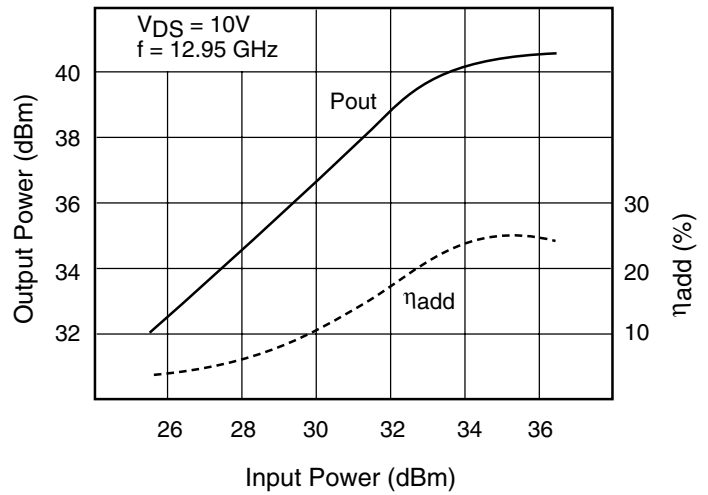
**OUTPUT POWER & IM<sub>3</sub> vs. INPUT POWER**



**OUTPUT POWER vs. FREQUENCY**

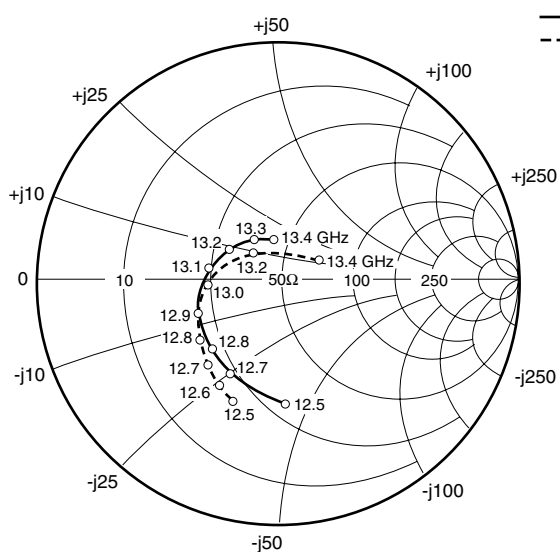


**OUTPUT POWER vs. INPUT POWER**

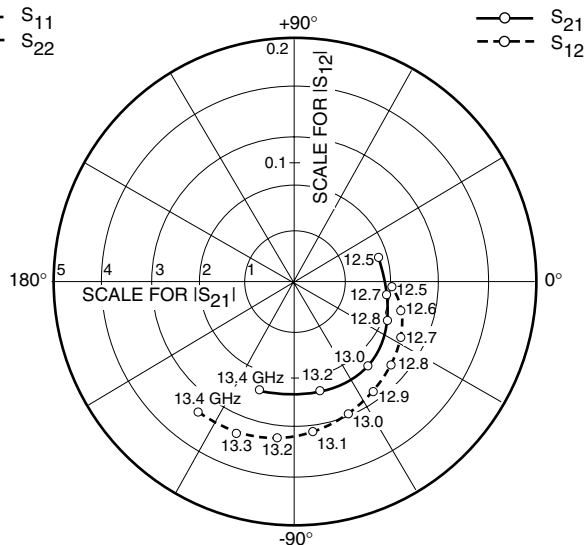


# FLM1213-12F

X, Ku-Band Internally Matched FET



—○— S<sub>11</sub>  
-○- S<sub>22</sub>



—○— S<sub>21</sub>  
-○- S<sub>12</sub>

## S-PARAMETERS

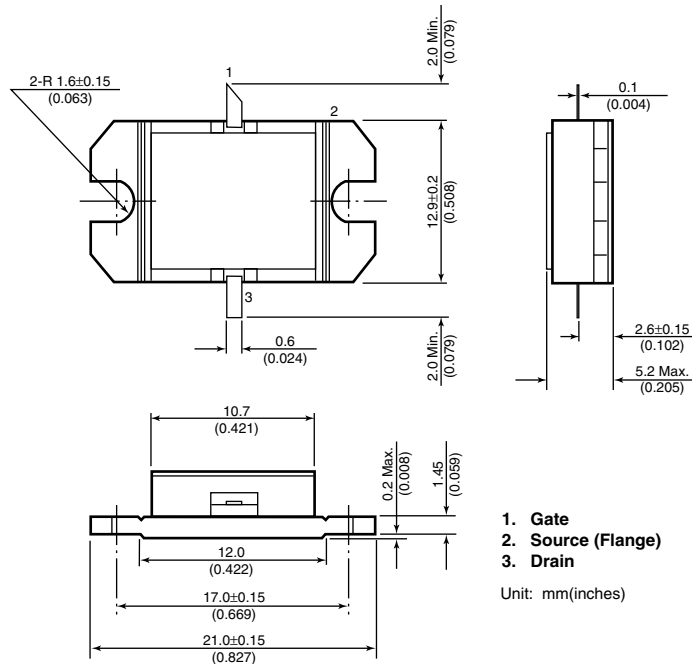
$V_{DS} = 10V, I_{DS} = 3600mA$

FREQUENCY (MHZ)	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
12500	.511	-86.9	1.787	16.5	.080	-2.7	.531	-110.8
12600	.474	-101.9	1.891	4.5	.089	-15.2	.497	-121.6
12700	.435	-118.0	1.995	-8.2	.098	-27.4	.460	-132.6
12800	.400	-134.6	2.092	-21.1	.104	-40.6	.414	-144.1
12900	.360	-152.2	2.192	-34.1	.112	-54.4	.362	-158.1
13000	.324	-171.0	2.283	-47.9	.120	-68.6	.298	-175.0
13100	.290	168.5	2.341	-62.2	.127	-82.8	.229	164.7
13200	.249	147.6	2.386	-77.2	.132	-97.1	.164	133.3
13300	.212	125.2	2.369	-91.4	.136	-111.6	.127	82.9
13400	.172	100.6	2.343	-106.4	.134	-126.6	.169	34.4

# FLM1213-12F

## X, Ku-Band Internally Matched FET

### Case Style "IB" Metal-Ceramic Hermetic Package



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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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