

FLM1213-4F

X, Ku-Band Internally Matched FET

FEATURES

- High Output Power: $P_{1dB} = 36.0\text{dBm}$ (Typ.)
- High Gain: $G_{1dB} = 6.5\text{dB}$ (Typ.)
- High PAE: $\eta_{add} = 28\%$ (Typ.)
- Low $IM_3 = -46\text{dBc}$ @ $P_o = 25.5\text{dBm}$
- Broad Band: 12.7 ~ 13.2GHz
- Impedance Matched $Z_{in}/Z_{out} = 50\Omega$
- Hermetically Sealed

DESCRIPTION

The FLM1213-4F 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	$T_c = 25^\circ\text{C}$	25.0	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:

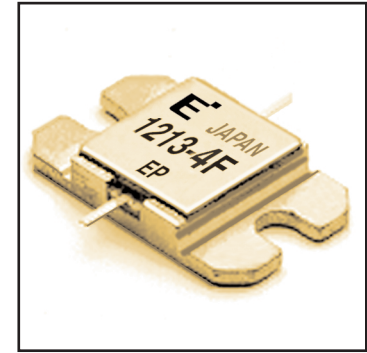
1. The drain-source operating voltage (V_{DS}) should not exceed 10 volts.
2. The forward and reverse gate currents should not exceed 16.0 and -2.2 mA respectively with gate resistance of 100 Ω .

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

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I_{DSS}	$V_{DS} = 5\text{V}, V_{GS} = 0\text{V}$	-	1700	2600	mA
Transconductance	g_m	$V_{DS} = 5\text{V}, I_{DS} = 1100\text{mA}$	-	1700	-	mS
Pinch-off Voltage	V_p	$V_{DS} = 5\text{V}, I_{DS} = 85\text{mA}$	-0.5	-1.5	-3.0	V
Gate Source Breakdown Voltage	V_{GSO}	$I_{GS} = -85\mu\text{A}$	-5.0	-	-	V
Output Power at 1dB G.C.P.	P_{1dB}		35.5	36.0	-	dBm
Power Gain at 1dB G.C.P.	G_{1dB}	$V_{DS} = 10\text{V}$	5.5	6.5	-	dB
Drain Current	I_{dsr}	$f = 12.7 \sim 13.2\text{GHz}$	-	1100	1300	mA
Power-Added Efficiency	η_{add}	$I_{DS} = 0.65 I_{DSS}(\text{Typ.})$	-	28	-	%
Gain Flatness	ΔG	$Z_S = Z_L = 50\Omega$	-	-	± 0.6	dB
3rd Order Intermodulation Distortion	IM_3	$f = 13.2\text{GHz}, \Delta f = 10\text{MHz}$ 2-Tone Test $P_{out} = 25.5\text{dBm S.C.L.}$	-44	-46	-	dBc
Thermal Resistance	R_{th}	Channel to Case	-	5.0	6.0	$^\circ\text{C/W}$
Channel Temperature Rise	ΔT_{ch}	$10\text{V} \times I_{dsr} \times R_{th}$	-	-	80	$^\circ\text{C}$

CASE STYLE: IA

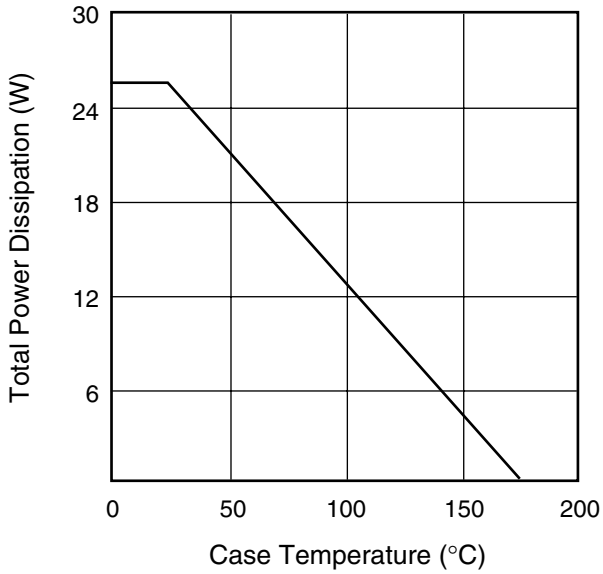
G.C.P.: Gain Compression Point, S.C.L.: Single Carrier Level



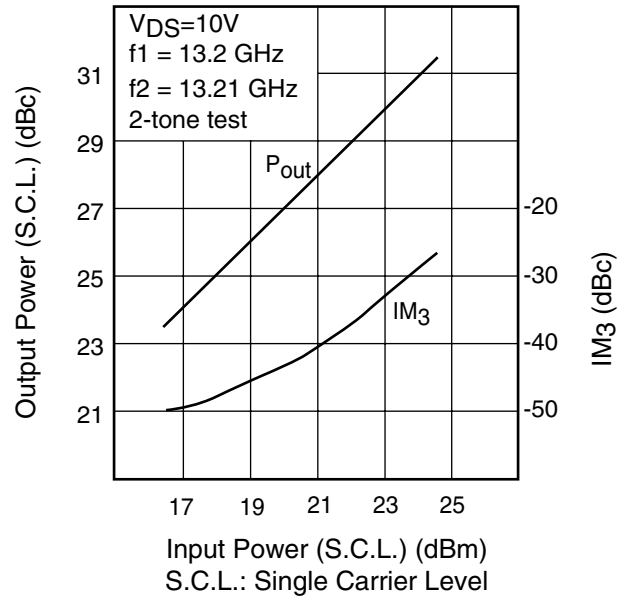
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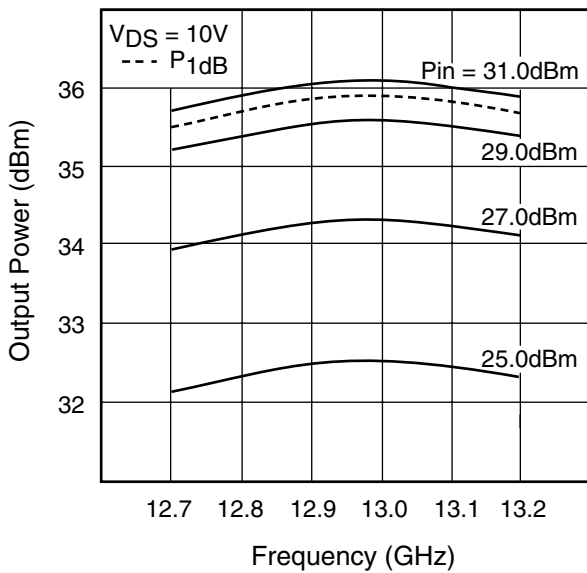
POWER DERATING CURVE



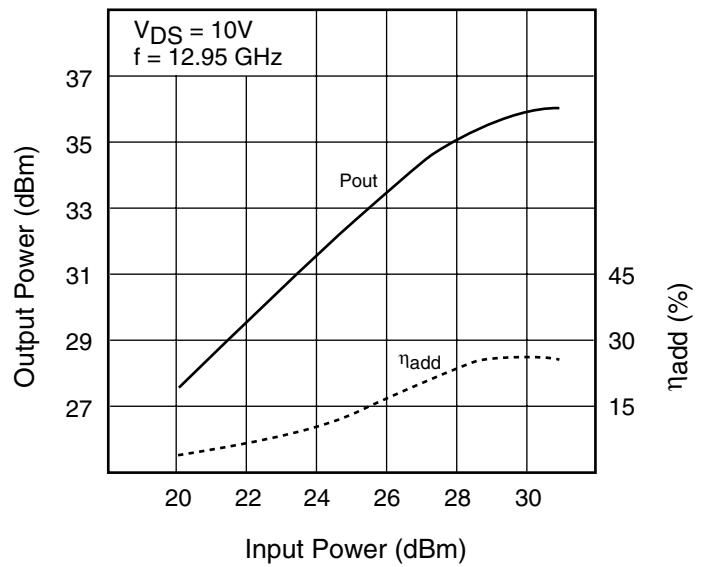
OUTPUT POWER & IM₃ vs. INPUT POWER

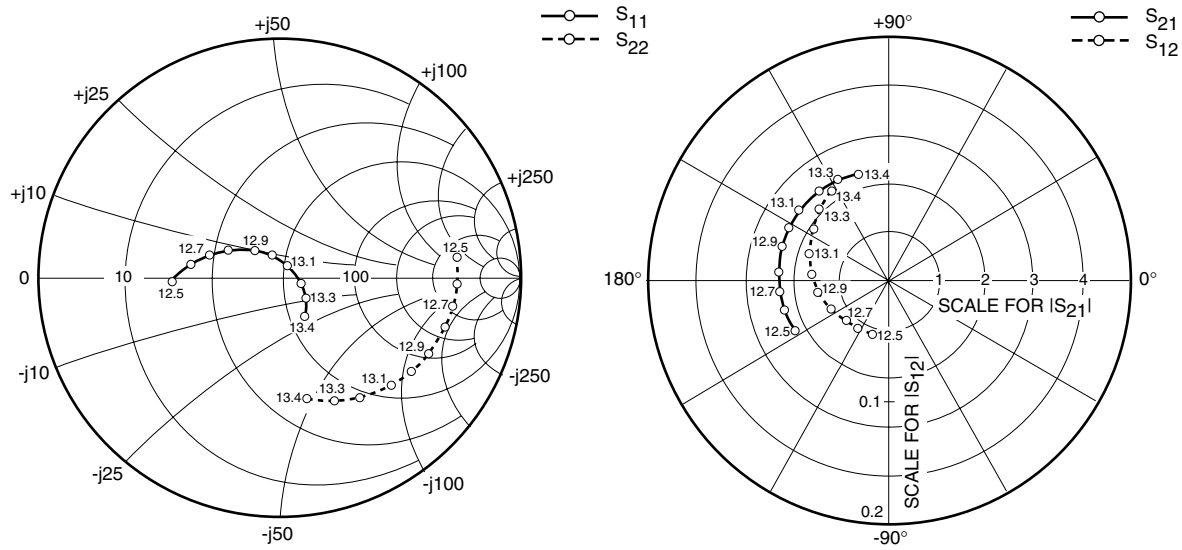


OUTPUT POWER vs. FREQUENCY



OUTPUT POWER vs. INPUT POWER





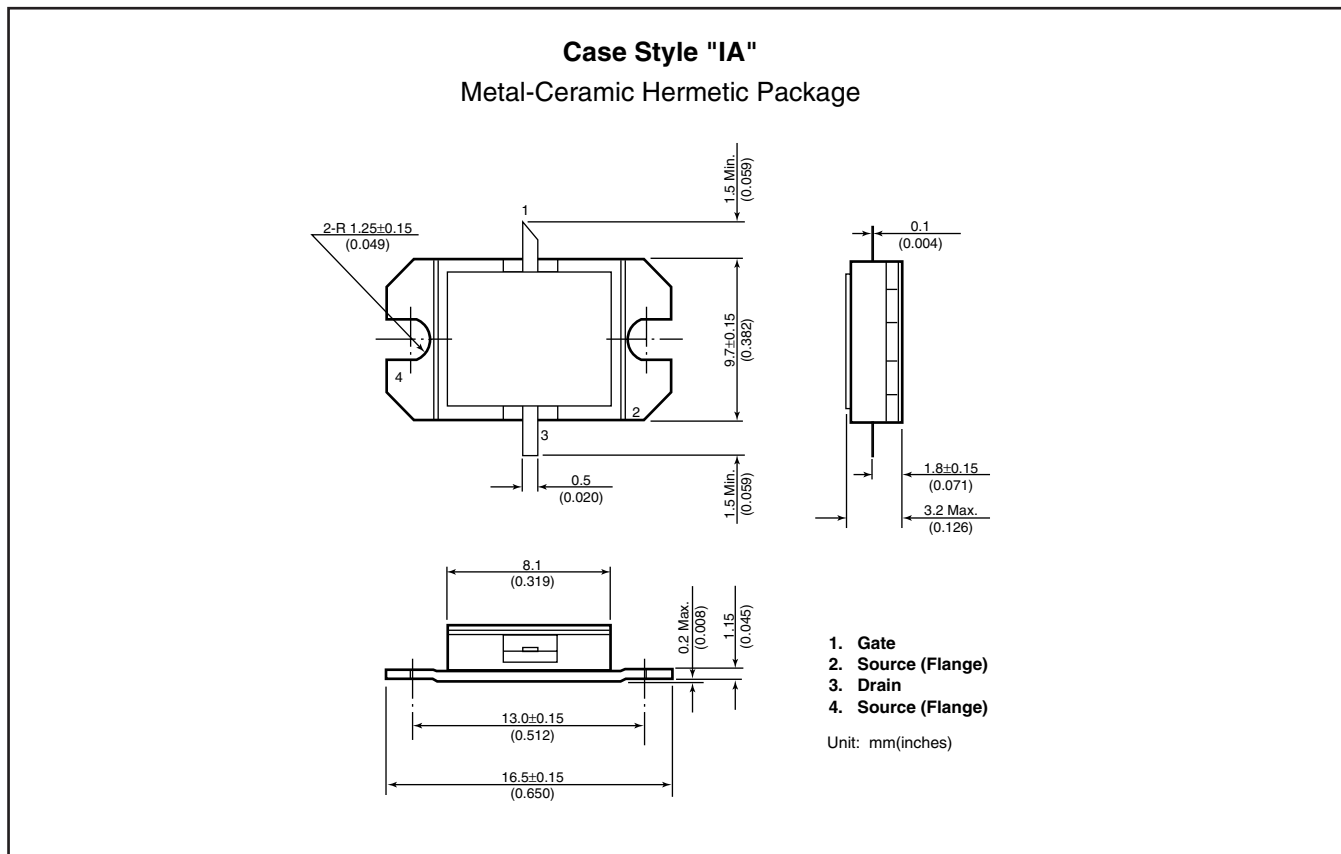
S-PARAMETERS

$V_{DS} = 10V, I_{DS} = 1100mA$

FREQUENCY (MHZ)	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
12500	.447	-178.5	2.188	-152.5	.046	-108.0	.741	6.9
12600	.372	171.0	2.249	-164.6	.048	-122.5	.738	-2.0
12700	.306	162.4	2.275	-174.2	.048	-138.0	.727	-9.1
12800	.242	151.4	2.307	175.8	.054	-154.2	.719	-16.6
12900	.154	132.3	2.323	162.5	.060	-170.7	.695	-27.0
13000	.098	108.9	2.344	152.5	.064	175.3	.671	-35.4
13100	.062	59.6	2.350	142.1	.071	161.6	.646	-43.9
13200	.092	-15.9	2.333	127.9	.076	145.4	.602	-56.4
13300	.143	-39.8	2.317	117.3	.083	135.0	.562	-66.0
13400	.192	-57.3	2.274	106.3	.088	121.9	.513	-76.7

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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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