

FEATURES

- High Output Power: $P_{1dB} = 36.0\text{dBm}$ (Typ.)
- High Gain: $G_{1dB} = 6.0\text{dB}$ (Typ.)
- High PAE: $\eta_{add} = 27\%$ (Typ.)
- Low $IM_3 = -46\text{dBc}$ @ $P_o = 25.5\text{dBm}$ (Typ.)
- Broad Band: 14.0 ~ 14.5GHz
- Impedance Matched $Z_{in}/Z_{out} = 50\Omega$
- Hermetically Sealed

DESCRIPTION

The FLM1414-4F 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	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:

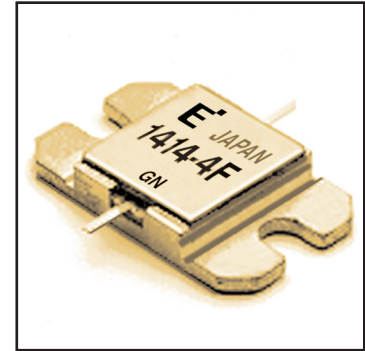
1. The drain-source operating voltage (V_{DS}) should not exceed 10 volts.
2. The forward and reverse gate currents should not exceed 16.0 and -2.2 mA respectively with gate resistance of 100 Ω .

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}	$V_{DS} = 10\text{V}$ $f = 14.0 \sim 14.5\text{GHz}$ $I_{DS} = 0.65 I_{DSS}(\text{Typ.})$ $Z_S = Z_L = 50\Omega$	35.5	36.0	-	dBm
Power Gain at 1dB G.C.P.	G_{1dB}		5.0	6.0	-	dB
Drain Current	I_{dsr}		-	1100	1300	mA
Power-Added Efficiency	η_{add}		-	27	-	%
Gain Flatness	ΔG		-	-	± 0.6	dB
3rd Order Intermodulation Distortion	IM_3	$f = 14.5\text{GHz}, \Delta f = 10\text{MHz}$ 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

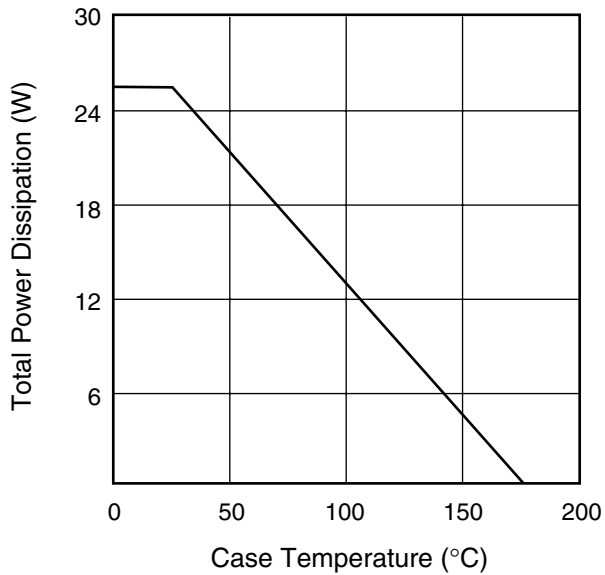
G.C.P.: Gain Compression Point, S.C.L.: Single Carrier Level



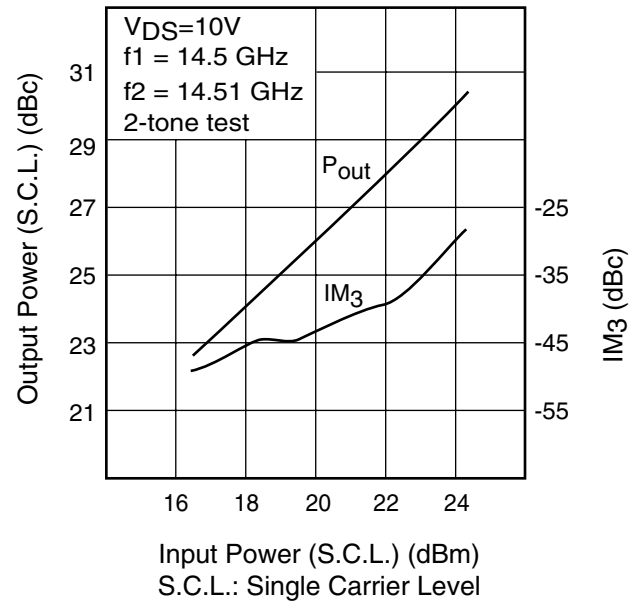
FLM1414-4F

Internally Matched Power GaAs FET

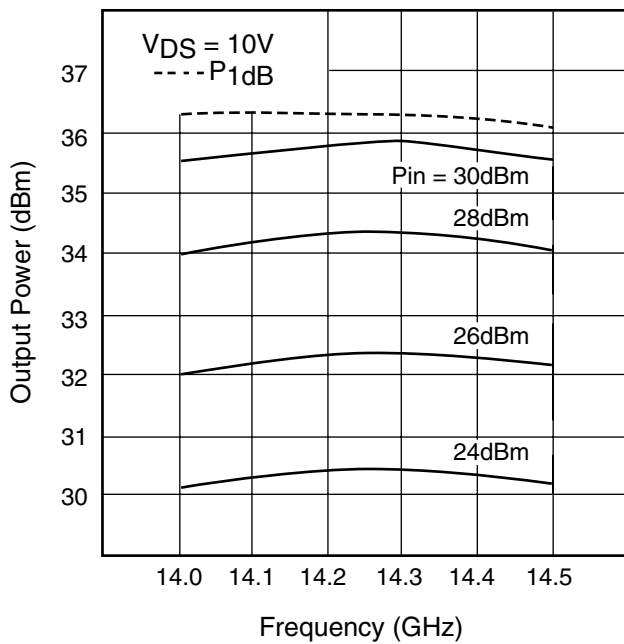
POWER DERATING CURVE



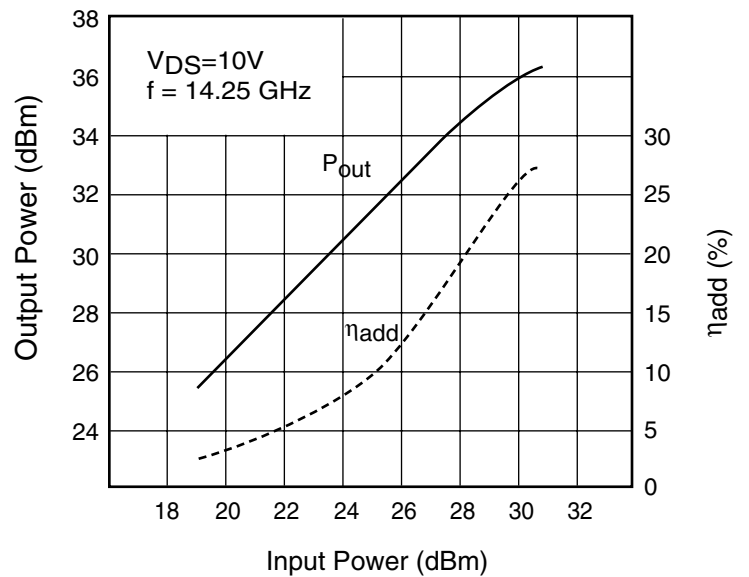
OUTPUT POWER & IM₃ vs. INPUT POWER



OUTPUT POWER vs. FREQUENCY

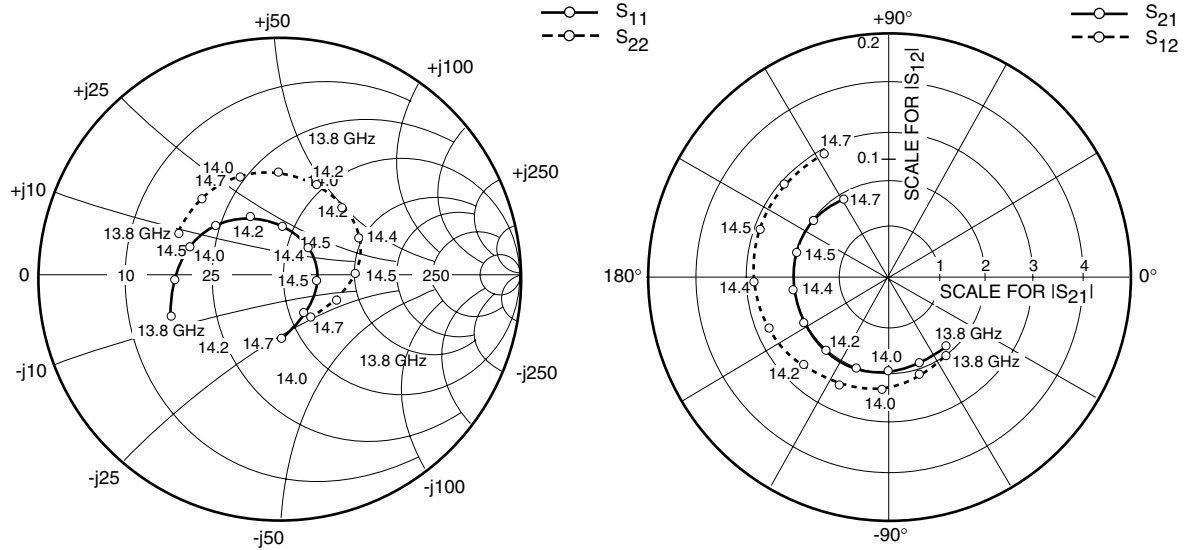


OUTPUT POWER vs. INPUT POWER



FLM1414-4F

Internally Matched Power GaAs FET



S-PARAMETERS

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

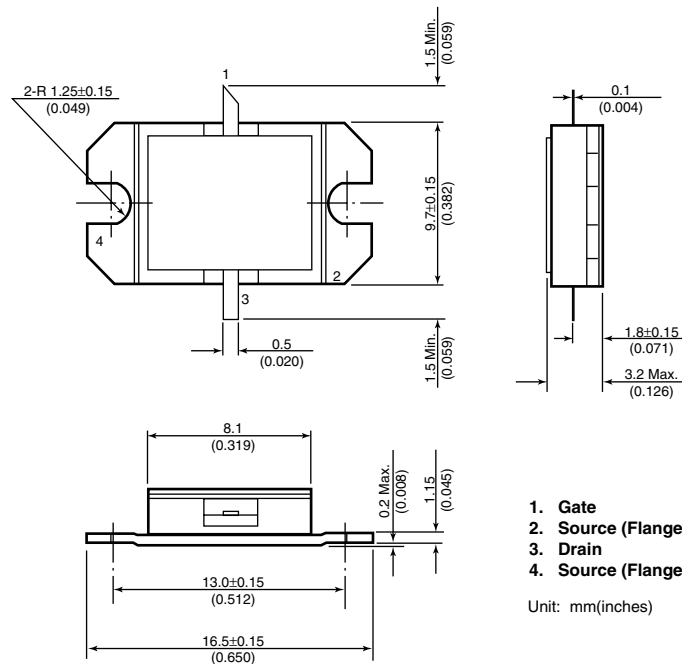
FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
13800	.479	-159.9	1.883	-51.6	.080	-54.0	.459	156.7
13900	.436	-178.2	1.921	-70.6	.084	-73.1	.454	134.3
14000	.388	162.3	1.955	-90.8	.093	-94.2	.438	112.7
14100	.334	141.1	1.990	-110.4	.098	-115.0	.430	92.1
14200	.278	117.4	2.017	-131.2	.100	-135.6	.413	68.9
14300	.209	88.3	2.032	-151.9	.110	-157.1	.381	48.0
14400	.162	47.6	2.050	-172.9	.113	-177.9	.353	24.8
14500	.150	-8.2	2.016	165.3	.114	160.0	.307	0.4
14600	.194	-55.1	1.966	143.4	.116	138.4	.256	-24.4
14700	.264	-89.3	1.882	121.0	.115	117.5	.216	-55.4

FLM1414-4F

Internally Matched Power GaAs FET

Case Style "IA"

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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