

# FLM1414-4F

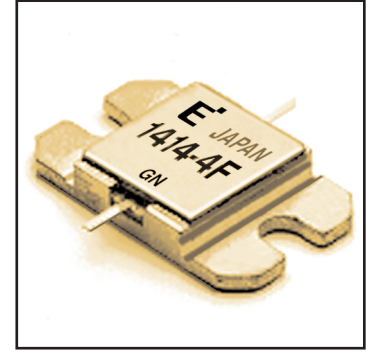
## Internally Matched Power GaAs FET

### 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  $100\Omega$ .

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

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 5\text{V}, V_{GS} = 0\text{V}$	-	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	$\eta_{add}$		-	27	-	%
Gain Flatness	$\Delta G$		-	-	$\pm 0.6$	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	$\Delta T_{ch}$	$10\text{V} \times I_{dsr} \times R_{th}$	-	-	80	$^\circ\text{C}$

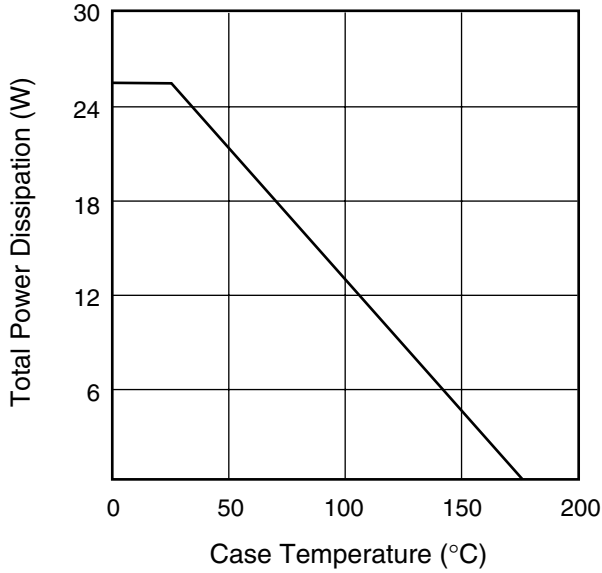
CASE STYLE: IA

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

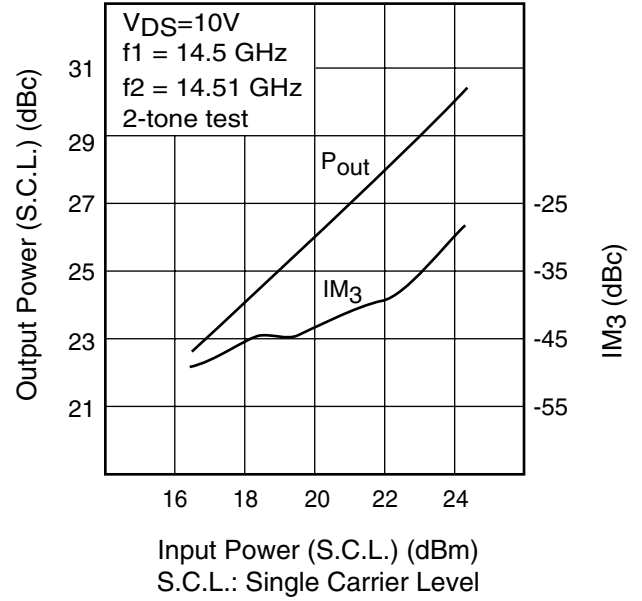
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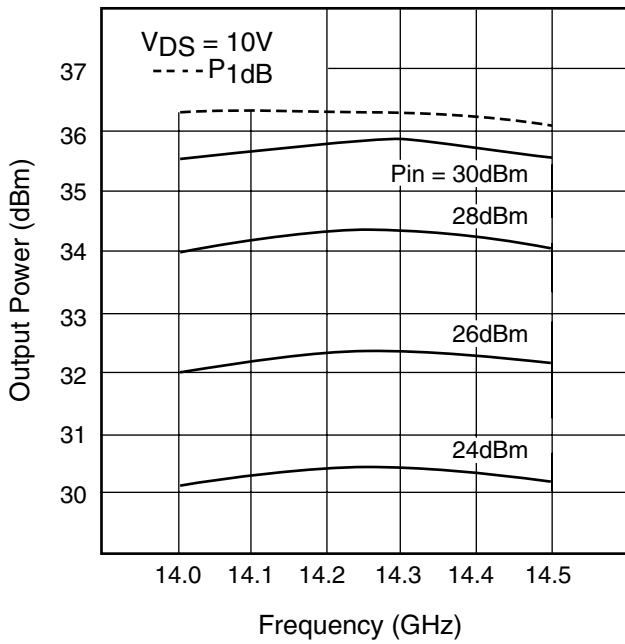
**POWER DERATING CURVE**



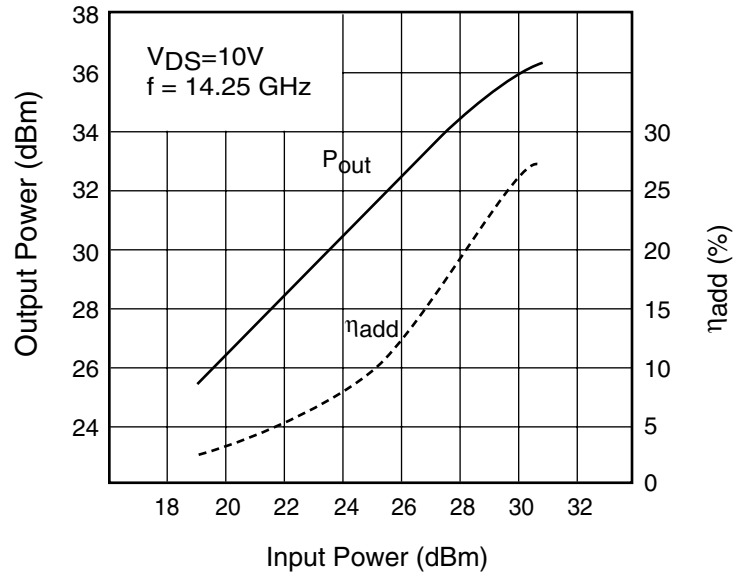
**OUTPUT POWER & IM<sub>3</sub> vs. INPUT POWER**



**OUTPUT POWER vs. FREQUENCY**

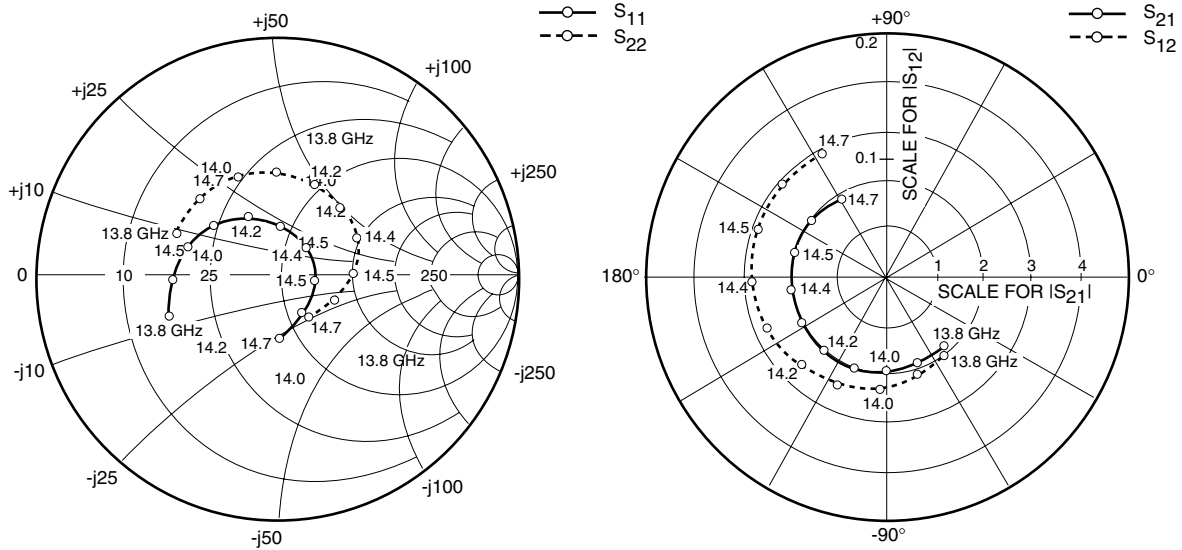


**OUTPUT POWER vs. INPUT POWER**



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## Internally Matched Power GaAs FET



### S-PARAMETERS

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

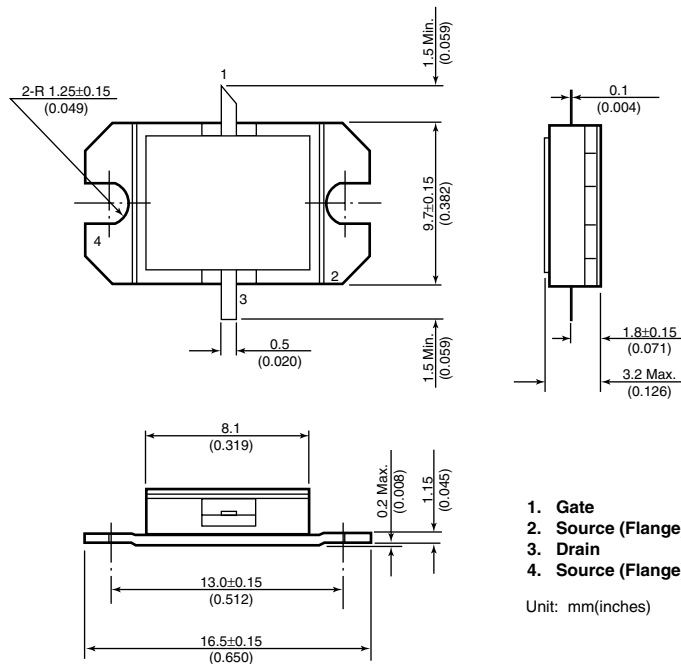
FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
13800	.479	-159.9	1.883	-51.6	.080	-54.0	.459	156.7
13900	.436	-178.2	1.921	-70.6	.084	-73.1	.454	134.3
14000	.388	162.3	1.955	-90.8	.093	-94.2	.438	112.7
14100	.334	141.1	1.990	-110.4	.098	-115.0	.430	92.1
14200	.278	117.4	2.017	-131.2	.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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