

# FLM1414-8F

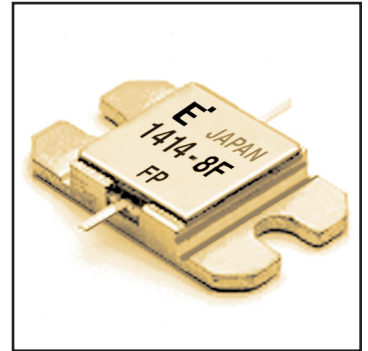
## Internally Matched Power GaAs FET

### FEATURES

- High Output Power:  $P_{1dB} = 39.0\text{dBm}$  (Typ.)
- High Gain:  $G_{1dB} = 6.0\text{dB}$  (Typ.)
- High PAE:  $\eta_{add} = 27\%$  (Typ.)
- Low  $IM_3 = -46\text{dBc}@P_o = 28.5\text{dBm}$  (Typ.)
- Broad Band: 14.0 ~ 14.5GHz
- Impedance Matched  $Z_{in}/Z_{out} = 50\Omega$
- Hermetically Sealed

### DESCRIPTION

The FLM1414-8F 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	$P_T$	$T_C = 25^\circ\text{C}$	42.8	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 32.0 and -4.4 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	$I_{DSS}$	$V_{DS} = 5\text{V}, V_{GS} = 0\text{V}$	-	3400	5200	mA	
Transconductance	$g_m$	$V_{DS} = 5\text{V}, I_{DS} = 2200\text{mA}$	-	3400	-	mS	
Pinch-off Voltage	$V_p$	$V_{DS} = 5\text{V}, I_{DS} = 170\text{mA}$	-0.5	-1.5	-3.0	V	
Gate Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -170\mu\text{A}$	-5.0	-	-	V	
Output Power at 1dB G.C.P.	$P_{1dB}$	$V_{DS} = 10\text{V}$ $f = 14.0 \sim 14.5\text{GHz}$ $I_{DS} = 0.65 I_{DSS}(\text{Typ.})$ $Z_S = Z_L = 50\Omega$	38.5	39.0	-	dBm	
Power Gain at 1dB G.C.P.	$G_{1dB}$		5.0	6.0	-	dB	
Drain Current	$I_{dsr}$		-	2200	2600	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 $P_{out} = 28.5\text{dBm S.C.L.}$	-44	-46	-	dBc
Thermal Resistance	$R_{th}$		Channel to Case	-	3.0	3.5	$^\circ\text{C/W}$
Channel Temperature Rise	$\Delta T_{ch}$	$10\text{V} \times I_{dsr} \times R_{th}$	-	-	80	$^\circ\text{C}$	

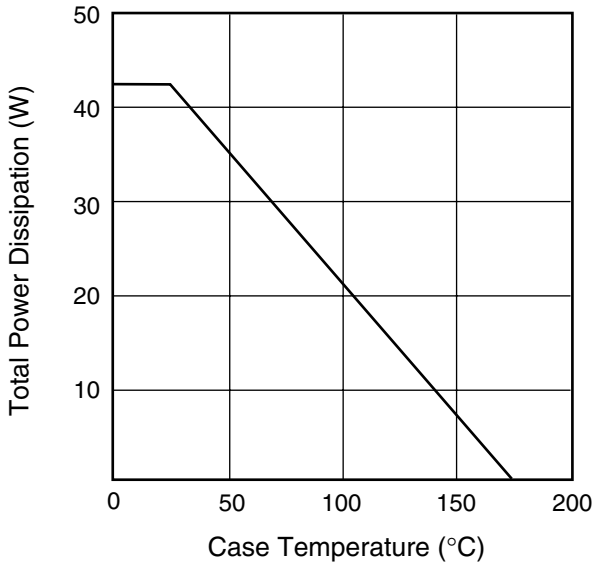
CASE STYLE: IA

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

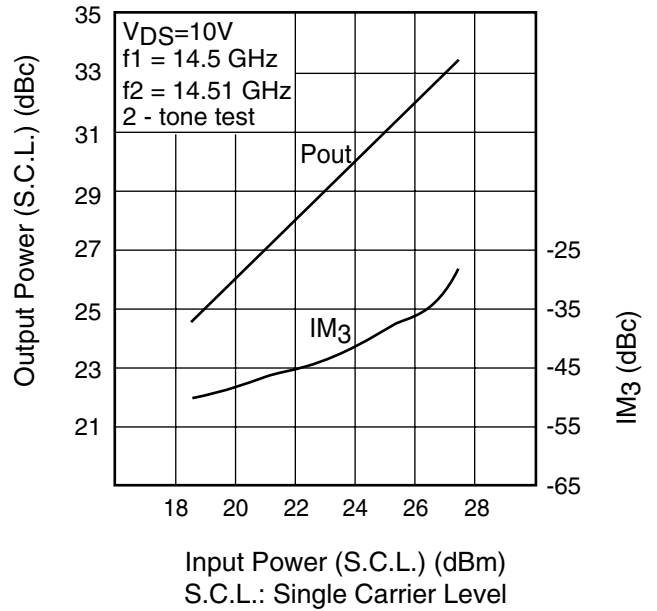
# FLM1414-8F

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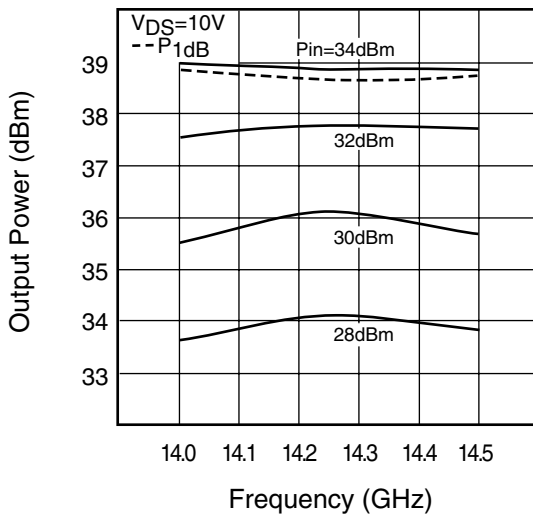
**POWER DERATING CURVE**



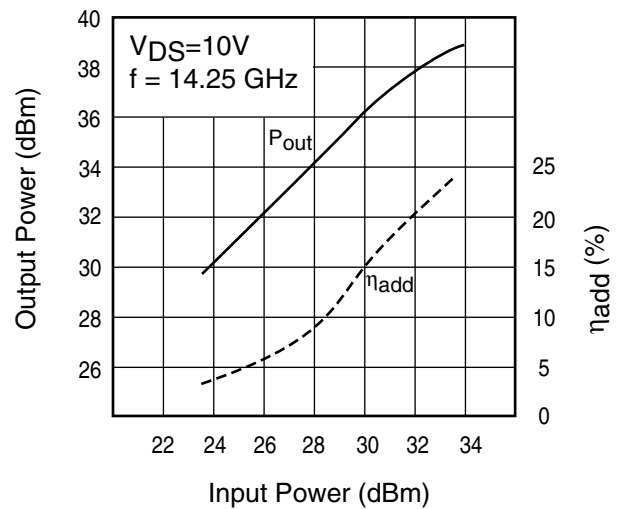
**OUTPUT POWER & IM<sub>3</sub> vs. INPUT POWER**



**OUTPUT POWER vs. FREQUENCY**

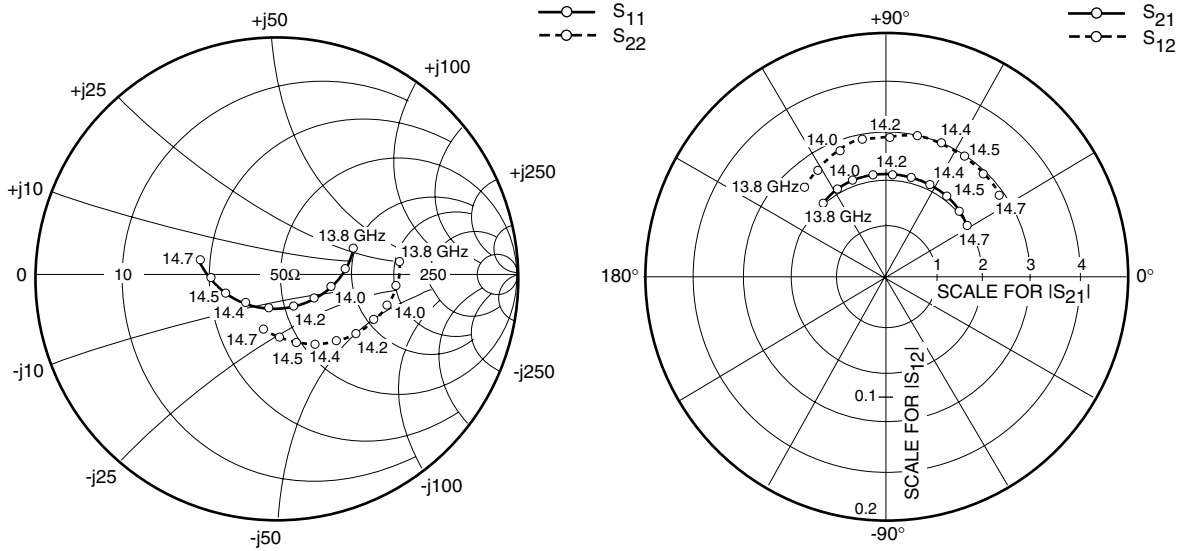


**OUTPUT POWER vs. INPUT POWER**



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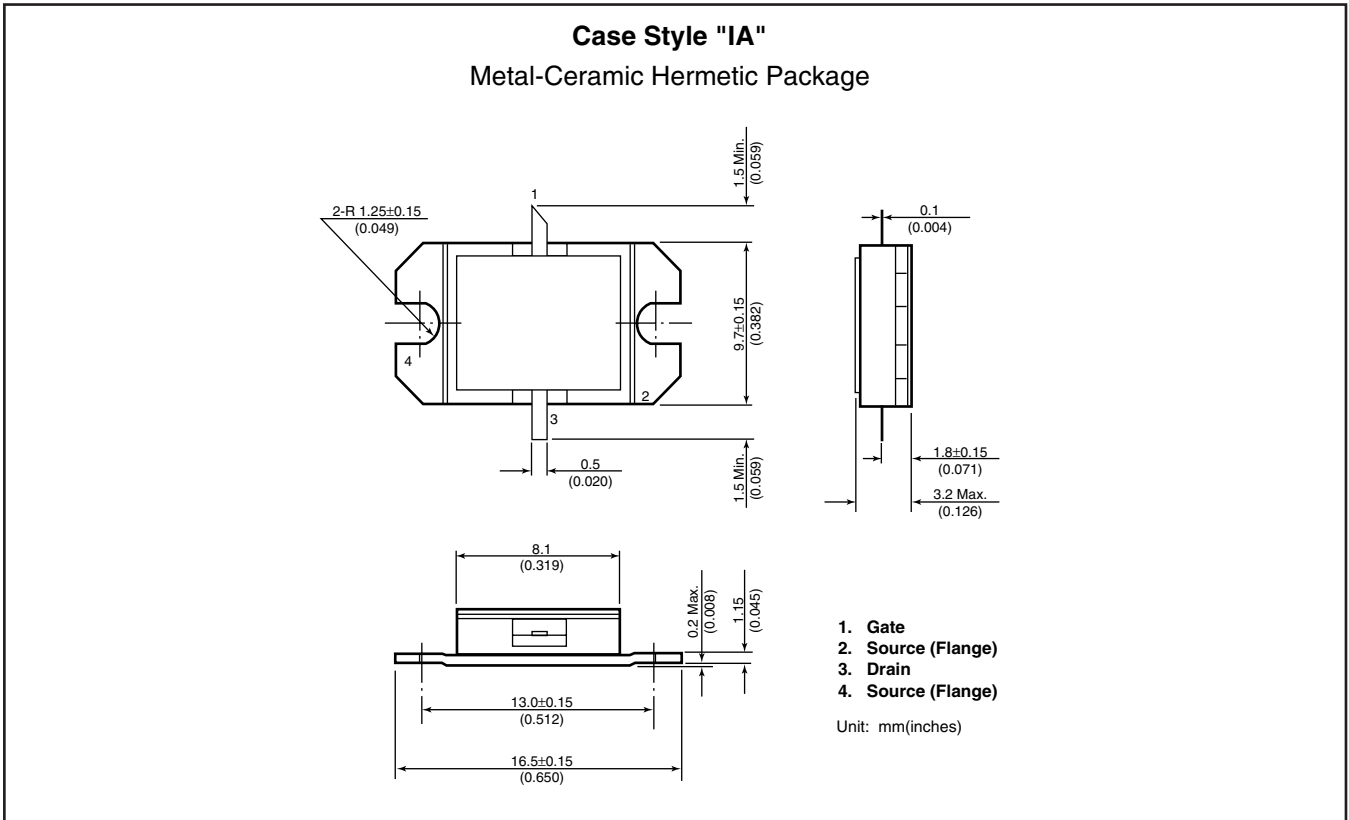
### S-PARAMETERS

$V_{DS} = 10V, I_{DS} = 2200mA$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
13800	.337	18.1	2.004	130.1	.100	132.0	.513	4.9
13900	.284	4.4	2.044	119.3	.104	121.3	.497	-5.7
14000	.231	-12.4	2.081	108.6	.110	109.7	.474	-16.3
14100	.182	-33.2	2.103	97.6	.114	99.8	.444	-26.7
14200	.147	-64.5	2.116	86.4	.114	88.6	.413	-37.7
14300	.144	-103.7	2.115	75.1	.119	77.3	.373	-49.0
14400	.172	-137.1	2.097	63.7	.119	67.5	.338	-60.8
14500	.221	-160.1	2.067	52.4	.118	56.1	.300	-74.0
14600	.272	-176.7	2.017	41.3	.116	45.9	.264	-88.6
14700	.323	170.6	1.949	30.3	.115	35.6	.237	-105.3

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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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