

# FLM1415-6F

## Internally Matched Power GaAs FET

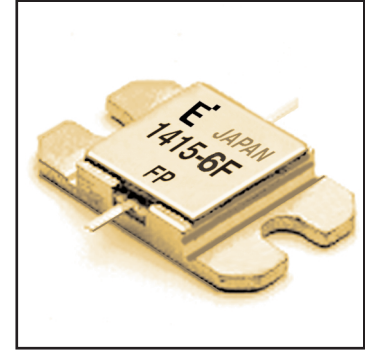
### FEATURES

- High Output Power:  $P_{1dB} = 37.0\text{dBm}$  (Typ.)
- High Gain:  $G_{1dB} = 5.5\text{dB}$  (Typ.)
- High PAE:  $\eta_{add} = 20\%$  (Typ.)
- Low  $IM_3 = -45\text{dBc}$  @  $P_o = 26.0\text{dBm}$  (Typ.)
- Broad Band: 14.5 ~ 15.3GHz
- Impedance Matched  $Z_{in}/Z_{out} = 50\Omega$
- Hermetically Sealed

### DESCRIPTION

The FLM1415-6F 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	$P_T$	$T_C = 25^\circ\text{C}$	31.2	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 26.0 and -2.8 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	$I_{DSS}$	$V_{DS} = 5\text{V}, V_{GS} = 0\text{V}$	-	2800	4200	mA
Transconductance	$g_m$	$V_{DS} = 5\text{V}, I_{DS} = 1800\text{mA}$	-	2350	-	mS
Pinch-off Voltage	$V_p$	$V_{DS} = 5\text{V}, I_{DS} = 120\text{mA}$	-0.5	-1.5	-3.0	V
Gate Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -120\mu\text{A}$	-5.0	-	-	V
Output Power at 1dB G.C.P.	$P_{1dB}$	$V_{DS} = 10\text{V},$ $I_{DS} = 0.6 I_{DSS}(\text{Typ.}),$ $f = 14.5 \sim 15.3 \text{GHz},$ $Z_S = Z_L = 50\Omega$	36.0	37.0	-	dBm
Power Gain at 1dB G.C.P.	$G_{1dB}$		4.5	5.5	-	dB
Drain Current	$I_{dsr}$		-	1800	2100	mA
Power-Added Efficiency	$\eta_{add}$		-	20	-	%
Gain Flatness	$\Delta G$		-	-	$\pm 0.6$	dB
3rd Order Intermodulation Distortion	$IM_3$	$f = 15.3\text{GHz}, \Delta f = 10\text{MHz}$ 2-Tone Test $P_{out} = 26.0\text{dBm S.C.L.}$	-42	-45	-	dBc
Thermal Resistance	$R_{th}$	Channel to Case	-	4.0	4.5	$^\circ\text{C}/\text{W}$
Channel Temperature Rise	$\Delta T_{ch}$	$10\text{V} \times I_{dsr} \times R_{th}$	-	-	80	$^\circ\text{C}$

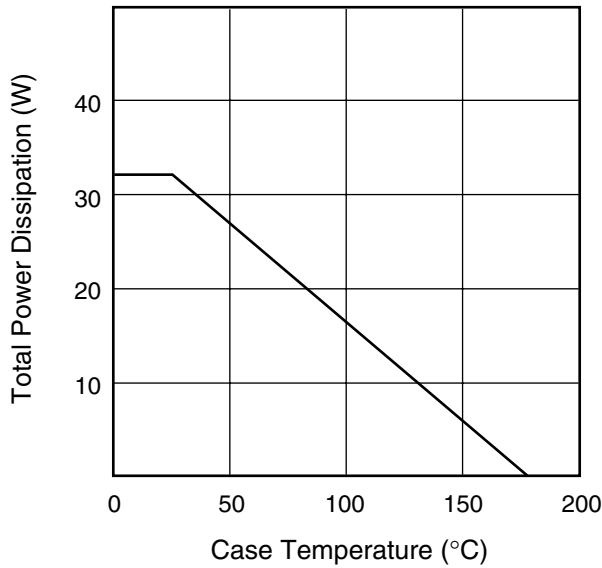
CASE STYLE: IA

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

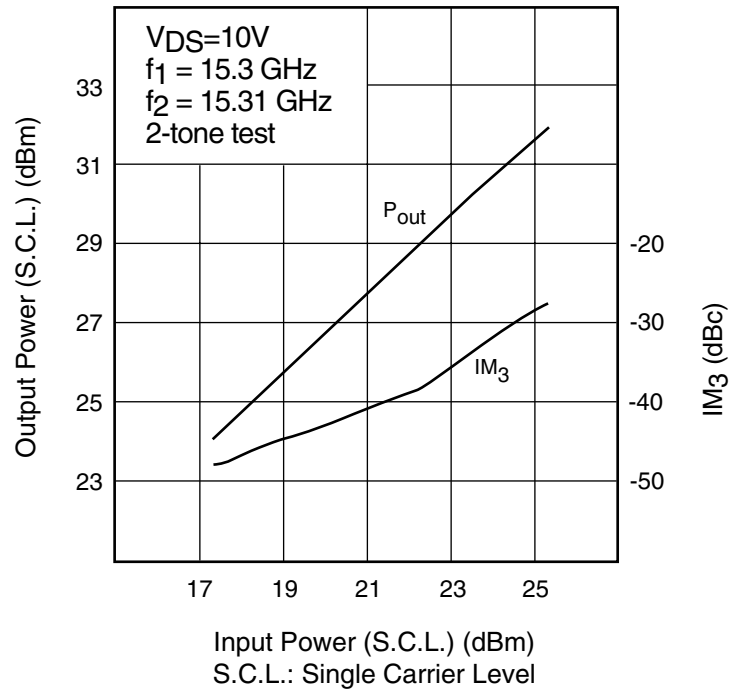
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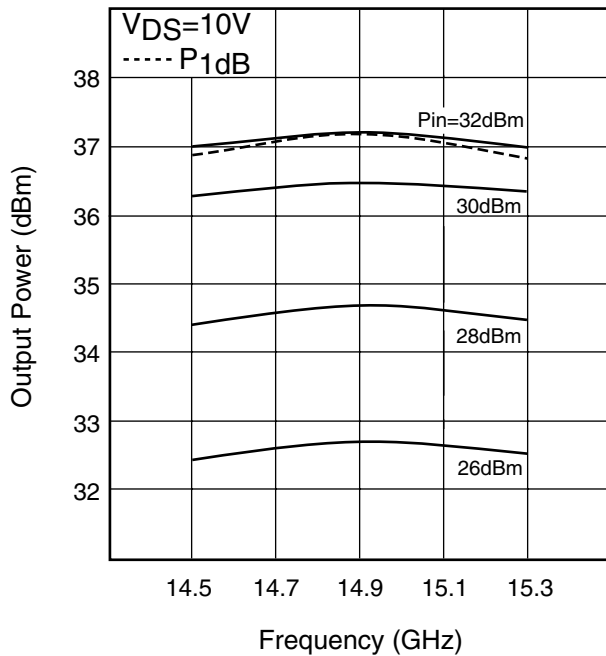
**POWER DERATING CURVE**



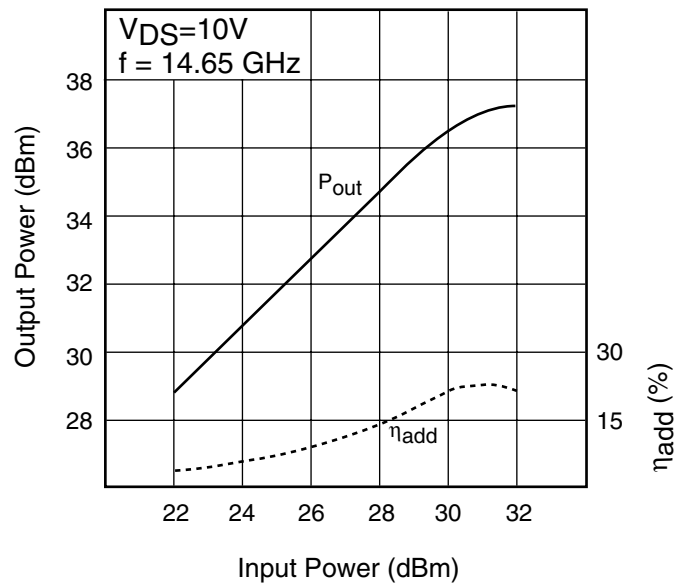
**OUTPUT POWER & IM<sub>3</sub> vs. INPUT POWER**



**OUTPUT POWER vs. FREQUENCY**

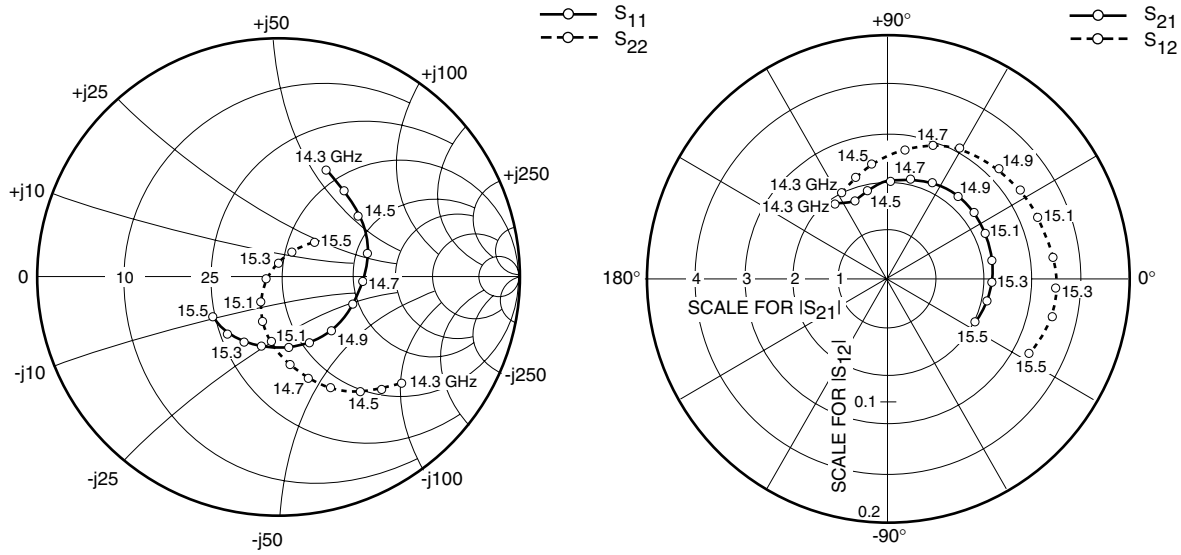


**OUTPUT POWER vs. INPUT POWER**



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## Internally Matched Power GaAs FET



### S-PARAMETERS

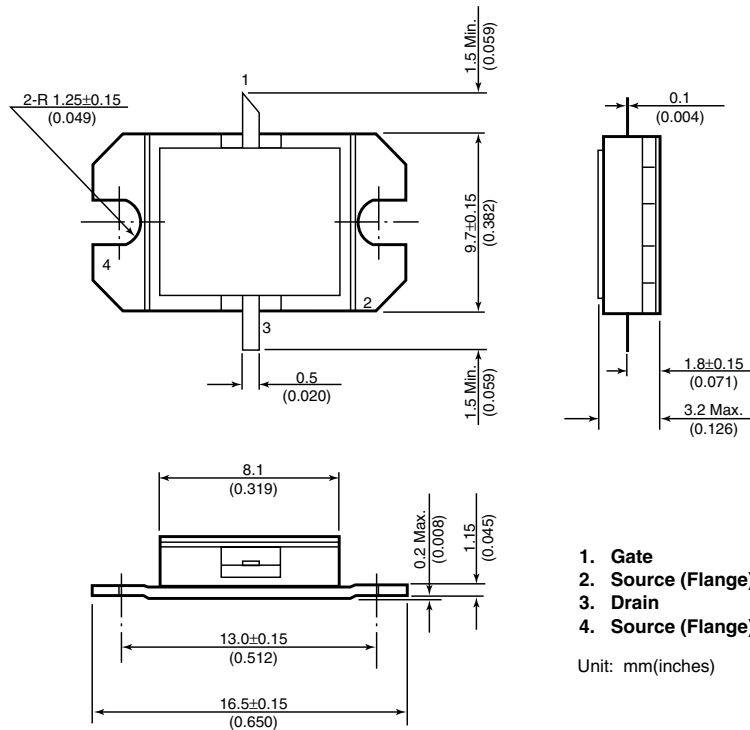
$V_{DS} = 10V, I_{DS} = 1800mA$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
14300	.487	65.7	1.862	123.5	.080	119.3	.676	-41.2
14400	.454	52.3	1.736	113.6	.087	108.0	.639	-47.6
14500	.422	37.2	1.858	103.3	.095	98.6	.591	-54.5
14600	.382	15.1	2.003	88.3	.106	82.3	.513	-65.1
14700	.355	-2.7	2.099	76.9	.116	71.5	.445	-73.6
14800	.333	-20.5	2.170	64.9	.122	60.2	.370	-82.7
14900	.317	-45.3	2.232	49.0	.129	44.3	.274	-96.6
15000	.309	-64.0	2.249	37.0	.132	33.9	.202	-109.1
15100	.302	-80.9	2.231	24.6	.133	22.5	.128	-124.1
15200	.301	-102.0	2.207	9.9	.137	7.5	.049	-171.9
15300	.308	-116.8	2.172	-1.7	.138	-3.1	.054	91.4
15400	.315	-130.4	2.108	-12.8	.139	-13.1	.118	59.1
15500	.316	-147.5	2.025	-26.9	.131	-27.7	.201	44.8

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### 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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