

# FLM1011-12F

X, Ku-Band Internally Matched FET

## FEATURES

- High Output Power:  $P_{1dB} = 40.5\text{dBm}$  (Typ.)
- High Gain:  $G_{1dB} = 6.0\text{dB}$  (Typ.)
- High PAE:  $\eta_{add} = 25\%$  (Typ.)
- Low  $IM_3 = -45\text{dBc}$  @  $P_o = 29.5\text{dBm}$
- Broad Band: 10.7 ~ 11.7GHz
- Impedance Matched  $Z_{in}/Z_{out} = 50\Omega$
- Hermetically Sealed

## DESCRIPTION

The FLM1011-12F 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	$P_T$	$T_C = 25^\circ\text{C}$	57.6	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:

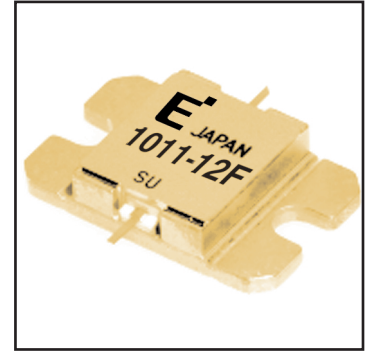
1. The drain-source operating voltage ( $V_{DS}$ ) should not exceed 10 volts.
2. The forward and reverse gate currents should not exceed 32.0 and -5.6 mA respectively with gate resistance of  $50\Omega$ .

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

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 5\text{V}, V_{GS} = 0\text{V}$	-	6000	9000	mA
Transconductance	$g_m$	$V_{DS} = 5\text{V}, I_{DS} = 3600\text{mA}$	-	5000	-	mS
Pinch-off Voltage	$V_p$	$V_{DS} = 5\text{V}, I_{DS} = 300\text{mA}$	-0.5	-1.5	-3.0	V
Gate Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -340\mu\text{A}$	-5	-	-	V
Output Power at 1dB G.C.P.	$P_{1dB}$	$V_{DS} = 10\text{V}$ $f = 10.7 \sim 11.7\text{GHz}$ $I_{DS} = 0.6 I_{DSS}(\text{Typ.})$ $Z_S = Z_L = 50\Omega$	39.5	40.5	-	dBm
Power Gain at 1dB G.C.P.	$G_{1dB}$		5.0	6.0	-	dB
Drain Current	$I_{dsr}$		-	3600	4500	mA
Power-Added Efficiency	$\eta_{add}$		-	25	-	%
Gain Flatness	$\Delta G$		-	-	$\pm 0.6$	dB
3rd Order Intermodulation Distortion	$IM_3$	$f = 11.7\text{GHz}, \Delta f = 10\text{MHz}$ 2-Tone Test $P_{out} = 29.5\text{dBm S.C.L.}$	-42	-45	-	dBc
Thermal Resistance	$R_{th}$	Channel to Case	-	2.3	2.6	$^\circ\text{C/W}$
Channel Temperature Rise	$\Delta T_{ch}$	$10\text{V} \times I_{dsr} \times R_{th}$	-	-	80	$^\circ\text{C}$

CASE STYLE: IB

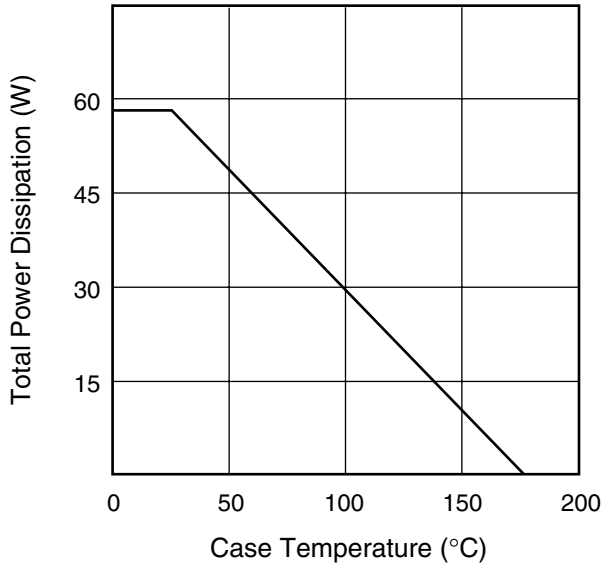
G.C.P.: Gain Compression Point



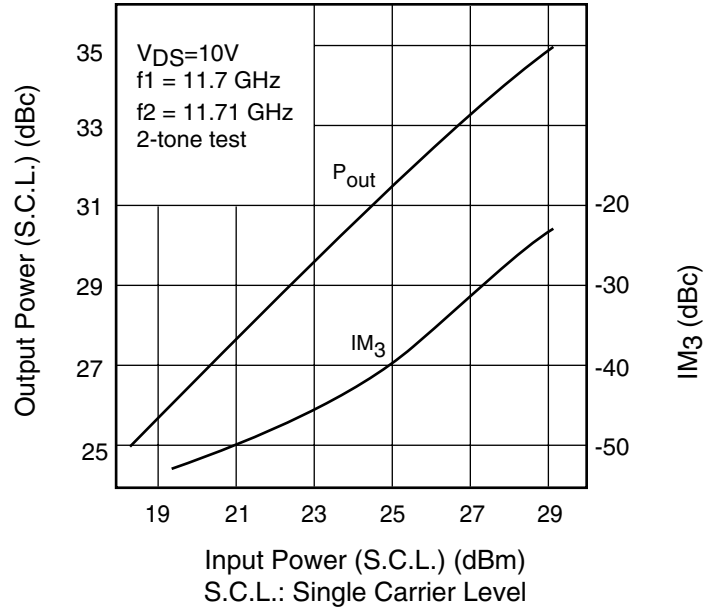
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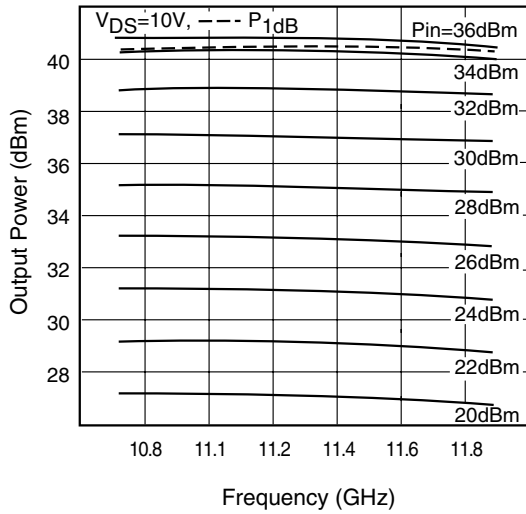
**POWER DERATING CURVE**



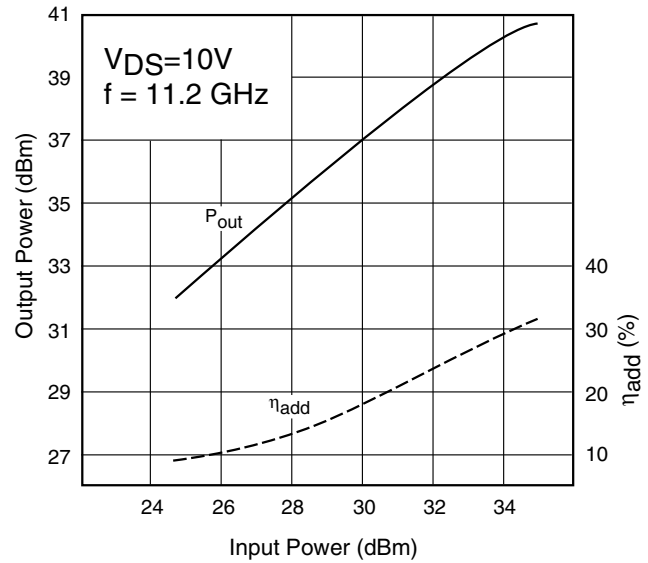
**OUTPUT POWER & IM<sub>3</sub> vs. INPUT POWER**



**OUTPUT POWER vs. FREQUENCY**

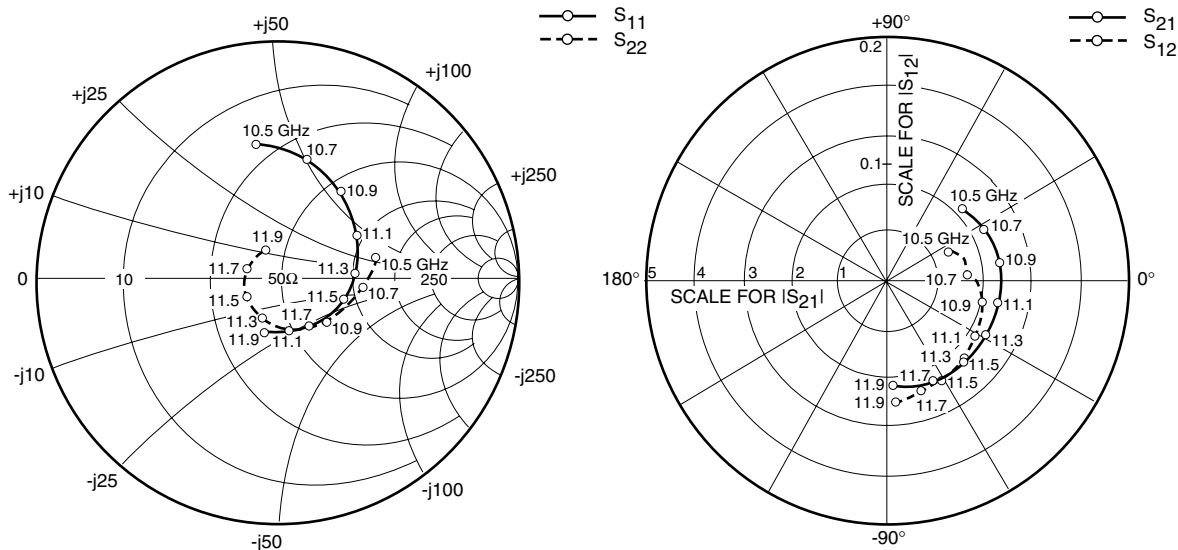


**OUTPUT POWER vs. INPUT POWER**



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## S-PARAMETERS

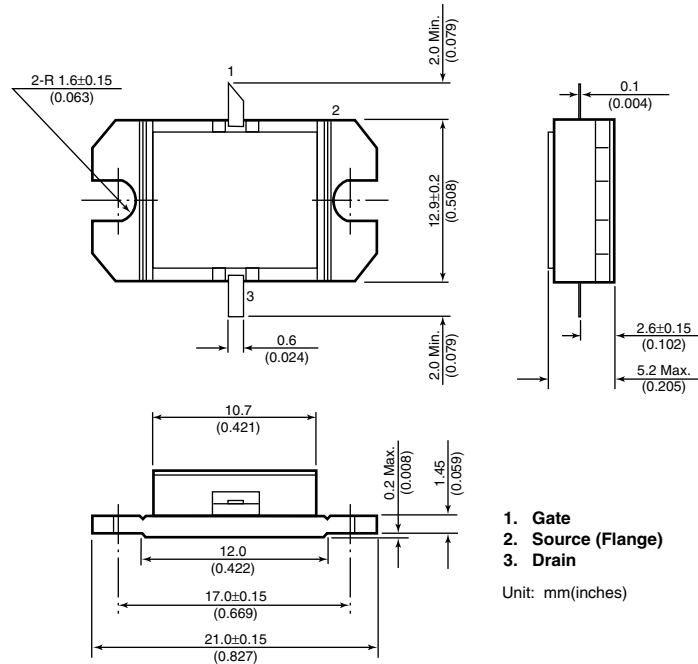
$V_{DS} = 10V, I_{DS} = 3600mA$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
10500	.575	98.6	2.142	44.3	.054	23.7	.389	6.8
10600	.549	87.9	2.158	36.2	.065	19.5	.362	-3.3
10700	.522	77.4	2.223	28.8	.066	3.2	.315	-14.9
10800	.487	66.0	2.316	18.9	.074	-1.4	.278	-29.5
10900	.457	55.0	2.337	8.9	.078	-14.3	.247	-44.1
11000	.421	43.3	2.326	-1.7	.083	-19.7	.222	-61.7
11100	.387	31.8	2.263	-11.0	.085	-32.4	.200	-78.4
11200	.355	19.5	2.257	-19.0	.086	-38.8	.180	-98.7
11300	.321	7.4	2.282	-27.7	.089	-47.0	.162	-116.7
11400	.292	-5.8	2.302	-37.1	.092	-55.5	.148	-137.7
11500	.265	-20.2	2.269	-47.2	.093	-61.9	.136	-161.2
11600	.240	-37.0	2.247	-56.4	.092	-70.6	.136	177.0
11700	.219	-55.9	2.235	-66.2	.098	-78.0	.139	155.0
11800	.205	-78.7	2.204	-77.3	.097	-86.7	.137	133.9
11900	.211	-103.2	2.117	-87.2	.101	-96.5	.137	111.5

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### Case Style "IB" 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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