

C-Band Internally Matched FET

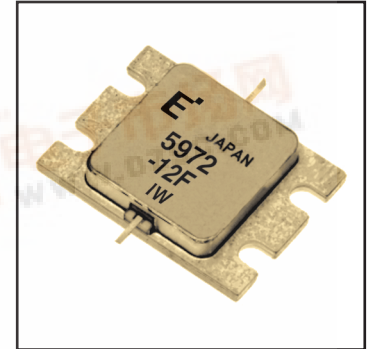
FEATURES

- High Output Power: $P_{1dB} = 41.5\text{dBm}$ (Typ.)
- High Gain: $G_{1dB} = 9.5\text{dB}$ (Typ.)
- High PAE: $\eta_{add} = 37\%$ (Typ.)
- Low $IM_3 = -45\text{dBc}$ @ $P_o = 30.5\text{dBm}$
- Broad Band: 5.9 ~ 7.2GHz
- Impedance Matched $Z_{in}/Z_{out} = 50\Omega$
- Hermetically Sealed Package

DESCRIPTION

The FLM5972-12F 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:

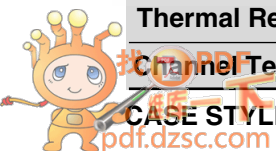
1. The drain-source operating voltage (V_{DS}) should not exceed 10 volts.
2. The forward and reverse gate currents should not exceed 32.0 and -5.6 mA respectively with gate resistance of 50 Ω .

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

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I_{DSS}	$V_{DS} = 5\text{V}, V_{GS} = 0\text{V}$	-	5000	7500	mA
Transconductance	g_m	$V_{DS} = 5\text{V}, I_{DS} = 3250\text{mA}$	-	5000	-	mS
Pinch-off Voltage	V_p	$V_{DS} = 5\text{V}, I_{DS} = 250\text{mA}$	-0.5	-1.5	-3.0	V
Gate Source Breakdown Voltage	V_{GSO}	$I_{GS} = -250\mu\text{A}$	-5.0	-	-	V
Output Power at 1dB G.C.P.	P_{1dB}	$V_{DS} = 10\text{V},$ $I_{DS} = 0.65I_{DSS}$ (Typ.), $f = 5.9 \sim 7.2\text{GHz},$ $Z_S = Z_L = 50\text{ohm}$	40.5	41.5	-	dBm
Power Gain at 1dB G.C.P.	G_{1dB}		8.5	9.5	-	dB
Drain Current	I_{dsr}		-	3250	3800	mA
Power-added Efficiency	η_{add}		-	37	-	%
Gain Flatness	ΔG		-	-	± 0.8	dB
3rd Order Intermodulation Distortion	IM_3	$f = 7.2\text{GHz}, \Delta f = 10\text{MHz}$ 2-Tone Test $P_{out} = 30.5\text{dBm S.C.L.}$	-42	-45	-	dBc
Thermal Resistance	R_{th}	Channel to Case	-	2.3	2.6	$^\circ\text{C/W}$
Channel Temperature Rise	ΔT_{ch}	$10\text{V} \times I_{dsr} \times R_{th}$	-	-	80	$^\circ\text{C}$

CASE STYLE: IK

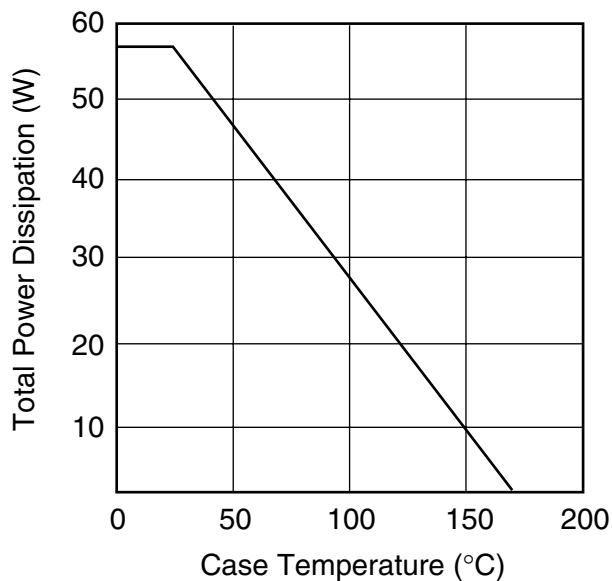
G.C.P.: Gain Compression Point, S.C.L.: Single Carrier Level



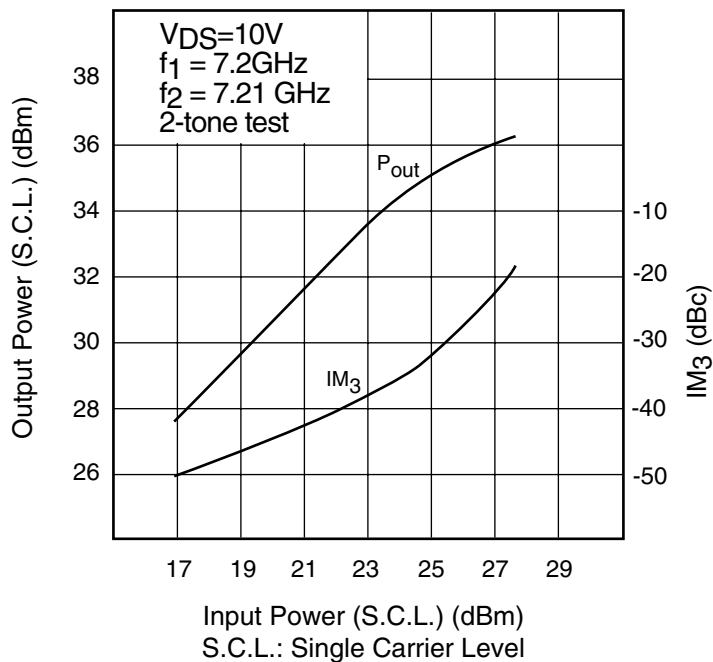
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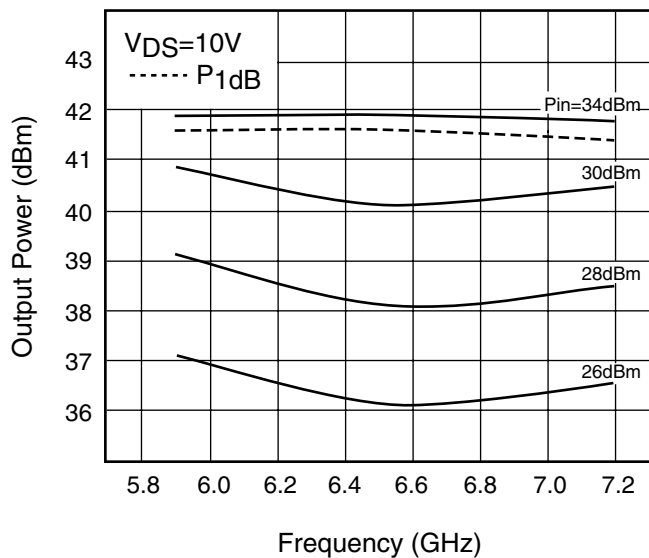
POWER DERATING CURVE



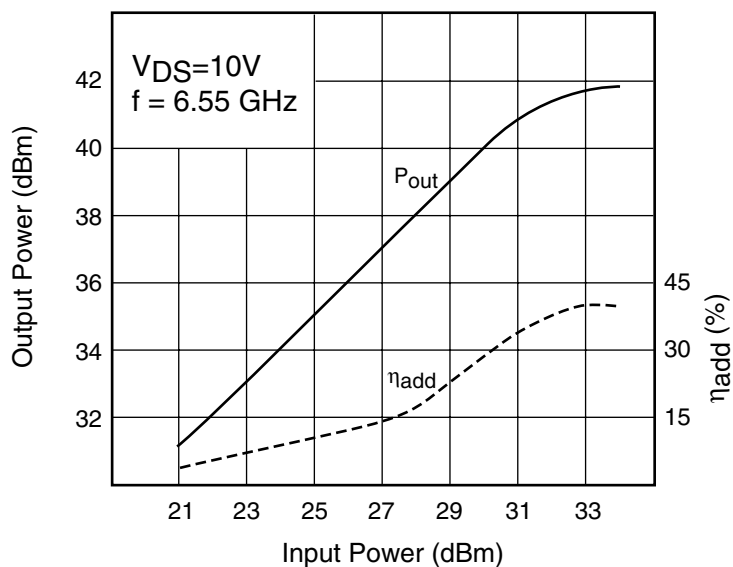
OUTPUT POWER & IM₃ vs. INPUT POWER



OUTPUT POWER vs. FREQUENCY

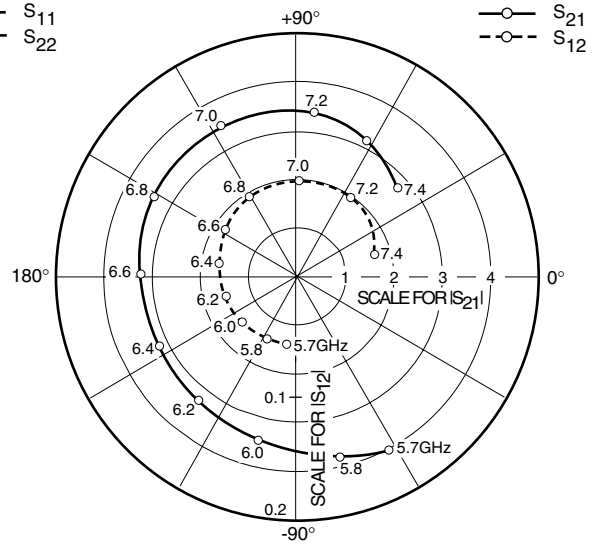
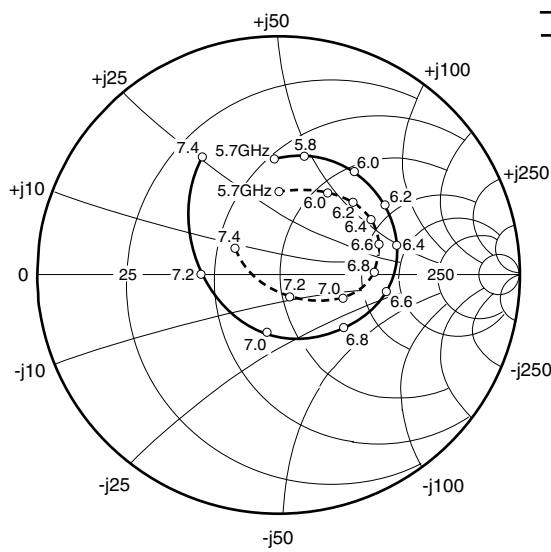


OUTPUT POWER vs. INPUT POWER



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S-PARAMETERS

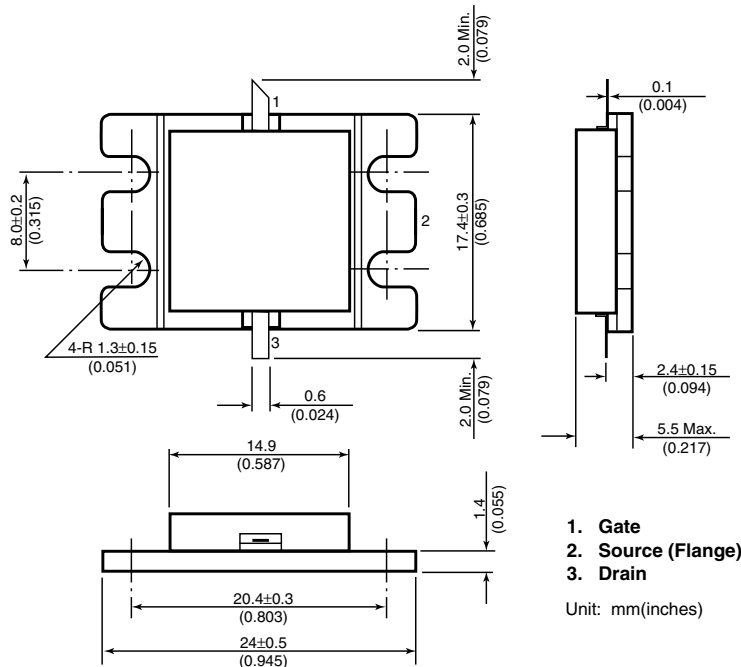
$V_{DS} = 10V$, $I_{DS} = 3250mA$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5700	.486	91.9	4.016	-62.2	.056	-100.3	.350	90.5
5800	.511	77.6	3.787	-76.7	.057	-116.1	.367	79.0
5900	.527	65.0	3.592	-90.5	.057	-130.1	.385	69.2
6000	.536	54.0	3.443	-103.6	.059	-141.2	.394	59.5
6100	.540	43.5	3.335	-116.2	.061	-153.9	.410	51.2
6200	.534	33.2	3.268	-128.9	.061	-164.8	.426	44.8
6300	.523	23.6	3.213	-141.4	.063	-176.4	.436	38.3
6400	.505	13.3	3.197	-154.0	.066	170.4	.439	31.6
6500	.479	2.4	3.206	-167.0	.067	159.1	.439	24.2
6600	.447	-9.5	3.254	179.6	.072	147.0	.434	17.4
6700	.404	-23.3	3.323	165.7	.073	133.3	.420	9.6
6800	.354	-41.0	3.383	150.9	.078	120.2	.392	1.5
6900	.296	-65.0	3.449	134.7	.078	104.0	.346	-6.6
7000	.248	-100.9	3.495	116.9	.080	88.6	.281	-20.8
7100	.252	-135.8	3.488	104.3	.081	76.5	.210	-31.6
7200	.331	179.5	3.375	83.7	.079	55.3	.108	-67.2
7300	.458	146.9	3.128	62.3	.074	35.6	.093	-173.8
7400	.586	122.5	2.759	41.3	.067	16.5	.212	148.7

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Case Style "IK" 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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