

ELM1414-30F/001

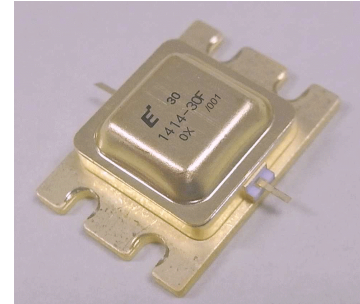
Ku-Band Internally Matched FET

FEATURES

- High Output Power: P1dB=44.5dBm(Typ.)
- High Gain: G1dB=6.0dB(Typ.)
- High PAE: η_{add} =22%(Typ.)
- Broad Band: 14.00~14.5GHz
- Impedance Matched Zin/Zout = 50Ω
- Hermetically Sealed Package

DESCRIPTION

The ELM1414-30F/001 is a power GaAs FET that is internally matched for standard communication bands to provide optimum power and gain in a 50Ω system.



ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Rating	Unit
Drain-Source Voltage (Tc=25°C)	V _{DS}	15	V
Gate-Source Voltage (Tc=25°C)	V _{GS}	-5	V
Total Power Dissipation	P _r	115.3	W
Storage Temperature	T _{stg}	-55 to +125	°C
Channel Temperature	T _{ch}	175	°C

RECOMMENDED OPERATING CONDITION

Item	Symbol	Condition	Limit	Unit
DC Input Voltage	V _{DS}		≤ 10	V
Forward Gate Current	I _{GF}	R _G =24 ohm	≤ 78.0	mA
Reverse Gate Current	I _{GR}	R _G =24 ohm	≥ -16.9	mA
Storage Temperature	T _{stg}		-55 to +125	°C
Channel Temperature	T _{ch}		≤ +155	°C

ELECTRICAL CHARACTERISTICS (Case Temperature Tc=25°C)

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Drain Current	I _{DSS}	V _{DS} =5V, V _{GS} =0V	-	16.4	-	A
Trans conductance	g _m	V _{DS} =5V, I _{DS} =8A	-	11.6	-	S
Pinch-off Voltage	V _p	V _{DS} =5V, I _{DS} =700mA	-0.5	-1.5	-3.0	V
Gate-Source Breakdown Voltage	V _{GSO}	I _{GS} =-700uA	-5.0	-	-	V
Output Power at 1dB G.C.P.	P _{1dB}	V _{DS} =10V	44.0	44.5	-	dBm
Power Gain at 1dB G.C.P.	G _{1dB}	f= 14.0 ~ 14.5 GHz	5.5	6.0	-	dB
Drain Current	I _{DSr}	I _{DS} DC=7.0A (typ.)	-	9.0	10.4	A
Power-added Efficiency	η _{add}	Z _s =Z _L =50 ohm	-	22	-	%
Gain Flatness	ΔG		-	-	1.2	dB
3rd Order Intermodulation Distortion	IM ₃	f=14.5 GHz Δf=10MHz, 2-tone Test P _{out} =38.0dBm (S.C.L.)	-25	-30	-	dBc
Thermal Resistance	R _{th}	Channel to Case	-	1.0	1.3	°C/W
Channel Temperature Rise	ΔT _{ch}	(10V x I _{DSr} + Pin - Pout) X R _{th}	-	-	100	°C

CASE STYLE : M2A

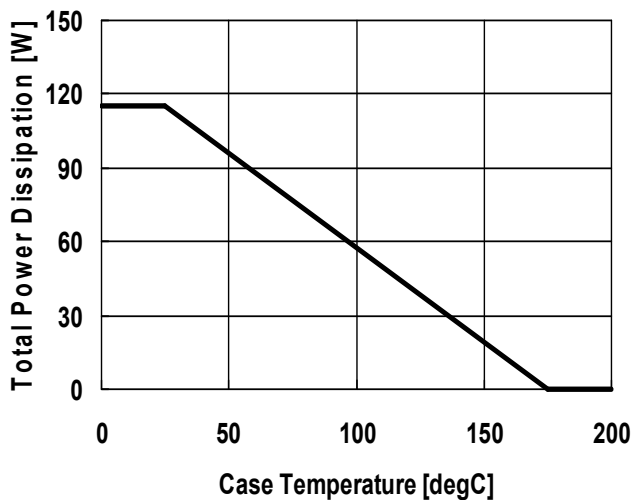
S.C.L. : Single Carrier Level G.C.P.: Gain Compression Point

ESD	Class III	2000V ~
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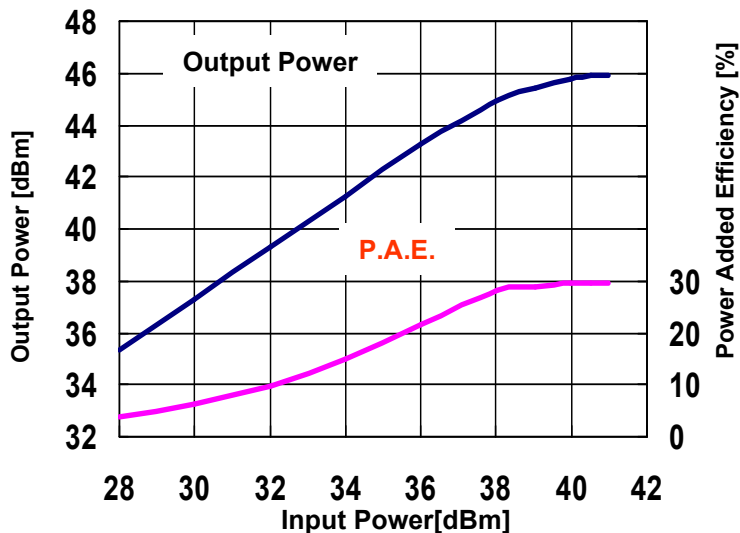
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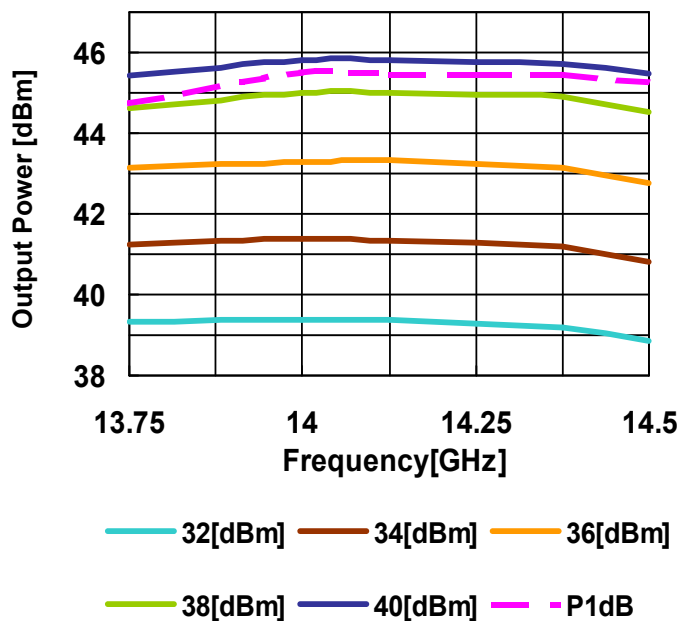
POWER DERATING CURVE



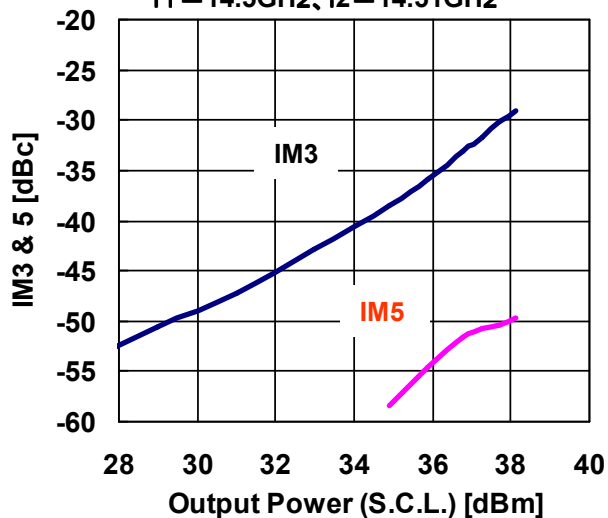
Output Power & P.A.E. vs. Input Power
VDS=10V, IDS(DC)=7A, freq.=14.25GHz



Output Power & P.A.E. vs. frequency
VDS=10V, IDS(DC)=7A



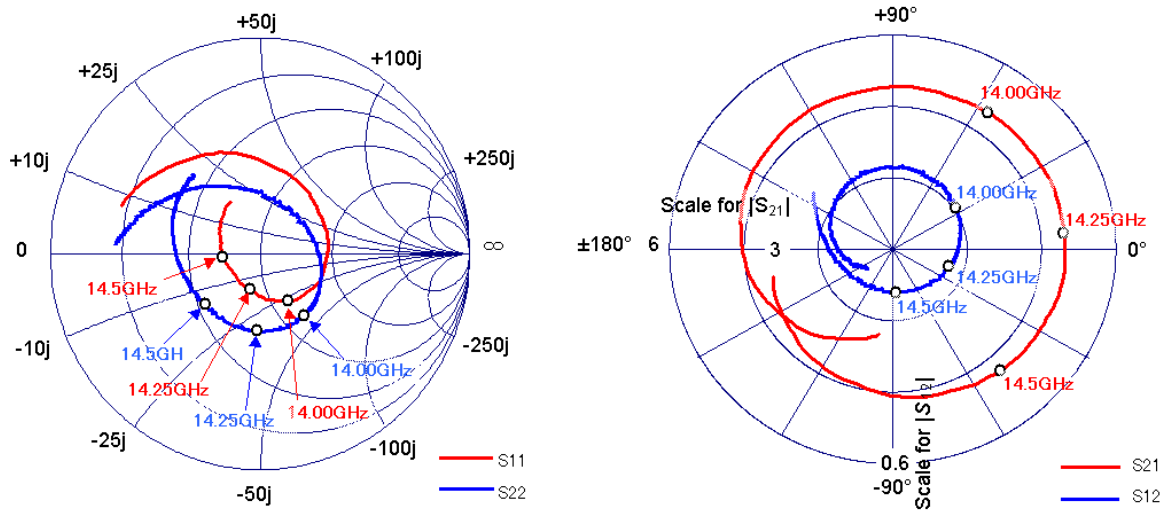
IMD vs. Output Power
VDS=10V, IDS(DC)=7A
f1 = 14.5GHz, f2 = 14.51GHz



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■ S-PARAMETER



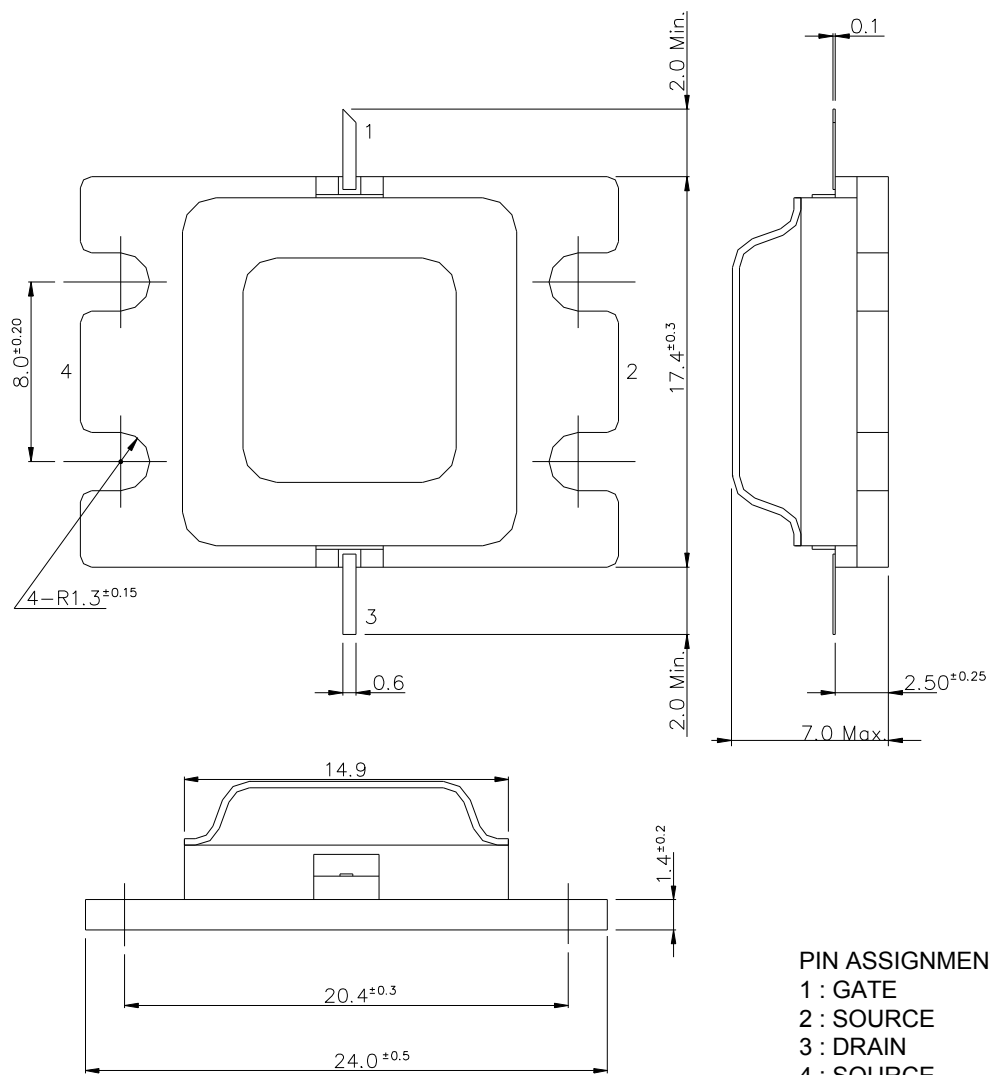
VDS=10.0V , IDS=7.0A

freq(GHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
13.5	0.388	66.4	2.004	179.4	0.094	153.2	0.334	111.8
13.6	0.346	38.9	2.126	157.9	0.104	134.8	0.266	80.2
13.7	0.331	13.2	2.176	136.5	0.113	113.5	0.246	43.0
13.8	0.314	-8.1	2.226	115.7	0.116	94.3	0.267	8.7
13.9	0.306	-26.5	2.245	96.0	0.115	73.9	0.306	-17.0
14	0.280	-43.5	2.261	76.0	0.111	54.5	0.337	-37.2
14.1	0.256	-58.8	2.291	56.4	0.103	34.1	0.354	-53.5
14.2	0.219	-76.9	2.301	36.4	0.094	15.4	0.361	-68.7
14.3	0.187	-94.2	2.320	15.8	0.086	-4.9	0.359	-83.6
14.4	0.166	-119.3	2.324	-4.8	0.075	-28.9	0.357	-99.6
14.5	0.152	-146.5	2.281	-27.2	0.066	-56.0	0.351	-118.0
14.6	0.176	-175.5	2.232	-49.7	0.061	-86.3	0.352	-137.9
14.7	0.201	160.5	2.127	-71.7	0.062	-117.8	0.369	-157.6

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■ Package Out Line
Case Style : M2A



PIN ASSIGNMENT
1 : GATE
2 : SOURCE
3 : DRAIN
4 : SOURCE

Unit : mm

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CAUTION

Eudyna Devices Compound Semiconductor 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 these products 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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