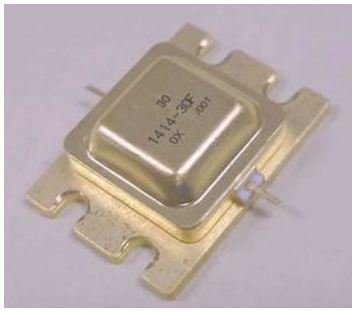
ELM1414-30F/001

Ku-Band Internally Matched FET



FEATURES

- •High Output Power: P1dB=44.5dBm(Typ.)
- •High Gain: G1dB=6.0dB(Typ.)
- •High PAE: ηadd=22%(Typ.)
- •Broad Band: 14.00 to14.5GHz
- •Impedance Matched Zin/Zout = 50ohm
- •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 50ohm system.

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Rating	Unit
Drain-Source Voltage (Tc=25deg.C	V_{DS}	15	V
Gate-Source Voltage (Tc=25deg.C	V_{GS}	-5	V
Total Power Dissipation	P_T	115.3	W
Storage Temperature	T_{stg}	-55 to +125	deg.C
Channel Temperature	T_{ch}	175	deg.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		deg.C
Channel Temperature	Tch		≤+155	deg.C

ELECTRICAL CHARACTERISTICS (Case Temperature Tc=25deg.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 f= 14.0 to 14.5 GHz I_{DS}DC=7.0A (typ.) Zs=Z_L=50 ohm	44.0	44.5	-	dBm
Power Gain at 1dB G.C.P.	G_{1dB}		5.5	6.0	-	dB
Drain Current	I_{dsr}		-	9.0	10.4	A
Power-added Efficiency	N_{add}		-	22	-	%
Gain Flatness	ΔG		-	-	1.2	dB
3rd Order Intermodulation Distortion	IM_3	f=14.5 GHz Δf=10MHz, 2-tone Test Pout=38.0dBm (S.C.L.)	-25	-30	-	dBc
Thermal Resistance	R_{th}	Channel to Case	-	1.0	1.3	deg.C/W
Channel Temperature Rise	ΔT_{ch}	(10V x Idsr + Pin - Pout) X Rth	-	-	100	deg.C

CASE STYLE : M2A **S.C.L. : Single Carrier Level G.C.P.: Gain Compression Point**

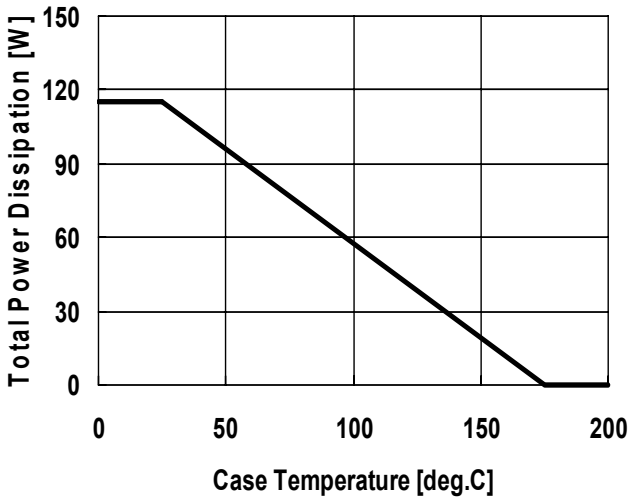
ESD	Class 3A	4000V to 8000V

Note : Based on EIAJ ED-4701 C-111A (C=100pF, R=1.5kohm)

RoHS COMPLIANCE	Yes

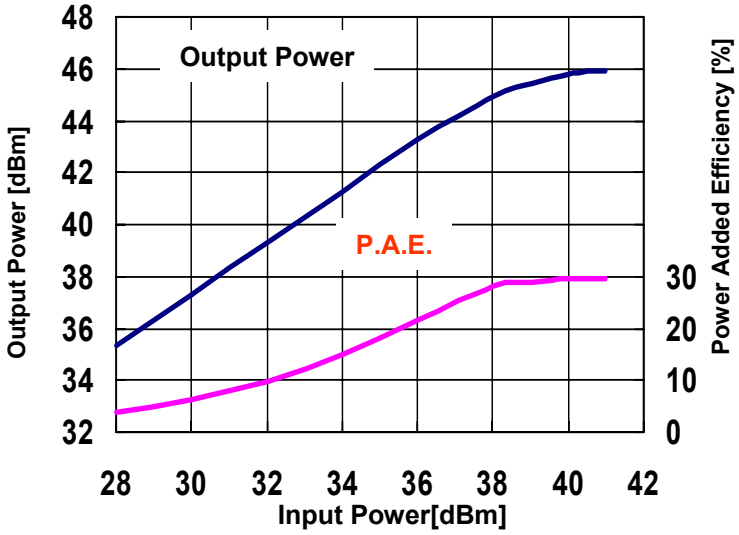
SUMITOMO ELECTRIC

POWER DERATING CURVE



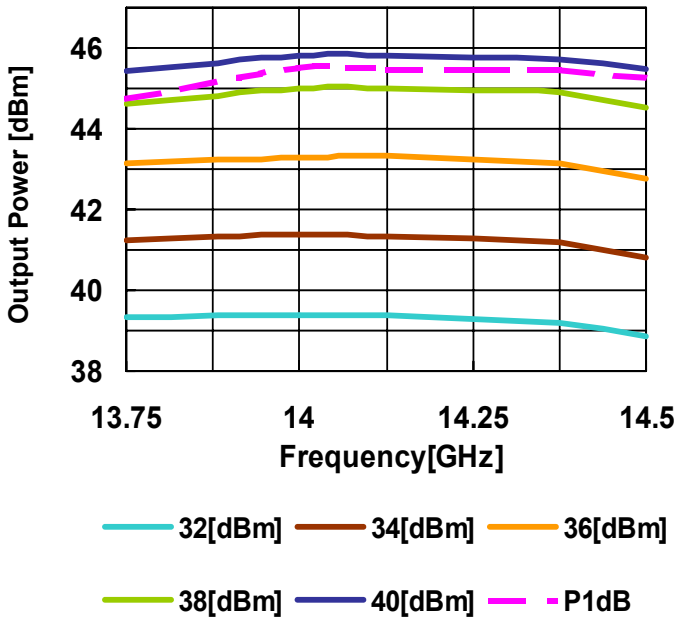
Output Power & P.A.E. vs. Input Power

VDS=10V, IDS(DC)=7A, freq.=14.25GHz



Output Power & P.A.E. vs. frequency

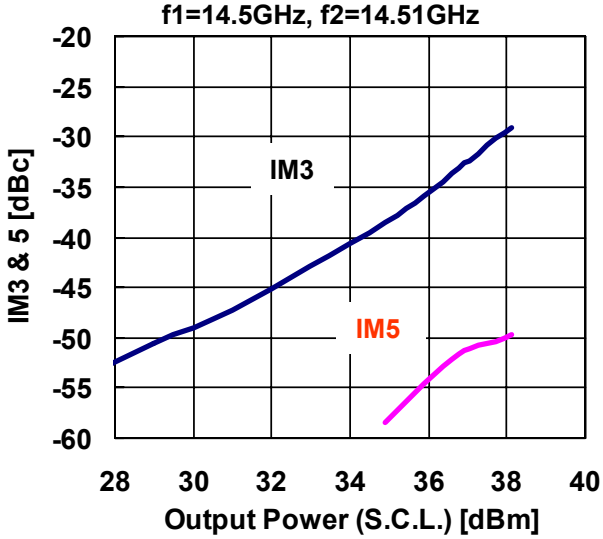
VDS=10V, IDS(DC)=7A



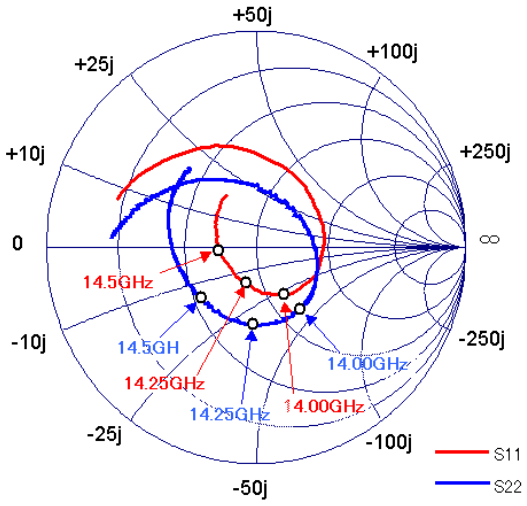
IMD vs. Output Power

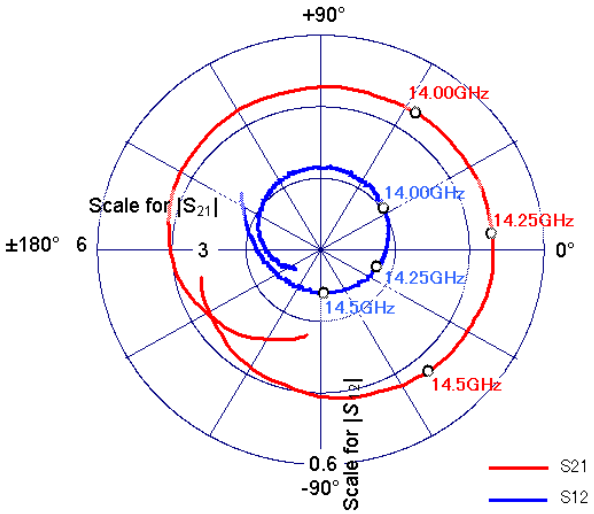
VDS=10V, IDS(DC)=7A

f1=14.5GHz, f2=14.51GHz



■ S-PARAMETER

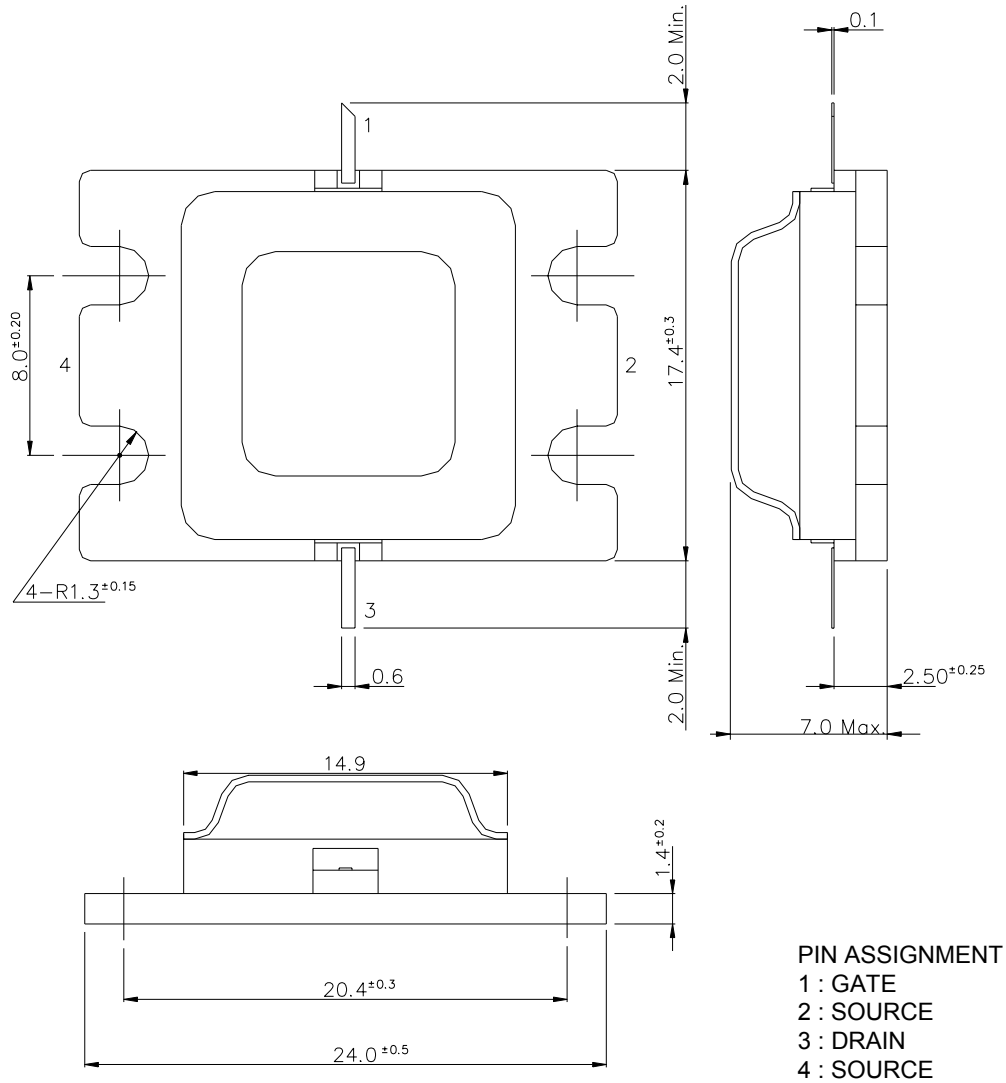




VDS=10.0V , IDS=7.0A

	S11		S21		S12		S22	
freq(GHz)	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

■ **Package Out Line**
Case Style : M2A



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

Unit : mm

For further information please contact:

http://global-sei.com/Electro-optic/about/office.html

CAUTION

This product contains **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.