

FLM1414-15F

X,Ku-Band Internally Matched FET

FEATURES

- High Output Power: P1dB=42.0dBm(Typ.)
- High Gain: G1dB=6.0dB(Typ.)
- High PAE: $\eta_{add}=26\%$ (Typ.)
- Broad Band: 14.0~14.5GHz
- Impedance Matched Zin/Zout = 50 Ω
- Hermetically Sealed Package



DESCRIPTION

The FLM1414-15F is a power GaAs FET that is internally matched for standard communication bands to provide optimum power and gain in a 50 Ω system.

ABSOLUTE MAXIMUM RATINGS (Case Temperature Tc=25°C)

Item	Symbol	Rating	Unit
Drain-Source Voltage	V _{DS}	15	V
Gate-Source Voltage	V _{GS}	-5	V
Total Power Dissipation	PT	75	W
Storage Temperature	T _{stg}	-65 to +175	°C
Channel Temperature	T _{ch}	175	°C

RECOMMENDED OPERATING CONDITION(Case Temperature Tc=25°C)

Item	Symbol	Condition	Limit	Unit
DC Input Voltage	V _{DS}		≤ 10	V
Forward Gate Current	I _{GF}	R _G =50 Ω	≤ 48	mA
Reverse Gate Current	I _{GR}	R _G =50 Ω	≥ -6.6	mA

ELECTRICAL CHARACTERISTICS (Case Temperature Tc=25°C)

Item	Symbol	Test Conditions	Limit			Unit	
			Min.	Typ.	Max.		
Drain Current	I _{DSS}	V _{DS} =5V, V _{GS} =0V	-	7.2	10.0	A	
Transconductance	g _m	V _{DS} =5V, I _{DS} =3600mA	-	6700	-	mS	
Pinch-off Voltage	V _P	V _{DS} =5V, I _{DS} =300mA	-0.5	-1.5	-3.0	V	
Gate-Source Breakdown Voltage	V _{GSO}	I _{GS} =-340 μ A	-5.0	-	-	V	
Output Power at 1dB G.C.P.	P _{1dB}	V _{DS} =10V f=14.0 - 14.5 GHz I _{DS} =0.6I _{DSS} (typ) Z _S =Z _L =50 Ω	41.5	42.0	-	dBm	
Power Gain at 1dB G.C.P.	G _{1dB}		5.0	6.0	-	dB	
Drain Current	I _{DSR}		-	4200	5000	mA	
Power-added Efficiency	η_{add}		-	26	-	%	
Gain Flatness	ΔG		-	-	1.2	dB	
3rd Order Intermodulation Distortion	IM ₃		f=14.5 GHz $\Delta f=10$ MHz, 2-Tone Test P _{out} =30.0dBm(S.C.L.)	-42.0	-45.0	-	dBc
Thermal Resistance	R _{th}		Channel to Case	-	1.8	2.0	°C /W
Channel Temperature Rise	ΔT_{ch}	10V x I _{DSR} X R _{th}	-	-	80	°C	

CASE STYLE: IB

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

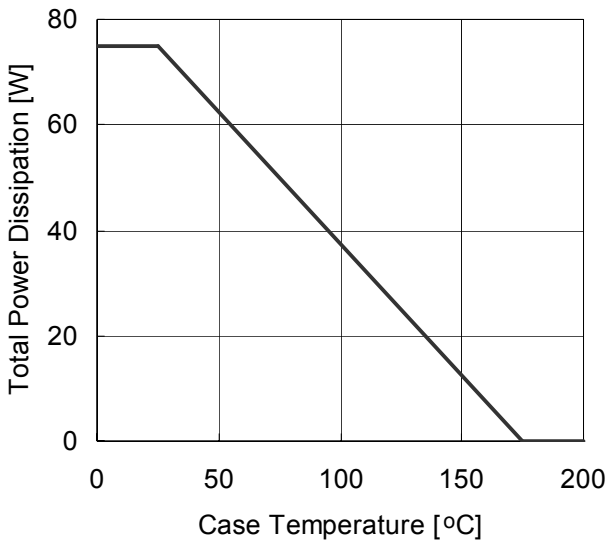
ESD	Class III	2000V~
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Note : Based on EIAJ ED-4701 C-111A(C=100pF, R=1.5k Ω)

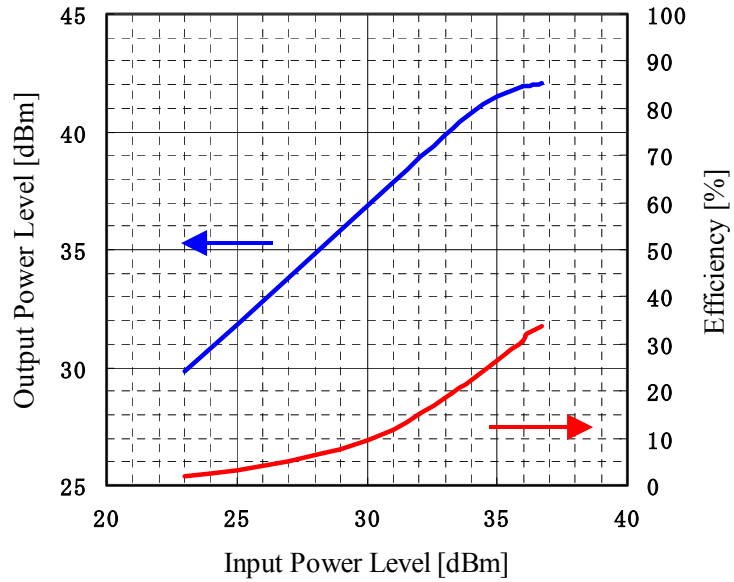
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POWER DERATING CURVE

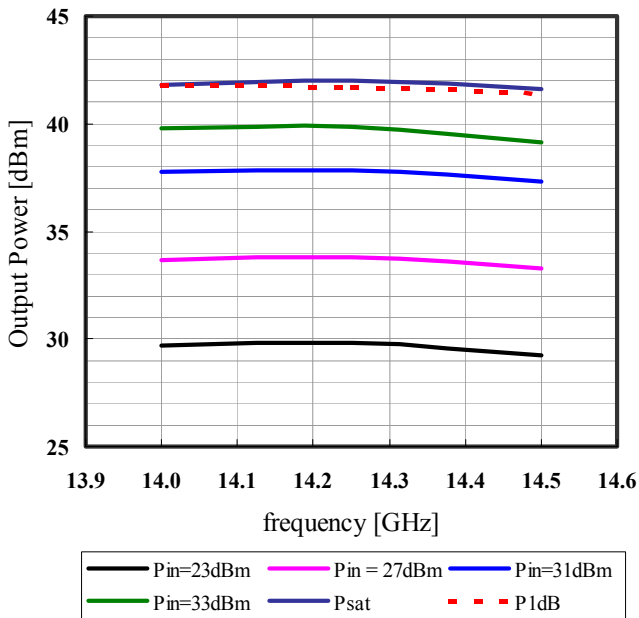


OUTPUT POWER , EFFICIENCY vs. INPUT POWER



OUTPUT POWER vs. FREQUENCY

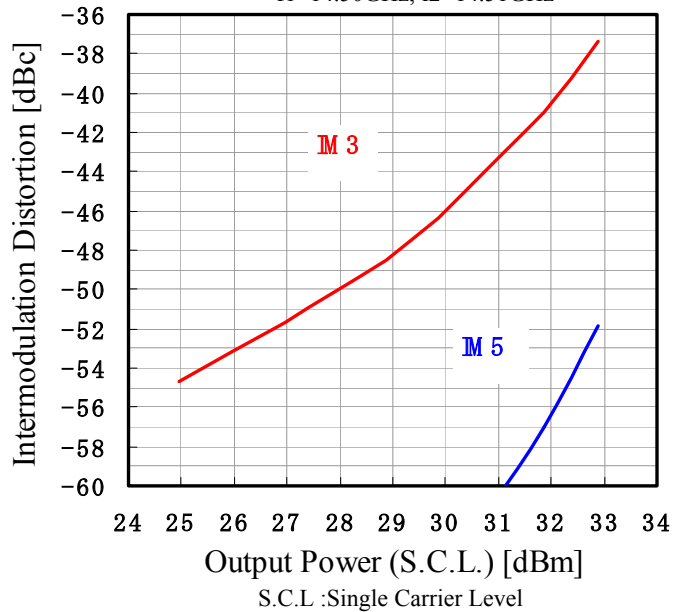
VDS=10V, IDS=0.65IDS



IMD vs OUTPUT POWER

VDS=10V, IDS=0.65IDS

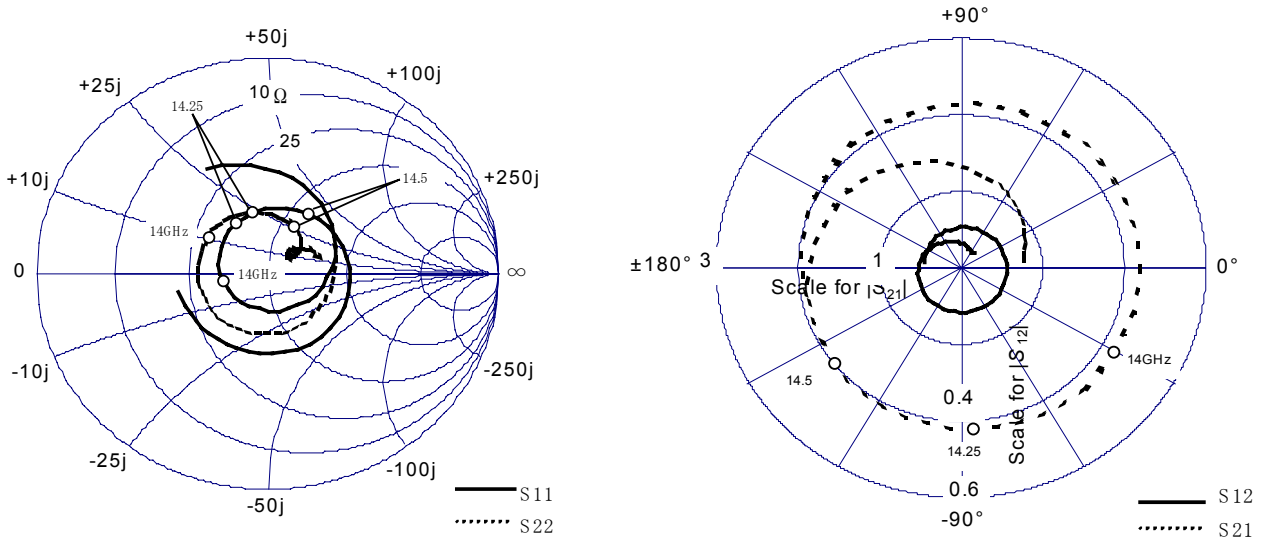
f1=14.50GHz, f2=14.51GHz



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■ S-PARAMETER



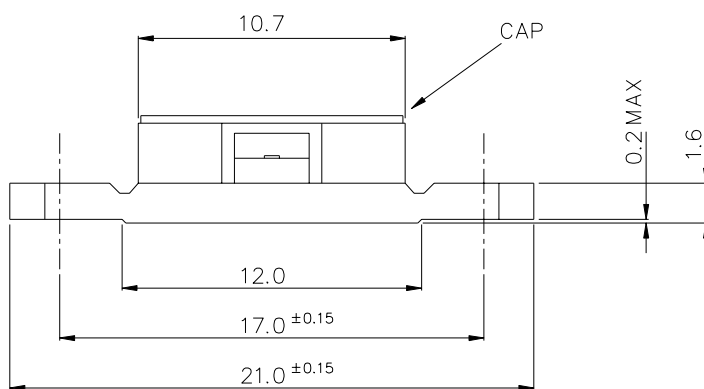
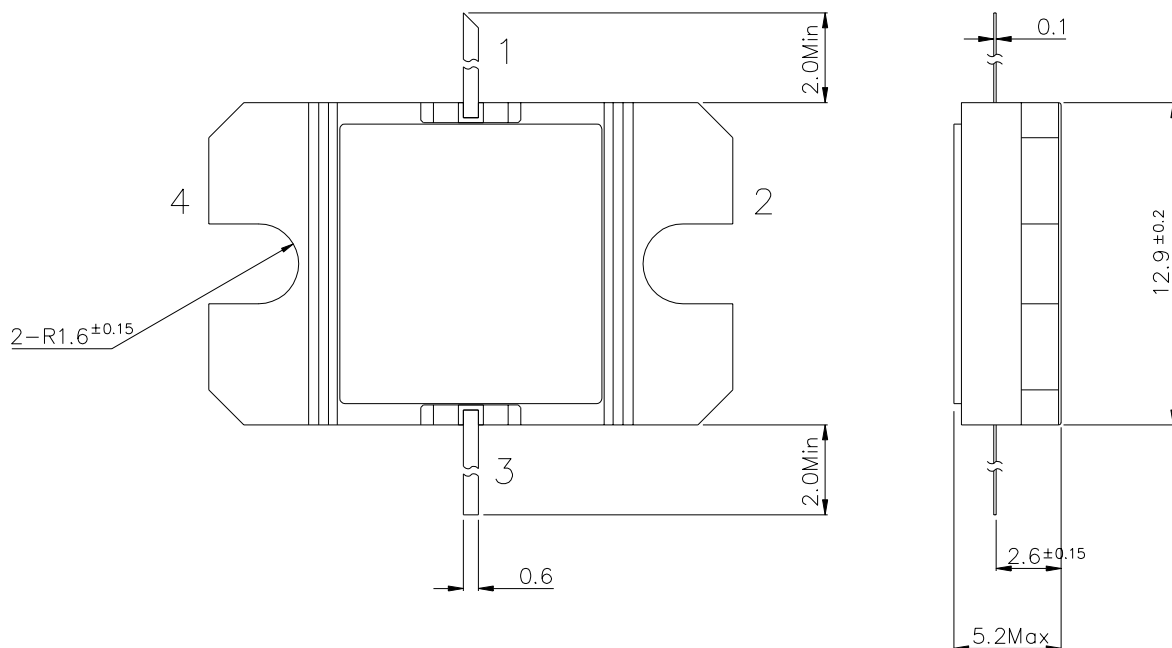
VDS=10V, IDS=4355mA

Freq [GHz]	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
11.0	0.883	78.074	0.679	-162.875	0.023	158.196	0.757	36.902
11.5	0.842	6.384	0.812	115.730	0.029	77.861	0.708	-38.816
12.0	0.805	-68.624	1.046	32.823	0.040	-0.870	0.612	-118.143
12.5	0.729	-155.313	1.503	-65.968	0.064	-91.628	0.455	143.005
13.0	0.553	118.032	1.922	-168.885	0.092	170.080	0.308	23.310
13.5	0.301	14.254	2.153	84.943	0.108	68.684	0.285	-105.214
14.0	0.193	-169.602	2.182	-30.677	0.114	-35.708	0.308	146.159
14.5	0.330	57.246	1.987	-141.198	0.113	-134.062	0.243	62.332
15.0	0.373	-69.708	1.440	104.525	0.082	126.406	0.118	45.259
15.5	0.400	-173.403	0.733	2.596	0.045	48.953	0.247	10.815
16.0	0.529	119.056	0.486	-75.751	0.034	-13.903	0.293	-37.756

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CASE STYLE: IB



PIN ASSIGNMENT

- 1 : GATE
- 2 : SOURCE
- 3 : DRAIN
- 4 : SOURCE

Unit : mm

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For further information please contact :

Eudyna Devices USA Inc.

2355 Zanker Rd.
San Jose, CA 95131-1138, U.S.A.
TEL: (408) 232-9500
FAX: (408) 428-9111
www.us.eudyna.com

Eudyna Devices Europe Ltd.

Network House
Norreys Drive
Maidenhead, Berkshire SL6 4FJ
United Kingdom
TEL: +44 (0) 1628 504800
FAX: +44 (0) 1628 504888

Eudyna Devices Asia Pte. Ltd.

Hong Kong Branch
Rm.1101,Ocean Centre, 5 Canton Road
Tsim Sha Tsui, Kowloon, Hong kong
TEL: +852-2377-0227
FAX: +852-2377-3921

Eudyna Devices Inc.

1000 Kamisukiahara, showa-cho
Nakakomagun, Yamanashi
409-3883, Japan
(Kokubo Industrial Park)
TEL +81-55-275-4411
FAX +81-55-275-9461

Sales Division

1, Kanai-cho, Sakae-ku
Yokohama,244-0845,Japan
TEL +81-45-853-8156
FAX +81-45-853-8170

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