

# FLM0910-12F

## X-Band Internally Matched FET

### FEATURES

- High Output Power: P1dB=40.5dBm(Typ.)
- High Gain: G1dB=7.0dB(Typ.)
- High PAE:  $\eta_{add}=25\%$ (Typ.)
- Broad Band: 9.5~10.5GHz
- Impedance Matched Zin/Zout = 50Ω
- Hermetically Sealed Package



### DESCRIPTION

The FLM0910-12F is a power GaAs FET that is internally matched for standard communication and radar bands to provide optimum power and gain in a 50Ω system.

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

Item	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	15	V
Gate-Source Voltage	V <sub>GS</sub>	-5	V
Total Power Dissipation	P <sub>Tot</sub>	57.6	W
Storage Temperature	T <sub>stg</sub>	-65 to +175	°C
Channel Temperature	T <sub>ch</sub>	175	°C

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

Item	Symbol	Condition	Limit	Unit
DC Input Voltage	V <sub>DS</sub>		≤10	V
Gate Current	I <sub>GS</sub>	R <sub>G</sub> =50Ω	≤32.0	mA
Gate Current	I <sub>GR</sub>	R <sub>G</sub> =50Ω	≥-5.6	mA

### ELECTRICAL CHARACTERISTICS (Case Temperature Tc=25°C)

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =5V, V <sub>GS</sub> =0V	-	6.0	9.0	A
Transconductance	g <sub>m</sub>	V <sub>DS</sub> =5V, I <sub>DS</sub> =3.6A	-	5000	-	mS
Pinch-off Voltage	V <sub>p</sub>	V <sub>DS</sub> =5V, I <sub>DS</sub> =300mA	-0.5	-1.5	-3.0	V
Gate-Source Breakdown Voltage	V <sub>GSO</sub>	I <sub>GS</sub> =-340uA	-5.0	-	-	V
Output Power at 1dB G.C.P.	P <sub>1dB</sub>	V <sub>DS</sub> =10V f=9.5 - 10.5 GHz I <sub>DS</sub> =0.5I <sub>DSS</sub> (typ.) Z <sub>S</sub> =Z <sub>L</sub> =50Ω	39.5	40.5	-	dBm
Power Gain at 1dB G.C.P.	G <sub>1dB</sub>		6.0	7.0	-	dB
Drain Current	I <sub>DSR</sub>		-	3.5	4.5	A
Power-added Efficiency	$\eta_{add}$		-	25	-	%
Gain Flatness	$\Delta G$		-	-	1.2	dB
Thermal Resistance	R <sub>th</sub>	Channel to Case	-	2.3	2.6	°C/W
Channel Temperature Rise	$\Delta T_{ch}$	10V X I <sub>DSR</sub> X R <sub>th</sub>	-	-	80	°C

### CASE STYLE: IB

G.C.P.: Gain Compression Point, S.C.L.: Single Carrier Level  
Note: RF-Test is measured with V<sub>GS</sub>-Constant Circuit.

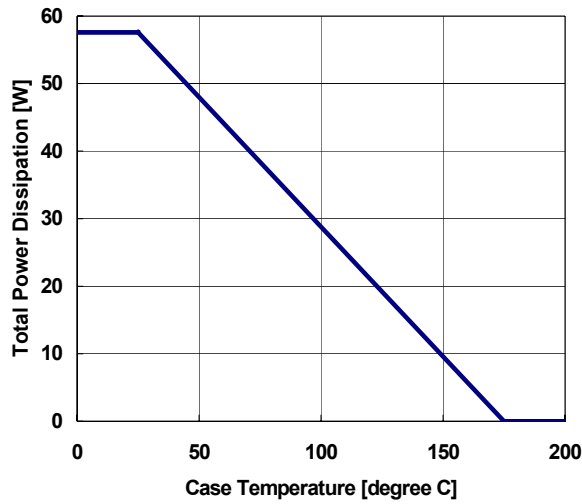
ESD	Class III	2000V ~
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Note : Based on EIAJ ED-4701 C-111A(C=100pF, R=1.5kΩ)

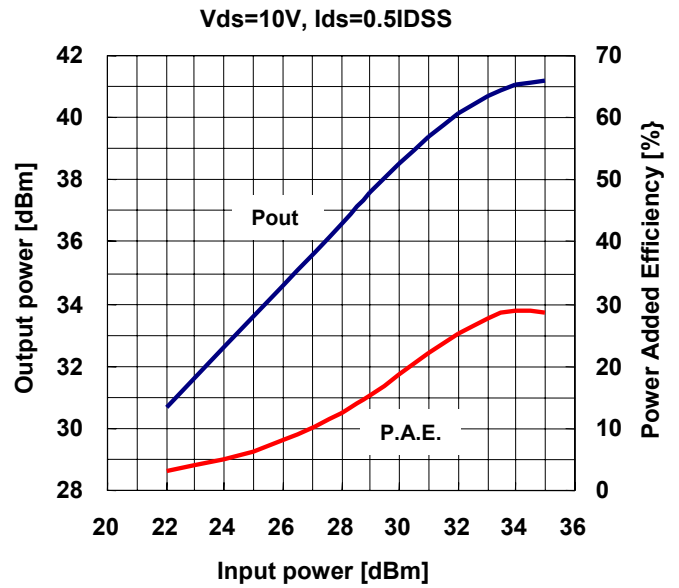
# FLM0910-12F

X-Band Internally Matched FET

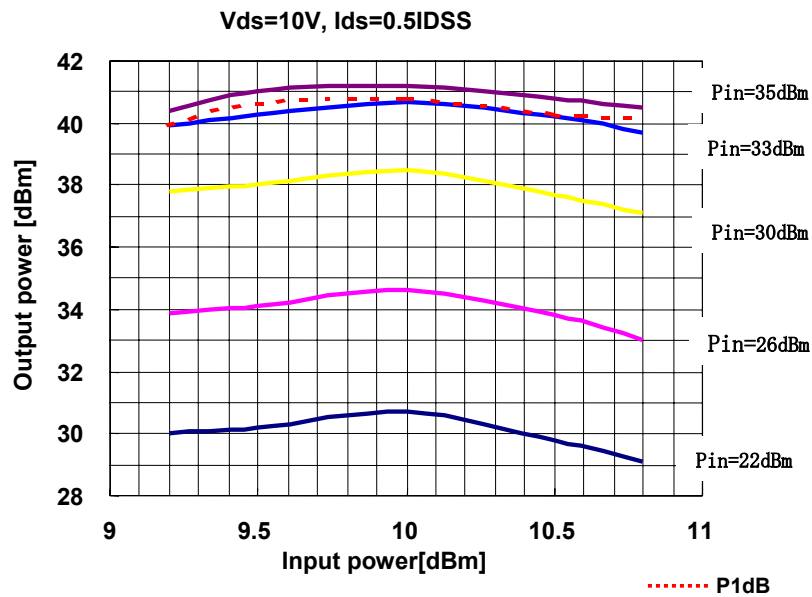
POWER DERATING CURVE



OUTPUT POWER , POWER ADDED EFFICIENCY vs. INPUT POWER



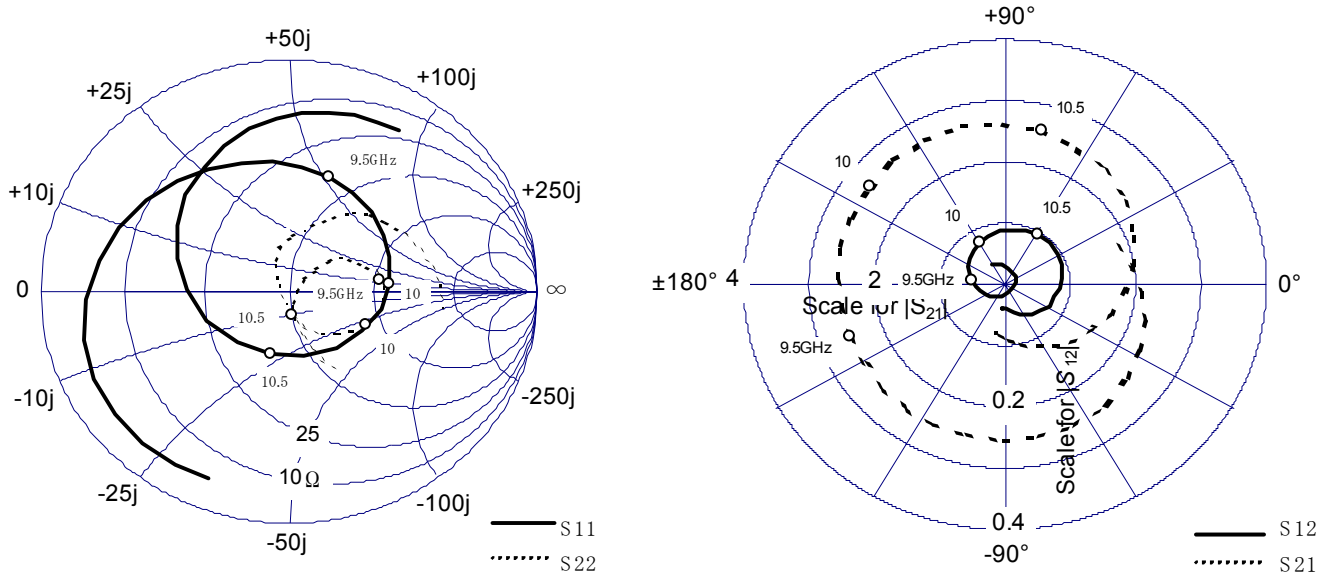
OUTPUT POWER vs. INPUT POWER



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## X-Band Internally Matched FET

### ■ S-PARAMETER



VDS=10V, IDS=0.5Idss

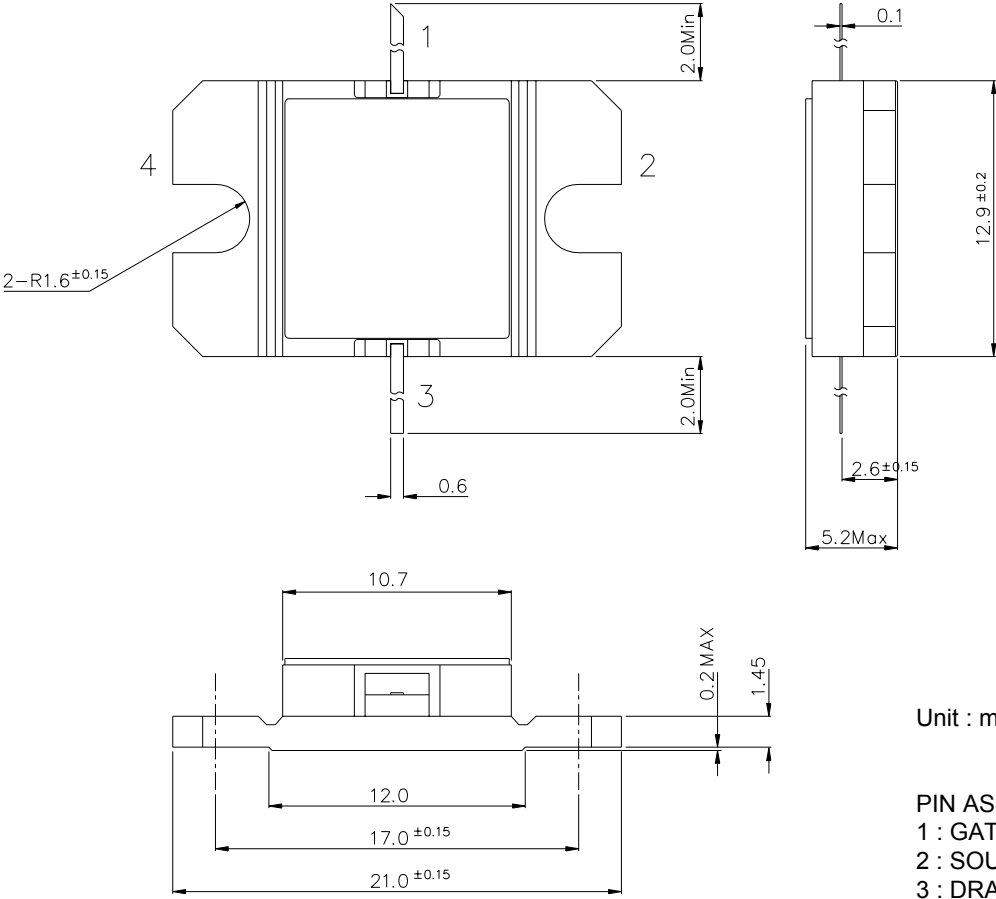
Freq [GHz]	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
9.0	0.66	133.64	2.54	-104.76	0.02	-117.97	0.25	36.41
9.1	0.62	121.51	2.53	-116.04	0.03	-137.79	0.28	30.66
9.2	0.59	109.11	2.52	-127.33	0.03	-150.61	0.30	24.58
9.3	0.56	96.79	2.51	-138.32	0.04	-165.52	0.33	18.45
9.4	0.54	84.51	2.51	-149.10	0.04	-175.45	0.36	13.07
9.5	0.52	71.65	2.52	-160.11	0.05	173.89	0.37	8.38
9.6	0.50	59.03	2.54	-171.12	0.06	162.66	0.38	2.25
9.7	0.48	46.37	2.56	177.84	0.06	153.39	0.38	-4.55
9.8	0.45	32.92	2.59	166.32	0.07	141.50	0.38	-11.38
9.9	0.43	19.89	2.61	154.59	0.07	130.54	0.37	-17.87
10	0.40	4.99	2.63	142.31	0.08	119.17	0.34	-24.57
10.1	0.38	-11.34	2.65	130.18	0.08	107.91	0.31	-32.73
10.2	0.34	-30.15	2.65	117.31	0.09	95.66	0.26	-42.86
10.3	0.30	-51.96	2.65	104.11	0.09	84.09	0.21	-55.55
10.4	0.28	-77.26	2.61	90.66	0.09	70.62	0.16	-68.18
10.5	0.28	-106.09	2.57	77.15	0.10	57.05	0.10	-84.69
10.6	0.30	-133.91	2.49	63.18	0.10	45.22	0.04	-134.34
10.7	0.35	-159.52	2.40	49.45	0.09	31.57	0.08	134.77
10.8	0.41	179.35	2.28	35.59	0.09	20.35	0.14	113.53
10.9	0.47	162.12	2.14	21.90	0.09	6.54	0.20	100.70
11	0.53	147.13	2.00	8.89	0.08	-4.01	0.25	85.90

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■ Package Out Line

Case Style : IB



Unit : mm

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

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## X-Band Internally Matched FET

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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