■ Features

- High Output Power: P1dB=41.0dBm (Typ.)
- High Gain: G1dB=6.0dB (Typ.)
- High Power Added Efficiency: PAE=23% (Typ.)
- Low IM3=-45dBc@Po=29.0dBm
- Broad Band: 13.75 to 14.5GHz
- Impedance Matched Zin/Zout = 50ohm
- Hermetically Sealed Package

■ Description

The FLM1314-12F 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 RATING (Ambient Temperature Ta=25 deg.C)

Item	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	15	V
Gate-Source Voltage	V_{GS}	-5	V
Total Power Dissipation	P_T	75	W
Storage Temperature	T_{stg}	-65 to +175	deg.C
Channel Temperature	T_{ch}	175	deg.C

Sumitomo Electric recommends the following conditions for the reliable operation of GaAs FETs:

1.The drain-source operating voltage (V_{DS}) should not exceed 10V.

2.The forward and reverse gate currents should not exceed 48.0 and -6.6 mA respectively with gate resistance of 50ohm.

ELECTRICAL CHARACTERISTICS (Ambient Temperature Ta=25 deg.C)

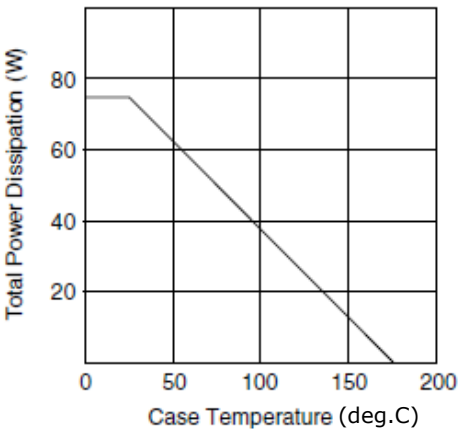
Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I_{DSS}	V_{DS}=5V, V_{GS}=0V	-	6.7	10	A
Trans Conductance	G_m	V_{DS}=5V, I_{DS}=4200mA	-	6700	-	mS
Pinch-off Voltage	V_P	V_{DS}=5V, I_{DS}=345mA	-0.5	-1.5	-3.0	V
Gate Source Breakdown Voltage	V_{GSO}	I_{GS}=-330uA	-5.0	-	-	V
Output Power at 1dB G.C.P.	$P1_{dB}$	V_{DS}=10V(typ.) I_{DS}=0.65I_{DSS}(typ.) f=13.75 to 14.5 GHz Z_S=Z_L=50ohm	40.5	41.0	-	dBm
Power Gain at 1dB G.C.P.	$G1_{dB}$		5.0	6.0	-	dB
Drain Current	I_{DSR}		-	4200	5000	mA
Power Added Efficiency	PAE		-	23	-	%
Gain Flatness	ΔG		-	-	1.2	dB
3rd Order Inter Modulation Distortion	IM_3	f=14.5GHz, Δf=10MHz, 2-tone Test Pout=29.0dBm (S.C.L.)	-42	-45	-	dBc
Thermal Resistance	R_{th}	Channel to Case	-	1.8	2.0	deg.C/W
Channel Temperature Rise	ΔT_{ch}	10V x I_{DSR} x R_{th}	-	-	80	deg.C

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

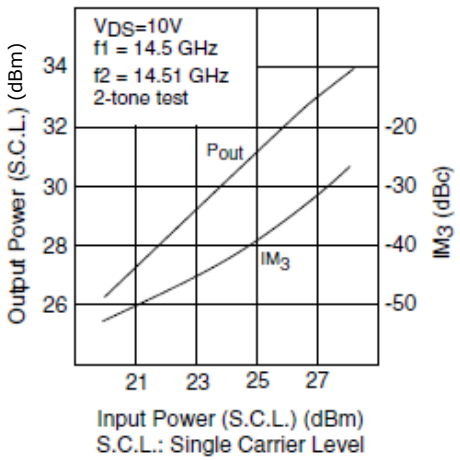
CASE STYLE	IB	
RoHS Compliance	YES	
ESD	Class 3A	4000V to 8000V

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

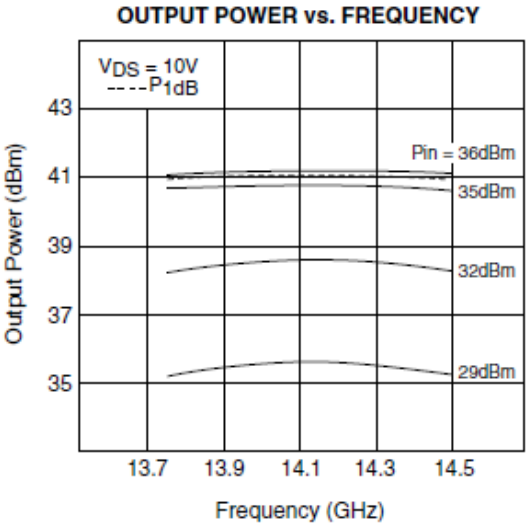
POWER DERATING CURVE



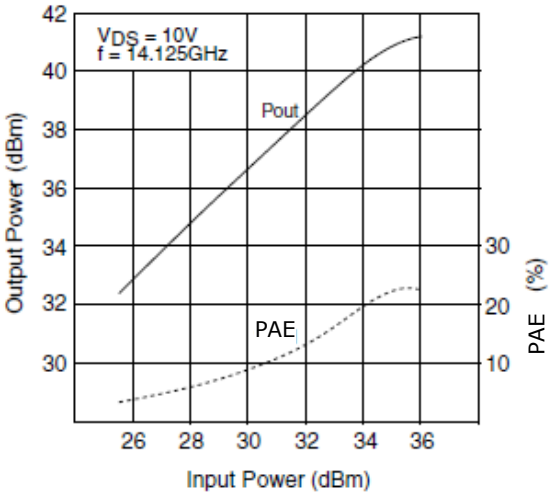
OUTPUT POWER & IM_3 vs. INPUT POWER

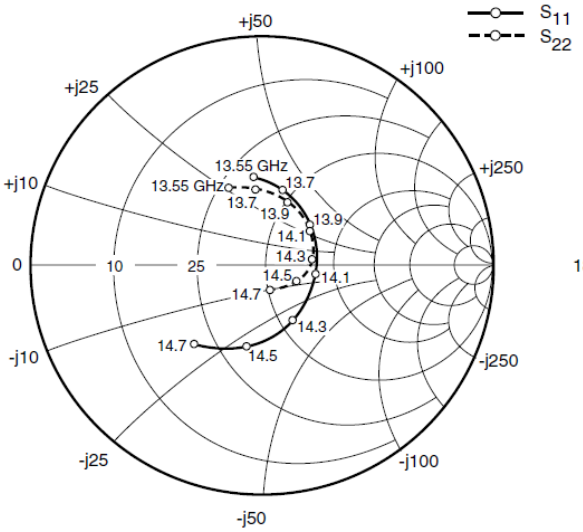


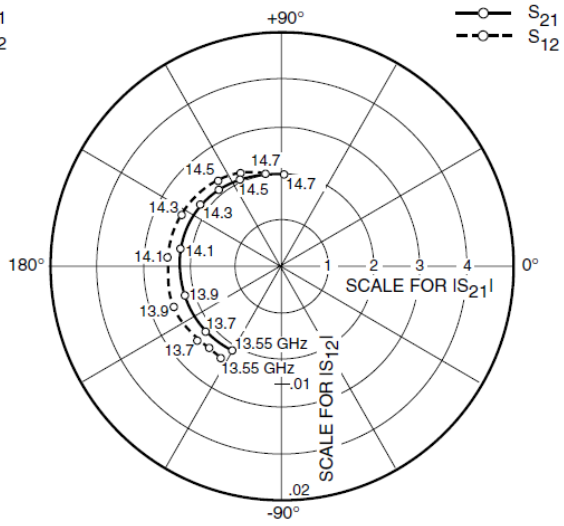
OUTPUT POWER vs. FREQUENCY



OUTPUT POWER vs. INPUT POWER







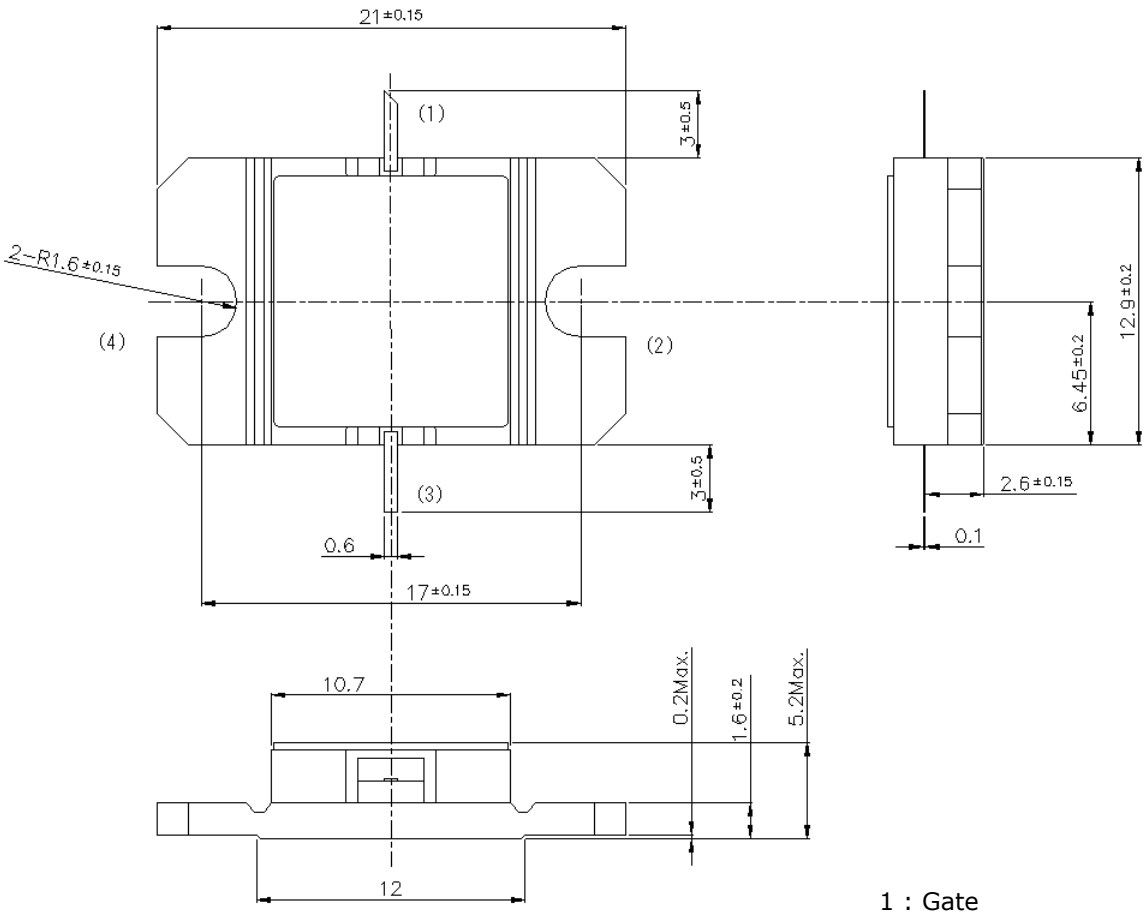
S-PARAMETERS

V_{DS}=10V,I_{DS}=4200mA

FREQUENCY	S11		S21		S12		S22	
(MHZ)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
13550	0.387	96.2	2.086	-121.7	0.094	-124.2	0.368	112.4
13600	0.367	89.7	2.102	-127.2	0.092	-126.1	0.356	107.2
13650	0.357	82.3	2.115	-133.0	0.095	-131.6	0.348	102.0
13700	0.341	75.0	2.140	-139.6	0.097	-138.8	0.331	95.0
13750	0.324	67.7	2.156	-145.5	0.097	-143.4	0.330	89.5
13800	0.303	59.2	2.166	-151.2	0.098	-148.7	0.322	82.9
13850	0.288	48.2	2.182	-158.2	0.099	-155.5	0.310	75.4
13900	0.272	40.2	2.196	-164.3	0.099	-159.9	0.301	68.6
13950	0.256	28.7	2.205	-170.4	0.101	-165.1	0.286	60.9
14000	0.246	17.3	2.223	-176.4	0.098	-172.4	0.273	53.6
14050	0.240	4.3	2.230	176.3	0.098	-177.7	0.269	45.0
14100	0.237	-9.2	2.231	170.0	0.099	176.0	0.259	38.1
14150	0.235	-23.8	2.232	163.7	0.101	170.9	0.251	28.6
14200	0.243	-36.3	2.219	157.3	0.100	165.0	0.243	21.7
14250	0.259	-50.2	2.208	149.8	0.098	157.1	0.233	14.9
14300	0.273	-61.8	2.202	143.2	0.097	152.4	0.219	5.2
14350	0.292	-72.9	2.182	136.9	0.095	147.0	0.207	0.0
14400	0.314	-81.9	2.169	130.4	0.097	138.8	0.196	-8.8
14450	0.338	-92.0	2.142	122.6	0.093	132.8	0.181	-19.3
14500	0.359	-100.9	2.115	116.1	0.090	127.8	0.164	-25.3
14550	0.388	-109.3	2.084	109.7	0.087	120.4	0.154	-35.8
14600	0.409	-115.6	2.059	103.4	0.087	114.5	0.140	-45.6
14650	0.434	-123.5	2.016	95.8	0.084	106.5	0.127	-59.8
14700	0.452	-130.6	1.976	89.4	0.080	100.8	0.116	-71.4

Package Out line

Case Style : IB



1 : Gate
2 : Source
3 : Drain
4 : Source

Unit : mm
Tolerance : ±0.15

For Safety, Observe the Following Procedures Environmental Management

- 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.
- Respect all applicable laws of the country when discarding this product.
  This product must be disposed in accordance with methods specified by applicable hazardous waste procedures.

Any information, such as descriptions of a function and examples of application circuits, in this document are presented solely as a reference for the purpose to show examples of operations and uses of Sumitomo Electric semiconductor device(s); Sumitomo Electric does not warrant the proper operation of the device(s) with respect to its use based on such information. When the user develops equipment incorporating the device(s) based on such information, they must assume full responsibility arising out of using such information. Sumitomo Electric assumes no liability for any damages whatsoever arising out of the use of the information.

Any information in this document, including descriptions of function and schematic diagrams, shall not be construed as a license for the use or exercise of any intellectual property right, such as patent right or copyright, or any other right of Sumitomo Electric or any third party nor does Sumitomo Electric warrant non-infringement of any third-party's intellectual property right or other right by using such information. Sumitomo Electric assumes no liability for any infringement of the intellectual property rights or other rights of third parties which would result from the use of information contained herein.

The products described in this document are designed, developed and manufactured as contemplated for general use, including, without limitation, ordinary industrial use, general office use, personal use, and household use, but are not designed, developed and manufactured as contemplated (1) for use accompanying fatal risks or dangers that, unless extremely high safety is secured, could have a serious effect to the public, and could lead directly to death, personal injury, severe physical damage or other loss (i.e., nuclear reaction control in nuclear facility, aircraft flight control, air traffic control, mass transport control, medical life support system, missile launch control in weapon system), or (2) for use requiring extremely high reliability (i.e., submersible repeater and artificial satellite).
Please note that Sumitomo Electric will not be liable to the user and/or any third party for any claims or damages arising from the aforementioned uses of the products.

Any semiconductor devices have an inherent chance of failure. You must protect against injury, damage or loss from such failures by incorporating safety design measures into your facility and equipment such as redundancy, fire protection, and prevention of excessive current levels and other abnormal operating conditions.

If any products described in this document represent goods or technologies subject to certain restrictions on export under the Foreign Exchange and Foreign Trade Law of Japan, the prior authorization of the Japanese government will be required for export of those products from Japan.

http://www.sedi.co.jp/

ATTENTION
Information in this document is subject to change without notice.