

Internally Matched Power GaAs FETs (X, Ku-Band)

Features

- High power
 - $P_{1dB} = 37.5$ dBm at 14.0 GHz to 14.5 GHz
- High gain
 - $G_{1dB} = 6.0$ dB at 14.0 GHz to 14.5 GHz
- Broad Band Internally Matched
- Hermetically sealed package

RF Performance Specifications ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Condition	Unit	Min.	Typ.	Max
Output Power at 1dB Compression Point	P_{1dB}	$V_{DS} = 9V$ $f = 14.0 \sim 14.5\text{GHz}$	dBm	37.0	37.5	–
Power Gain at 1dB Compression Point	G_{1dB}		dB	5.0	6.0	–
Drain Current	I_{DS}		A	–	2.0	2.5
Power Added Efficiency	η_{add}		%	–	20	–
Channel-Temperature Rise	ΔT_{ch}	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	$^\circ\text{C}$	–	–	80

Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Trans-conductance	gm	$V_{DS}=3V$ $I_{DS}=2.4\text{ A}$	mS	–	1400	–
Pinch-off Voltage	V_{GSoff}	$V_{DS}=3V$ $I_{DS}=72\text{mA}$	V	-2.0	-3.5	-5.0
Saturated Drain Current	I_{DSS}	$V_{DS}=3V$ $V_{GS}=0V$	A	–	5.0	5.7
Gate to Source Breakdown Voltage	V_{GSO}	$I_{GS}=-72\ \mu\text{A}$	V	-5	–	–
Thermal Resistance	$R_{th(c-c)}$	Channel to case	$^\circ\text{C/W}$	–	3.0	3.7

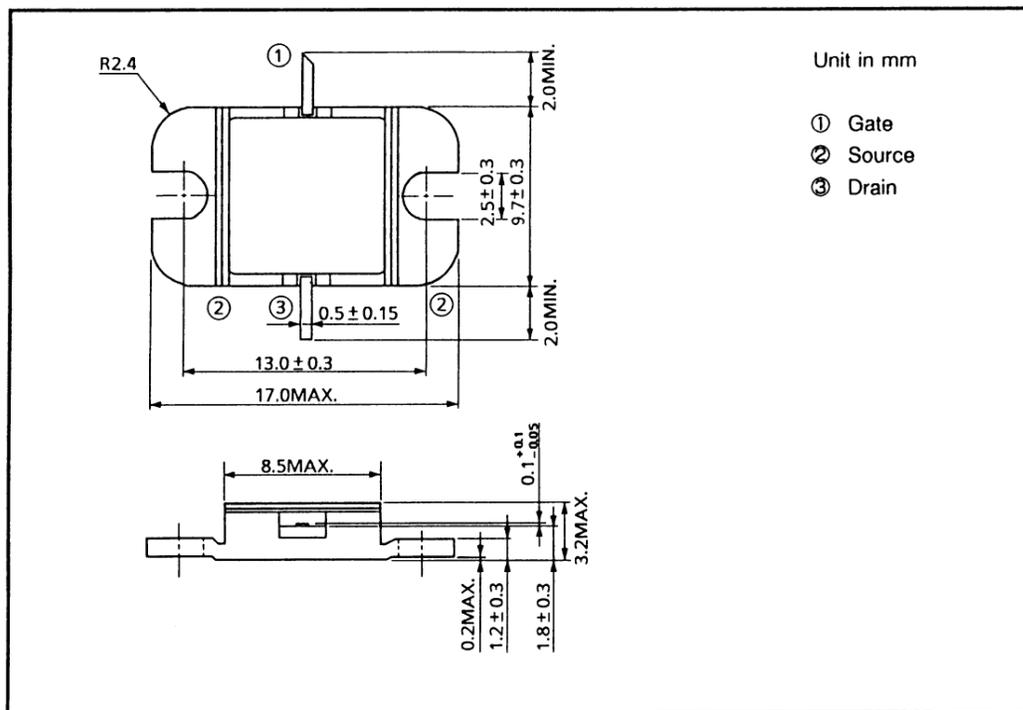
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Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Unit	Rating
Drain Source Voltage	V_{DS}	V	15
Gate Source Voltage	V_{GS}	V	-5
Drain Current	I_{DS}	A	5.7
Total Power Dissipation ($T_c = 25^\circ\text{C}$)	P_T	W	30
Channel Temperature	T_{ch}	$^\circ\text{C}$	175
Storage Temperature	T_{stg}	$^\circ\text{C}$	-65~175

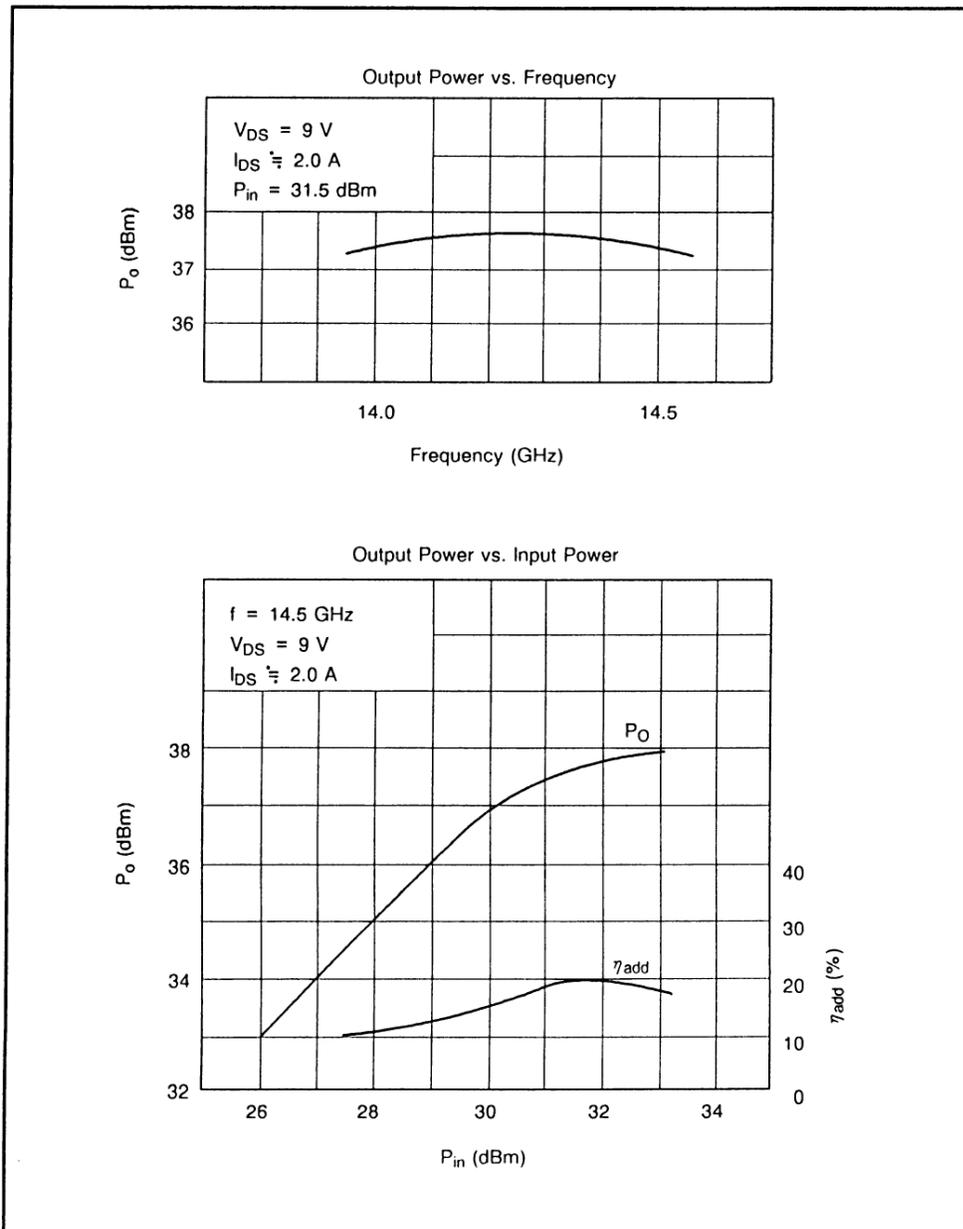
Package Outline (2-9D1B)



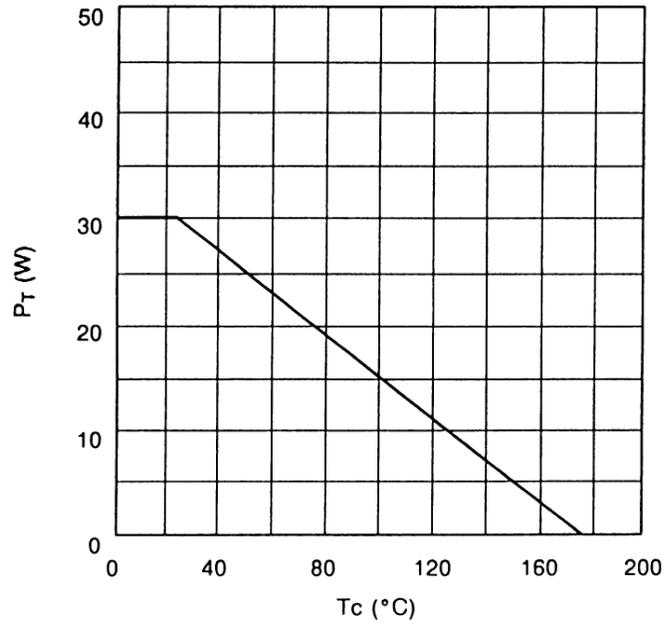
Handling Precautions for Packaged Type

Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF Performances

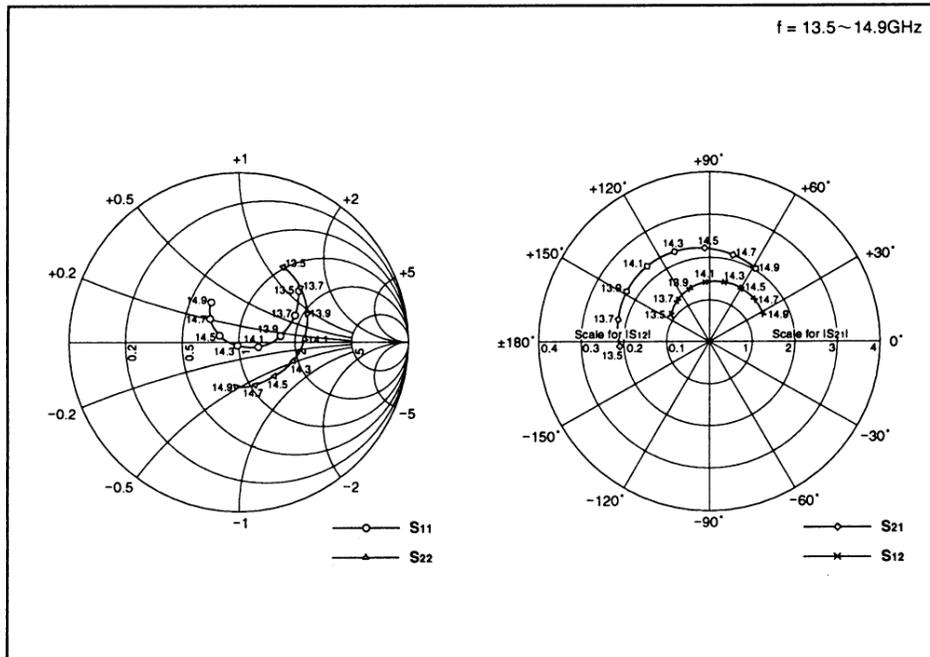


Power Dissipation vs. Case Temperature



Tim1414-5 S-Parameters
(MAGN. and ANGLES)

$V_{DS} = 9\text{ V}$, $I_{DS} = 2\text{ A}$



FREQUENCY (GHz)	S_{11}		S_{21}		S_{12}		S_{22}	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
13.50	0.47	41	2.10	-177	0.111	144	0.52	60
13.60	0.42	34	2.16	175	0.118	136	0.51	51
13.70	0.37	26	2.20	166	0.124	127	0.49	42
13.80	0.31	18	2.25	157	0.130	119	0.47	33
13.90	0.25	9	2.28	148	0.135	110	0.44	23
14.00	0.19	-1	2.30	139	0.139	102	0.42	13
14.10	0.12	-13	2.31	129	0.142	94	0.39	3
14.20	0.06	-32	2.30	120	0.145	85	0.36	-8
14.30	0.02	-113	2.29	111	0.146	76	0.34	-19
14.40	0.07	178	2.26	102	0.148	68	0.31	-31
14.50	0.12	160	2.22	93	0.147	60	0.29	-43
14.60	0.17	149	2.18	84	0.147	51	0.28	-56
14.70	0.22	140	2.13	75	0.146	44	0.27	-68
14.80	0.26	132	2.09	66	0.144	36	0.27	-81
14.90	0.29	124	2.04	58	0.142	28	0.29	-93