

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

#### Features

- High power
  - $P_{1dB} = 40.5$  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	40.0	40.5	–
Power Gain at 1dB Compression Point	$G_{1dB}$		dB	5.0	6.0	–
Drain Current	$I_{DS}$		A	–	4.0	5.0
Power Added Efficiency	$\eta_{add}$		%	–	23	–
Channel-Temperature Rise	$\Delta T_{ch}$	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	$^\circ\text{C}$	–	–	90

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

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Trans-conductance	gm	$V_{DS}=3V$ $I_{DS}=4.8\text{A}$	mS	–	2800	–
Pinch-off Voltage	$V_{GSoff}$	$V_{DS}=3V$ $I_{DS}=145\text{mA}$	V	-2.0	-3.5	5.0
Saturated Drain Current	$I_{DSS}$	$V_{DS}=3V$ $V_{GS}=0V$	A	–	10.0	11.5
Gate to Source Breakdown Voltage	$V_{GSO}$	$I_{GS}=-145\mu\text{A}$	V	-5	–	–
Thermal Resistance	$R_{th(c-c)}$	Channel to case	$^\circ\text{C/W}$	–	2.0	2.5

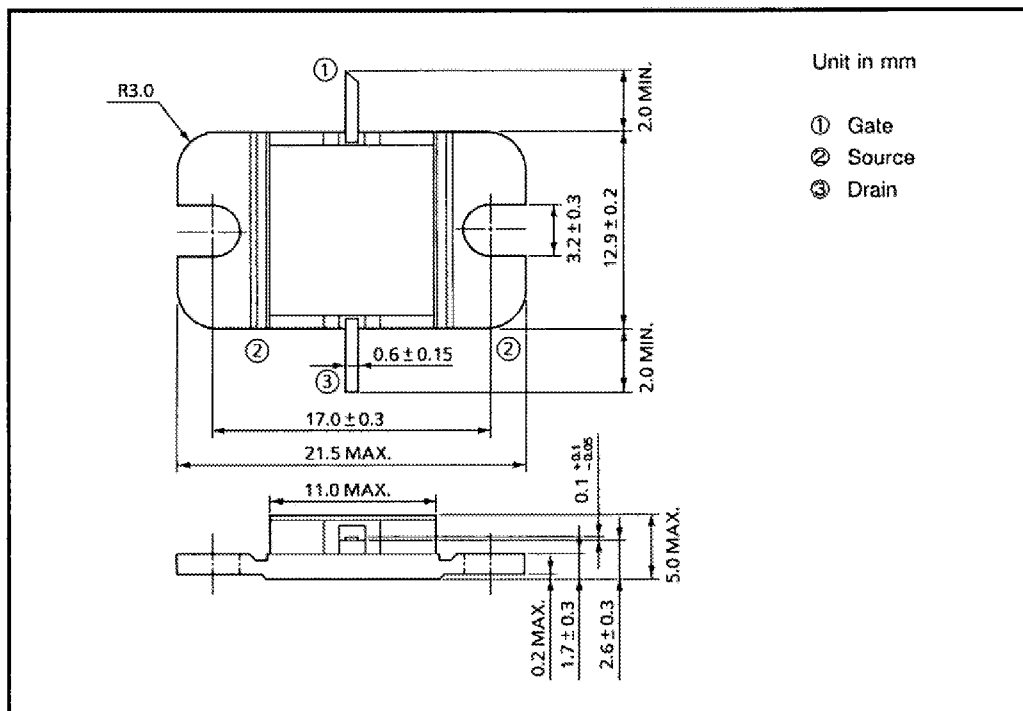
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**Absolute Maximum Ratings (T<sub>a</sub> = 25° C)**

Characteristic	Symbol	Unit	Rating
Drain Source Voltage	V <sub>DS</sub>	V	15
Gate Source Voltage	V <sub>GS</sub>	V	-5
Drain Current	I <sub>DS</sub>	A	11.5
Total Power Dissipation (T <sub>c</sub> = 25°C)	P <sub>T</sub>	W	60
Channel Temperature	T <sub>ch</sub>	°C	175
Storage Temperature	T <sub>stg</sub>	°C	-65~175

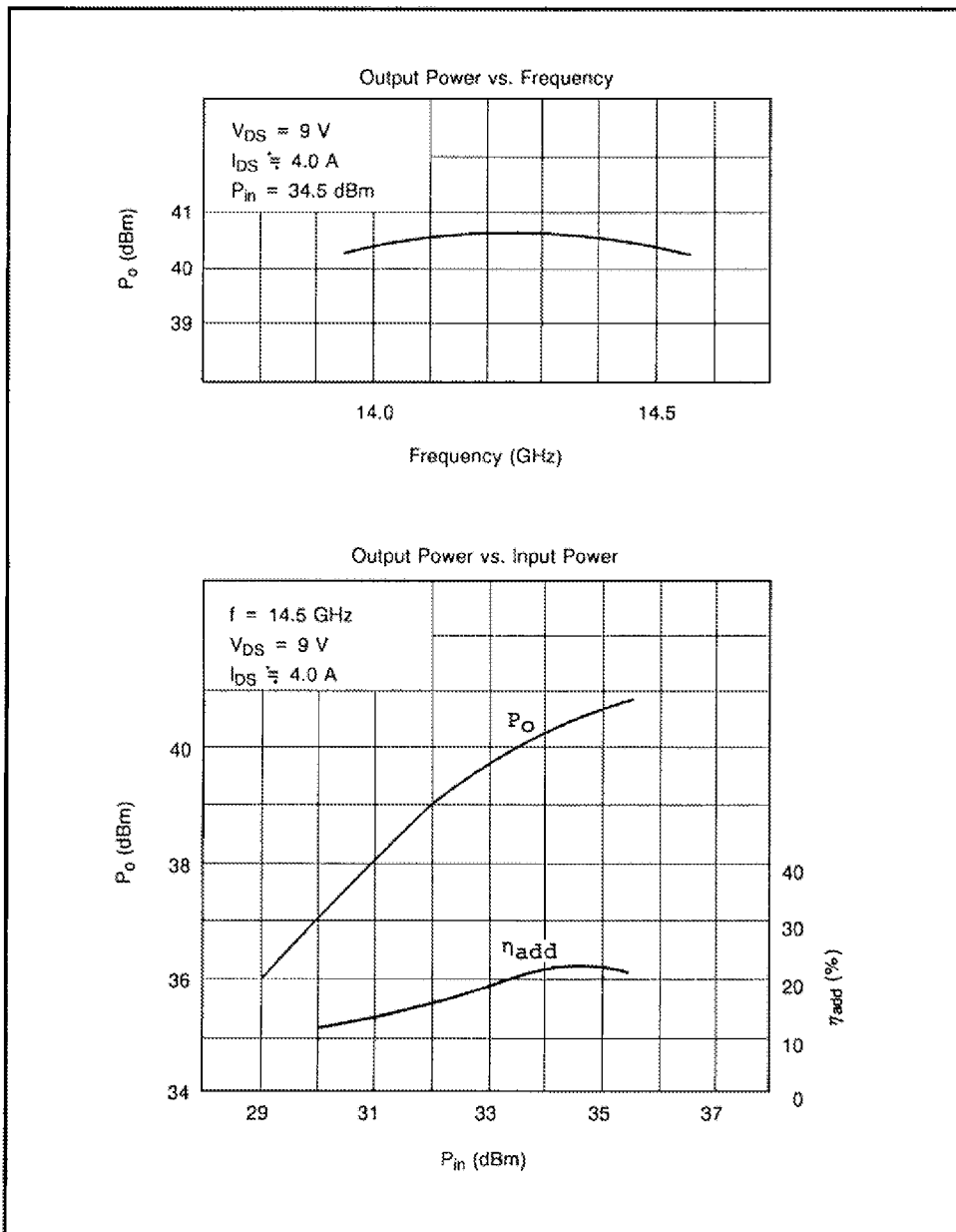
**Package Outline (2-11C1B)**



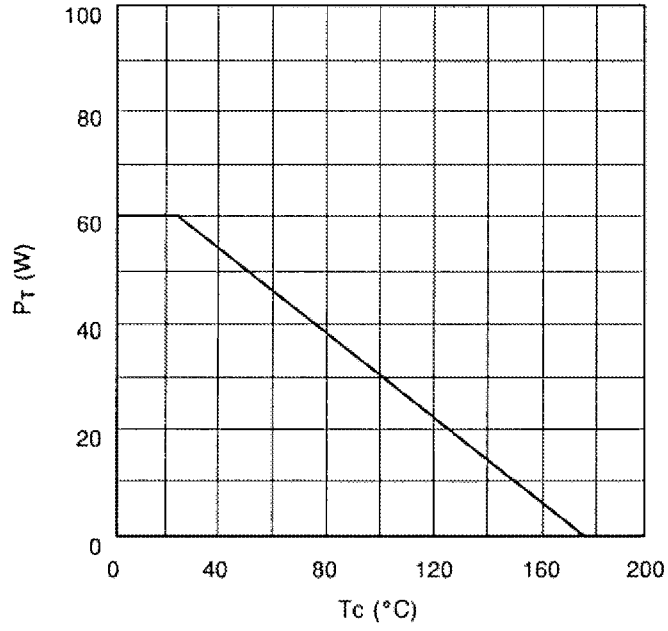
**Handling Precautions for Packaged Type**

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

RF Performances

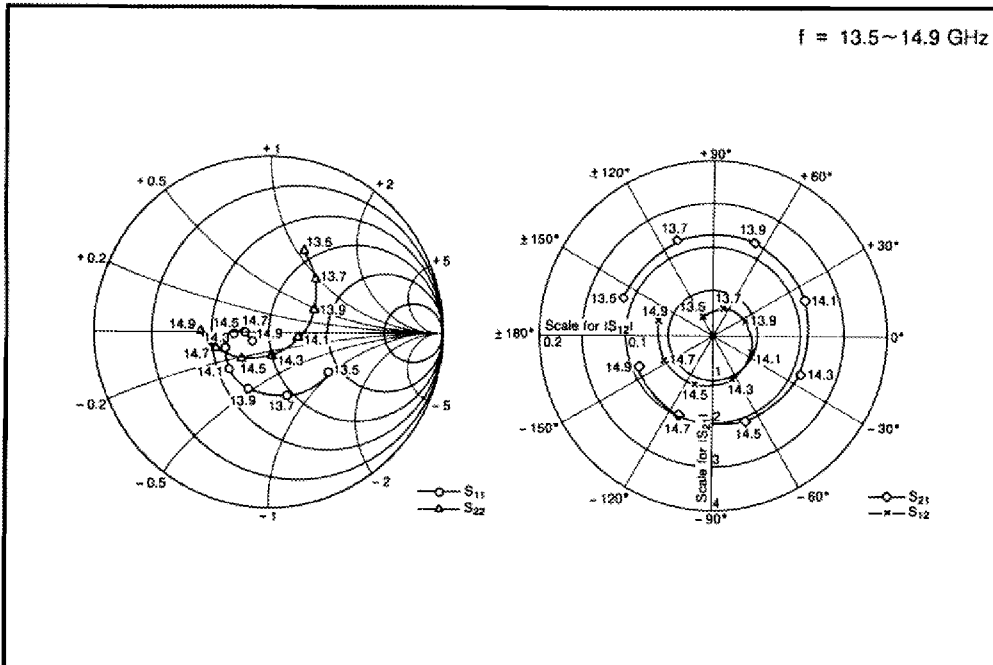


Power Dissipation vs. Case Temperature



Tim1414-10A S-Parameters  
(MAGN. and ANGLES)

$V_{DS} = 9\text{ V}$ ,  $I_{DS} = 4.0\text{ A}$



FREQUENCY (MHz)	$S_{11}$		$S_{21}$		$S_{12}$		$S_{22}$	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
13.50	0.42	-33	2.23	158	0.048	116	0.51	67
13.60	0.40	-53	2.28	135	0.057	93	0.46	58
13.70	0.38	-73	2.31	111	0.065	69	0.41	49
13.80	0.36	-92	2.33	88	0.073	46	0.35	39
13.90	0.34	-109	2.31	65	0.081	23	0.29	27
14.00	0.32	-124	2.29	43	0.089	1	0.23	12
14.10	0.30	-137	2.27	20	0.096	-22	0.17	-9
14.20	0.28	-150	2.24	-2	0.104	-44	0.13	-42
14.30	0.26	-161	2.20	-24	0.109	-66	0.13	-82
14.40	0.22	-170	2.16	-47	0.115	-88	0.17	-115
14.50	0.20	-177	2.11	-69	0.119	-110	0.21	-136
14.60	0.16	180	2.05	-91	0.123	-132	0.27	-152
14.70	0.13	178	1.98	-113	0.125	-153	0.32	-163
14.80	0.11	169	1.92	-135	0.127	-174	0.36	-173
14.90	0.10	153	1.85	-157	0.128	165	0.39	179