

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

- High power
  - $P_{1dB} = 39.5$  dBm at 14.0 GHz to 14.5 GHz
- High gain
  - $G_{1dB} = 5.0$  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	38.5	39.5	–
Power Gain at 1dB Compression Point	$G_{1dB}$		dB	4.0	5.0	–
Drain Current	$I_{DS}$		A	–	3.4	4.4
Power Added Efficiency	$\eta_{add}$		%	–	20	–
Channel-Temperature Rise	$\Delta T_{ch}$	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	$^\circ\text{C}$	–	–	80

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

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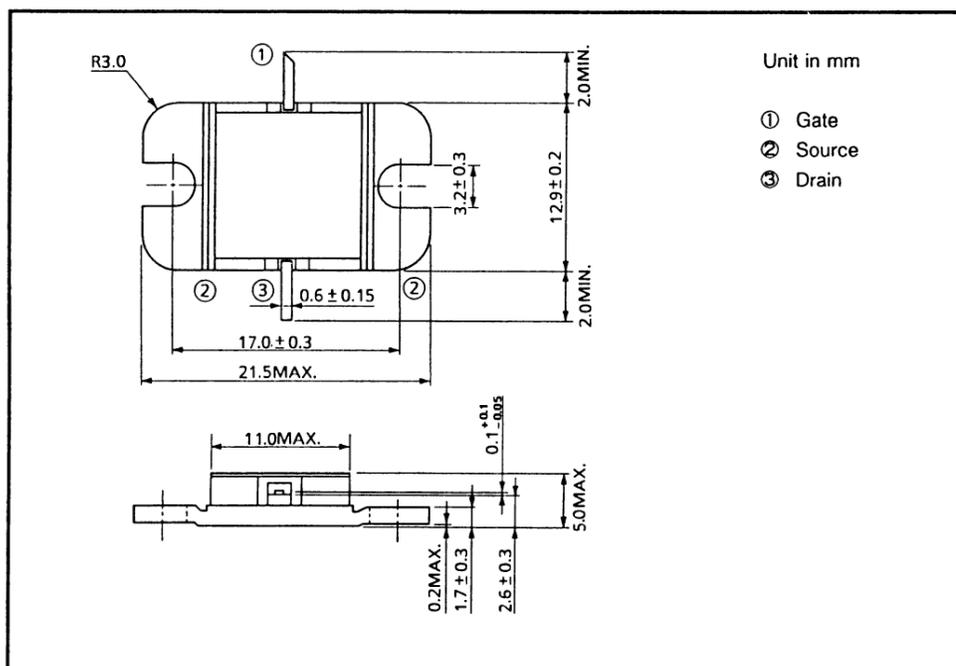
Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Trans-conductance	gm	$V_{DS}=3V$ $I_{DS}=4.0\text{A}$	mS	–	2400	–
Pinch-off Voltage	$V_{GSoff}$	$V_{DS}=3V$ $I_{DS}=120\text{mA}$	V	-2	-3.5	-5
Saturated Drain Current	$I_{DSS}$	$V_{DS}=3V$ $V_{GS}=0V$	A	–	8.0	10.4
Gate to Source Breakdown Voltage	$V_{GSO}$	$I_{GS}=-120\mu\text{A}$	V	-5	–	–
Thermal Resistance	$R_{th(c-c)}$	Channel to case	$^\circ\text{C/W}$	–	1.6	2.5

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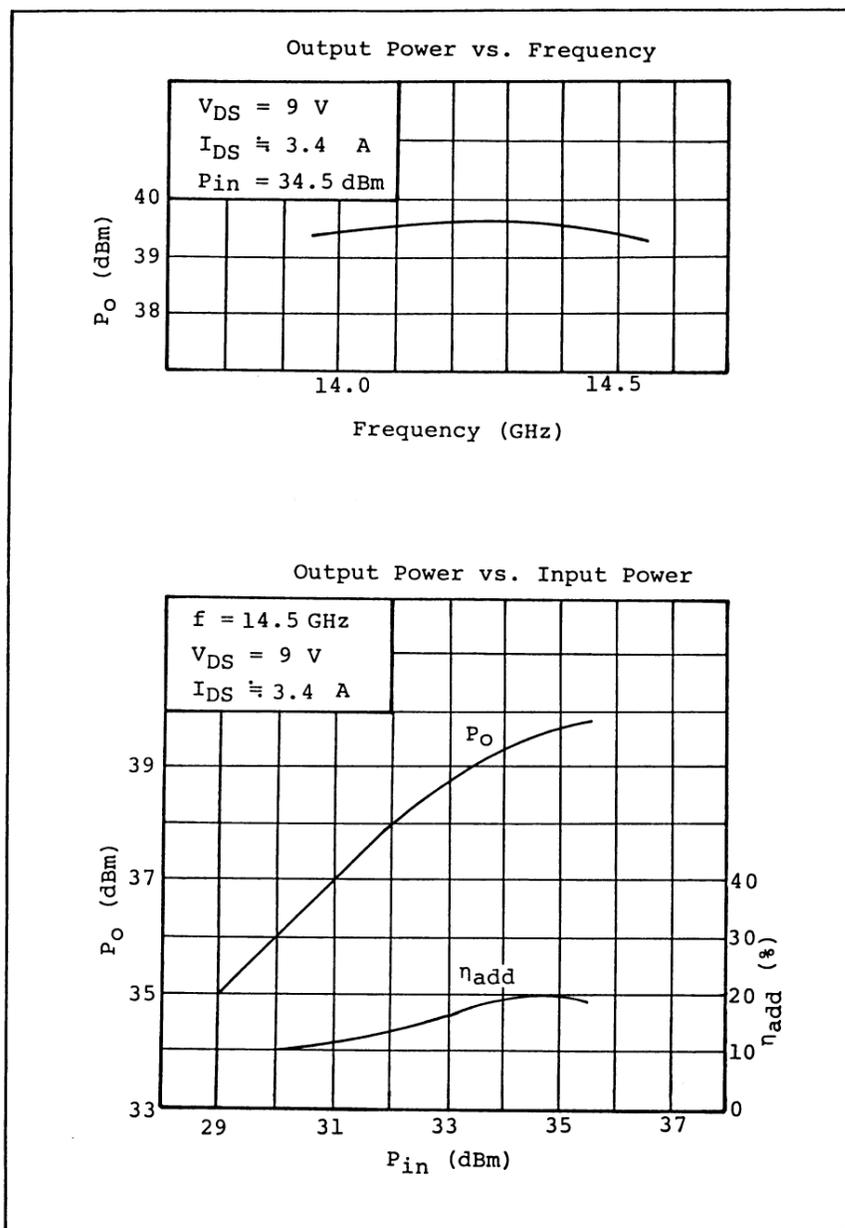
**TIM1414-8****Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )**

Characteristic	Symbol	Unit	Rating
Drain Source Voltage	$V_{DS}$	V	15
Gate Source Voltage	$V_{GS}$	V	-5
Drain Current	$I_{DS}$	A	10.4
Total Power Dissipation ( $T_c = 25^\circ\text{C}$ )	$P_T$	W	60
Channel Temperature	$T_{ch}$	$^\circ\text{C}$	175
Storage Temperature	$T_{stg}$	$^\circ\text{C}$	-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  $260^\circ\text{C}$ .

RF Performances

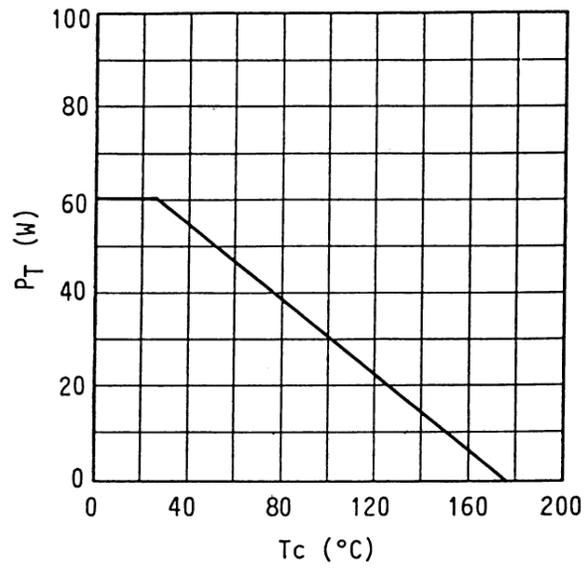


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# TIM1414-8

## Power Dissipation vs. Case Temperature



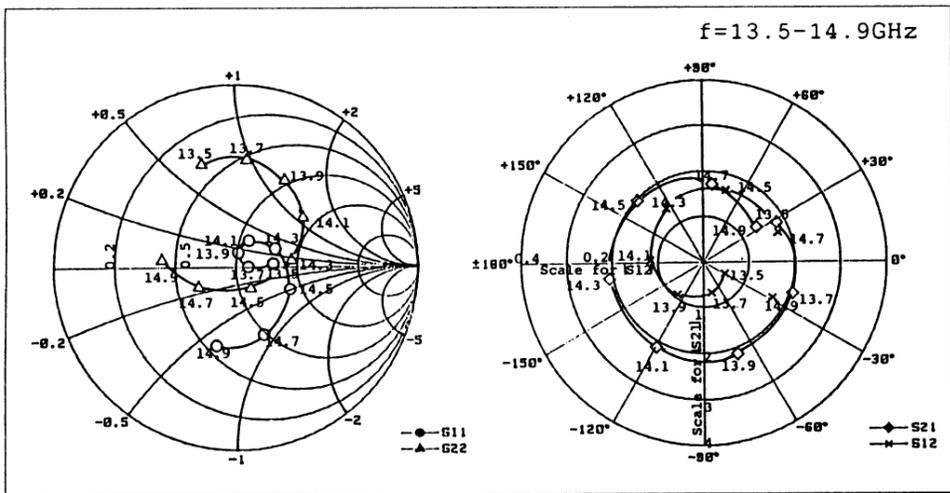
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**Tim1414-10S-Parameters  
(MAGN. and ANGLES)**

$V_{DS}=9V, I_{DS}=3.4A$



FREQUENCY (GHz)	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
13.5	0.20	5	1.81	28	0.052	-29	0.59	108
13.7	0.07	2	2.06	-20	0.070	-77	0.59	84
13.9	0.08	81	2.13	-70	0.092	-130	0.54	60
14.1	0.16	64	2.13	-120	0.117	177	0.45	36
14.3	0.24	25	2.10	-170	0.143	125	0.30	7
14.5	0.32	-23	1.98	137	0.164	72	0.14	-57
14.7	0.40	-68	1.71	84	0.175	21	0.23	-152
14.9	0.45	-104	1.38	33	0.169	-28	0.41	175

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