TOSHIBA

MICROWAVE POWER GaAs FET TIM1414-8

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

Features

- High power
  - P_{1dB} =39.5 dBm at 14.0 GHz to14.5 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° C)

Characteristics	Symbol	Condition	Unit	Min.	Typ.	Max
Output Power at 1dB Compression Point	P_{1dB}	V_{DS} = 9V f = 14.0 ~ 14.5GHz	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	η_{add}		%	–	20	–
Channel-Temperature Rise	ΔT_{ch}	V_{DS} X I_{DS} X $R_{th(c-c)}$	°C	–	–	80

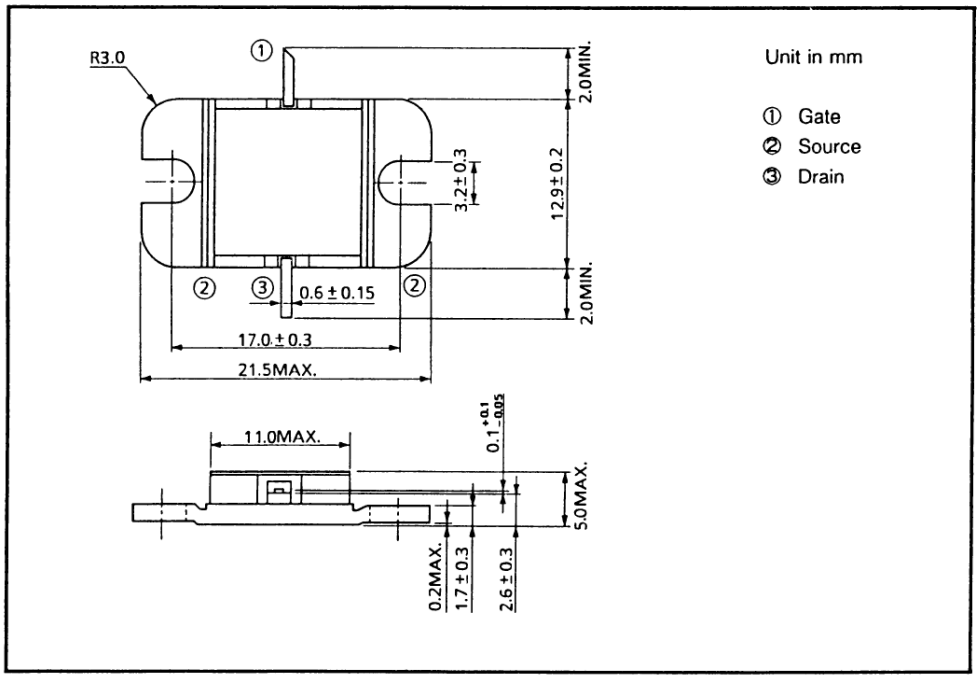
Electrical Characteristics (T_a = 25° C)

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Trans-conductance	gm	V_{DS}=3V I_{DS}=4.0 A	mS	–	2400	–
Pinch-off Voltage	V_{GSoff}	V_{DS}=3V I_{DS}=120mA	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 μA	V	-5	–	–
Thermal Resistance	$R_{th\ (c-c)}$	Channel to case	°C/W	–	1.6	2.5

Absolute Maximum Ratings (T_a = 25° 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 (Tc = 25°C)	P_T	W	60
Channel Temperature	T_{ch}	˚C	175
Storage Temperature	T_{stg}	˚C	-65~175

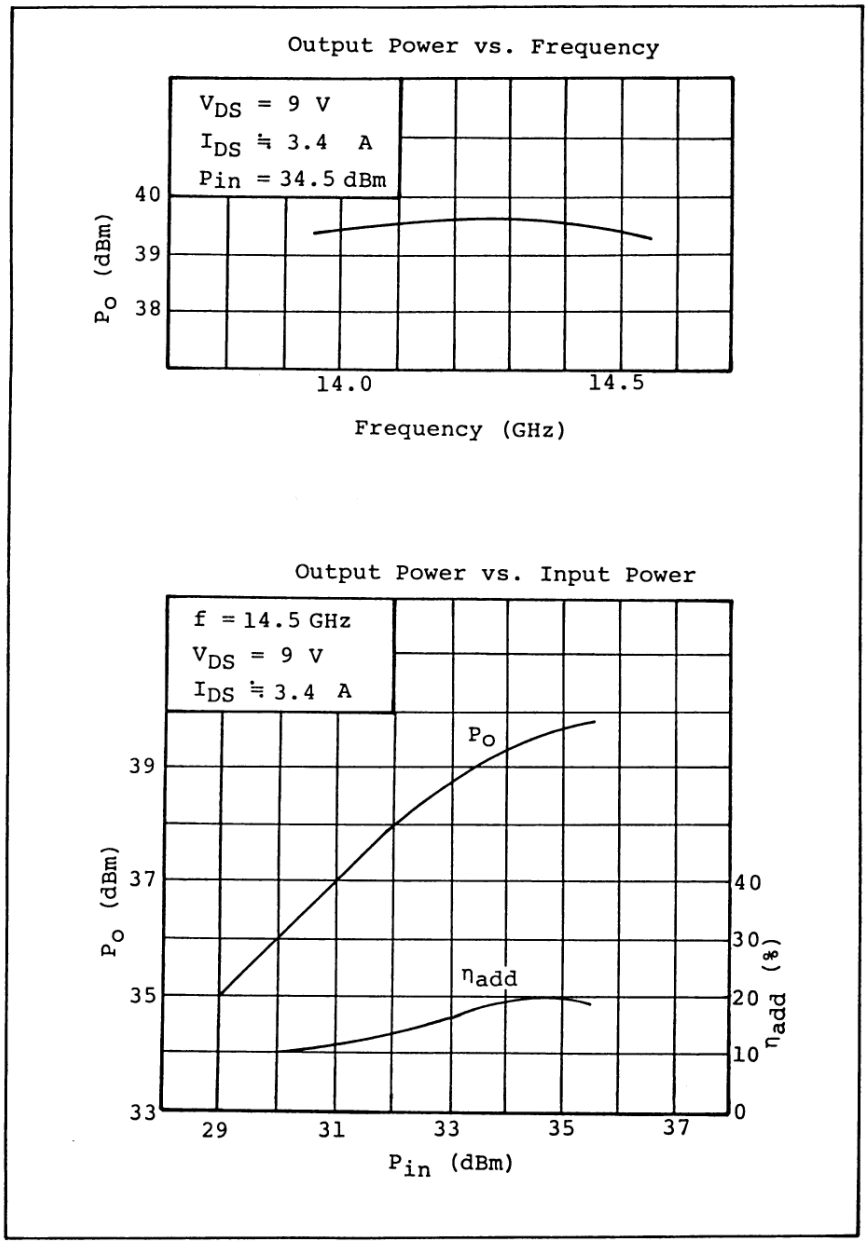
Package Outline (2-11C1B)



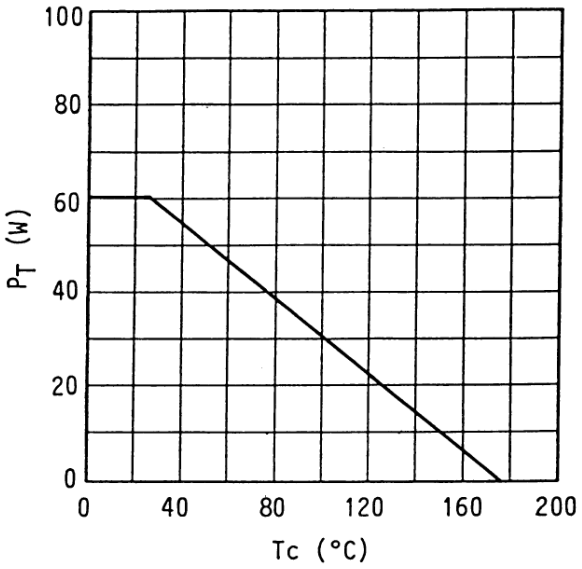
Handling Precautions for Packaged Type

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

RF Performances

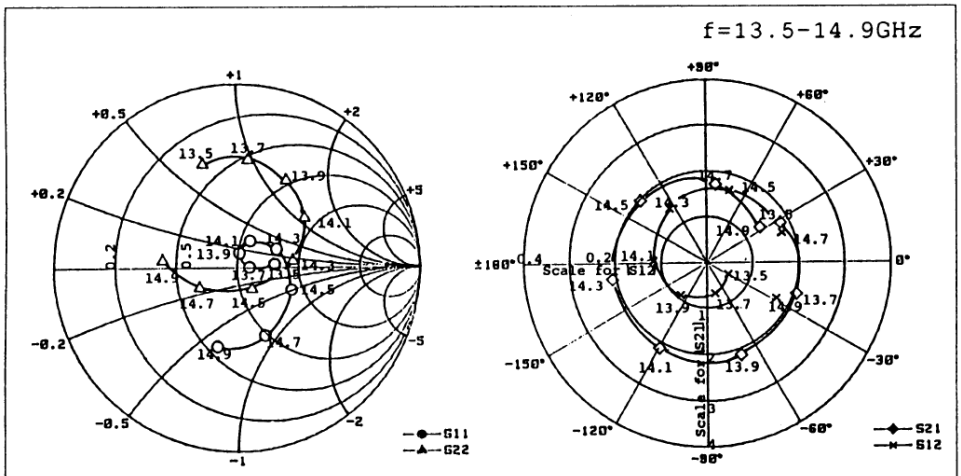


Power Dissipation vs. Case Temperature



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

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



FREQUENCY (GHz)	S_{11}		S_{21}		S_{12}		S_{22}	
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