TOSHIBA

MICROWAVE POWER GaAs FET TIM1414-4A

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

Features

- High power
  - P_{1dB} = 36.5 dBm at 14.0 GHz to 14.5 GHz
- High gain
  - G_{1dB} = 6.5 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 ~ 14.5 GHz	dBm	36.0	36.5	–
Power Gain at 1dB Compression Point	G_{1dB}		dB	6.0	6.5	–
Drain Current	I_{DS}		A	–	1.7	2.2
Power Added Efficiency	η_{add}		%	–	23	–
Channel-Temperature Rise	ΔT_{ch}	V_{DS} X I_{DS} X $R_{th(c-c)}$	°C	–	–	70

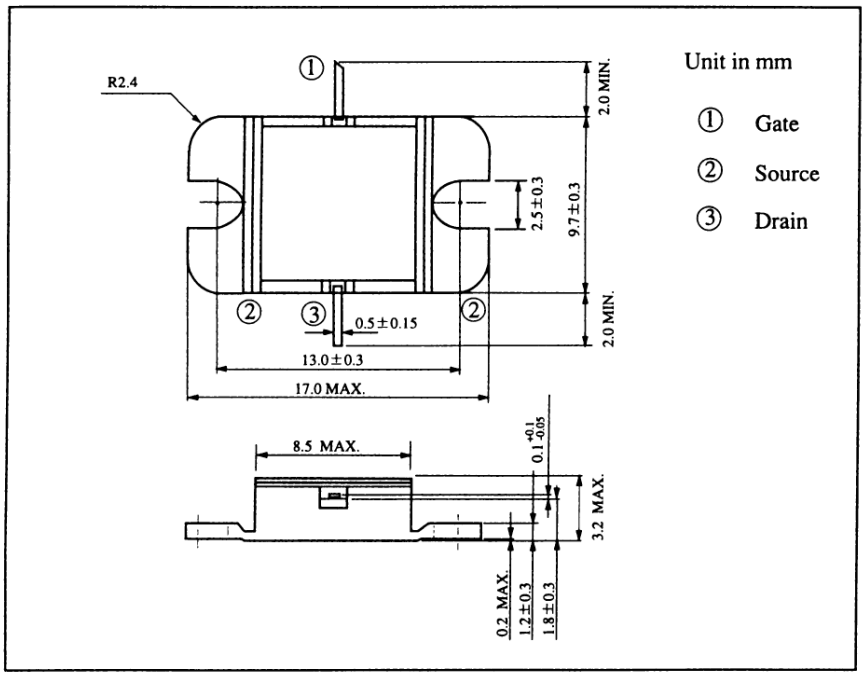
Electrical Characteristics (T_a = 25° C)

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Trans-conductance	gm	V_{DS}=3V I_{DS}=2.0 A	mS	–	1200	–
Pinch-off Voltage	V_{GSoff}	V_{DS}=3V I_{DS}=60mA	V	-2.0	-3.5	-5.0
Saturated Drain Current	I_{DSS}	V_{DS}=3V V_{GS}=0V	A	–	4.0	5.2
Gate to Source Breakdown Voltage	V_{GSO}	I_{GS}=-60 μA	V	-5	–	–
Thermal Resistance	$R_{th\ (c-c)}$	Channel to case	°C/W	–	2.9	3.5

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	5.2
Total Power Dissipation (Tc = 25°C)	P_T	W	30
Channel Temperature	T_{ch}	˚C	175
Storage Temperature	T_{stg}	˚C	-65~175

Package Outline (2-9D1B)

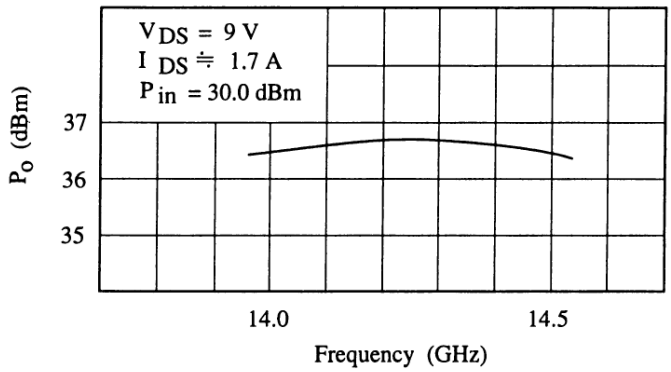


Handling Precautions for Packaged Type

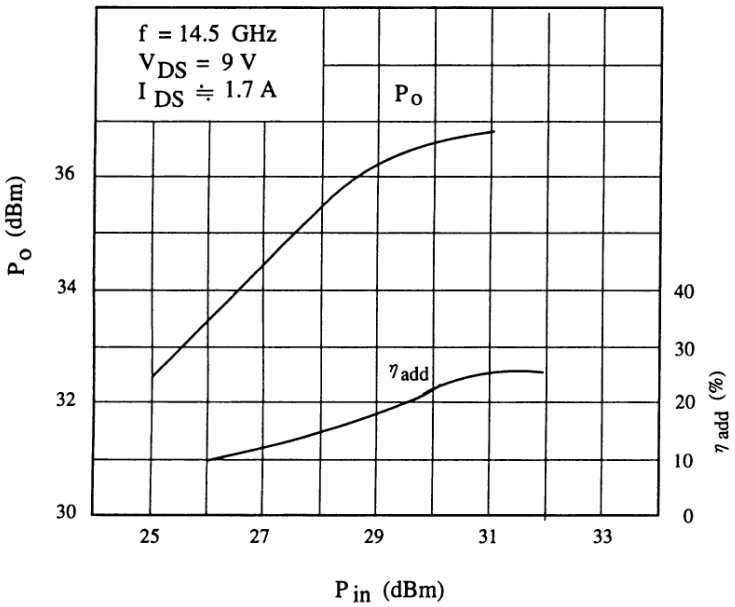
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF Performances

Output Power vs. Frequency



Output Power vs. Input Power



Power Dissipation vs. Case Temperature