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

Features

- High power
  - P_{1dB} = 36.5 dBm at 12.7 GHz to 13.2 GHz
- High gain
  - G_{1dB} = 7.5 dB at 12.7 GHz to 13.2 GHz
- Broadband internally matched
- Hermetically sealed package

RF Performance Specifications (T_a = 25°C)

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Output Power at 1dB Compression Point	P_{1dB}	V_{DS} = 9V f = 12.7 - 13.2 GHz	dBm	35.5	36.5	–
Power Gain at 1dB Compression Point	G_{1dB}		dB	6.5	7.5	–
Drain Current	I_{DS}		A	–	1.7	2.2
Power Added Efficiency	η_{add}		%	–	24	–
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.
Transconductance	gm	V_{DS} = 3V I_{DS} = 2.0A	mS	–	1200	–
Pinch-off Voltage	V_{GSoff}	V_{DS} = 3V I_{DS} = 60 mA	V	-2	-3.5	-5
Saturated Drain Current	I_{DSS}	V_{DS} = 3V V_{GS} = 0V	A	–	4.0	5.2
Gate-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

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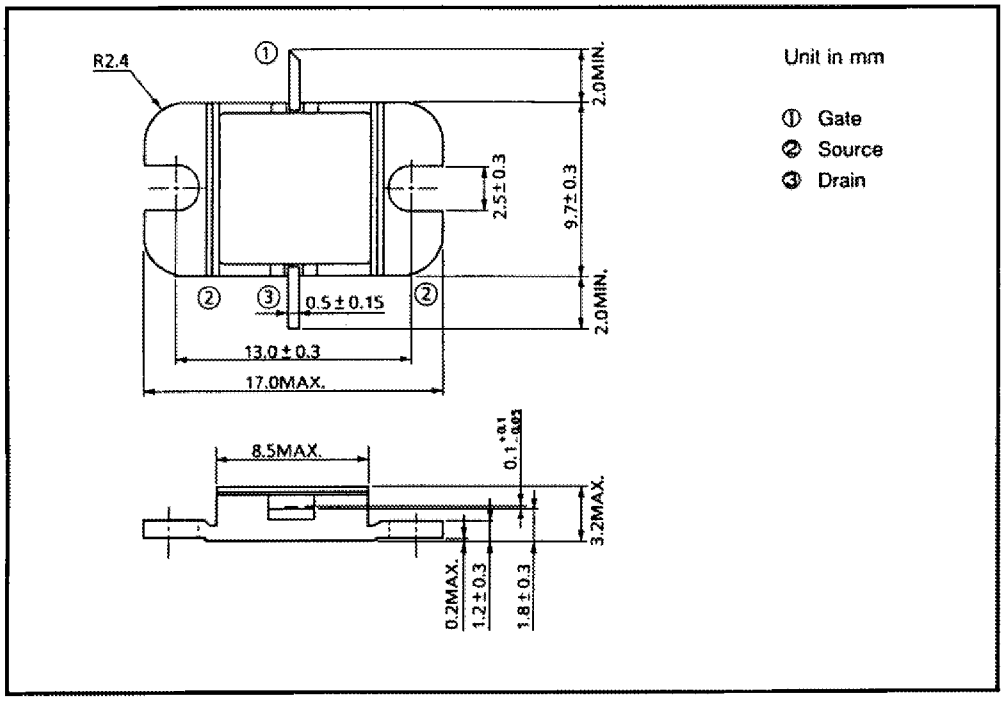
Absolute Maximum Ratings (T_a = 25°C)

Characteristic	Symbol	Unit	Rating
Drain-Source Voltage	V_{DS}	V	15
Gate-Source Voltage	V_{GS}	V	-5
Drain Current	I_D	A	5.2
Total Power Dissipation (T_c = 25°C)	P_T	W	30
Channel Temperature	T_{ch}	°C	175
Storage Temperature	T_{stg}	°C	-65 ~ 175

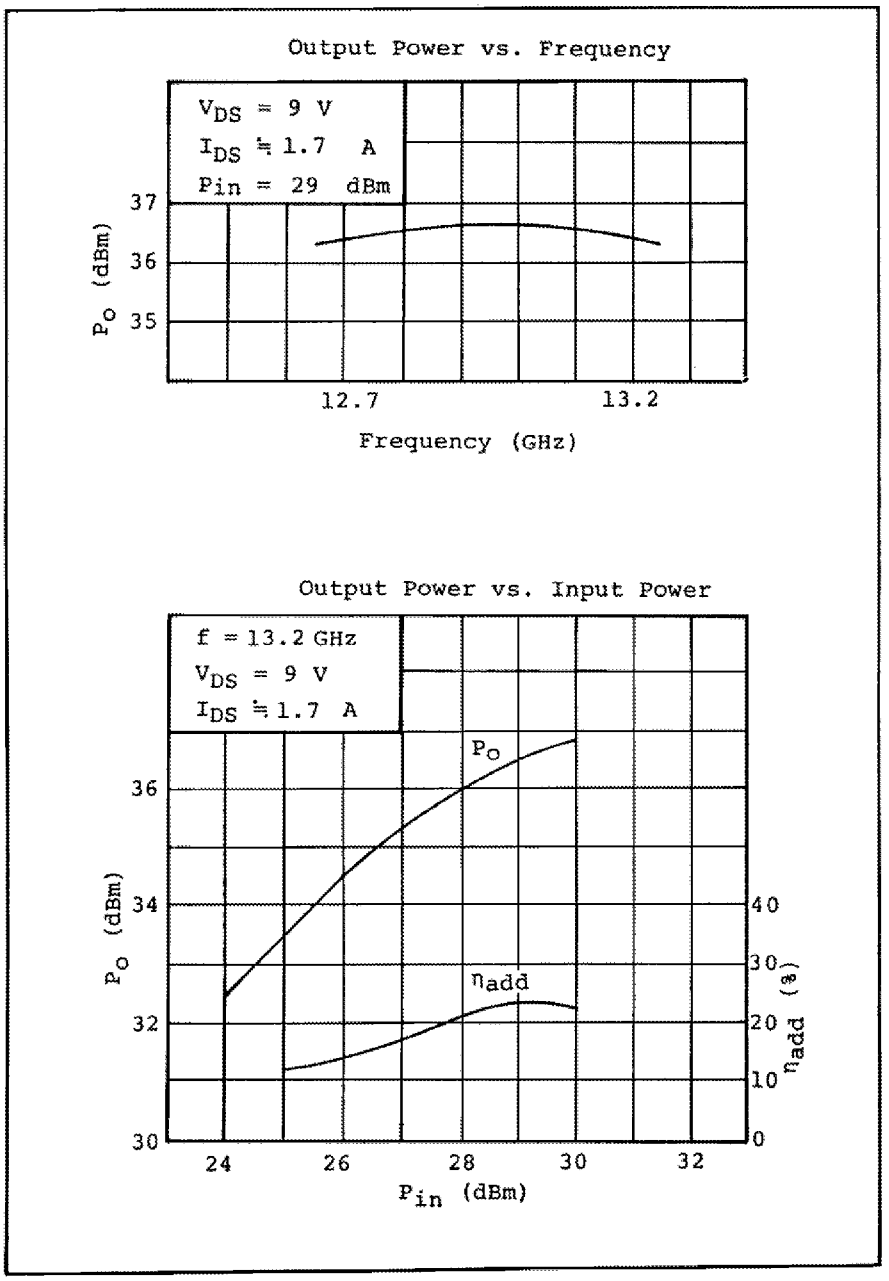
Package Outline (2-9D1B)



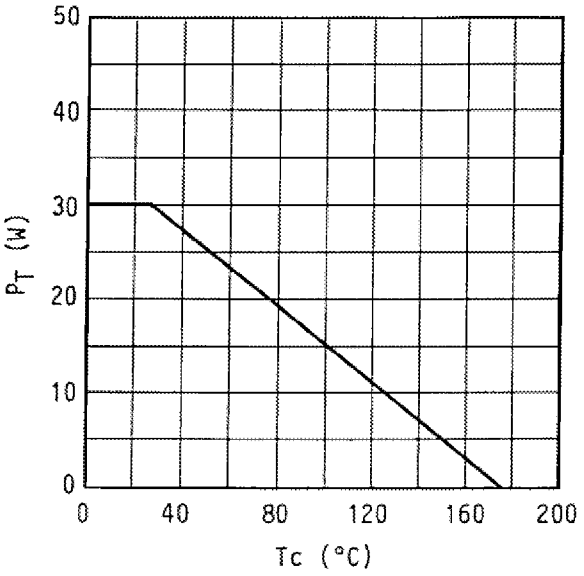
Handling Precautions for Packaged Type

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

RF Performances

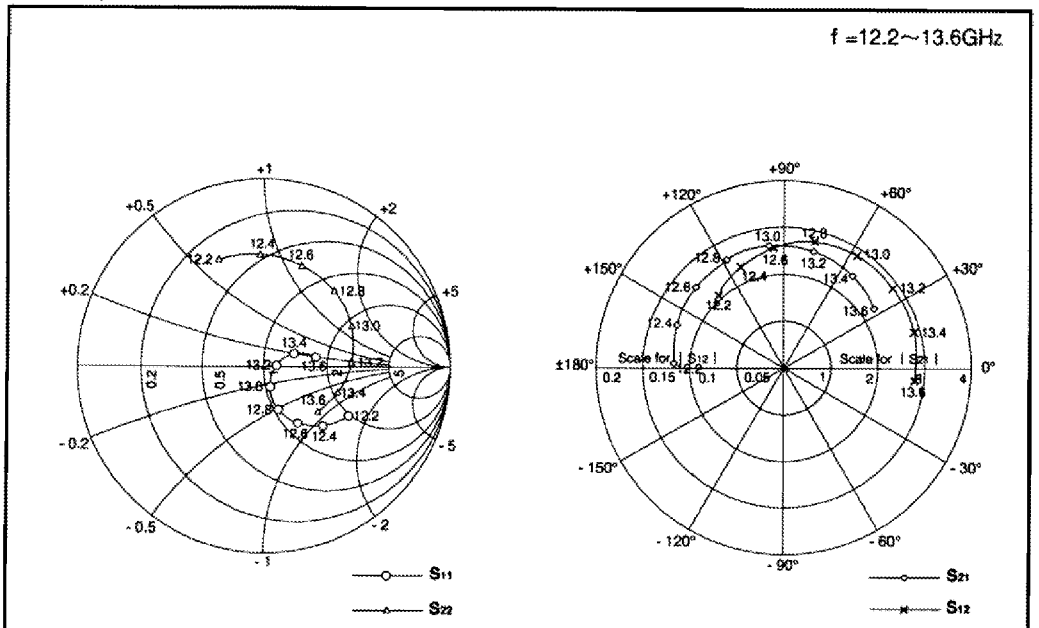


Power Dissipation vs. Case Temperature



TIM1213-4 S-Parameters (Magn. and Angles)

V_{DS} = 9V, I_{DS} = 2.0A



FREQUENCY (MHz)	S_{11} MAG	S_{11} ANG	S_{12} MAG	S_{12} ANG	S_{21} MAG	S_{21} ANG	S_{22} MAG	S_{22} ANG
12.2	0.533	-29.7	0.104	132.3	2.357	177.3	0.611	113.3
12.4	0.453	-44.3	0.117	114.1	2.458	158.1	0.591	91.4
12.6	0.354	-58.2	0.128	95.4	2.539	138.5	0.571	68.9
12.8	0.240	-70.3	0.137	76.0	2.592	118.1	0.549	46.5
13.0	0.119	-71.3	0.143	56.0	2.599	97.2	0.517	24.6
13.2	0.069	-1.7	0.145	35.6	2.553	75.7	0.477	3.1
13.4	0.174	20.7	0.144	15.1	2.447	54.2	0.430	-18.1
13.6	0.287	9.6	0.140	-5.4	2.298	33.1	0.383	-39.4