

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

Features

- High power
 - $P_{1dB} = 37.5$ dBm at 10.7 GHz to 11.7 GHz
- High gain
 - $G_{1dB} = 7.0$ dB at 10.7 GHz to 11.7 GHz
- Broadband internally matched
- Hermetically sealed package

RF Performance Specifications ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Output Power at 1dB Compression Point	P_{1dB}	$V_{DS} = 9V$ $f = 10.7 - 11.7$ GHz	dBm	37.0	37.5	-
Power Gain at 1dB Compression Point	G_{1dB}		dB	6.0	7.0	-
Drain Current	I_{DS}		A	-	2.0	2.5
Power Added Efficiency	η_{add}		%	-	20	-
Channel-Temperature Rise	ΔT_{ch}	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	$^\circ\text{C}$	-	-	80

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

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max.
Transconductance	gm	$V_{DS} = 3V$ $I_{DS} = 2.4A$	mS	-	1400	-
Pinch-off Voltage	V_{GSoff}	$V_{DS} = 3V$ $I_{DS} = 72$ mA	V	-2	-3.5	-5
Saturated Drain Current	I_{DSS}	$V_{DS} = 3V$ $V_{GS} = 0V$	A	-	5.0	5.7
Gate-Source Breakdown Voltage	V_{GSO}	$I_{GS} = -72$ μA	V	-5	-	-
Thermal Resistance	$R_{th(c-c)}$	Channel to Case	$^\circ\text{C/W}$	-	3.0	3.7

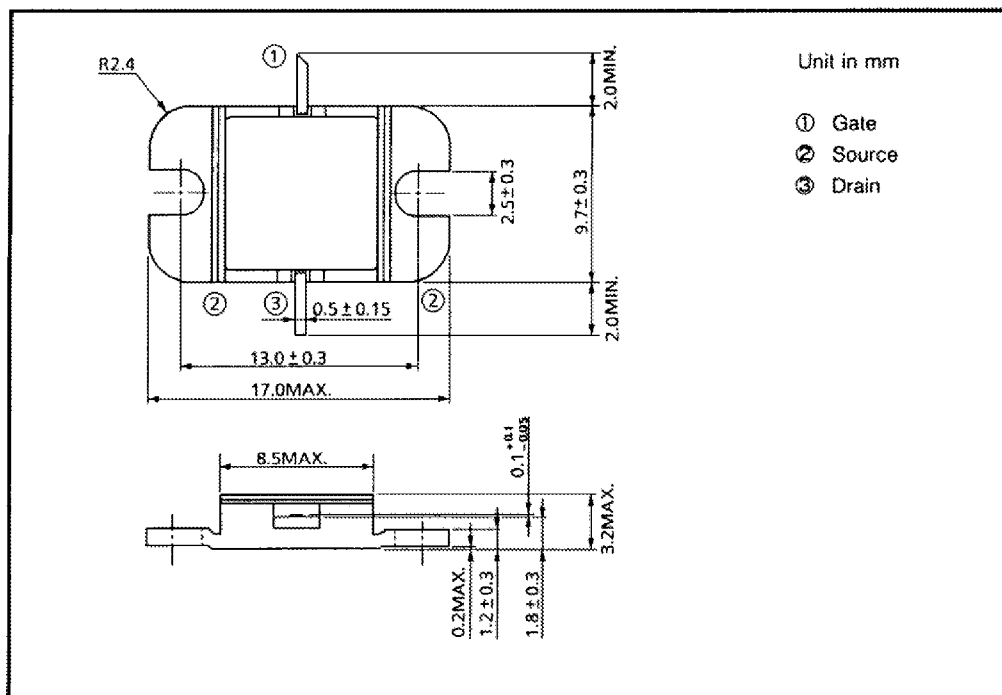
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Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Unit	Rating
Drain-Source Voltage	V_{DS}	V	15
Gate-Source Voltage	V_{GS}	V	-5
Drain Current	I_D	A	5.7
Total Power Dissipation ($T_c = 25^\circ\text{C}$)	P_T	W	30
Channel Temperature	T_{ch}	$^\circ\text{C}$	175
Storage Temperature	T_{stg}	$^\circ\text{C}$	-65 ~ 175

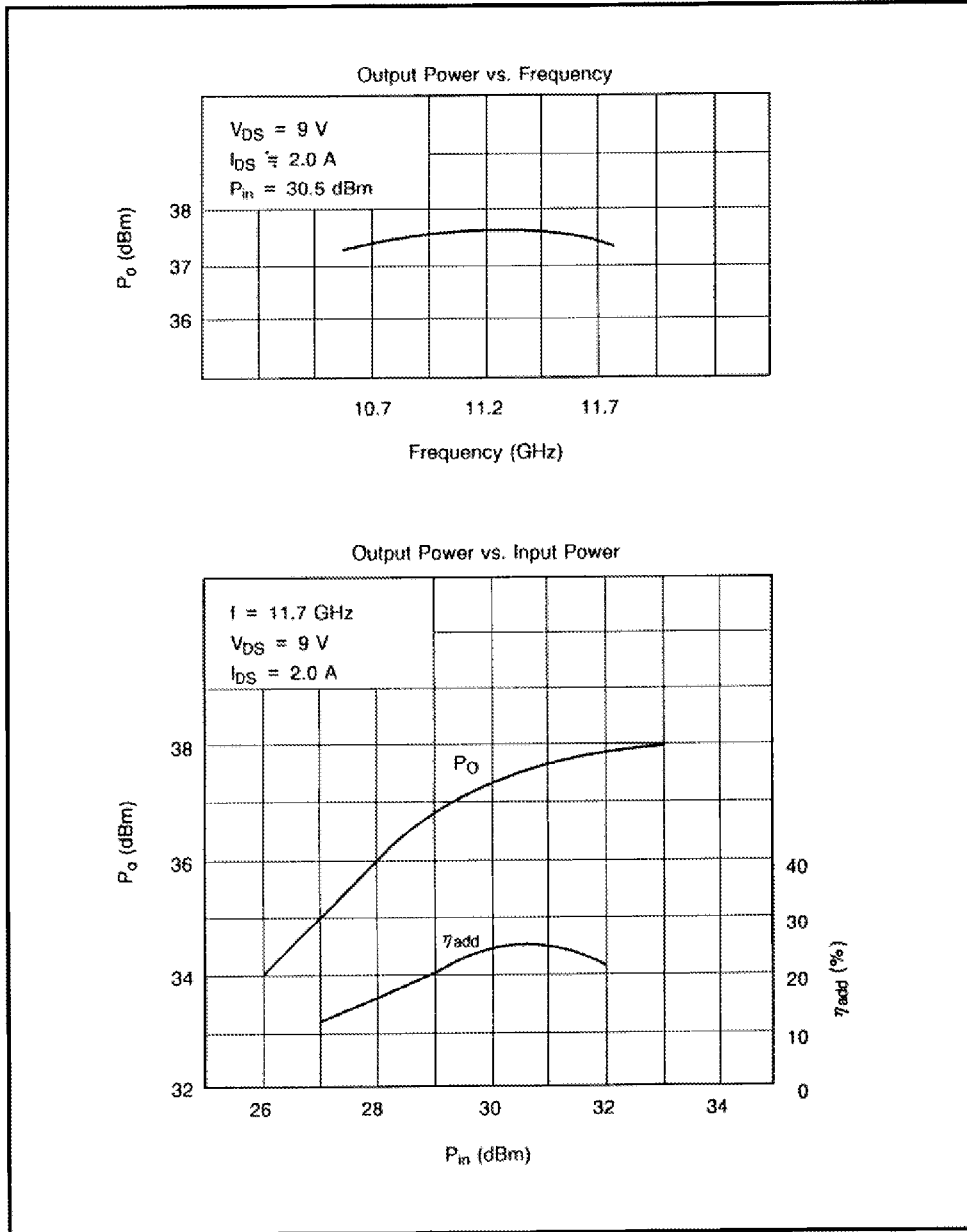
Package Outline (2-9D1B)



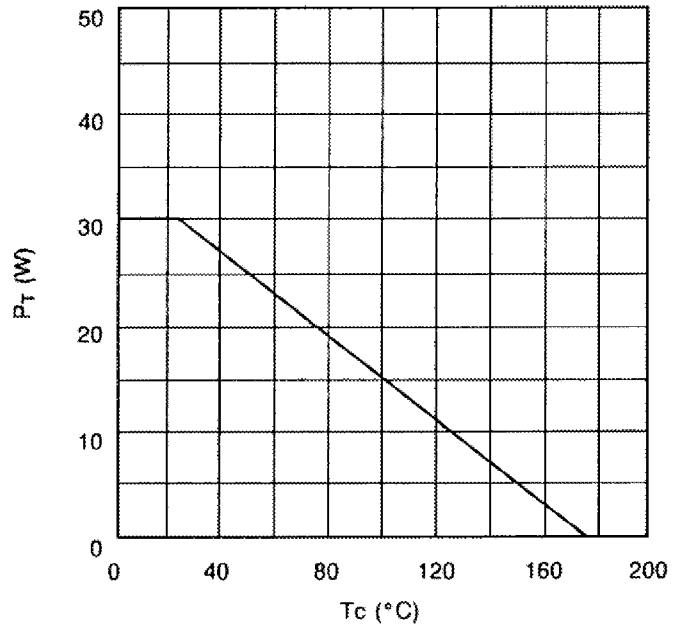
Handling Precautions for Packaged Type

Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260 $^\circ\text{C}$.

RF Performances

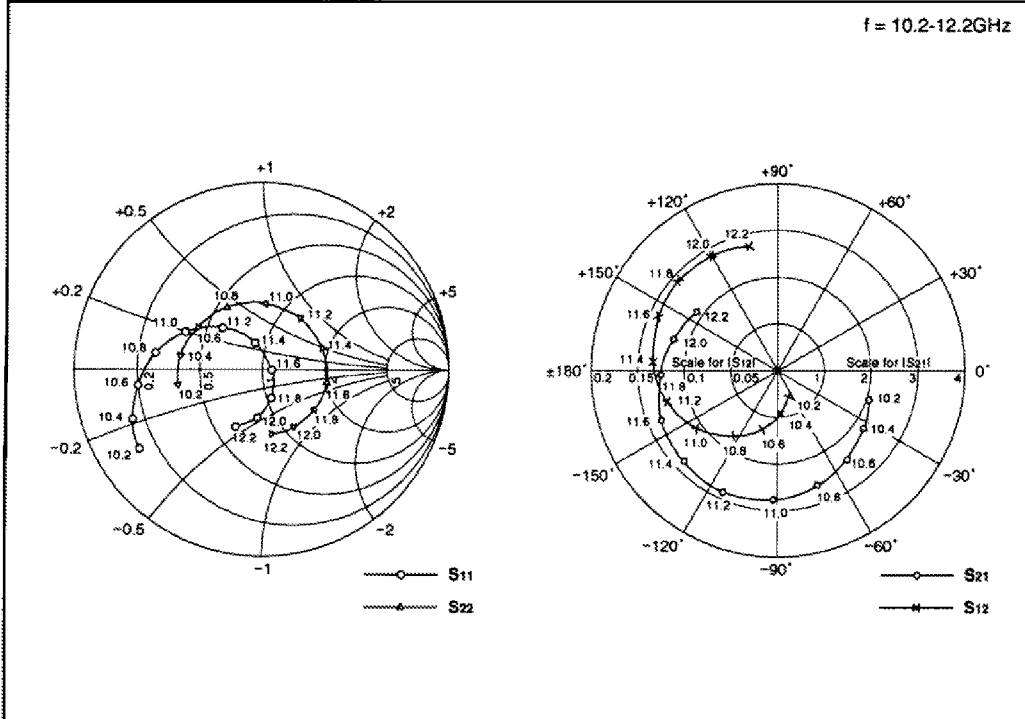


Power Dissipation vs. Case Temperature



TIM1011-5 S-Parameters (Magn. and Angles)

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



FREQUENCY (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
10.2	0.78	-147	2.06	-18	0.031	-69	0.46	-170
10.4	0.74	-159	2.22	-34	0.047	-87	0.44	170
10.6	0.67	-173	2.42	-52	0.066	-105	0.41	147
10.8	0.58	171	2.61	-71	0.085	-124	0.38	120
11.0	0.46	154	2.76	-92	0.106	-144	0.35	88
11.2	0.31	134	2.83	-114	0.123	-164	0.34	54
11.4	0.15	106	2.81	-136	0.135	176	0.34	20
11.6	0.05	-1	2.70	-157	0.141	156	0.35	-11
11.8	0.16	-73	2.53	-178	0.144	138	0.35	-37
12.0	0.26	-96	2.33	163	0.141	120	0.35	-61
12.2	0.34	-115	2.14	144	0.136	103	0.35	-82