

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

Features

- High power
 - $P_{1dB} = 40.5$ dBm at 10.7 GHz to 11.7 GHz
- High gain
 - $G_{1dB} = 6.0$ 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	40.0	40.5	-
Power Gain at 1dB Compression Point	G_{1dB}		dB	5.0	6.0	-
Drain Current	I_{DS}		A	-	3.0	5.0
Power Added Efficiency	η_{add}		%	-	20	-
Channel-Temperature Rise	ΔT_{ch}	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	$^\circ\text{C}$	-	-	90

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

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max.
Transconductance	gm	$V_{DS} = 3V$ $I_{DS} = 4.8A$	mS	-	2800	-
Pinch-off Voltage	V_{GSoff}	$V_{DS} = 3V$ $I_{DS} = 145$ mA	V	-2	-3.5	-5
Saturated Drain Current	I_{DSS}	$V_{DS} = 3V$ $V_{GS} = 0V$	A	-	10.0	11.5
Gate-Source Breakdown Voltage	V_{GSO}	$I_{GS} = -145$ μA	V	-5	-	-
Thermal Resistance	$R_{th(c-c)}$	Channel to Case	$^\circ\text{C/W}$	-	2.0	2.5

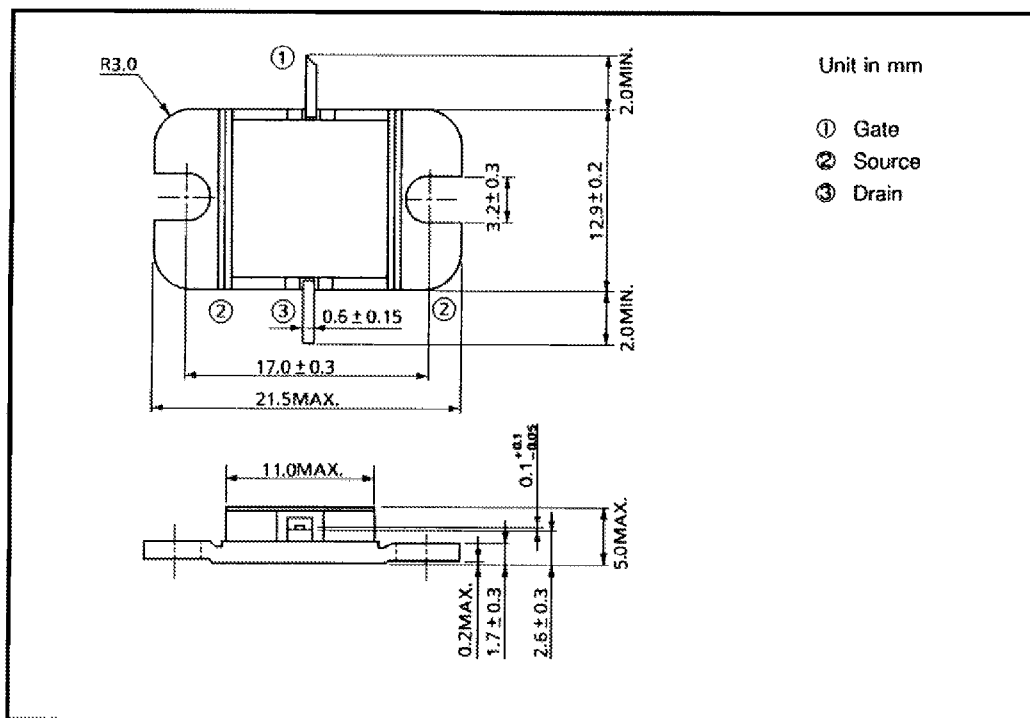
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Absolute Maximum Ratings (T_a = 25°C)

Characteristic	Symbol	Unit	Rating
Drain-Source Voltage	V _{DS}	V	15
Gate-Source Voltage	V _{GS}	V	-5
Drain Current	I _D	A	11.5
Total Power Dissipation (T _c = 25°C)	P _T	W	60
Channel Temperature	T _{ch}	°C	175
Storage Temperature	T _{stg}	°C	-65 ~ 175

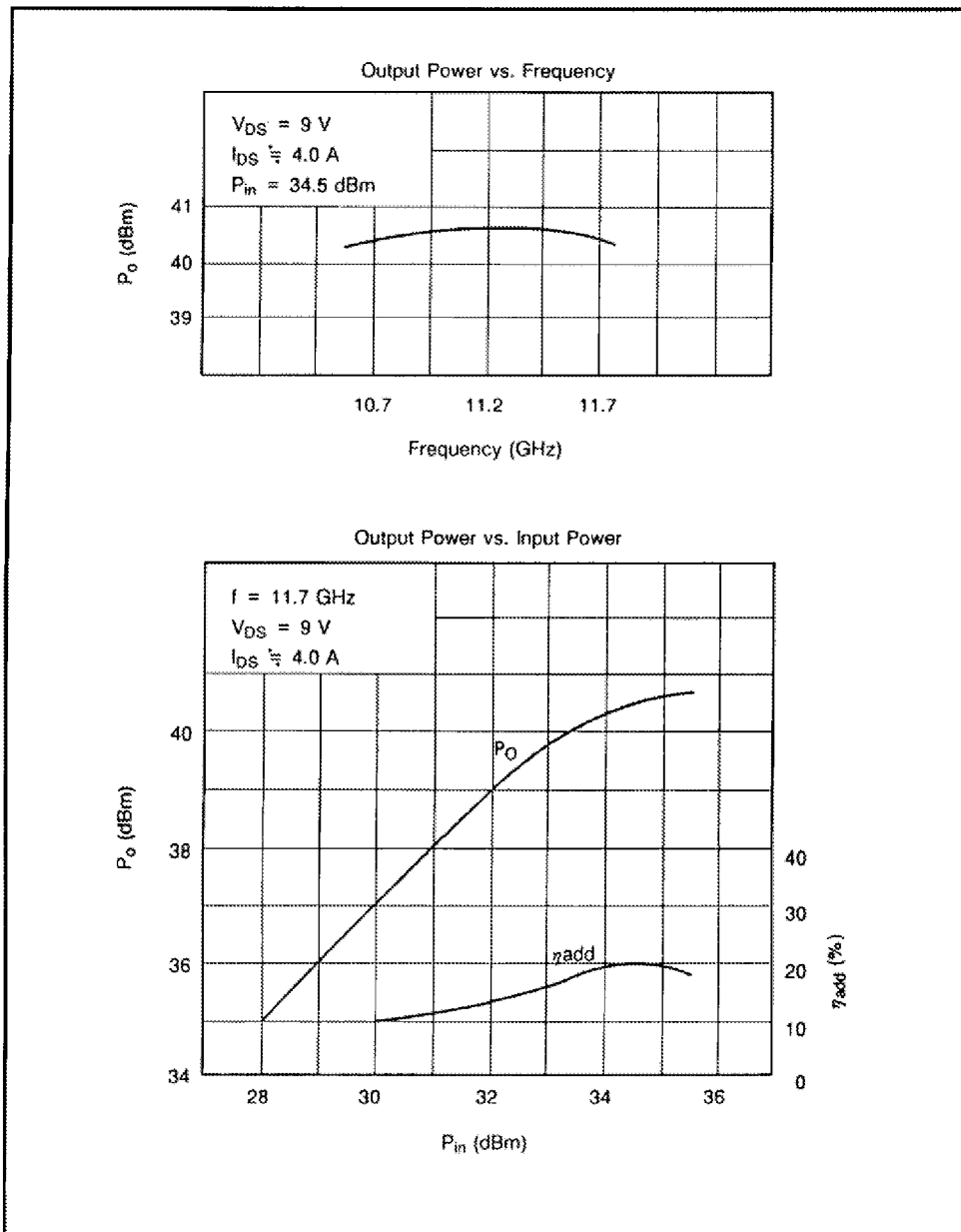
Package Outline (2-11C1B)



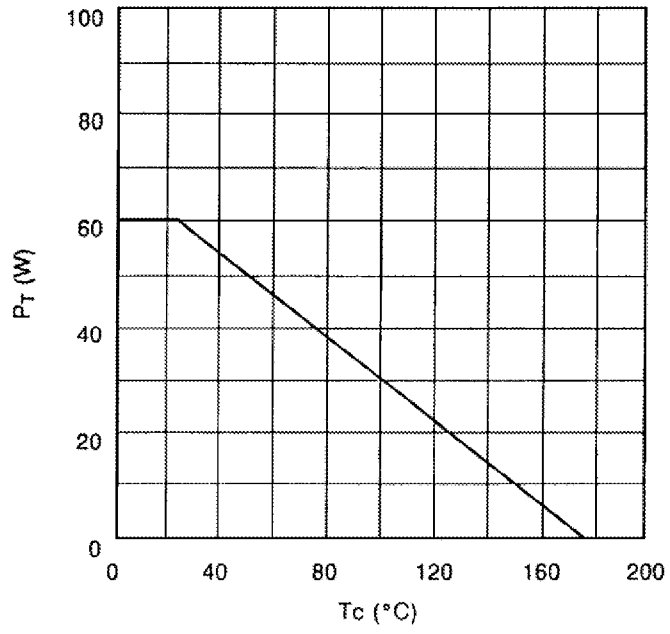
Handling Precautions for Packaged Type

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

RF Performances



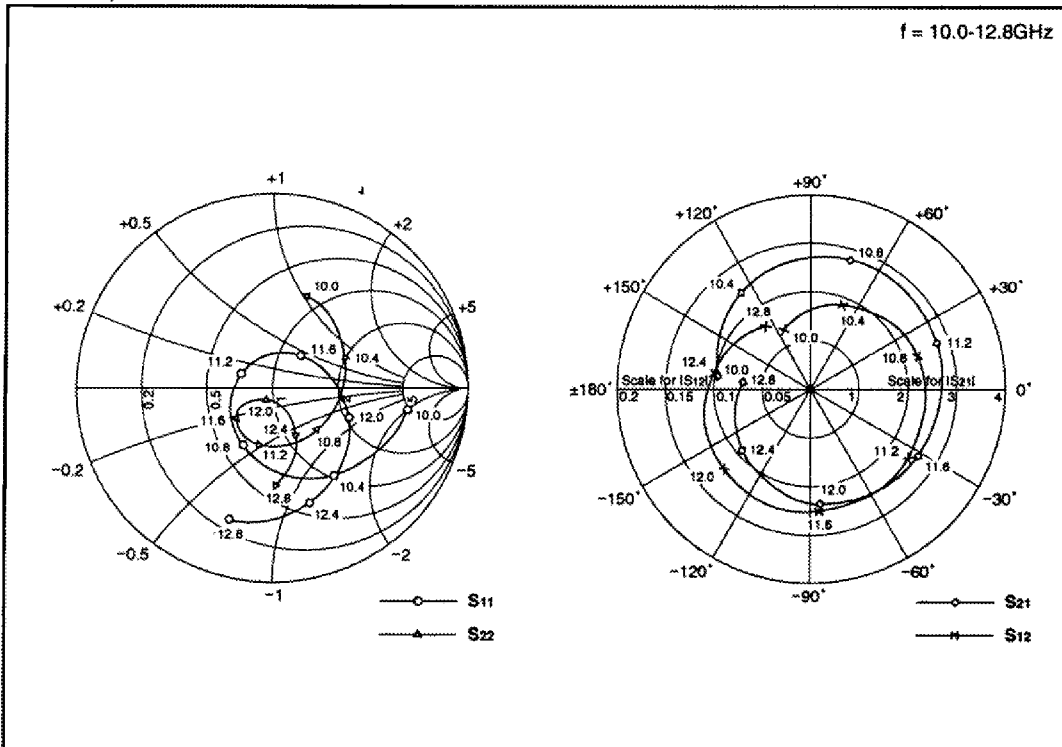
Power Dissipation vs. Case Temperature



TIM1011-10 S-Parameters (Magn. and Angles)

V_{DS} = 9V , I_{DS} = 4.0A

f = 10.0-12.8GHz



FREQUENCY (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
10.0	0.70	-9	1.93	172	0.066	114	0.50	70
10.4	0.55	-55	2.44	126	0.092	69	0.40	23
10.8	0.33	-117	2.77	73	0.115	17	0.31	-43
11.2	0.18	155	2.75	20	0.123	-35	0.30	-103
11.6	0.22	50	2.61	-32	0.126	-86	0.24	-140
12.0	0.42	-21	2.36	-85	0.121	-137	0.07	-120
12.4	0.62	-72	1.89	-138	0.102	171	0.27	-64
12.8	0.71	-108	1.40	174	0.078	125	0.50	-88