Internally Matched Power GaAs FETs (C-Band)

Features

- High power
  - P_{1dB} = 36.0 dBm at 3.7 GHz to 4.2 GHz
- High gain
  - G_{1dB} = 10.5 dB at 3.7 GHz to 4.2 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} = 10V f = 3.7 ~ 4.2 GHz	dBm	35.0	36.0	–
Power Gain at 1dB Compression Point	G_{1dB}		dB	9.5	10.5	–
Drain Current	I_{DS}		A	–	1.1	1.5
Power Added Efficiency	η_{add}		%	–	33	–
Channel-Temperature Rise	ΔT_{ch}	V_{DS}xI_{DS}xR_{th}(c-c)	°C	–	–	80

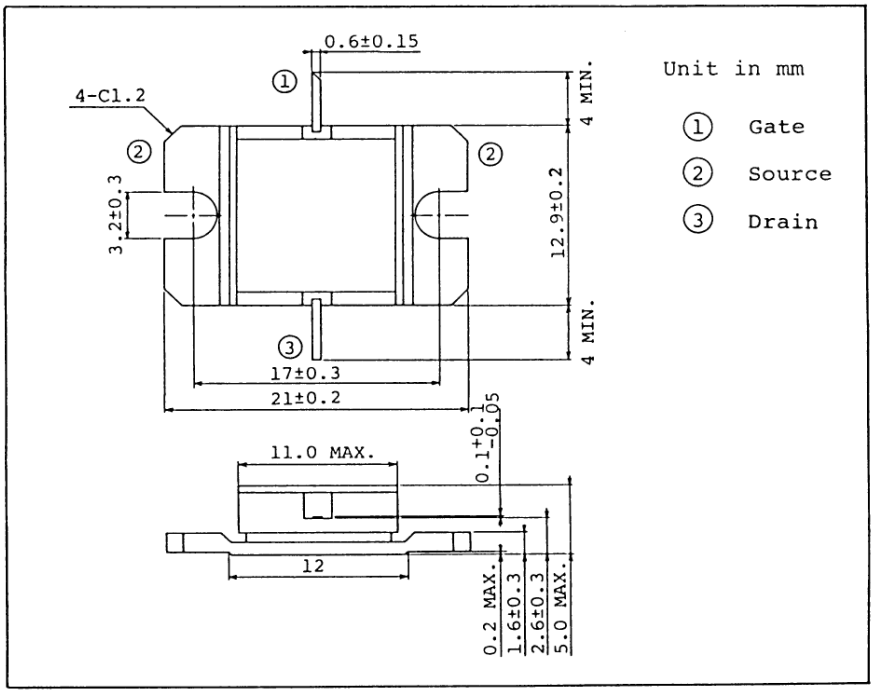
Electrical Characteristics (T_a = 25° C)

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Trans-conductance	gm	V_{DS} = 3V I_{DS} = 1.5 A	mS	–	900	–
Pinch-off Voltage	V_{GSoff}	V_{DS} = 3V I_{DS} = 20mA	V	-2	-3.5	-5
Saturated Drain Current	I_{DSS}	V_{DS} = 3V V_{GS} = 0V	A	–	2.9	3.8
Gate to Source Breakdown Voltage	V_{GSO}	I_{GS} = -60 μA	V	-5	–	–
Thermal Resistance	$R_{th\ (c-c)}$	Channel to case	°C/W	–	4.0	6.0

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	4
Total Power Dissipation (Tc = 25°C)	P_T	W	20
Channel Temperature	T_{ch}	˚C	175
Storage Temperature	T_{stg}	˚C	-65~175

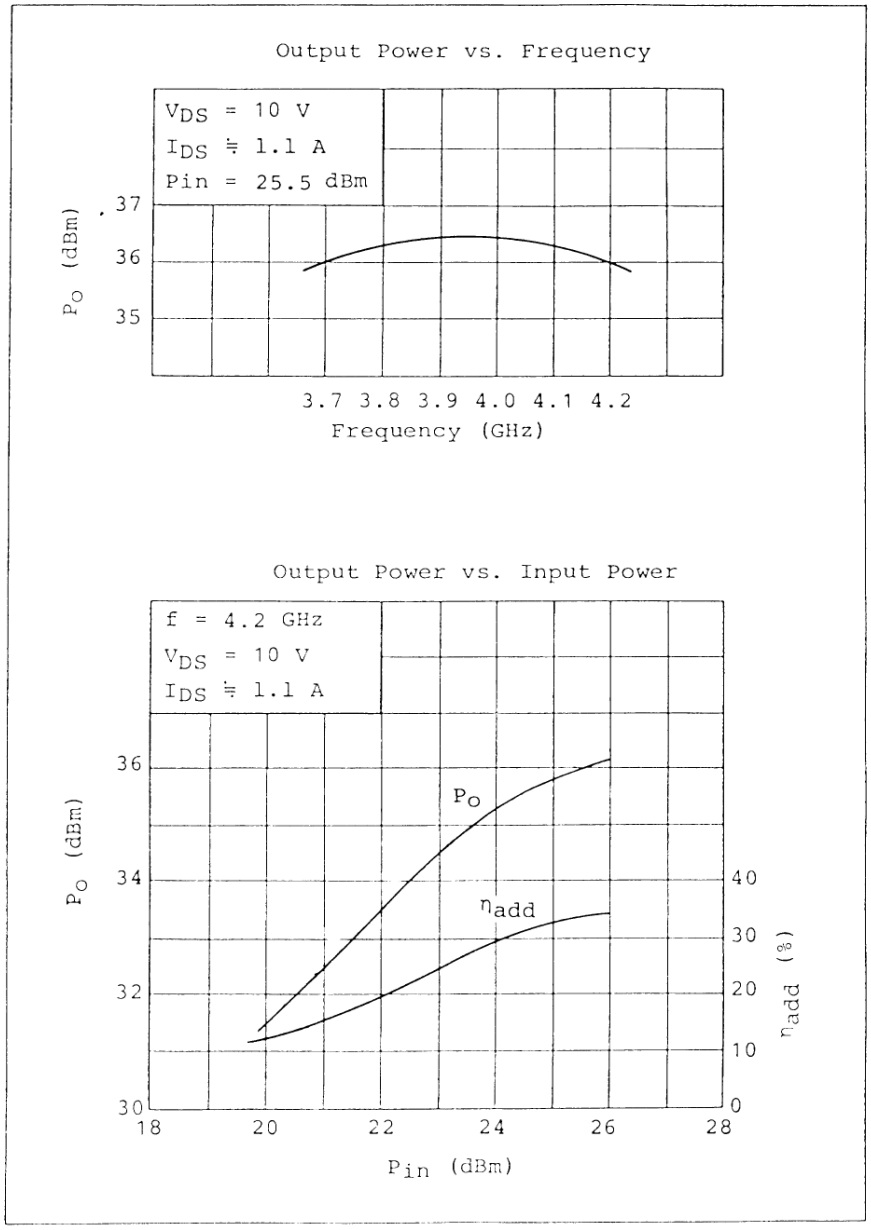
Package Outline (2-11D1B)



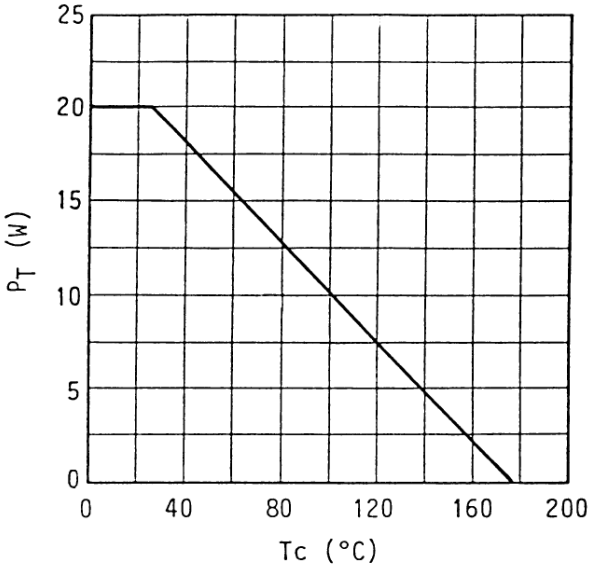
Handling Precautions for Packaged Type

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

RF Performances

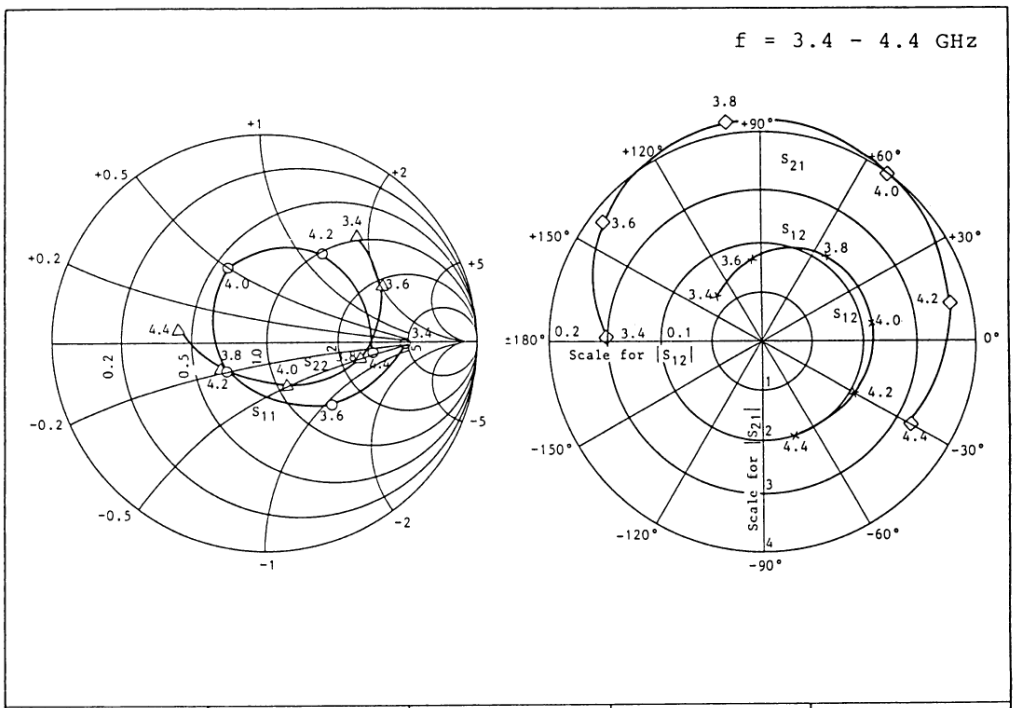


Power Dissipation vs. Case Temperature



TPM3742-4 S-Parameters
(MAGN. and ANGLES)

V_{DS} = 10 V, I_{DS} = 1.0 A



FREQUENCY (GHz)	S_{11}		S_{12}		S_{21}		S_{22}	
3.4	0.66	0	0.063	130	2.98	178	0.68	50
3.6	0.43	-44	0.087	96	3.77	143	0.63	26
3.8	0.22	-147	0.107	53	4.28	99	0.46	-10
4.0	0.40	114	0.110	9	4.12	54	0.23	-66
4.2	0.52	58	0.104	-30	3.67	13	0.24	-151
4.4	0.51	-5	0.095	-70	3.18	-29	0.41	170