Internally Matched Power GaAs FETs (C-Band)

Features

- High power
  - P_{1dB} = 39.0 dBm at 3.7 GHz to 4.2 GHz
- High gain
  - G_{1dB} = 10.0 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	38.0	39.0	–
Power Gain at 1dB Compression Point	G_{1dB}		dB	9.0	10.0	–
Drain Current	I_{DS}		A	–	2.2	2.8
Power Added Efficiency	η_{add}		%	–	32	–
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} = 3.0 A	mS	–	1800	–
Pinch-off Voltage	V_{GSoff}	V_{DS} = 3V I_{DS} = 40mA	V	-2	-3.5	-5
Saturated Drain Current	I_{DSS}	V_{DS} = 3V V_{GS} = 0V	A	–	5.8	7.5
Gate to Source Breakdown Voltage	V_{GSO}	I_{GS} = -120 μA	V	-5	–	–
Thermal Resistance	$R_{th\ (c-c)}$	Channel to case	°C/W	–	2.3	3.5

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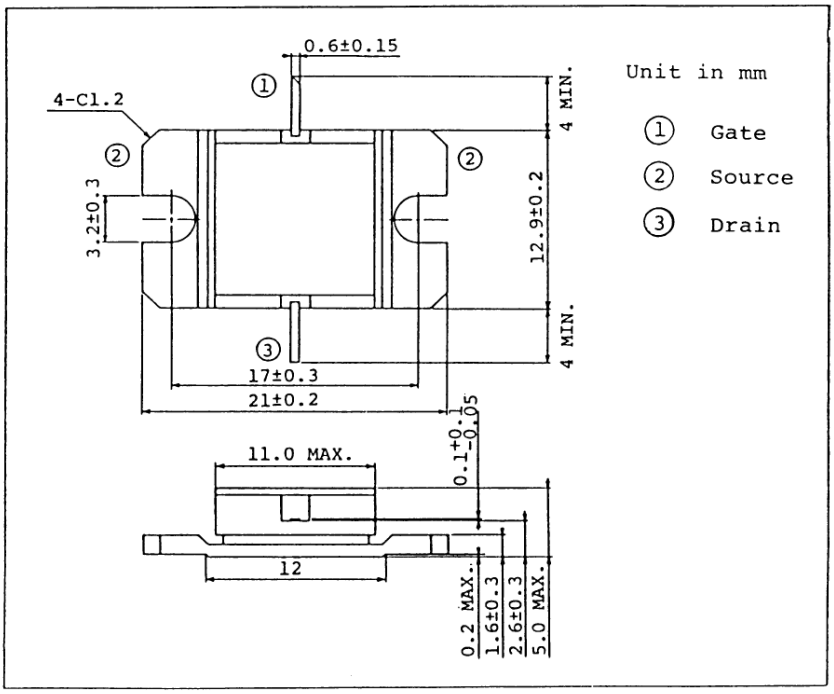
Absolute Maximum Ratings (T_a = 25° C)

Characteristic	Symbol	Unit	Rating
Drain Source Voltage	V_{DS}	V	15
Gate Source Voltage	V_{GS}	V	-5
Drain Current	I_D	A	8
Total Power Dissipation (Tc = 25°C)	P_T	W	37.5
Channel Temperature	T_{ch}	˚C	175
Storage Temperature	T_{stg}	˚C	-65~175

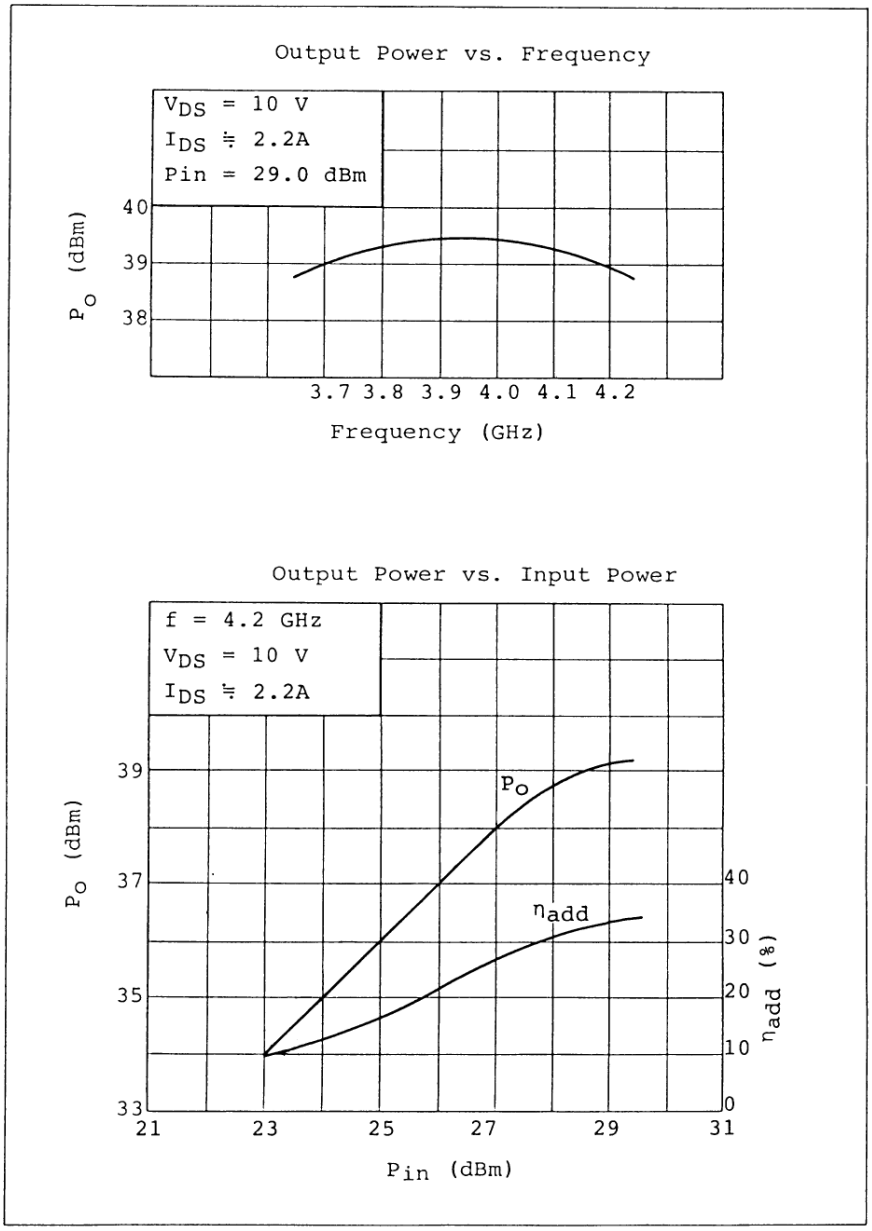
Package Outline (2-11D1B)



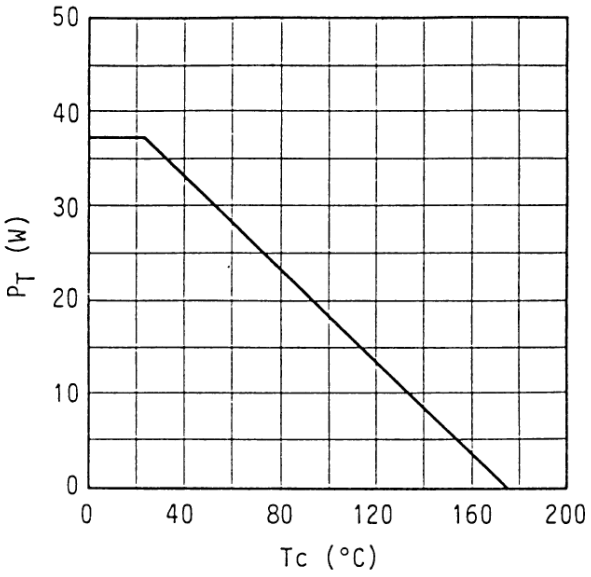
Handling Precautions for Packaged Type

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

RF Performances

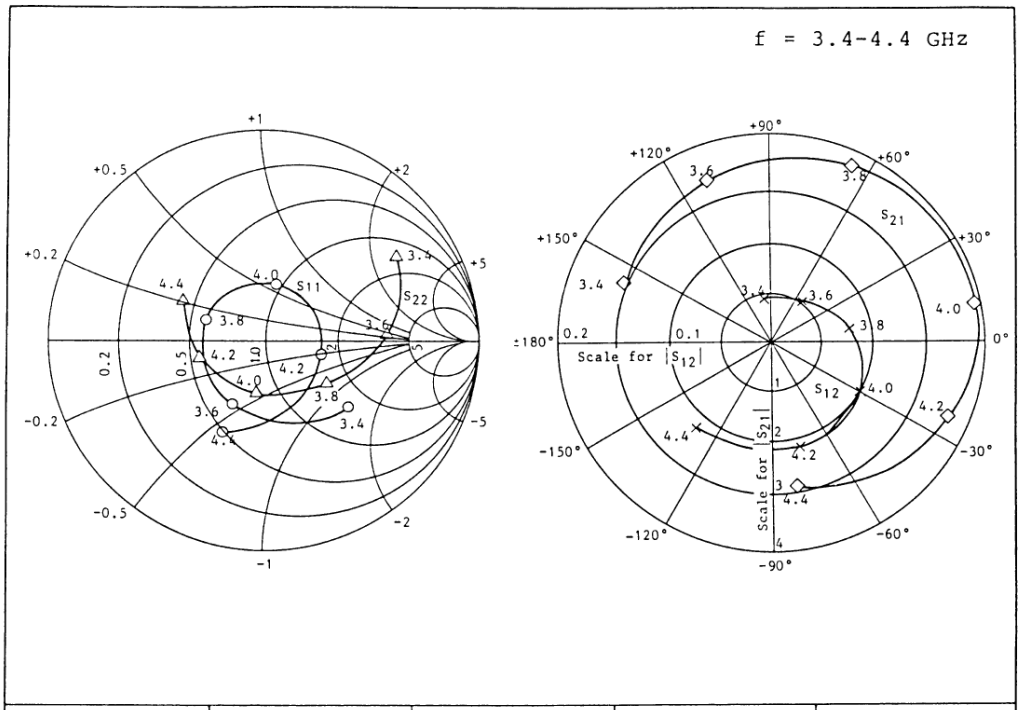


Power Dissipation vs. Case Temperature



TPM3742-8 S-Parameters
(MAGN. and ANGLES)

V_{DS} = 10 V, I_{DS} = 2.0 A



FREQUENCY (GHz)	S11		S12		S21		S22	
3.4	0.50	-38	0.043	101	2.99	157	0.74	33
3.6	0.33	-115	0.052	55	3.37	111	0.59	3
3.8	0.28	157	0.076	11	3.74	65	0.36	-33
4.0	0.28	78	0.100	-31	3.94	23	0.24	-97
4.2	0.28	-12	0.107	-76	3.63	-24	0.30	-164
4.4	0.47	-113	0.111	-132	2.87	-81	0.41	152