High Power GaAs FETs (L, S-Band)

Features

- High power
  - P_{1dB} = 42.0 dBm at 2.3 GHz
- High gain
  - G_{1dB} = 12.0 dB at 2.3 GHz
- Partially matched type
- 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 = 2.3 GHz	dBm	41.0	42.0	–
Power Gain at 1dB Compression Point	G_{1dB}		dB	11.0	12.0	–
Drain Current	I_{DS}		A	–	4.0	5.0
Power Added Efficiency	N_{add}		%	–	37	–
Channel-Temperature Rise	ΔT_{ch}	NOTE 1	°C	–	–	80

Electrical Characteristics (T_a = 25° C)

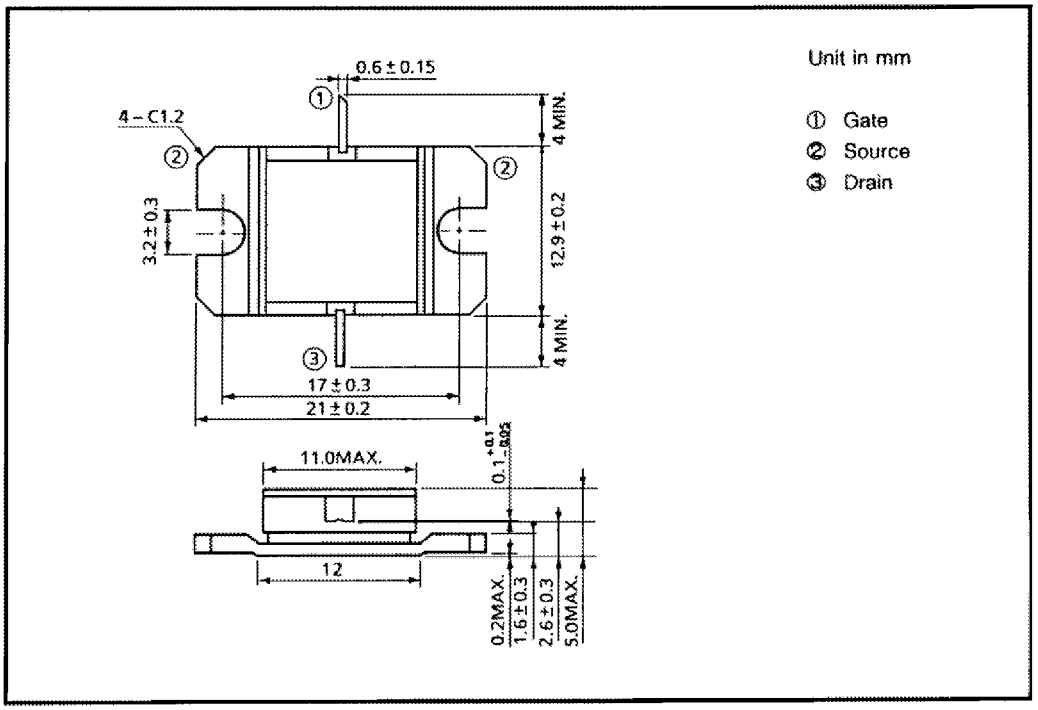
Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Trans-conductance	gm	V_{DS}=3V I_{DS}=3.5A	mS	–	3200	–
Pinch-off Voltage	V_{GSoff}	V_{DS}=3V I_{DS}=70mA	V	-1.0	-3.0	-4.0
Saturated Drain Current	I_{DSS}	V_{DS}=3V V_{GS}=0V	A	–	10	13
Gate to Source Breakdown Voltage	V_{GSO}	I_{GS}=-210 μA	V	-5	–	–
Thermal Resistance	$R_{th\ (c\text{-}c)}$	Channel to case	°C/W	–	1.9	2.5

NOTE 1: $\Delta Tch = (V_{DS} \times I_{DS} + Pin - P_{1dB}) \times R_{th(c\text{-}c)}$

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	13
Total Power Dissipation (Tc = 25°C)	P_T	W	60
Channel Temperature	T_{ch}	°C	175
Storage Temperature	T_{stg}	°C	-65~175

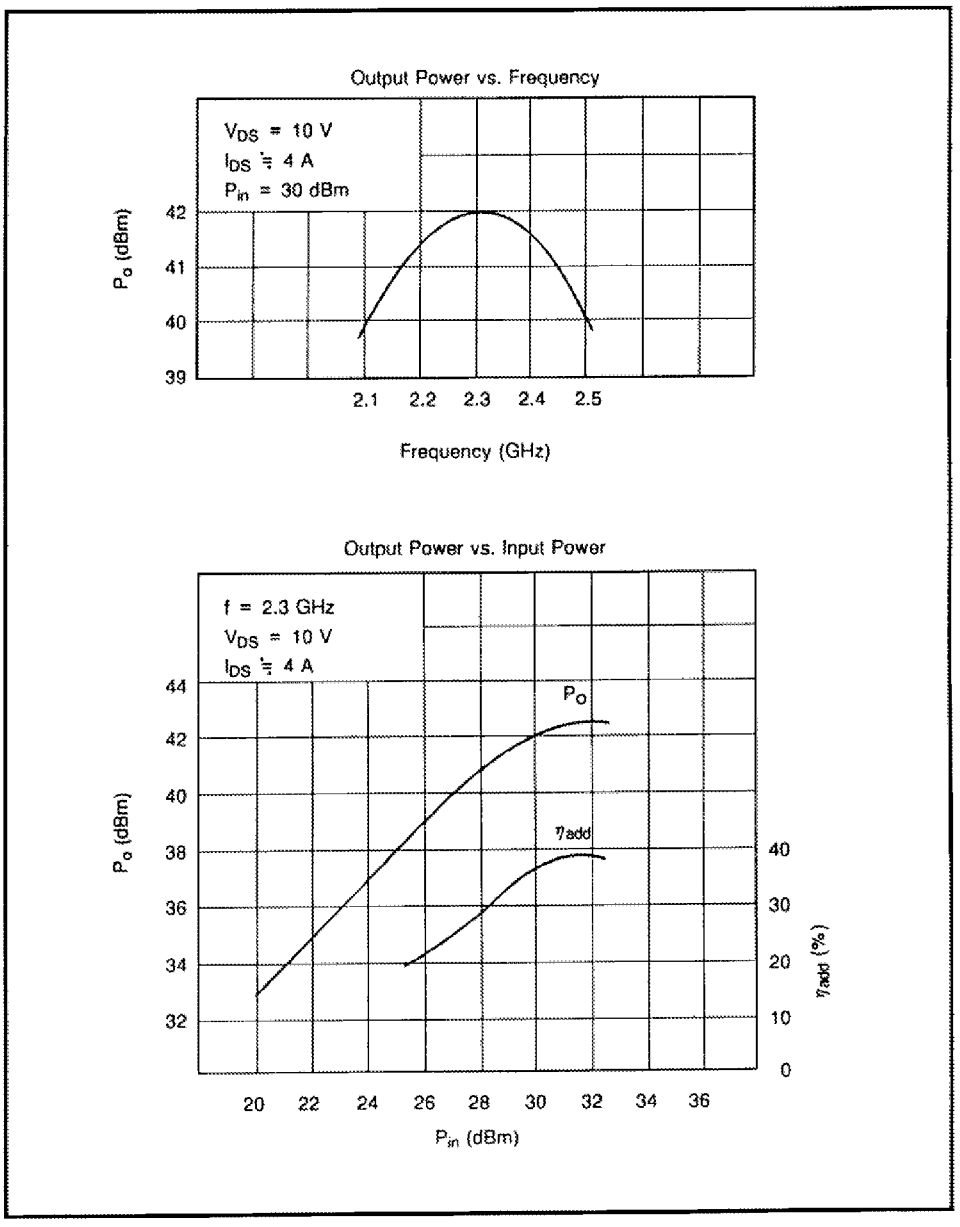
Package Outline (2-11D1B)



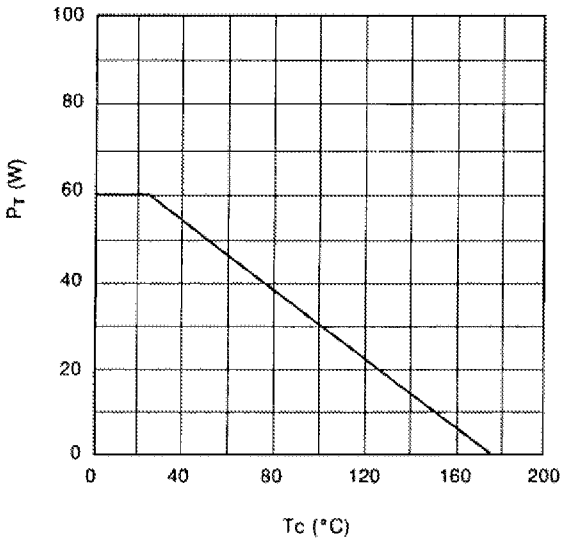
Handling Precautions for Packaged Type

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

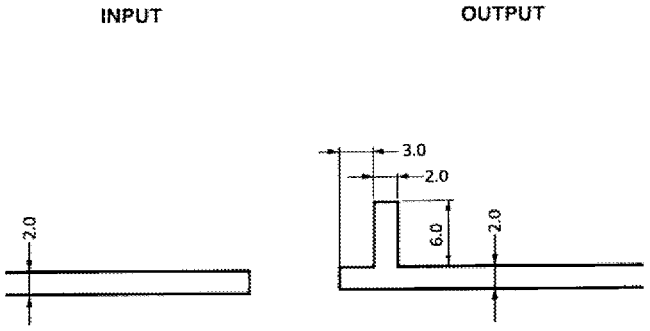
RF Performances



Power Dissipation vs. Case Temperature

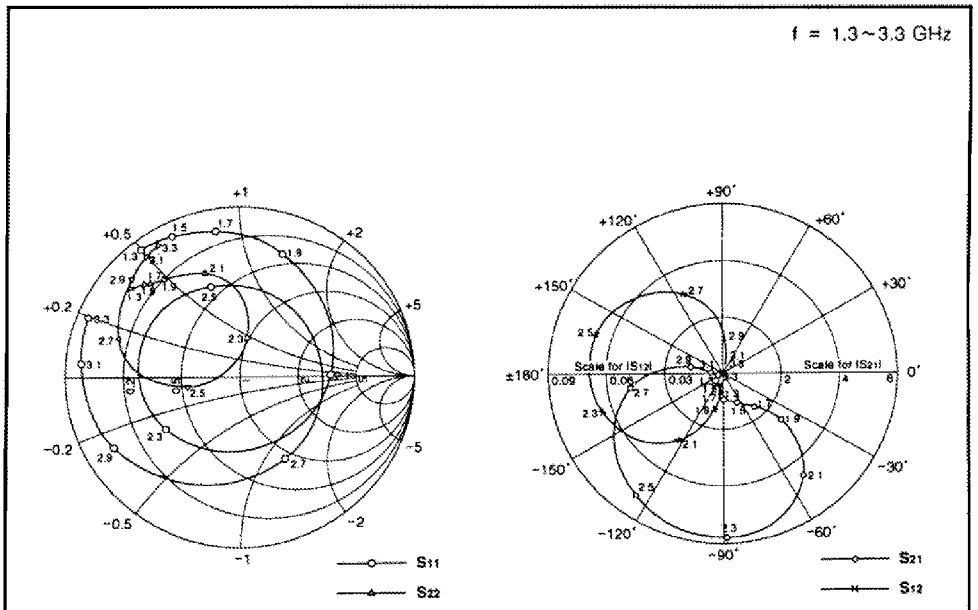


Drawing of Matching Network



TPM2323-14 S-Parameters (MAGN. and ANGLES)

V_{DS} = 10 V, I_{DS} = 4 A



FREQ. (GHz)	S_{11} MAG	S_{11} ANG.	S_{21} MAG	S_{21} ANG.	S_{12} MAG	S_{12} ANG.	S_{22} MAG	S_{22} ANG.
1.30	0.94	127	0.93	− 89	0.006	− 114	0.81	140
1.50	0.91	115	1.14	− 66	0.007	− 101	0.78	136
1.70	0.87	99	1.60	− 48	0.100	− 97	0.75	133
1.90	0.76	71	2.59	− 40	0.020	− 103	0.72	127
2.10	0.52	1	4.56	− 53	0.043	− 123	0.64	108
2.30	0.53	− 144	5.80	− 89	0.066	− 162	0.23	80
2.50	0.56	107	5.24	− 125	0.069	162	0.30	− 169
2.70	0.55	− 62	3.22	− 171	0.047	115	0.73	162
2.90	0.83	− 150	1.12	168	0.018	86	0.85	137
3.10	0.91	175	0.41	176	0.008	77	0.87	127
3.30	0.94	158	0.18	− 162	0.005	76	0.89	121