Internally Matched Power GaAs FETs (C-Band)

Features

- High power
  - P_{1dB} = 42.5 dBm at 3.7 GHz to 4.2 GHz
- High gain
  - G_{1dB} = 9.5 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	41.5	42.5	–
Power Gain at 1dB Compression Point	G_{1dB}		dB	8.5	9.5	–
Drain Current	I_{DS}		A	–	4.8	5.5
Power Added Efficiency	η_{add}		%	–	33	–
Channel-Temperature Rise	ΔT_{ch}	V_{DS}xI_{DS}xR_{th}(c-c)	°C	–	–	80

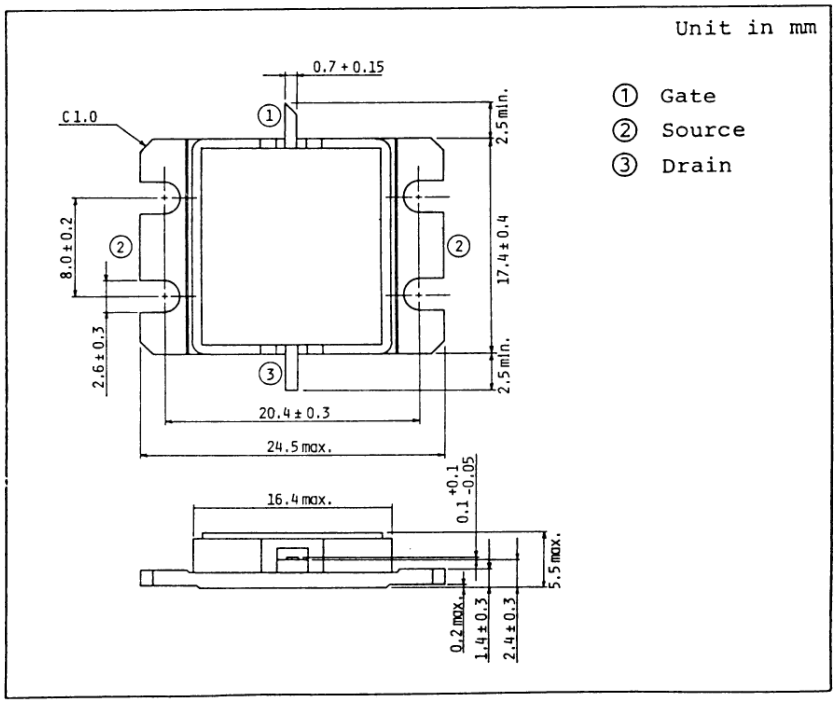
Electrical Characteristics (T_a = 25° C)

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Trans-conductance	gm	V_{DS} = 3V I_{DS} = 6.0 A	mS	–	3600	–
Pinch-off Voltage	V_{GSoff}	V_{DS} = 3V I_{DS} = 80mA	V	-2	-3.5	-5
Saturated Drain Current	I_{DSS}	V_{DS} = 3V V_{GS} = 0V	A	–	11.6	15.0
Gate to Source Breakdown Voltage	V_{GSO}	I_{GS} = -240 μA	V	-5	–	–
Thermal Resistance	$R_{th\ (c-c)}$	Channel to case	°C/W	–	1.4	1.8

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	16
Total Power Dissipation (Tc = 25°C)	P_T	W	70
Channel Temperature	T_{ch}	˚C	175
Storage Temperature	T_{stg}	˚C	-65~175

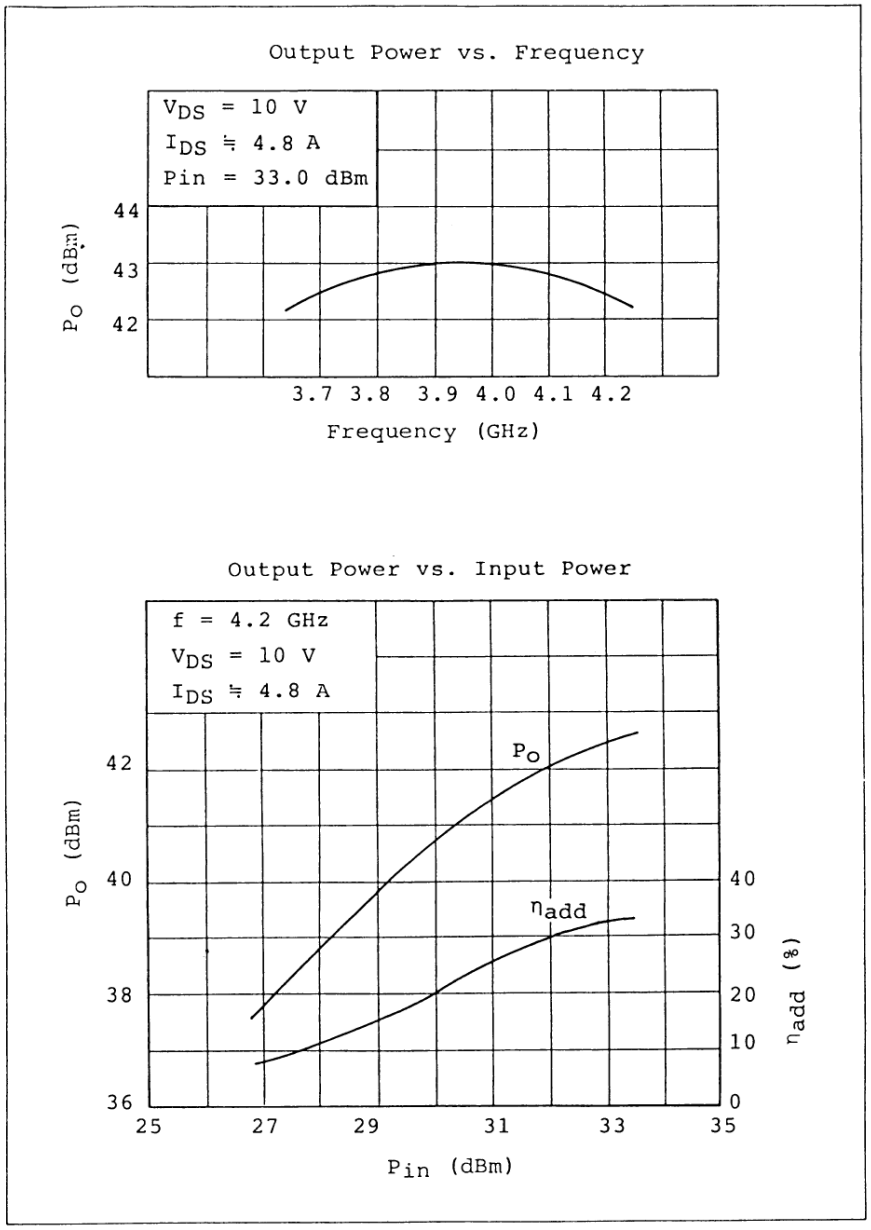
Package Outline (2-16G1B)



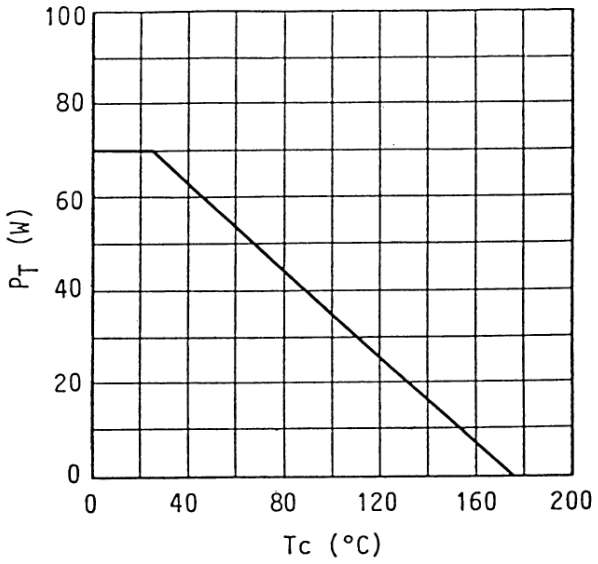
Handling Precautions for Packaged Type

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

RF Performances

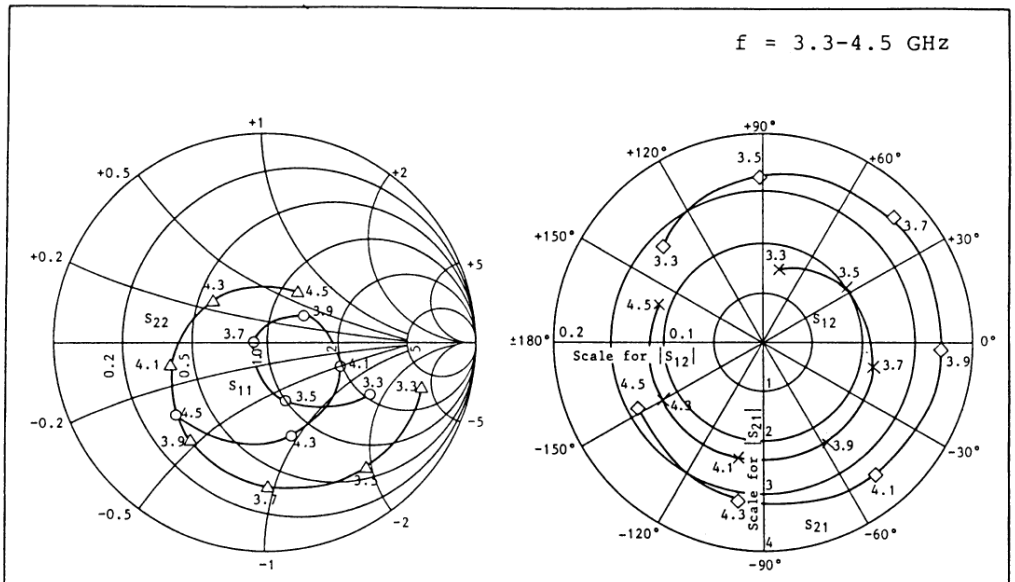


Power Dissipation vs. Case Temperature



TPM3742-16 S-Parameters
(MAGN. and ANGLES)

V_{DS} = 10 V, I_{DS} = 4.0 A



FREQUENCY (GHz)	S11		S12		S21		S22	
3.3	0.56	-27	0.077	78	2.73	136	0.77	-17
3.5	0.30	-73	0.098	34	3.24	91	0.77	-52
3.7	0.05	175	0.111	-13	3.47	43	0.70	-89
3.9	0.22	38	0.118	-58	3.46	-4	0.59	-126
4.1	0.37	-16	0.119	-104	3.32	-50	0.46	-166
4.3	0.47	-74	0.117	-151	3.14	-99	0.32	140
4.5	0.55	-141	0.108	158	2.78	-152	0.30	59