Internally Matched Power GaAs FETs (C-Band)

Features

- High power
  - P_{1dB} = 42.5 dBm at 7.7 GHz to 8.5 GHz
- High gain
  - G_{1dB} = 5.0 dB at 7.7 GHz to 8.5 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 = 7.7 ~ 8.5 GHz	dBm	41.0	42.0	–
Power Gain at 1dB Compression Point	G_{1dB}		dB	4.0	5.0	–
Drain Current	I_{DS}		A	–	4.5	5.5
Power Added Efficiency	η_{add}		%	–	24	–
Channel-Temperature Rise	ΔT_{ch}	V_{DS}xI_{DS}xR_{th}(c-c)	°C	–	–	80

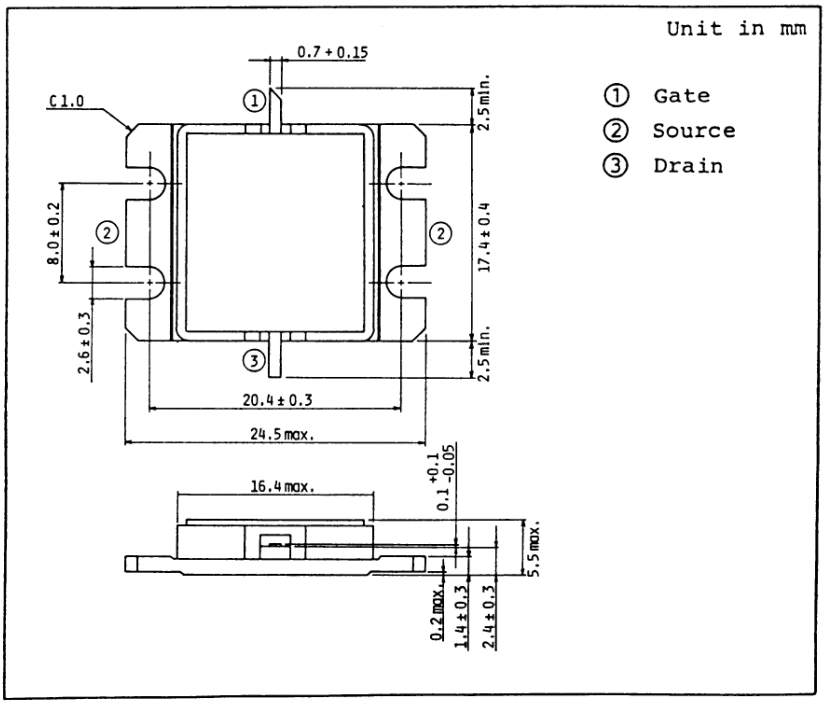
Electrical Characteristics (T_a = 25° C)

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

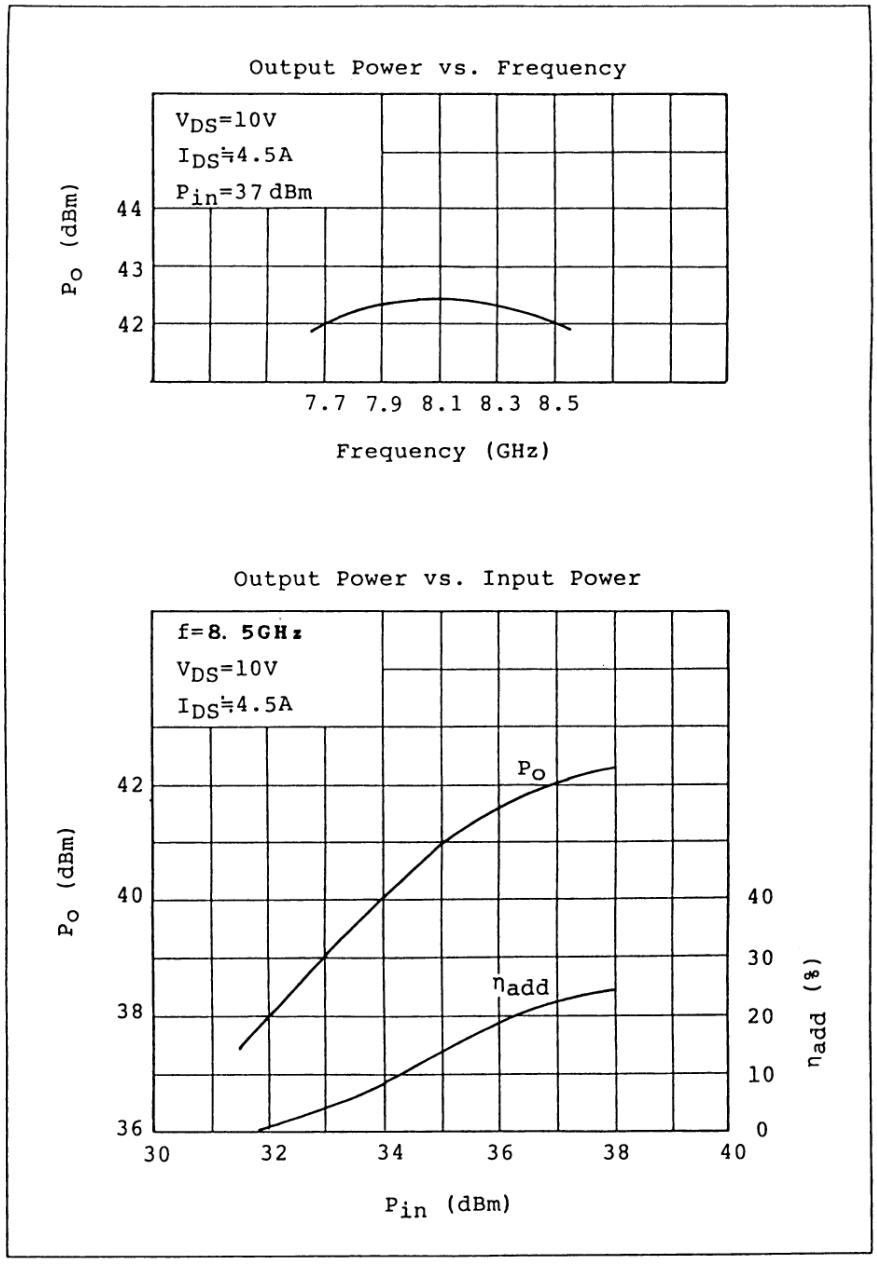
Package Outline (2-16G1B)



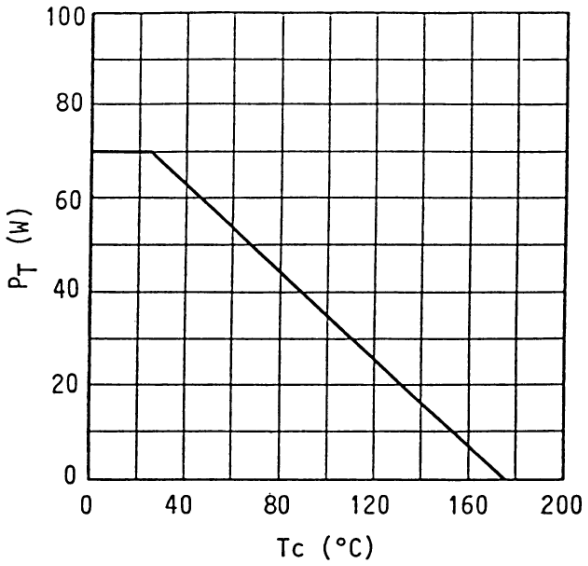
Handling Precautions for Packaged Type

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

RF Performances

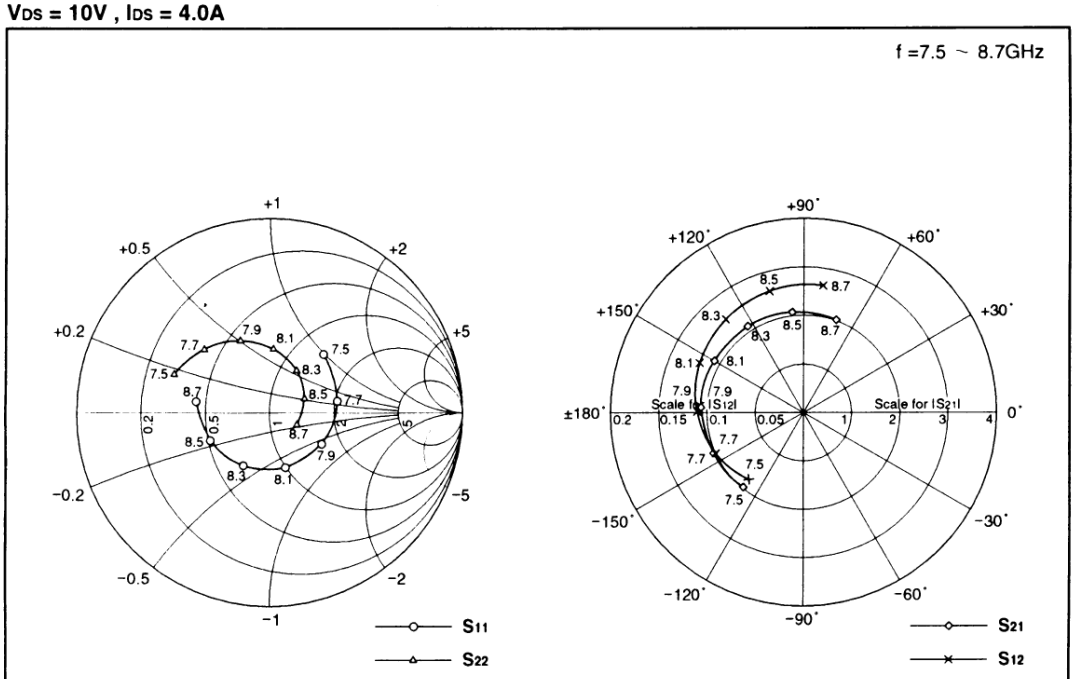


Power Dissipation vs. Case Temperature



TIM7785-16 S-Parameters
(MAGN. and ANGLES)

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



FREQUENCY (GHz)	S_{11}		S_{12}		S_{21}		S_{22}	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
7.50	0.410	47.1	0.089	-129.2	1.975	-128.9	0.533	158.3
7.70	0.356	9.7	0.100	-155.1	2.062	-155.9	0.470	136.3
7.90	0.315	-30.8	0.110	179.5	2.112	177.0	0.400	112.5
8.10	0.295	-73.5	0.119	154.5	2.126	149.9	0.328	86.7
8.30	0.304	-116.2	0.125	130.0	2.113	123.1	0.257	57.1
8.50	0.339	-155.0	0.130	105.8	2.077	96.6	0.195	21.8
8.70	0.389	171.4	0.133	81.6	2.024	70.3	0.155	-23.9