

Internally Matched Power GaAs FETs (C-Band)

Features

- High power
 - $P_{1dB} = 39$ dBm at 4.4 GHz to 5.0 GHz
- High gain
 - $G_{1dB} = 9.5$ dB at 4.4 GHz to 5.0 GHz
- Broad band internally matched
- Hermetically sealed package

RF Performance Specifications ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Condition	Unit	Min.	Typ.	Max
Output Power at 1dB Compression Point	P_{1dB}	$V_{DS} = 10V$ $f = 4.4 \sim 5.0$ GHz	dBm	38.0	39.0	–
Power Gain at 1dB Compression Point	G_{1dB}		dB	8.5	9.5	–
Drain Current	I_{DS}		A	–	2.2	2.8
Power Added Efficiency	η_{add}		%	–	32	–
Channel-Temperature Rise	ΔT_{ch}	$V_{DS} \times I_{DS} \times R_{th}(c-c)$	$^\circ\text{C}$	–	–	80

Electrical Characteristics ($T_a = 25^\circ\text{C}$)

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}	$V_{DS} = 3V$ $I_{DS} = 40$ mA	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	$^\circ\text{C/W}$	–	2.3	3.5

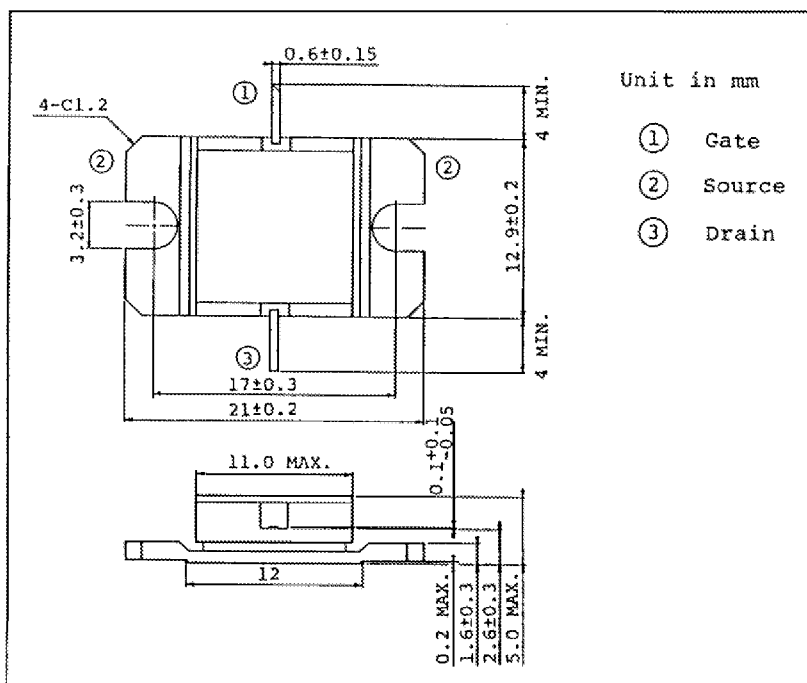
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Absolute Maximum Ratings (T_a = 25° C)

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 (T _c = 25°C)	P _T	W	37.5
Channel Temperature	T _{ch}	°C	175
Storage Temperature	T _{stg}	°C	-65~175

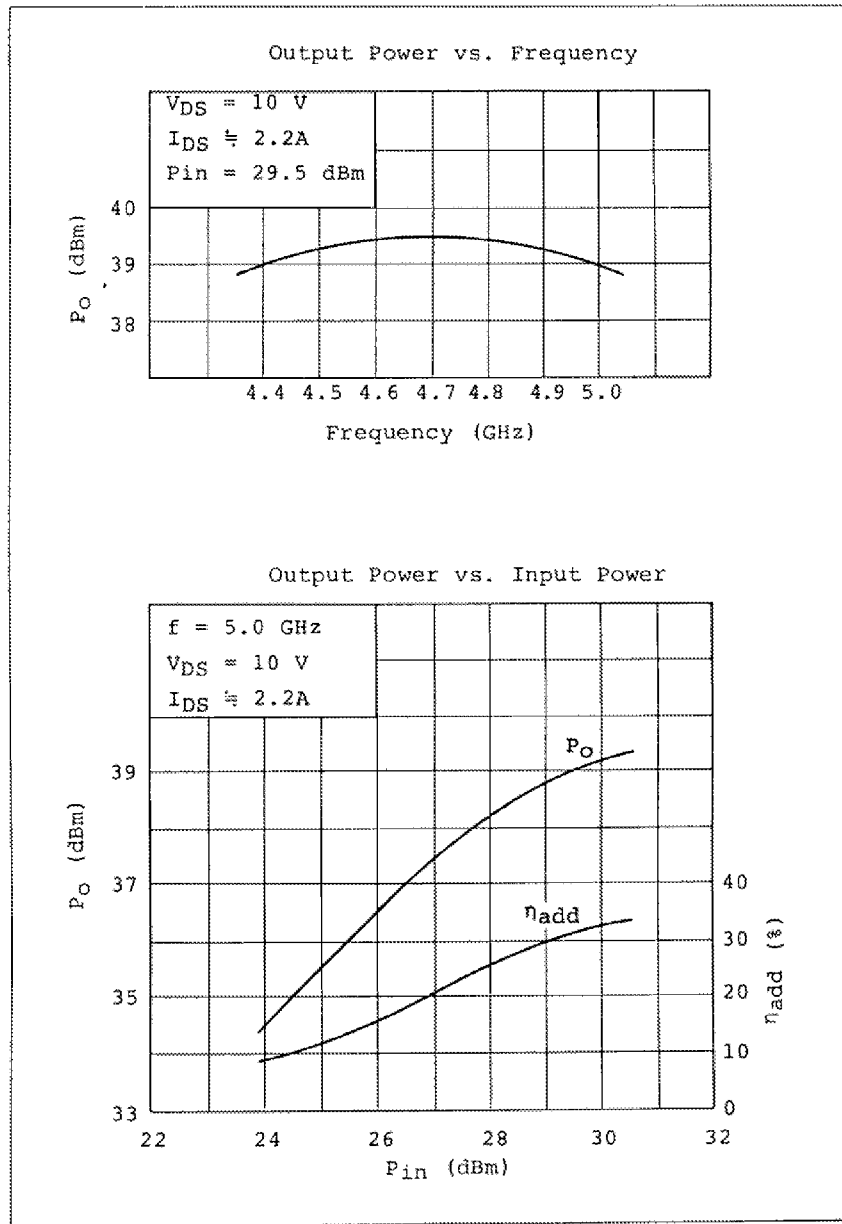
Package Outline (2-11D1B)



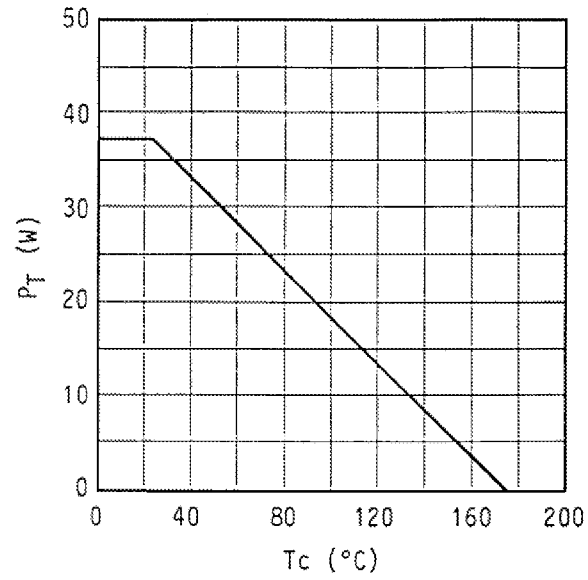
Handling Precautions for Packaged Type

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

RF Performances

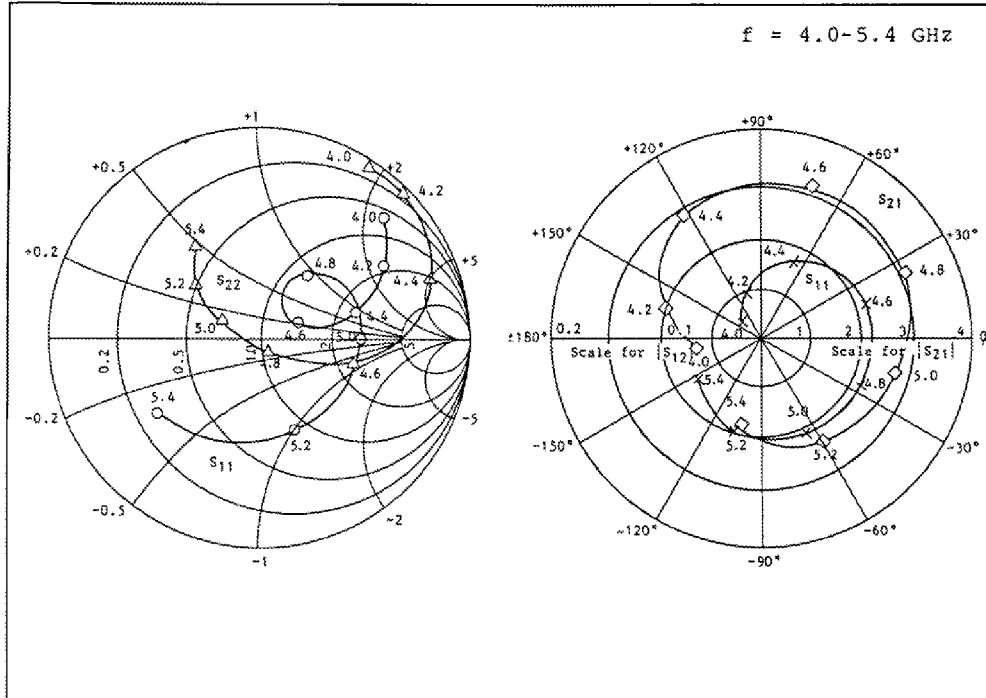


Power Dissipation vs. Case Temperature



TPM4450-8 S-Parameters
(MAGN. and ANGLES)

$V_{DS} = 10 \text{ V}, I_{DS} = 2.0 \text{ A}$



FREQUENCY (GHz)	S ₁₁		S ₁₂		S ₂₁		S ₂₂	
4.0	0.83	44	0.028	136	1.34	-172	0.97	57
4.2	0.69	30	0.048	108	1.95	162	0.98	44
4.4	0.48	16	0.080	68	2.85	122	0.87	19
4.6	0.20	23	0.105	18	3.33	71	0.47	-15
4.8	0.38	53	0.105	-27	3.03	24	0.07	-58
5.0	0.48	0	0.102	-66	2.68	-16	0.19	154
5.2	0.48	-68	0.095	-107	2.39	-59	0.39	139
5.4	0.60	-143	0.074	-149	1.80	-103	0.53	124