

Internally Matched Power GaAs FETs (C-Band)

Features

- High power
 - $P_{1dB} = 42.5$ dBm at 4.4 GHz to 5.0 GHz
- High gain
 - $G_{1dB} = 9.0$ 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	41.5	42.5	–
Power Gain at 1dB Compression Point	G_{1dB}		dB	8.0	9.0	–
Drain Current	I_{DS}		A	–	4.8	5.5
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	$V_{DS} = 3V$ $I_{DS} = 6.0$ A	mS	–	3600	–
Pinch-off Voltage	V_{GSoff}	$V_{DS} = 3V$ $I_{DS} = 80$ mA	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	$^\circ\text{C/W}$	–	1.4	1.8

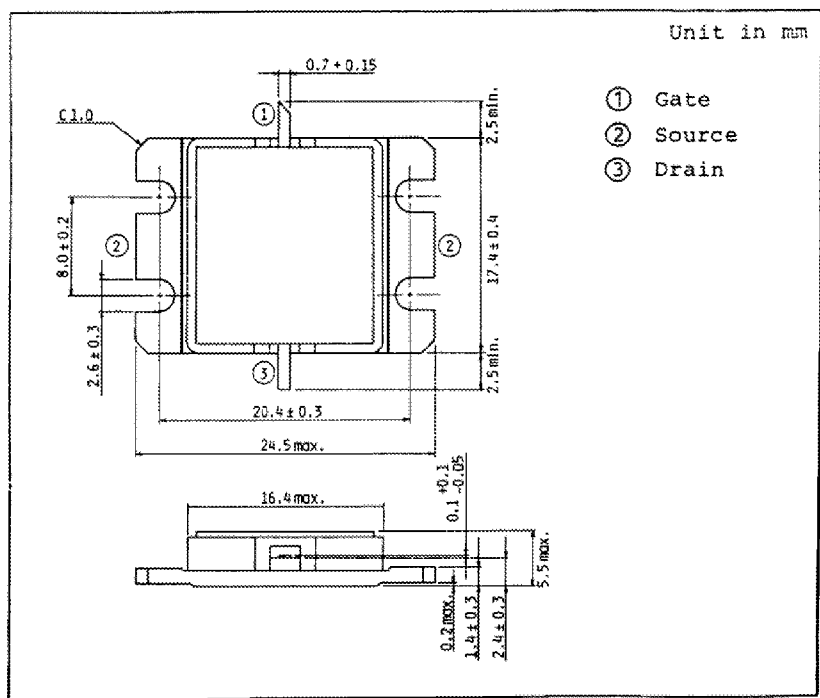
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Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

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 ($T_c = 25^\circ\text{C}$)	P_T	W	70
Channel Temperature	T_{ch}	$^\circ\text{C}$	175
Storage Temperature	T_{stg}	$^\circ\text{C}$	-65~175

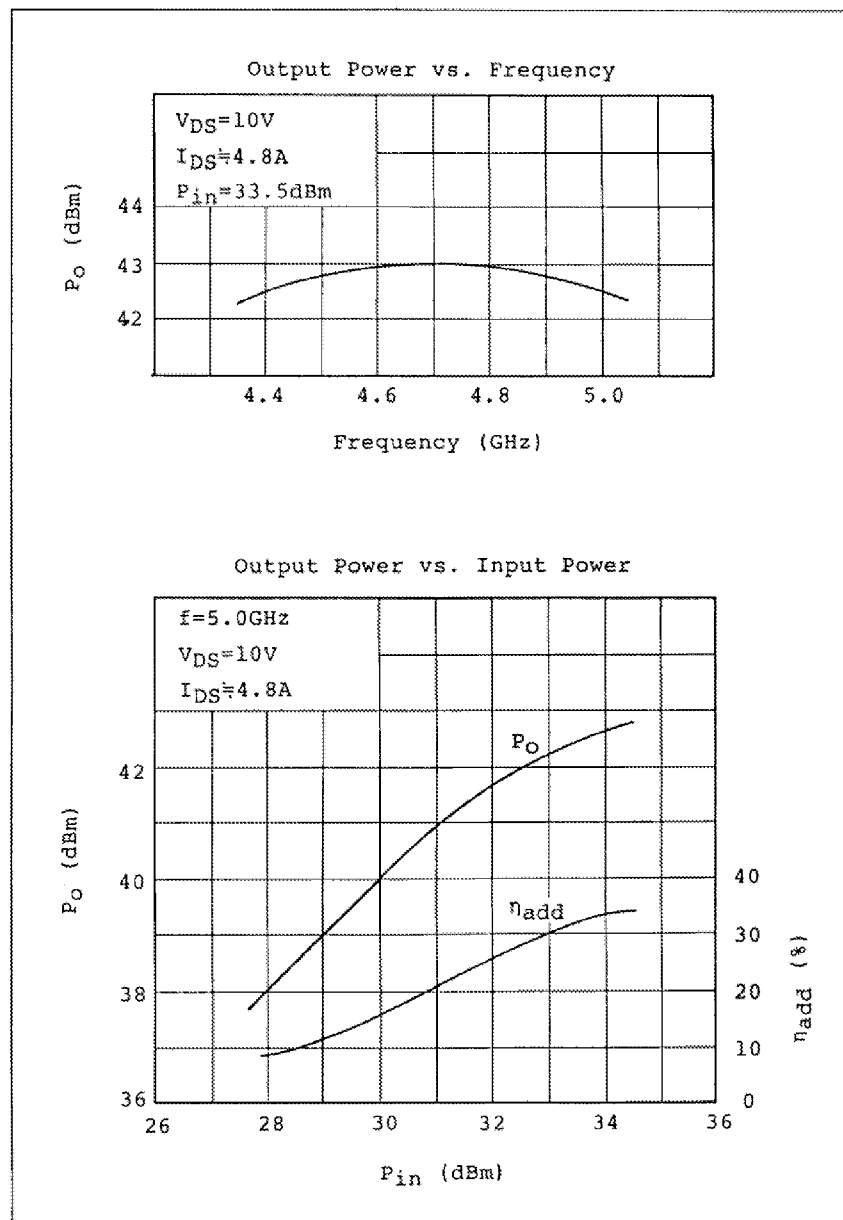
Package Outline (2-16G1B)



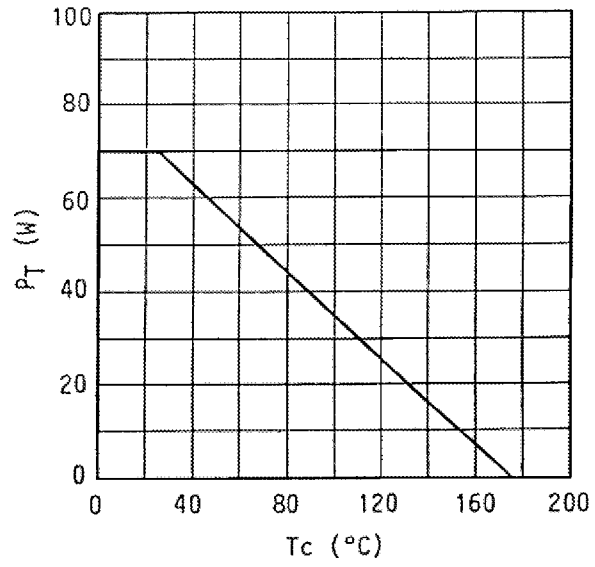
Handling Precautions for Packaged Type

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

RF Performances

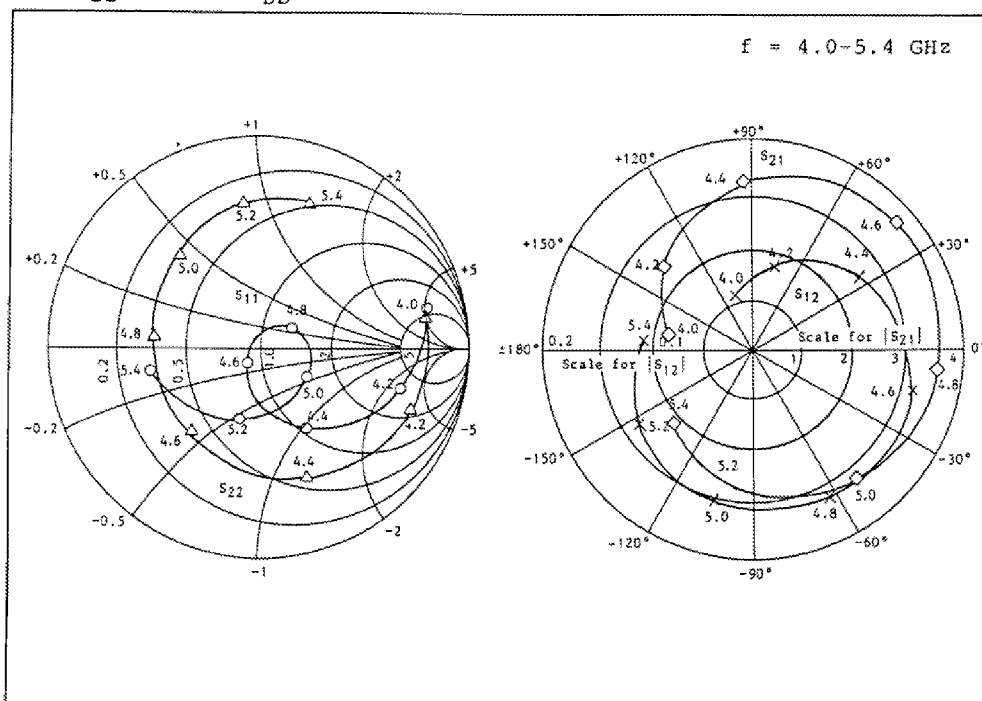


Power Dissipation vs. Case Temperature



TPM4450-16 S-Parameters
(MAGN. and ANGLES)

$V_{DS} = 10 \text{ V}, I_{DS} = 4.0 \text{ A}$



FREQUENCY (GHz)	S ₁₁		S ₁₂		S ₂₁		S ₂₂	
4.0	0.83	13	0.058	109	1.66	168	0.81	11
4.2	0.70	-17	0.087	76	2.35	135	0.78	-21
4.4	0.45	-59	0.127	34	3.21	92	0.66	-69
4.6	0.09	-126	0.157	-14	3.71	41	0.51	-128
4.8	0.18	33	0.160	-62	3.57	-7	0.49	174
5.0	0.27	-32	0.150	-106	3.23	-51	0.57	129
5.2	0.36	-106	0.133	-147	2.74	-95	0.68	96
5.4	0.52	-168	0.108	173	2.12	-136	0.73	70