Internally Matched Power GaAs FETs (X, Ku-Band)

Features

- High power
  - P_{1dB} = 33.5 dBm at 14.0 GHz to 14.5 GHz
- High gain
  - G_{1dB} = 6.5 dB at 14.0 GHz to 14.5 GHz
- Broadband internally matched
- Hermetically sealed package

RF Performance Specifications (T_a = 25°C)

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Output Power at 1dB Compression Point	P_{1dB}	V_{DS} = 9V f = 14.0 - 14.5 GHz	dBm	32.5	33.5	–
Power Gain at 1dB Compression Point	G_{1dB}		dB	5.5	6.5	–
Drain Current	I_{DS}		A	–	0.85	1.1
Power Added Efficiency	η_{add}		%	–	23	–
Channel-Temperature Rise	ΔT_{ch}	V_{DS} x I_{DS} x $R_{th\ (c-c)}$	°C	–	–	60

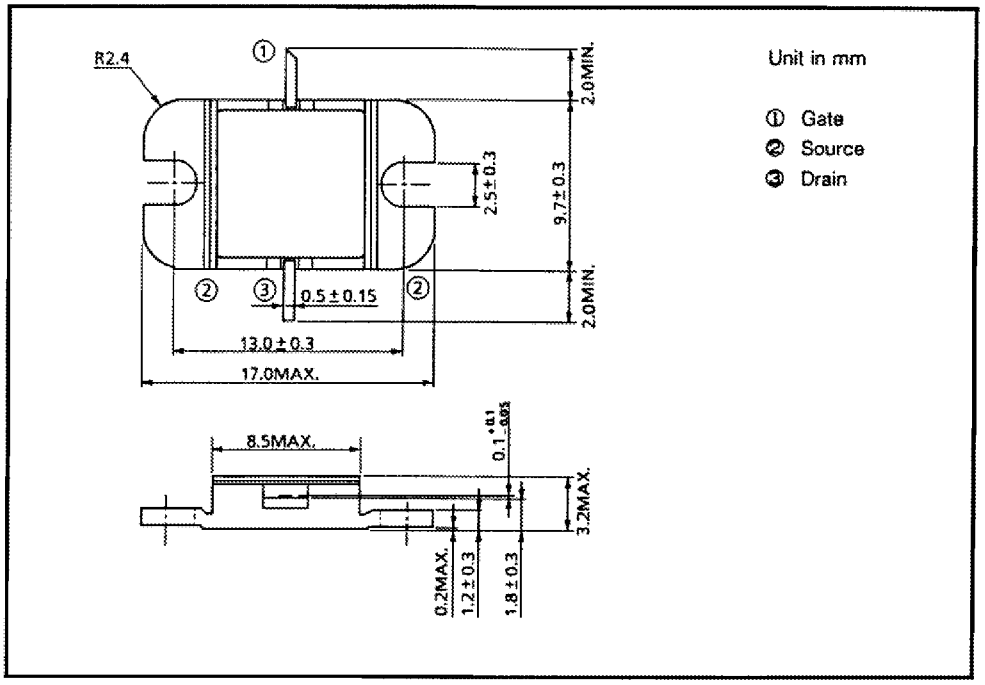
Electrical Characteristics (T_a = 25°C)

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max.
Transconductance	gm	V_{DS} = 3V I_{DS} = 1.0A	mS	–	600	–
Pinch-off Voltage	V_{GSoff}	V_{DS} = 3V I_{DS} = 30 mA	V	-2	-3.5	-5
Saturated Drain Current	I_{DSS}	V_{DS} = 3V V_{GS} = 0V	A	–	2.0	2.6
Gate-Source Breakdown Voltage	V_{GSO}	I_{GS} = -30 μA	V	-5	–	–
Thermal Resistance	$R_{th\ (c-c)}$	Channel to Case	°C/W	–	5	6

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	2.6
Total Power Dissipation (T_c = 25°C)	P_T	W	15
Channel Temperature	T_{ch}	°C	175
Storage Temperature	T_{stg}	°C	-65 ~ 175

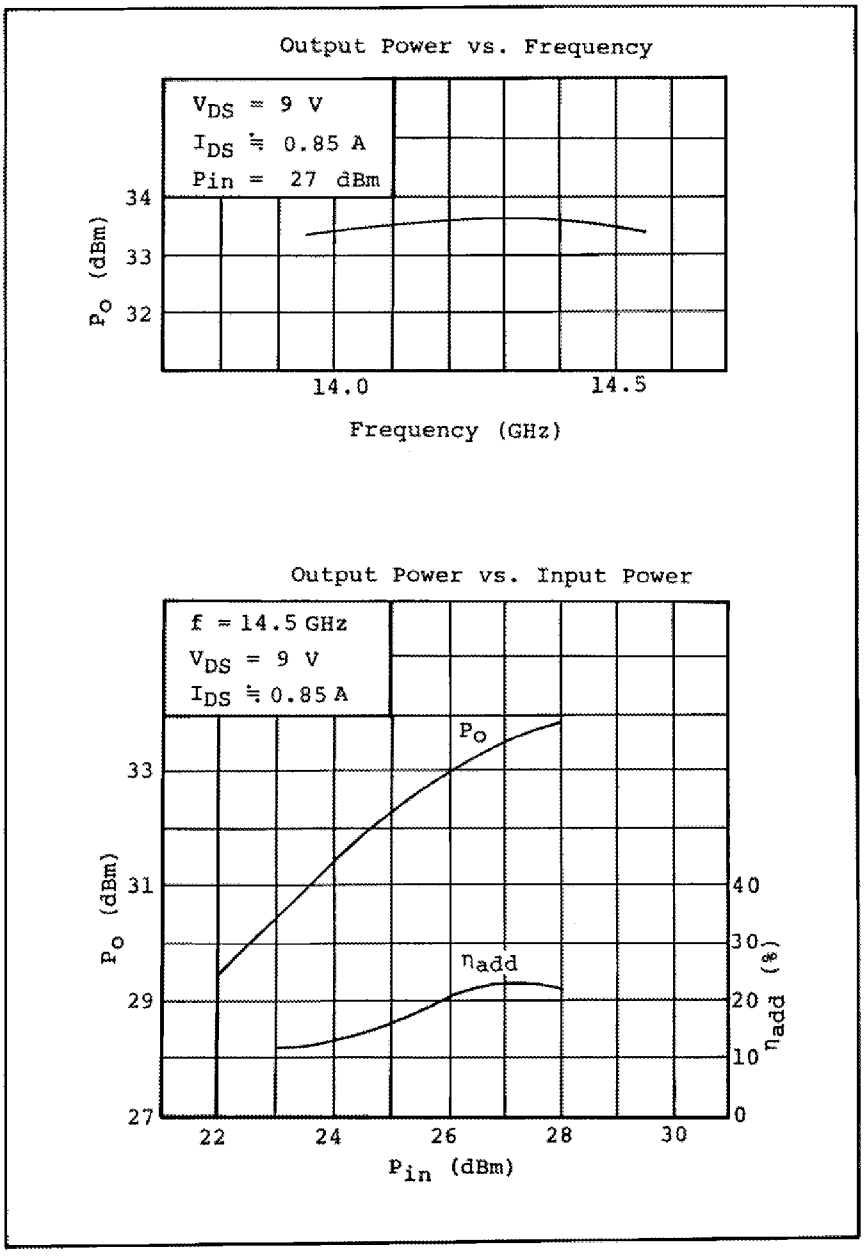
Package Outline (2-9D1B)



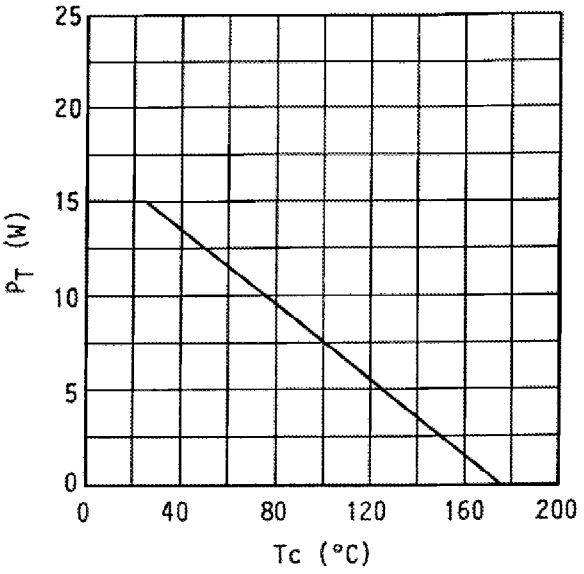
Handling Precautions for Packaged Type

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

RF Performances

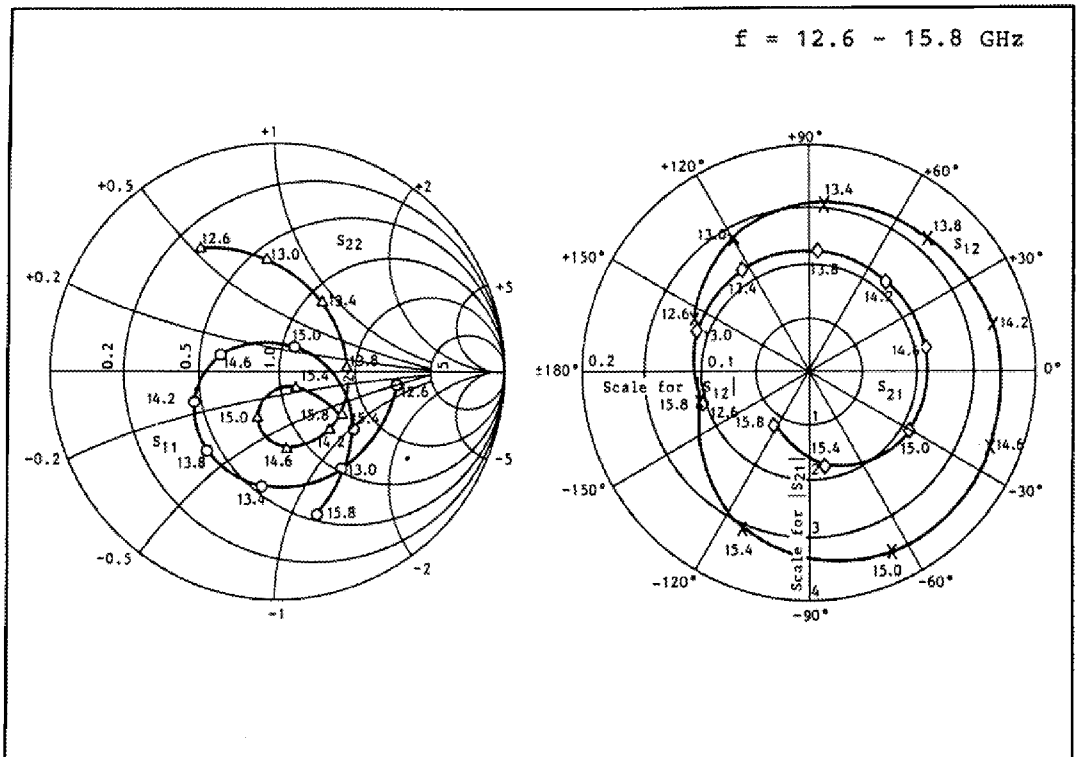


Power Dissipation vs. Case Temperature



TIM1414-2 S-Parameters (Magn. and Angles)

V_{DS} = 9 V, I_{DS} = 1.0 A



FREQUENCY (GHz)	S_{11}		S_{12}		S_{21}		S_{22}	
12.6	0.53	-7	0.117	156	2.06	-163	0.65	123
13.0	0.53	-57	0.140	120	2.17	160	0.50	96
13.4	0.52	-97	0.153	86	2.21	124	0.37	58
13.8	0.48	-131	0.163	50	2.21	87	0.31	2
14.2	0.40	-159	0.171	15	2.18	50	0.35	-47
14.6	0.26	167	0.176	-23	2.16	12	0.35	-83
15.0	0.13	54	0.178	-65	2.11	-33	0.23	-112
15.4	0.43	-37	0.155	-114	1.76	-82	0.11	-37
15.8	0.67	-74	0.104	-161	1.17	-125	0.35	-34