TOSHIBA

MICROWAVE SEMICONDUCTOR TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM0910-2

FEATURES:

- HIGH POWER
  P_{1dB} = 33.5 dBm at 9.5 GHz to 10.5 GHz
- HIGH GAIN
  G_{1dB} = 7.5 dB at 9.5 GHz to 10.5 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 1 dB Compression Point	P_{1dB}	V_{DS} = 9 V f = 9.5 -10.5 GHz	dBm	32.5	33.5	-
Power Gain at 1 dB Compression Point	G_{1dB}		dB	6.5	7.5	-
Drain Current	I_{DS}		A	-	0.85	1.1
Power Added Efficiency	ηadd		%	-	24	-
Channel-Temperature Rise	$\triangle T_{ch}$	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	°C	-	-	60

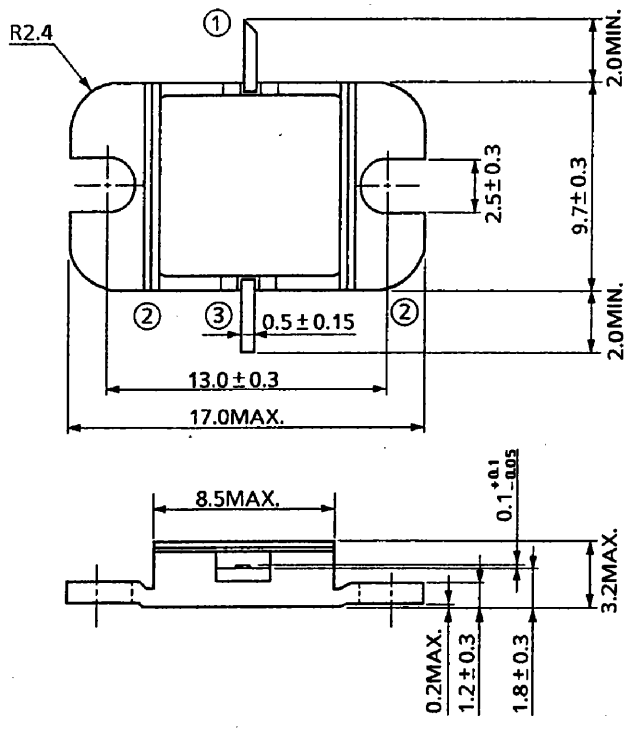
ELECTRICAL CHARACTERISTICS (T_a = 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	V_{DS} = 3 V I_{DS} = 1.0 A	mS	-	600	-
Pinch-off Voltage	V_{GSoff}	V_{DS} = 3 V I_{DS} = 30 mA	V	-2	-3.5	-5
Saturated Drain Current	I_{DSS}	V_{DS} = 3 V V_{GS} = 0 V	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_{DS}	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)



Unit in mm

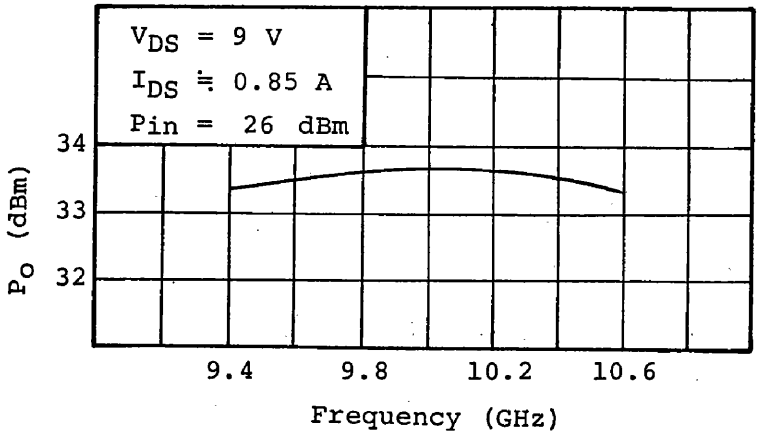
① Gate
② Source
③ Drain

HANDLING PRECAUTIONS FOR PACKAGED TYPE

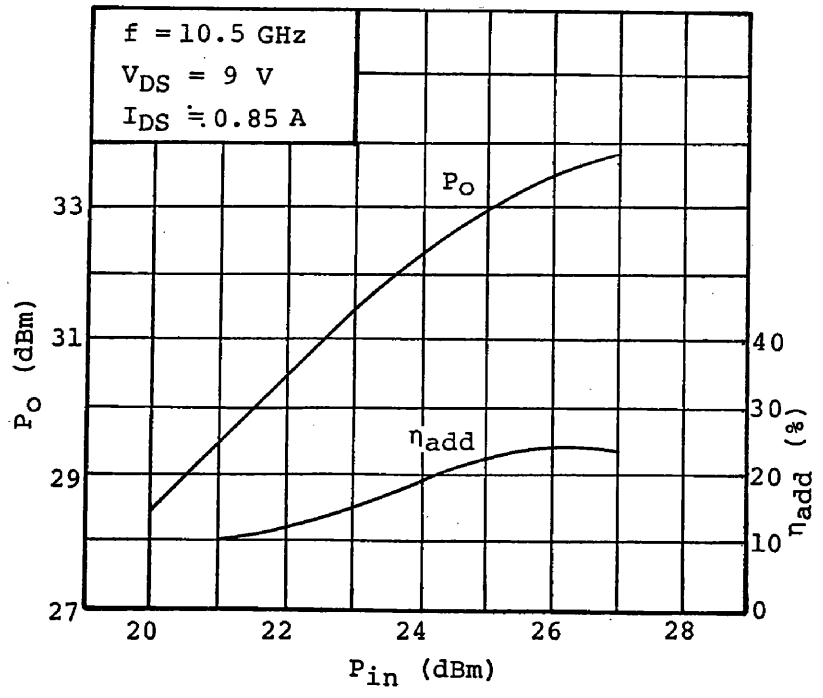
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF PERFORMANCES

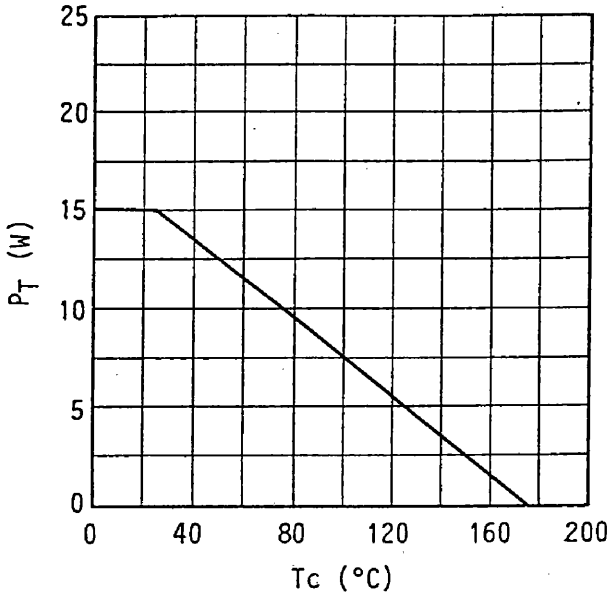
Output Power vs. Frequency



Output Power vs. Input Power

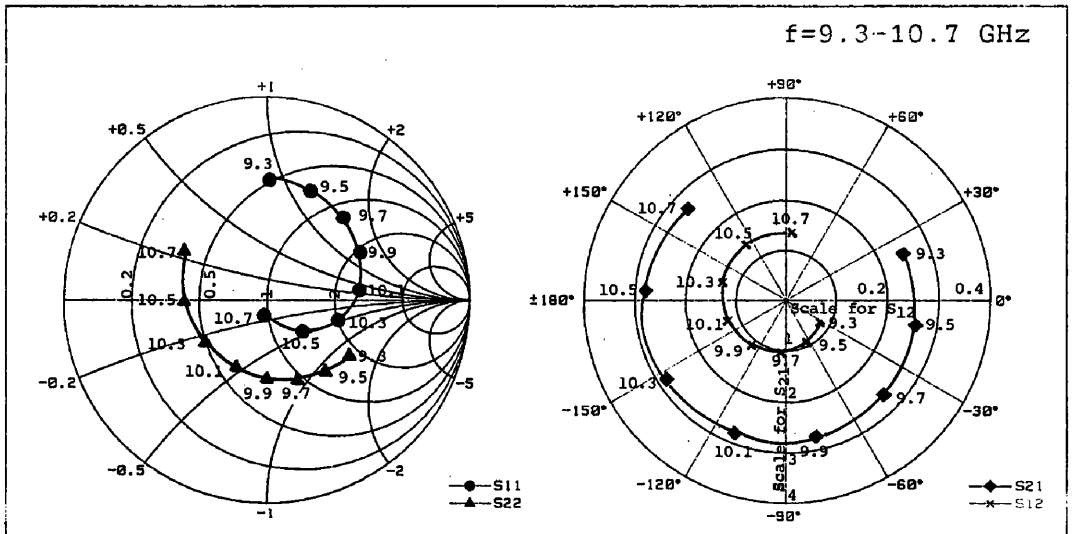


POWER DISSIPATION VS. CASE TEMPERATURE



TIM0910-2 S-PARAMETERS
(MAGN. and ANGLES)

V_{DS}=9V, I_{DS}=0.85A



FREQUENCY (GHz)	S_{11}		S_{21}		S_{12}		S_{22}	
9.3	0.61	88	2.51	23	0.080	-29	0.49	-33
9.5	0.59	68	2.59	-10	0.089	-61	0.45	-49
9.7	0.57	48	2.65	-43	0.099	-95	0.41	-68
9.9	0.53	28	2.70	-77	0.108	-129	0.38	-89
10.1	0.46	7	2.75	-111	0.119	-163	0.35	-115
10.3	0.37	-14	2.79	-147	0.131	162	0.36	-146
10.5	0.23	-39	2.78	175	0.140	124	0.40	179
10.7	0.06	-97	2.69	136	0.141	84	0.48	148