TOSHIBA

MICROWAVE SEMICONDUCTOR TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM1112-2

FEATURES:

- HIGH POWER
  P_{1dB} = 33.5 dBm at 11.7 GHz to 12.7 GHz
- HIGH GAIN
  G_{1dB} = 7.5 dB at 11.7 GHz to 12.7 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 = 11.7 -12.7 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	η_{add}		%	-	24	-
Channel-Temperature Rise	$\triangle T_{ch}$	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	°C	-	-	60

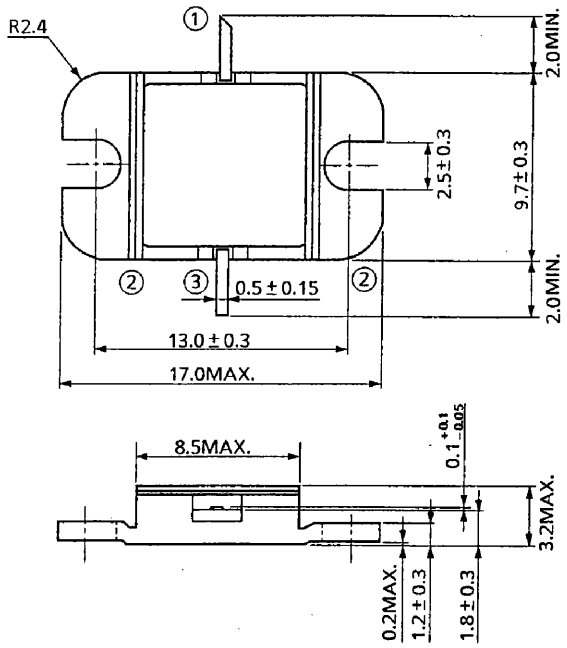
ELECTRICAL CHARACTERISTICS (T_a = 25°C)

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

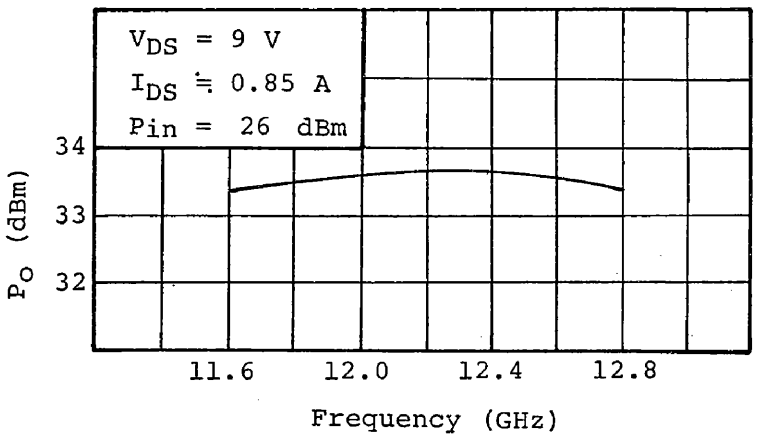
① Gate
② Source
③ Drain

HANDLING PRECAUTIONS FOR PACKAGED TYPE

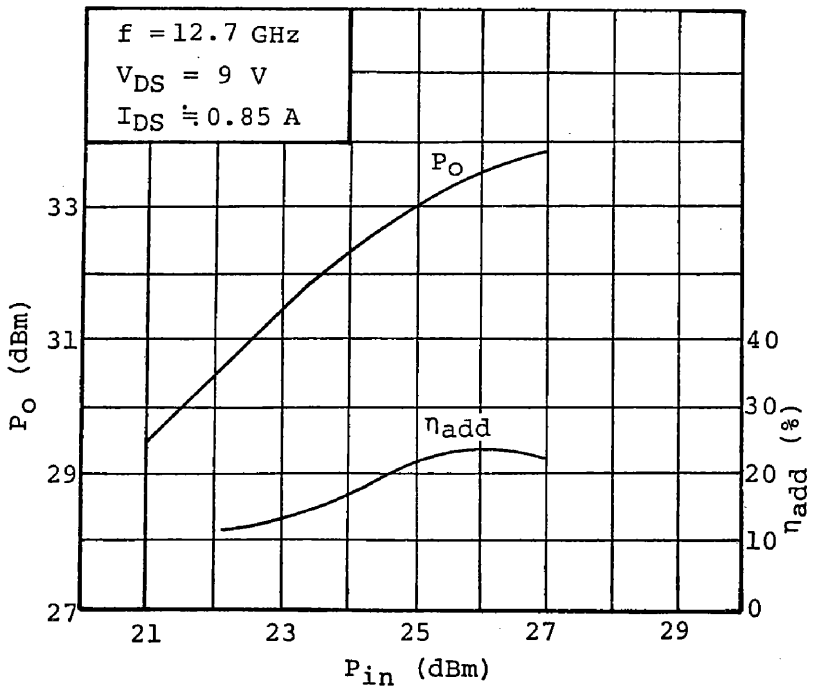
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF PERFORMANCES

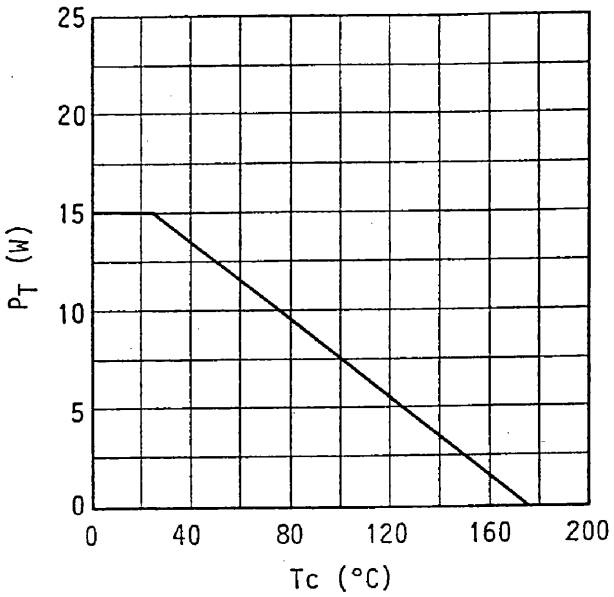
Output Power vs. Frequency



Output Power vs. Input Power

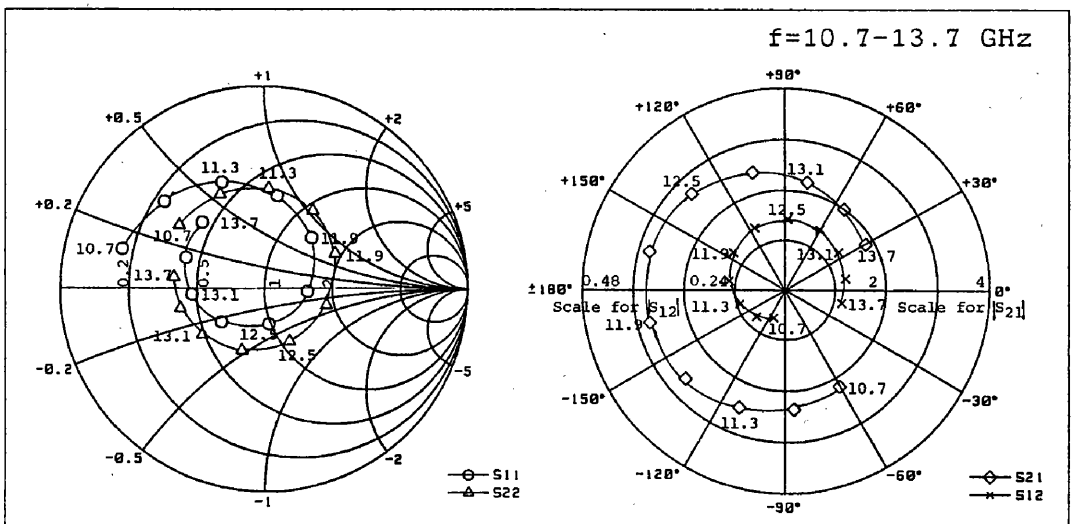


POWER DISSIPATION VS. CASE TEMPERATURE



TIM1112-2 S-PARAMETERS
(MAGN. and ANGLES)

V_{DS}=9V, I_{DS}=1A



FREQUENCY (GHz)	S_{11}		S_{12}		S_{21}		S_{22}	
10.7	0.72	164	0.075	-113	2.19	-60	0.52	143
10.9	0.68	149	0.088	-130	2.29	-76	0.52	126
11.1	0.62	128	0.105	-148	2.40	-96	0.51	104
11.3	0.57	111	0.118	-162	2.48	-111	0.50	88
11.5	0.51	94	0.132	-179	2.58	-127	0.47	71
11.7	0.42	69	0.149	160	2.69	-149	0.43	47
11.9	0.34	47	0.159	144	2.75	-166	0.39	26
12.1	0.26	20	0.169	127	2.78	176	0.34	2
12.3	0.18	-34	0.176	105	2.75	152	0.30	-35
12.5	0.18	-83	0.177	88	2.66	134	0.29	-65
12.7	0.23	-122	0.175	72	2.53	117	0.32	-93
12.9	0.31	-156	0.171	50	2.34	94	0.36	-124
13.1	0.36	-175	0.163	35	2.19	79	0.38	-143
13.3	0.39	169	0.157	21	2.05	63	0.41	-157
13.5	0.43	149	0.150	1	1.93	45	0.43	-174
13.7	0.45	133	0.144	-13	1.84	30	0.45	173