

# TOSHIBA

## MICROWAVE SEMICONDUCTOR

### TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM1112-2

#### FEATURES:

- HIGH POWER  
P<sub>1dB</sub> = 33.5 dBm at 11.7 GHz to 12.7 GHz
- BROAD BAND INTERNALLY MATCHED
- HIGH GAIN  
G<sub>1dB</sub> = 7.5 dB at 11.7 GHz to 12.7 GHz
- HERMETICALLY SEALED PACKAGE

#### RF PERFORMANCE SPECIFICATIONS (T<sub>a</sub> = 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Output Power at 1 dB Compression Point	P <sub>1dB</sub>	V <sub>DS</sub> = 9 V  f = 11.7 -12.7 GHz	dBm	32.5	33.5	-
Power Gain at 1 dB Compression Point	G <sub>1dB</sub>		dB	6.5	7.5	-
Drain Current	I <sub>DS</sub>		A	-	0.85	1.1
Power Added Efficiency	η <sub>add</sub>		%	-	24	-
Channel-Temperature Rise	ΔT <sub>ch</sub>	V <sub>DS</sub> × I <sub>DS</sub> × R <sub>th(c-c)</sub>	°C	-	-	60

#### ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans-conductance	g <sub>m</sub>	V <sub>DS</sub> = 3 V I <sub>DS</sub> = 1.0 A	mS	-	600	-
Pinch-off Voltage	V <sub>GSoff</sub>	V <sub>DS</sub> = 3 V I <sub>DS</sub> = 30 mA	V	-2	-3.5	-5
Saturated Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 3 V V <sub>GS</sub> = 0 V	A	-	2.0	2.6
Gate-Source Breakdown Voltage	V <sub>GS0</sub>	I <sub>GS</sub> = -30 μA	V	-5	-	-
Thermal Resistance	R <sub>th(c-c)</sub>	Channel to Case	°C/W	-	5	6

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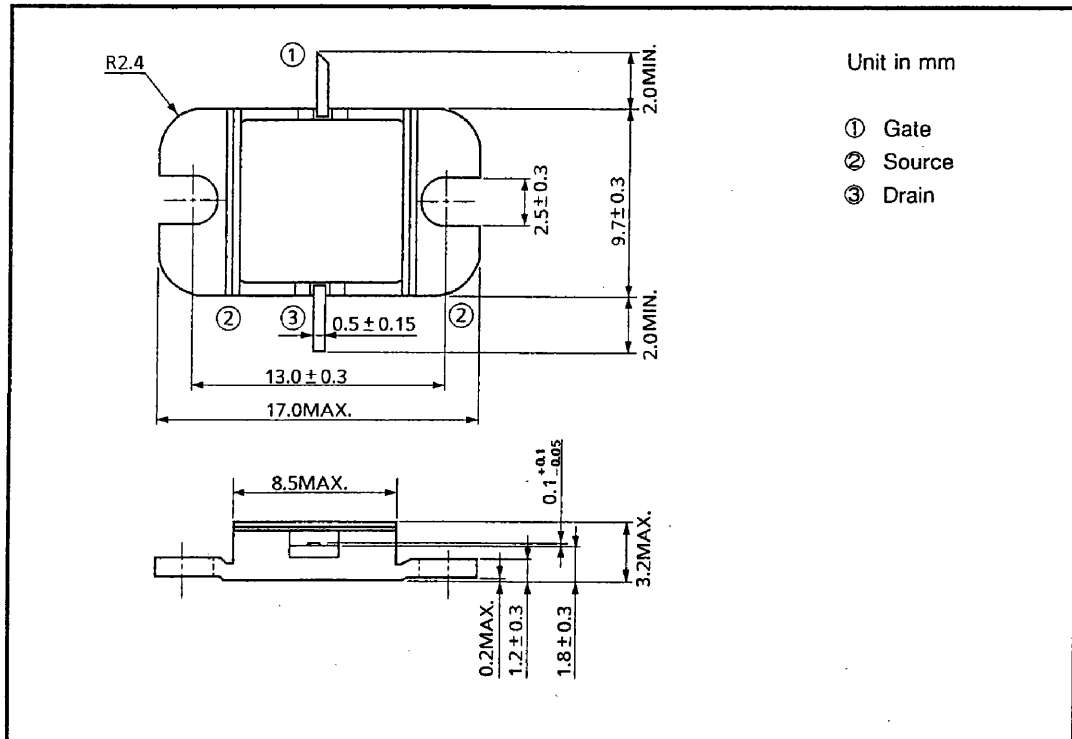


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## ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	UNIT	RATING
Drain-Source Voltage	$V_{DS}$	V	15
Gate-Source Voltage	$V_{GS}$	V	-5
Drain Current	$I_{DS}$	A	2.6
Total Power Dissipation ( $T_c=25^\circ\text{C}$ )	$P_T$	W	15
Channel Temperature	$T_{ch}$	$^\circ\text{C}$	175
Storage Temperature	$T_{stg}$	$^\circ\text{C}$	-65~175

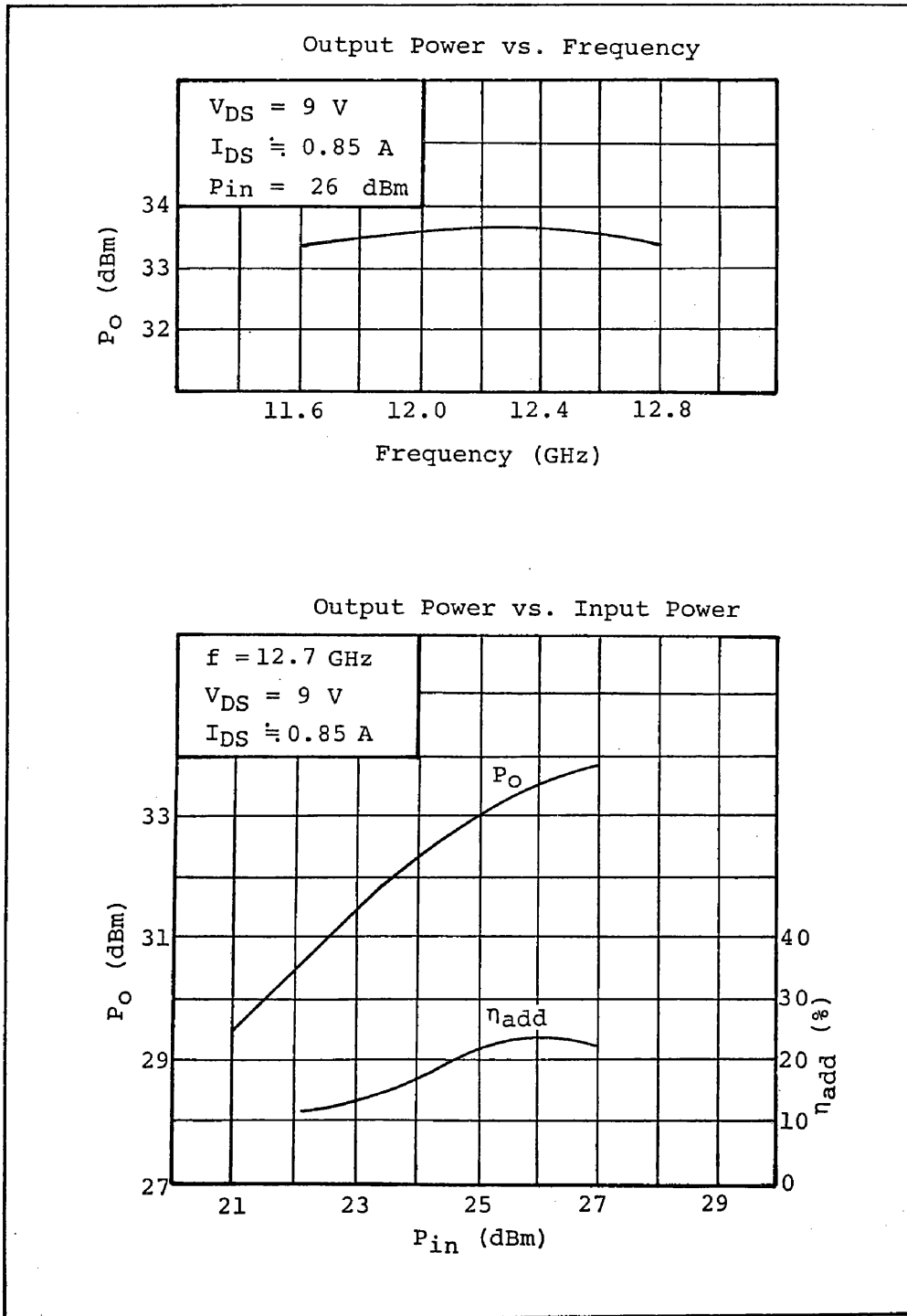
## PACKAGE OUTLINE (2-9D1B)



### HANDLING PRECAUTIONS FOR PACKAGED TYPE

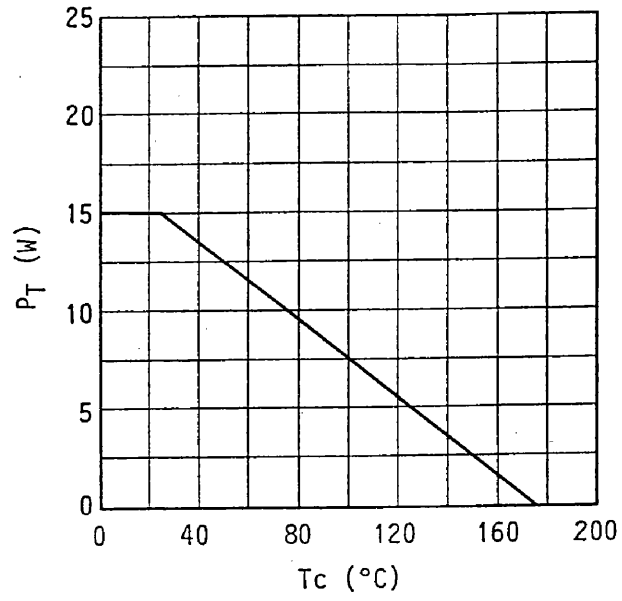
Soldering iron should be grounded and the operating time should not exceed 10 seconds at  $260^\circ\text{C}$ .

RF PERFORMANCES



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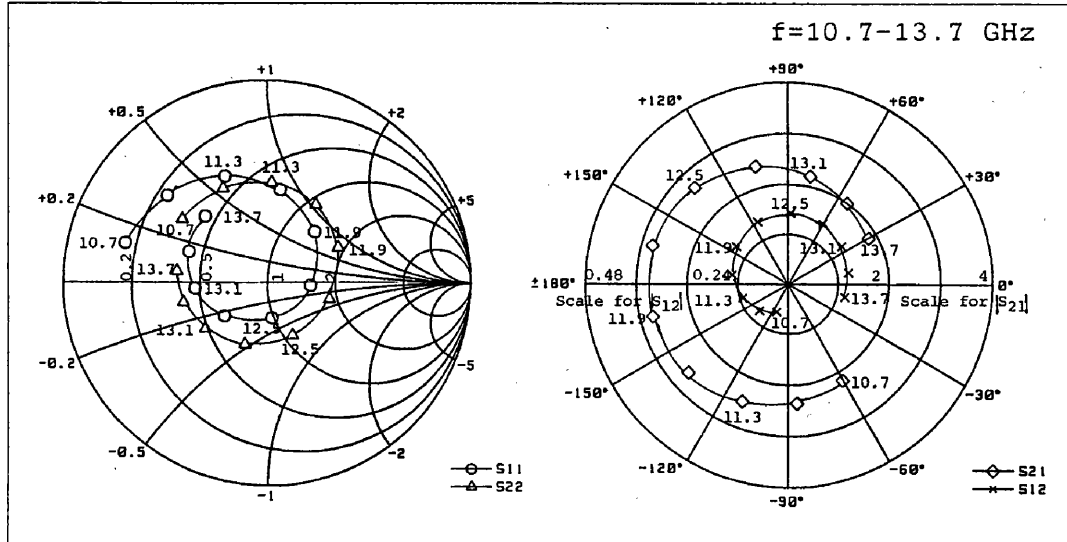
## POWER DISSIPATION VS. CASE TEMPERATURE



# TIM1112-2

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

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



FREQUENCY (GHz)	S <sub>11</sub>		S <sub>12</sub>		S <sub>21</sub>		S <sub>22</sub>	
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