TOSHIBA

MICROWAVE SEMICONDUCTOR TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM5964-8

FEATURES:

- HIGH POWER
  P_{1dB} = 39 dBm at 5.9 GHz to 6.4 GHz
- HIGH GAIN
  G_{1dB} = 8.0 dB at 5.9 GHz to 6.4 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} = 10 V f = 5.9∿6.4GHz	dBm	38.0	39.0	-
Power Gain at 1 dB Compression Point	G_{1dB}		dB	7.0	8.0	-
Drain Current	I_{DS}		A	-	2.2	2.8
Power Added Efficiency	η_{add}		%	-	30	-
Channel-Temperature Rise	ΔT_{ch}	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	°C	-	-	80

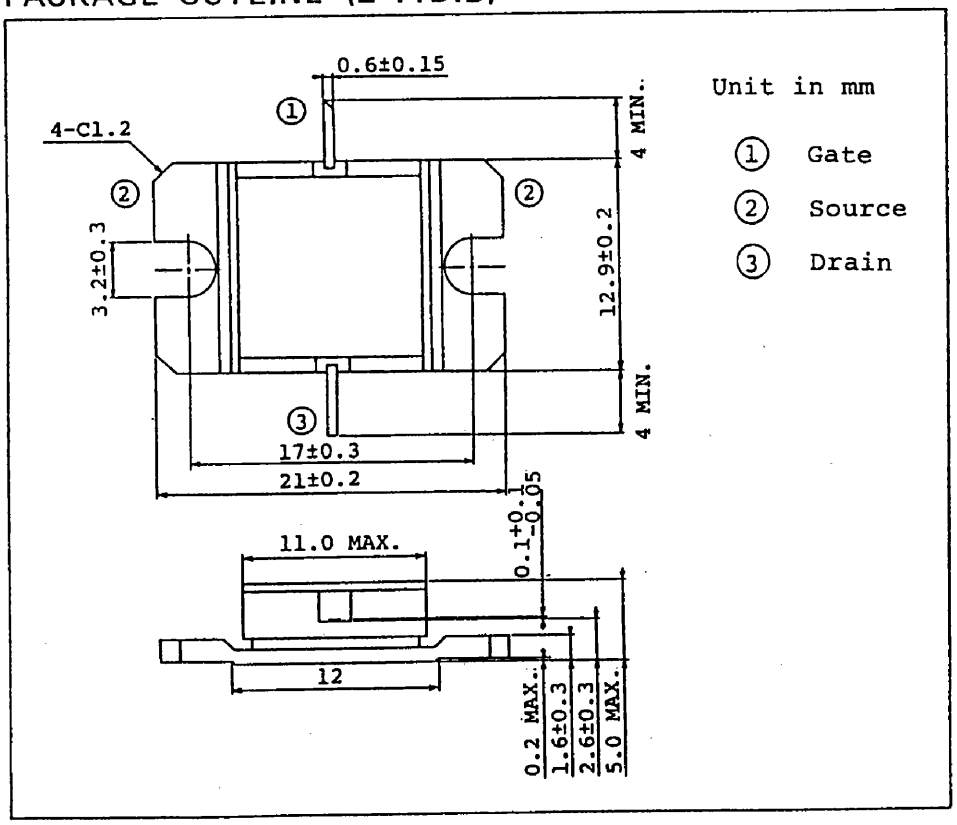
ELECTRICAL CHARACTERISTICS (T_a = 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans-conductance	gm	V_{DS} = 3 V I_{DS} = 3.0 A	mS	-	1800	-
Pinch-off Voltage	V_{GSoff}	V_{DS} = 3 V I_{DS} = 40 mA	V	-2	-3.5	-5
Saturated Drain Current	I_{DSS}	V_{DS} = 3 V V_{GS} = 0 V	A	-	5.8	7.5
Gate-Source Breakdown Voltage	V_{GSO}	I_{GS} =-120 μA	V	-5	-	-
Thermal Resistance	$R_{th(c-c)}$	Channel to Case	°C/W	-	2.3	3.5

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	8
Total Power Dissipation (T_C=25°C)	P_T	W	37.5
Channel Temperature	T_{ch}	°C	175
Storage Temperature	T_{stg}	°C	-65~175

PACKAGE OUTLINE (2-11D1B)

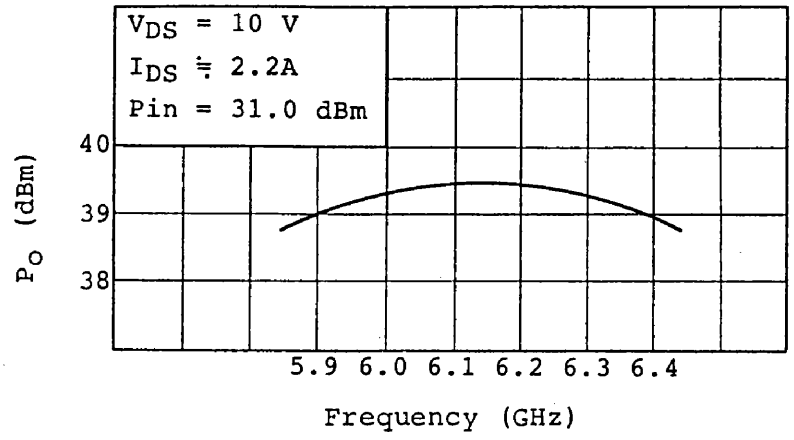


HANDLING PRECAUTIONS FOR PACKAGED TYPE

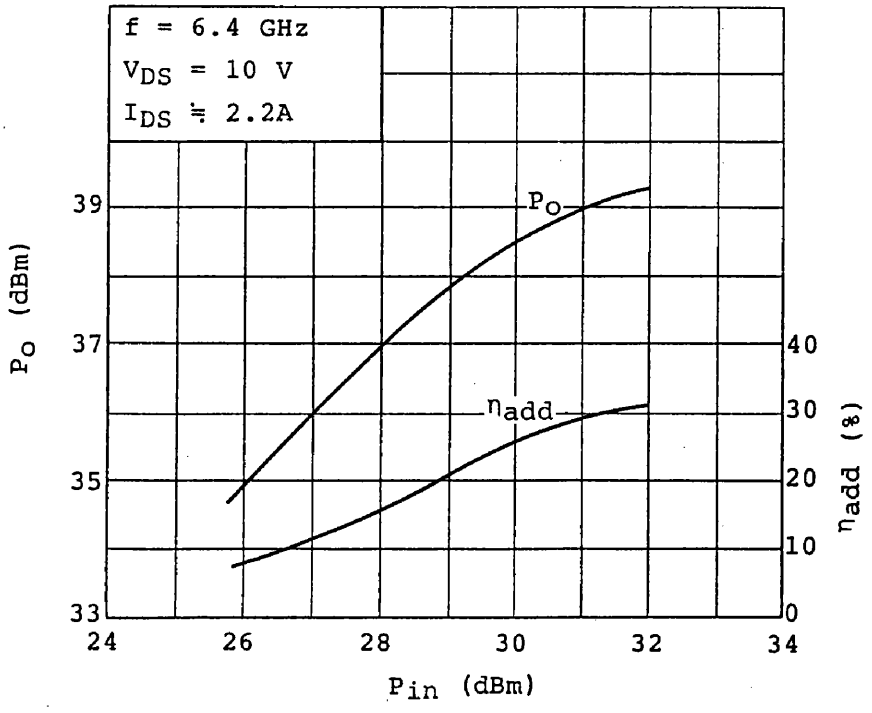
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF PERFORMANCES

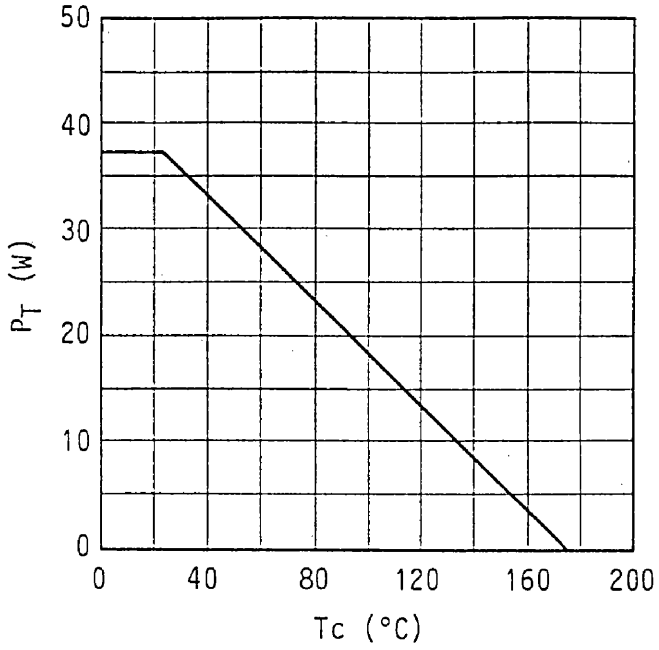
Output Power vs. Frequency



Output Power vs. Input Power



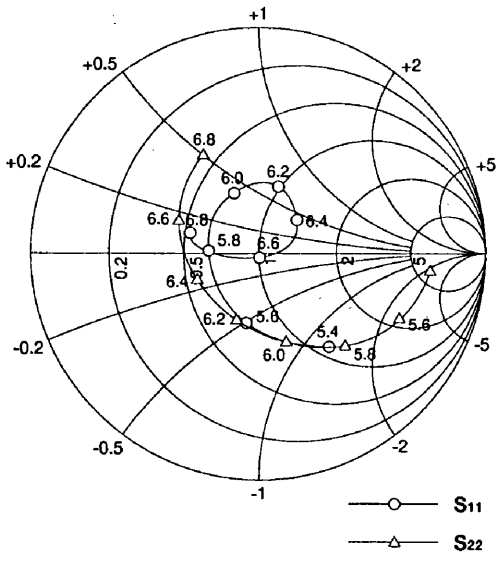
POWER DISSIPATION VS. CASE TEMPERATURE

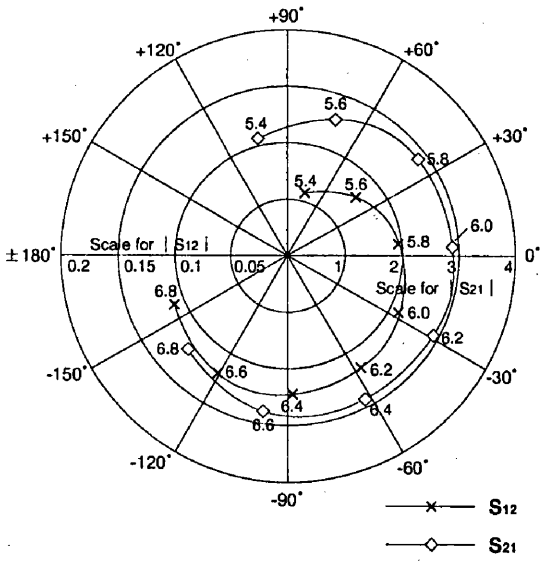


TIM5964-8 S-PARAMETERS
(MAGN.and ANGLES)

V_{DS} = 10V, I_{DS} = 2.0A

f =5.4~6.8GHz





FREQUENCY (GHz)	S_{11} MAG	S_{11} ANG	S_{21} MAG	S_{21} ANG	S_{12} MAG	S_{12} ANG	S_{22} MAG	S_{22} ANG
5.4	0.515	-53	2.137	104	0.058	74	0.761	-6
5.6	0.312	-100	2.567	71	0.079	41	0.685	-25
5.8	0.217	177	2.814	37	0.097	6	0.556	-47
6.0	0.287	112	2.880	3	0.108	-27	0.411	-73
6.2	0.309	74	2.883	-29	0.116	-57	0.306	-108
6.4	0.219	42	2.882	-62	0.121	-88	0.290	-156
6.6	0.014	-86	2.788	-99	0.121	-121	0.380	157
6.8	0.312	163	2.430	-137	0.109	-157	0.502	119