

TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM5964-8

FEATURES:

- HIGH POWER
 $P_{1dB} = 39 \text{ dBm}$ at 5.9 GHz to 6.4 GHz
- BROAD BAND INTERNALLY MATCHED
- HIGH GAIN
 $G_{1dB} = 8.0 \text{ dB}$ at 5.9 GHz to 6.4 GHz
- HERMETICALLY SEALED PACKAGE

RF PERFORMANCE SPECIFICATIONS ($T_a = 25^\circ\text{C}$)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Output Power at 1 dB Compression Point	P_{1dB}	$V_{DS} = 10 \text{ V}$ $f = 5.9 \sim 6.4 \text{ GHz}$	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}	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	$^\circ\text{C}$	-	-	80

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

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

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TOSHIBA CORPORATION

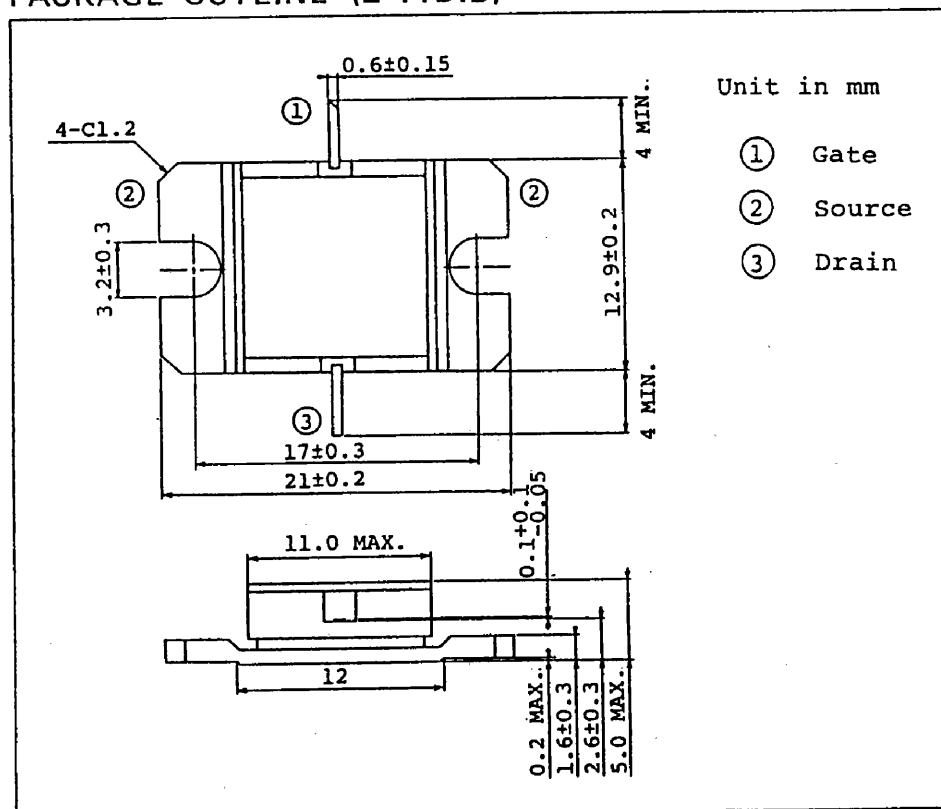
Revised May 1989

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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	8
Total Power Dissipation ($T_c = 25^\circ\text{C}$)	P_T	W	37.5
Channel Temperature	T_{ch}	$^\circ\text{C}$	175
Storage Temperature	T_{stg}	$^\circ\text{C}$	-65-175

PACKAGE OUTLINE (2-11D1B)

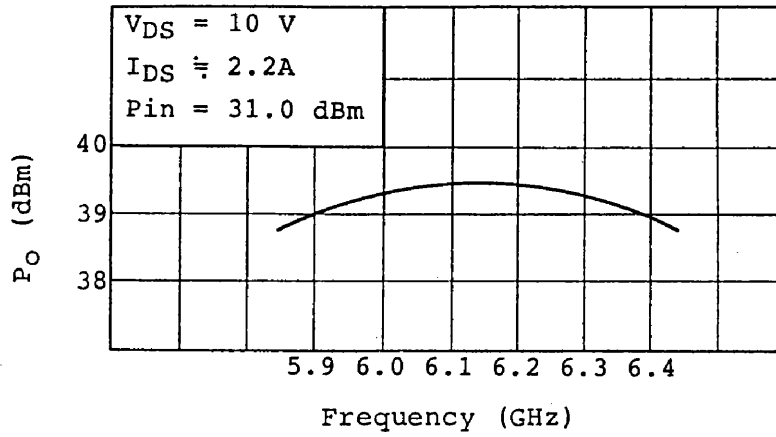


HANDLING PRECAUTIONS FOR PACKAGED TYPE

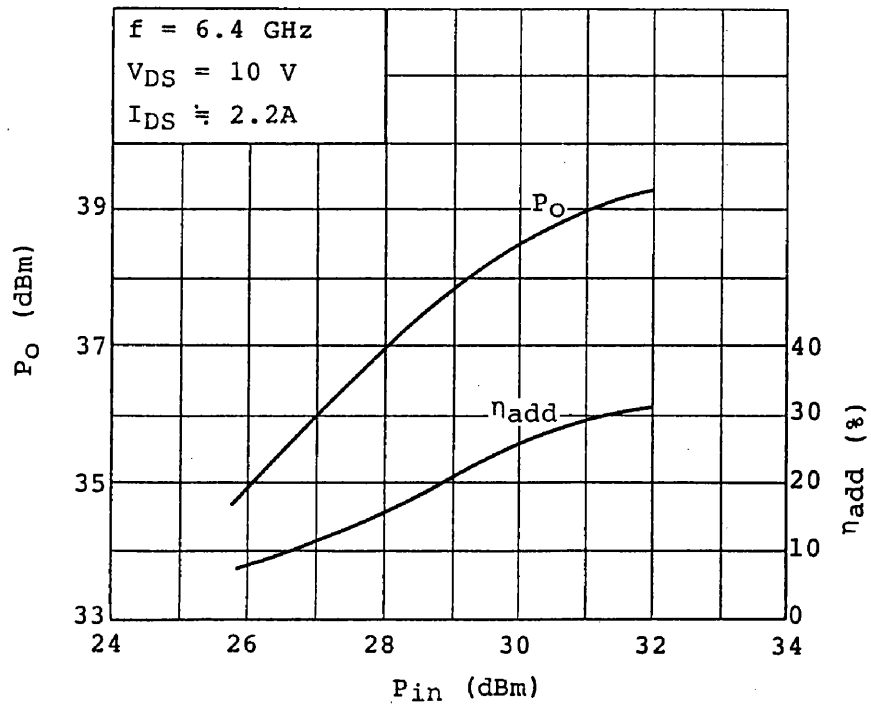
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C .

RF PERFORMANCES

Output Power vs. Frequency

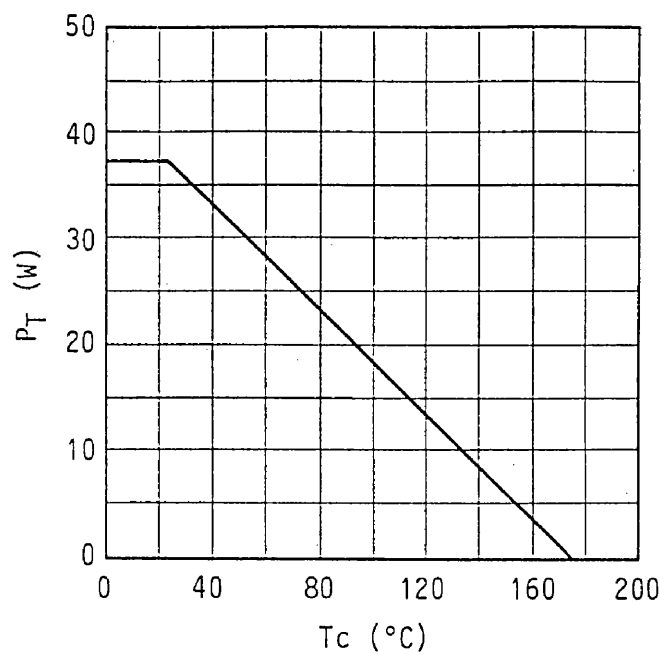


Output Power vs. Input Power



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POWER DISSIPATION VS. CASE TEMPERATURE

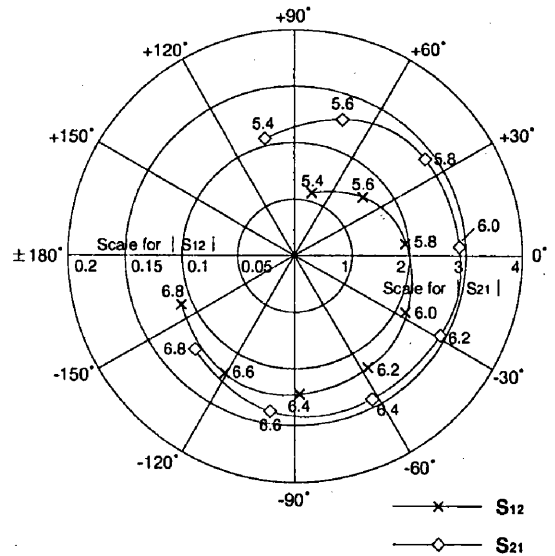
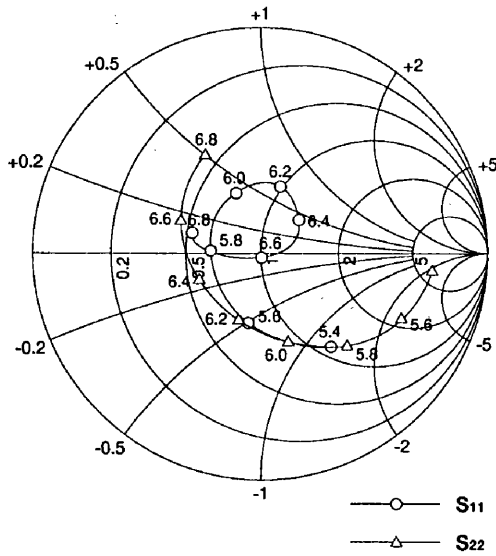


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TIM5964-8 S-PARAMETERS (MAGN.and ANGLES)

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

$f = 5.4 \sim 6.8GHz$



FREQUENCY (GHz)	S_{11}		S_{21}		S_{12}		S_{22}	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	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