

TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM5964-16

FEATURES:

- HIGH POWER
P_{1dB} = 42.5 dBm at 5.9 GHz to 6.4 GHz
- HIGH GAIN
G_{1dB} = 7 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	41.5	42.5	-
Power Gain at 1 dB Compression Point	G _{1dB}		dB	6.0	7.0	-
Drain Current	I _{DS}		A	-	4.8	5.5
Power Added Efficiency	η _{add}		%	-	30	-
Channel-Temperature Rise	ΔT _{ch}		V _{DS} ×I _{DS} ×R _{th(c-c)}	°C	-	-

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans-conductance	g _m	V _{DS} = 3 V I _{DS} = 6.0 A	mS	-	3600	-
Pinch-off Voltage	V _{GSoff}	V _{DS} = 3 V I _{DS} = 80 mA	V	-2	-3.5	-5
Saturated Drain Current	I _{DSS}	V _{DS} = 3 V V _{GS} = 0 V	A	-	11.6	15.0
Gate-Source Breakdown Voltage	V _{GSO}	I _{GS} = -240 μA	V	-5	-	-
Thermal Resistance	R _{th(c-c)}	Channel to Case	°C/W	-	1.4	1.8

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TOSHIBA CORPORATION

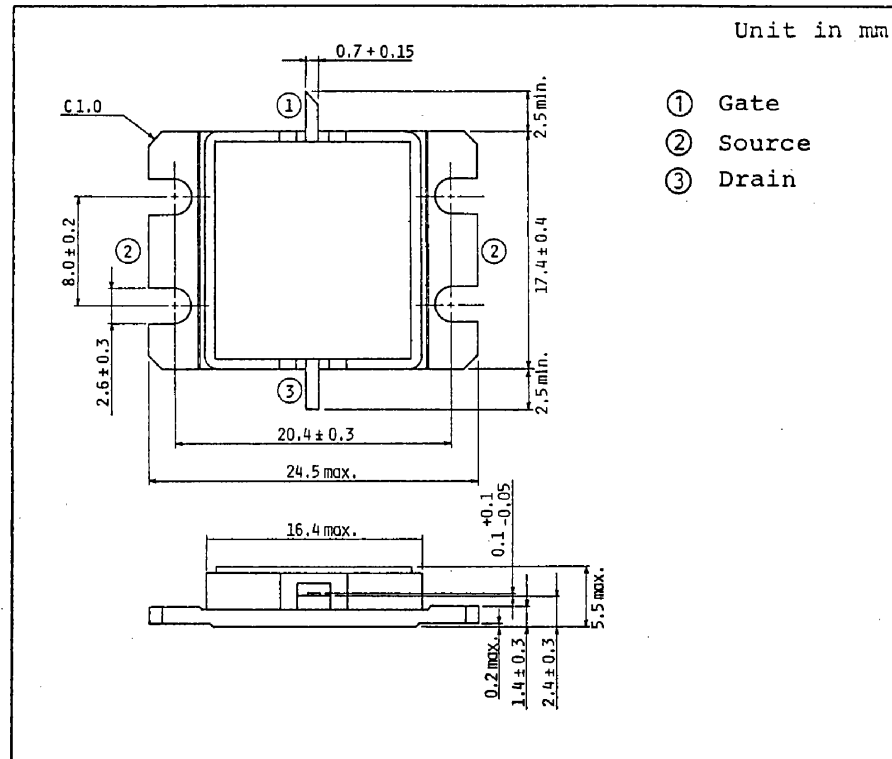
Revised May 1989

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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	16
Total Power Dissipation ($T_c=25^\circ\text{C}$)	P_T	W	70
Channel Temperature	T_{ch}	$^\circ\text{C}$	175
Storage Temperature	T_{stg}	$^\circ\text{C}$	-65~175

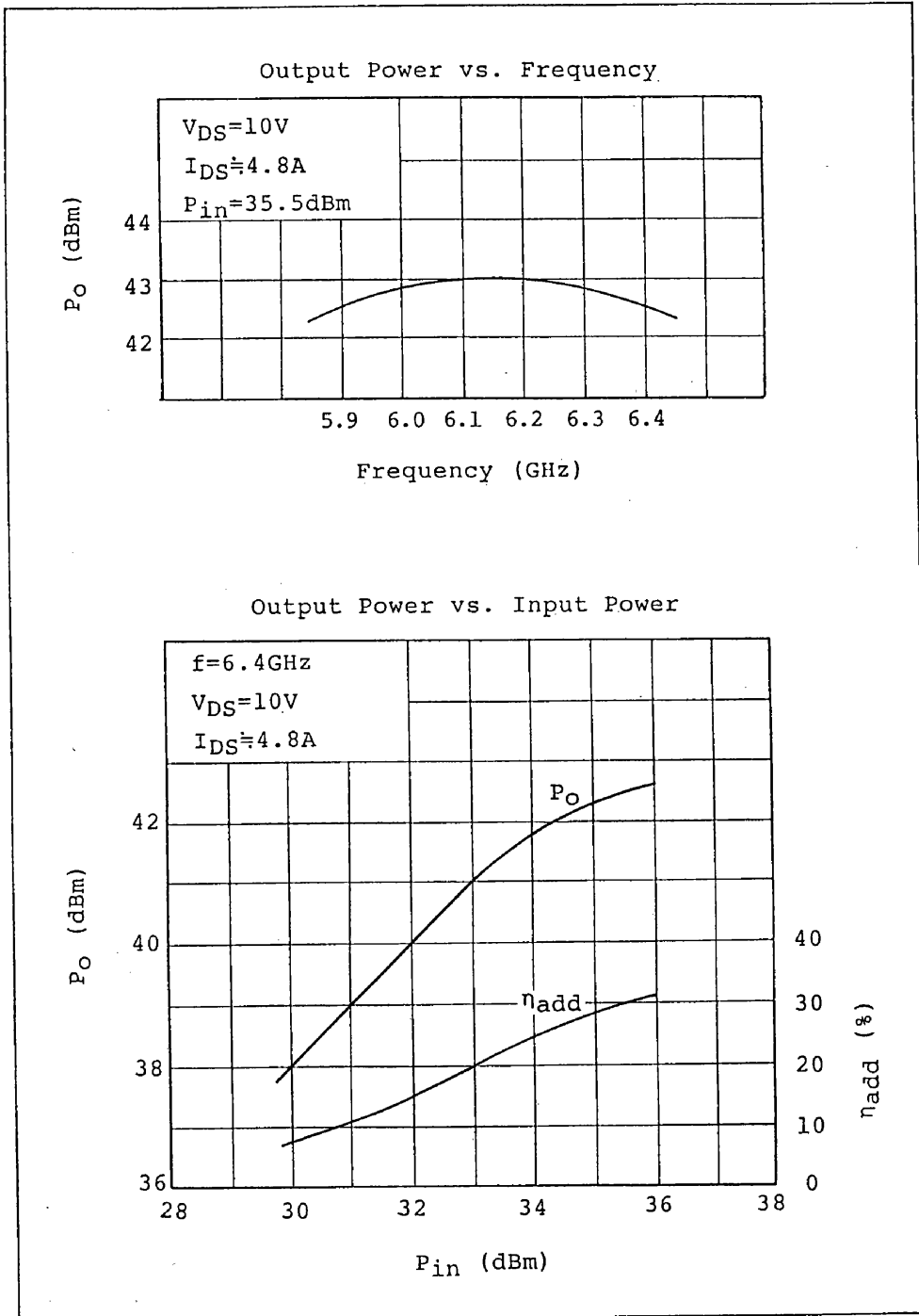
PACKAGE OUTLINE (2-16G1B)



HANDLING PRECAUTIONS FOR PACKAGED TYPE

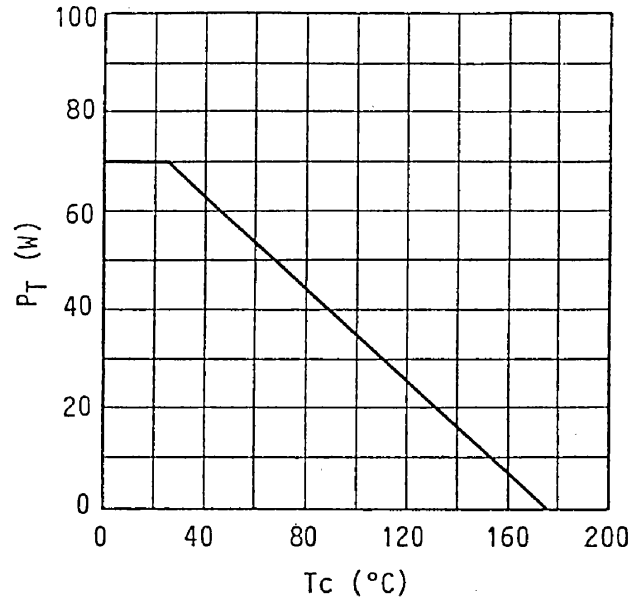
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C .

RF PERFORMANCES



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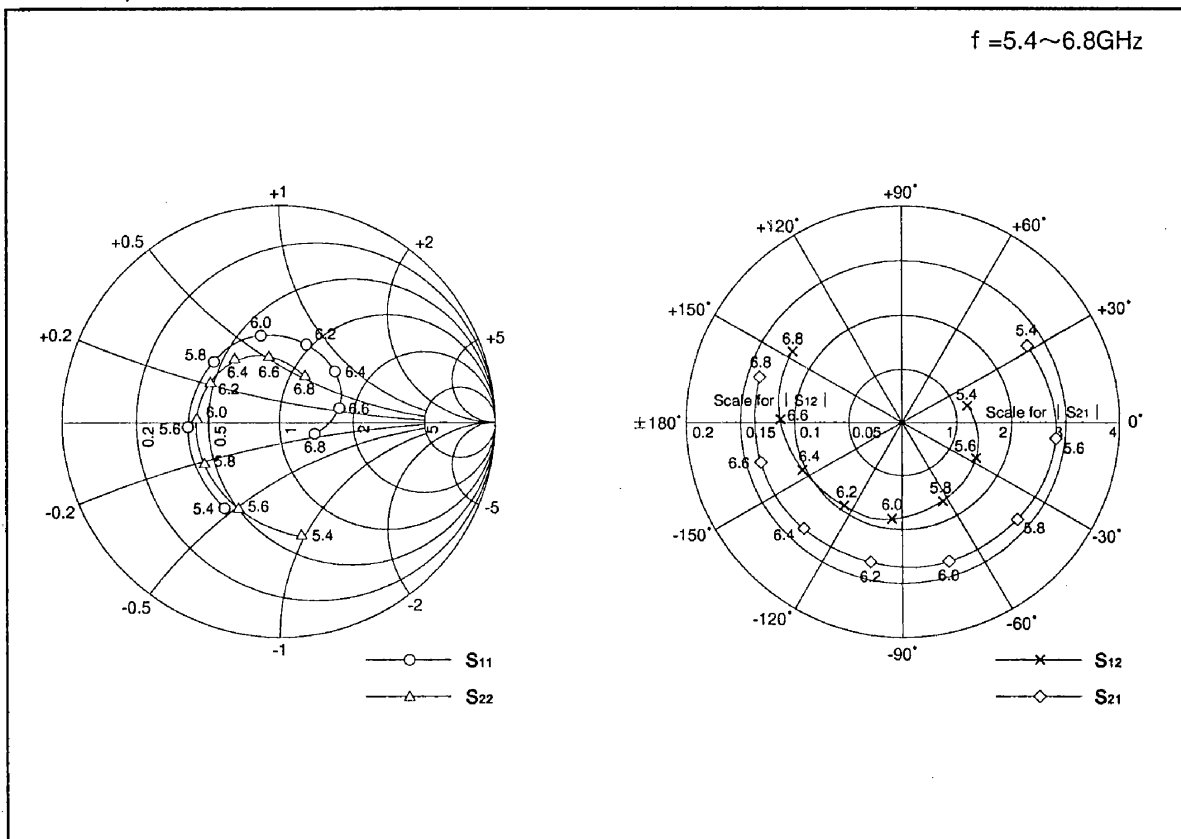
POWER DISSIPATION VS. CASE TEMPERATURE



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TIM5964-16 S-PARAMETERS (MAGN.and ANGLES)

$V_{DS} = 10V, I_{DS} = 4.0A$



FREQUENCY (GHz)	S_{11}		S_{21}		S_{12}		S_{22}	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5.4	0.477	-122	2.702	32	0.062	15	0.539	-79
5.6	0.425	-177	2.818	-6	0.075	-26	0.447	-115
5.8	0.416	137	2.775	-41	0.083	-63	0.400	-151
6.0	0.410	102	2.715	-72	0.090	-96	0.380	178
6.2	0.388	71	2.679	-103	0.095	-125	0.369	150
6.4	0.347	43	2.676	-133	0.103	-154	0.354	125
6.6	0.288	14	2.725	-164	0.112	178	0.315	99
6.8	0.172	-19	2.789	162	0.121	147	0.249	61