TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM5964-35SLA

FEATURES :

- **LOW INTERMODULATION DISTORTION**
  IM3 = -45dBc at Po = 35.0dBm
- **HIGH POWER**
  P1dB = 45.5dBm at 5.9 to 6.4GHz
- **HIGH EFFICIENCY**
  ηadd = 39% at 5.9 to 6.4GHz
- **HIGH GAIN**
  G1dB = 9.0dB at 5.9 to 6.4GHz
- **BROAD BAND INTERNALLY MATCHED**
- **HERMETICALLY SEALED PACKAGE**

RF PERFORMANCE SPECIFICATIONS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Output Power at 1 dB Compression Point	P_{1dB}	V_{DS} = 10 V f = 5.9~6.4 GHz	dBm	45.0	45.5	–
Power Gain at 1 dB Compression Point	G_{1dB}		dB	8.0	9.0	–
Drain Current	I_{DS}		A	–	8.0	9.0
Power Added Efficiency	η_{add}		%	–	39	–
3rd Order Intermodulation Distortion	IM_3	Note 1	dBc	−42	−45	–
Channel-Temperature Rise	ΔTch	$V_{DS} \times I_{DS} \times R_{th\ (c-c)}$	°C	–	–	100

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	V_{DS} = 3 V I_{DS} = 10.5A	mS	–	6500	–
Pinch-off Voltage	V_{GSoff}	V_{DS} = 3 V I_{DS} = 140mA	V	−1.0	−2.5	−4.0
Saturated Drain Current	I_{DSS}	V_{DS} = 3 V V_{GS} = 0 V	A	–	20	26
Gate-Source Breakdown Voltage	V_{GSO}	I_{GS} = −420μA	V	−5	–	–
Thermal Resistance	$R_{th\ (c-c)}$	Channel to Case	°C/W	–	1.0	1.3

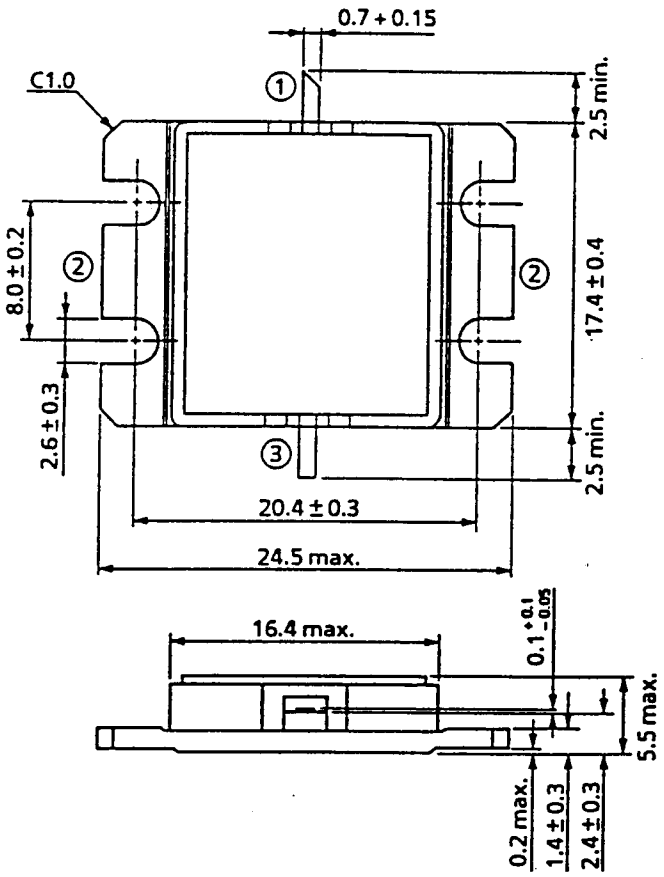
Note 1 : 2 tone Test Pout = 35dBm Single Carrier Level.

Recommended Gate Resistance(Rg) : Rg = Rg1(10 Ω) + Rg2(18 Ω) = 28 Ω (MAX.)

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	V_{DS}	V	15
Gate-Source Voltage	V_{GS}	V	−5
Drain Current	I_{DS}	A	26
Total Power Dissipation (T_C = 25°C)	P_T	W	115
Channel Temperature	T_{ch}	°C	175
Storage Temperature	T_{stg}	°C	−65~175

PACKAGE OUTLINE (2-16G1B)



Unit in mm

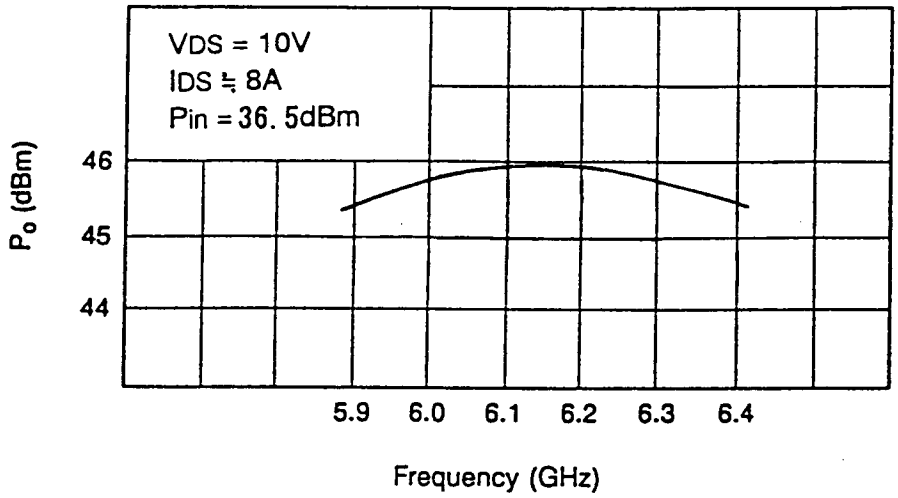
① Gate
② Source
③ Drain

HANDLING PRECAUTIONS FOR PACKAGED TYPE

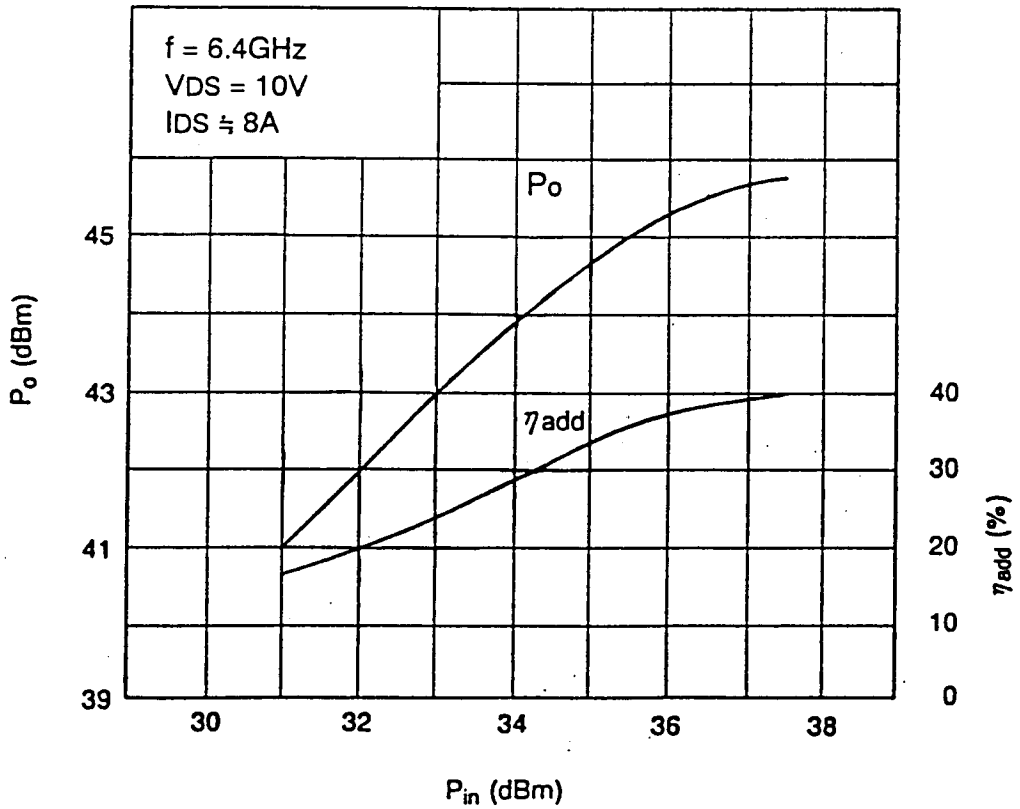
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF PERFORMANCES

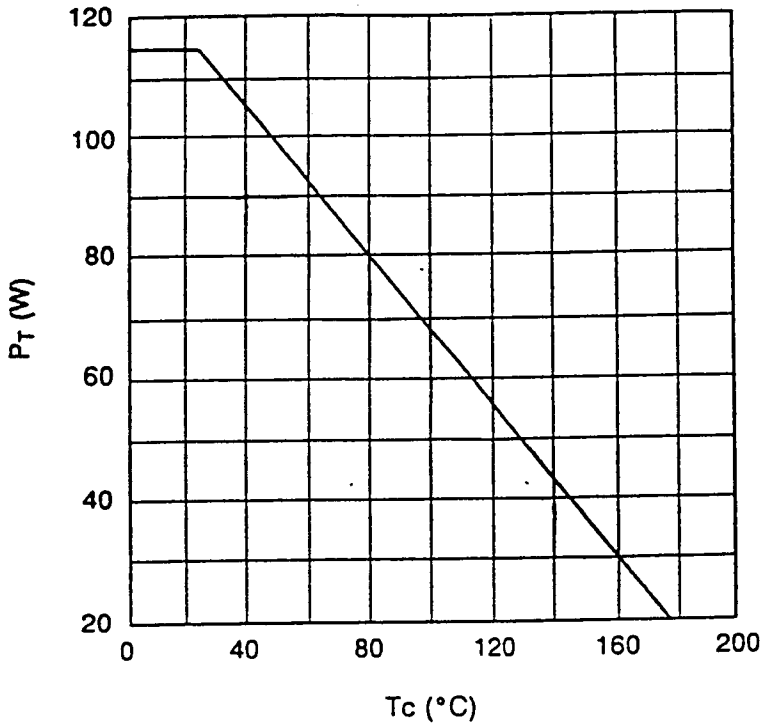
Output Power vs. Frequency



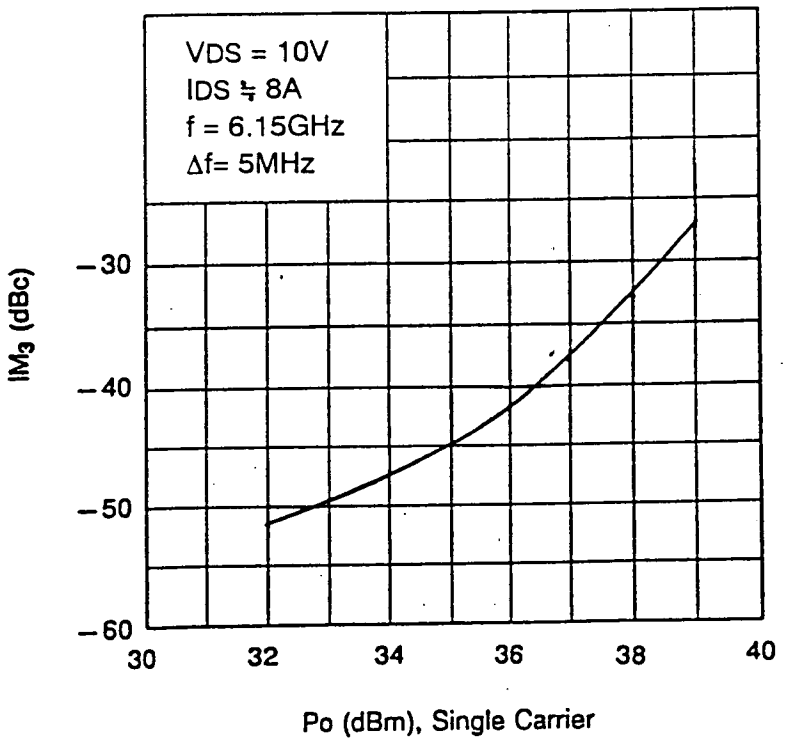
Output Power vs. Input Power



POWER DISSIPATION VS. CASE TEMPERATURE



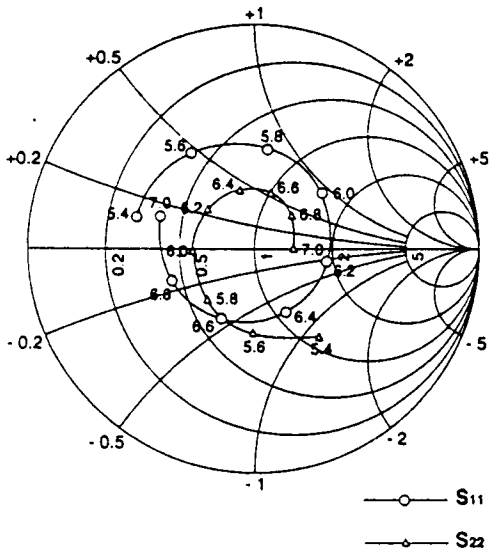
IM_3 VS. OUTPUT POWER CHARACTERISTICS

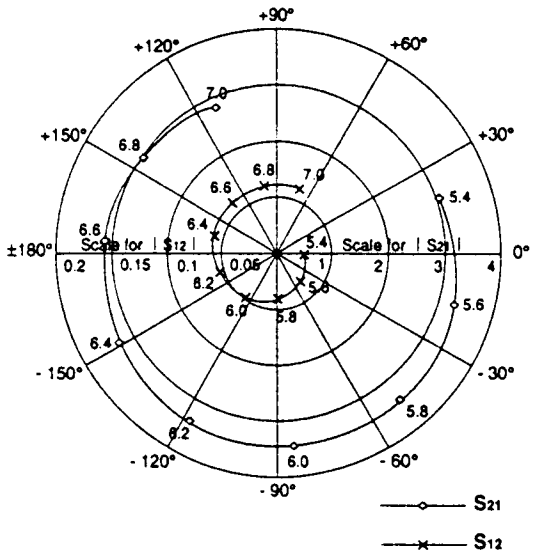


TIM5964-35SLA S-PARAMETERS
(MAGN.and ANGLES)

V_{DS} = 10V, I_{DS} = 8.0A

f =5.4~7.0GHz





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	0.54	165	3.05	19	0.025	-2	0.48	-54
5.6	0.51	123	3.28	-16	0.033	-49	0.37	-91
5.8	0.45	83	3.41	-50	0.040	-89	0.30	-133
6.0	0.38	40	3.45	-85	0.048	-126	0.27	-179
6.2	0.32	-10	3.39	-118	0.054	-162	0.27	139
6.4	0.31	-64	3.28	-151	0.058	165	0.27	104
6.6	0.34	-115	3.13	176	0.060	132	0.26	74
6.8	0.39	-159	2.97	145	0.061	101	0.22	43
7.0	0.44	161	2.81	113	0.061	70	0.17	2