TOSHIBA

MICROWAVE SEMICONDUCTOR TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM0910-30L

FEATURES

- **BROAD BAND INTERNALLY MATCHED FET**
- **HIGH POWER**
  P1dB= 45.0dBm at 9.5GHz to 10.5GHz
- **HIGH GAIN**
  G1dB= 7.0dB at 10.5GHz to 10.5GHz
- **LOW INTERMODULATION DISTORTION**
  IM3= -25dBc (Min.) at Pout= 38dBm (Single Carrier Level)
- **HERMETICALLY SEALED PACKAGE**

RF PERFORMANCE SPECIFICATIONS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Output Power at 1dB Gain Compression Point	P1dB	VDS= 10V IDSset= 7.0A f= 9.5 to 10.5GHz	dBm	44.0	45.0	—
Power Gain at 1dB Gain Compression Point	G1dB		dB	6.0	7.0	—
Drain Current	IDS1		A	—	10.0	11.5
Gain Flatness	ΔG		dB	—	—	±0.8
Power Added Efficiency	ηadd		%	—	25	—
3rd Order Intermodulation Distortion	IM3	Two-Tone Test Po= 38dBm, Δf= 5MHz (Single Carrier Level)	dBc	-25	—	—
Drain Current	IDS2		A	—	9.0	10.1
Channel Temperature Rise	ΔTch	(VDS × IDS + Pin − P1dB) × Rth(c-c)	°C	—	—	100

Recommended Gate Resistance (Rg): 10 Ω

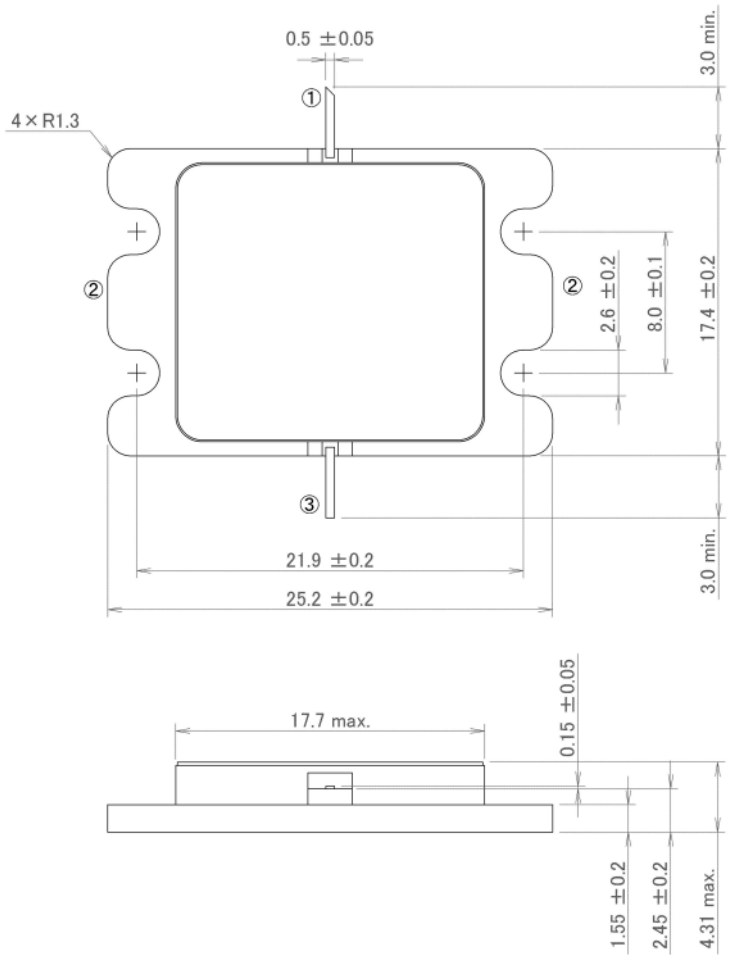
ELECTRICAL CHARACTERISTICS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	VDS= 3V IDS= 9.6A	S	—	5.5	—
Pinch-off Voltage	VGSoff	VDS= 3V IDS= 290mA	V	-0.7	-2.0	-4.5
Saturated Drain Current	IDSS	VDS= 3V VGS= 0V	A	—	20.0	—
Gate-Source Breakdown Voltage	VGSO	IGS= -290μA	V	-5	—	—
Thermal Resistance	Rth(c-c)	Channel to Case	°C/W	—	1.0	1.1

ABSOLUTE MAXIMUM RATINGS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	VDS	V	15
Gate-Source Voltage	VGS	V	-5
Drain Current	IDS	A	20
Total Power Dissipation (Tc= 25°C)	PT	W	136
Channel Temperature	Tch	°C	175
Storage	Tstg	°C	-65 to +175

PACKAGE OUTLINE (7-AA03B)



Unit in mm

① Gate
② Source
③ Drain

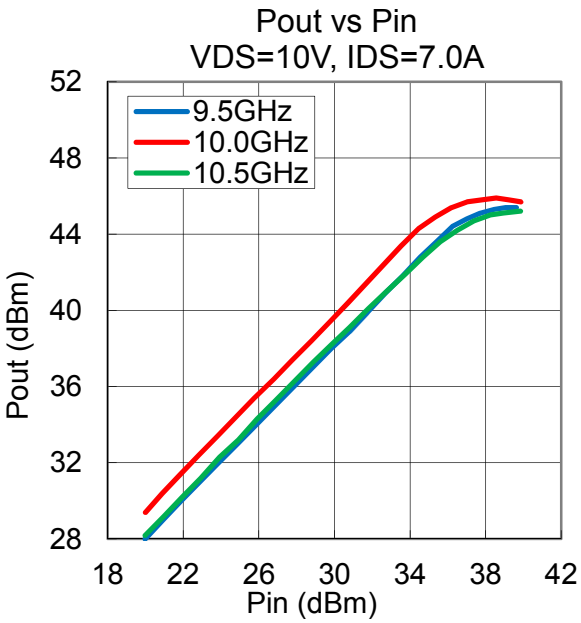
HANDLING PRECAUTIONS FOR PACKAGE MODEL

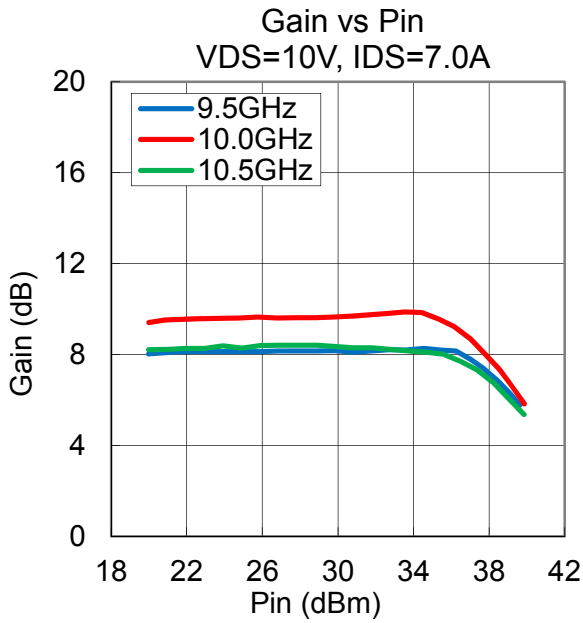
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C or 3 seconds at 350°C.

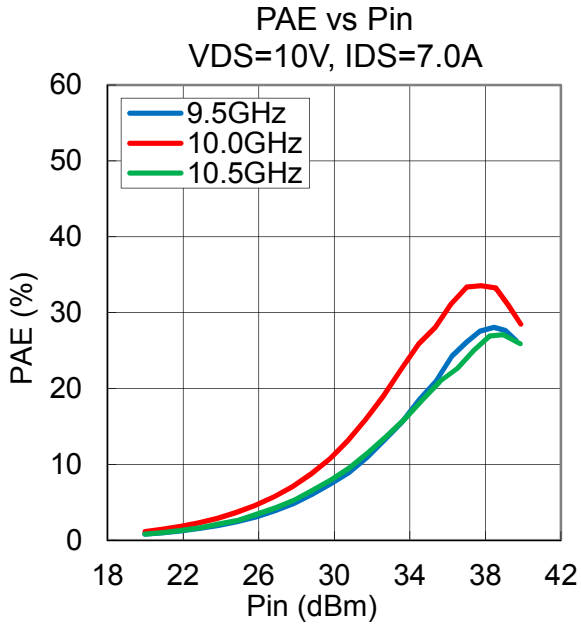
TYPICAL RF PERFORMANCE

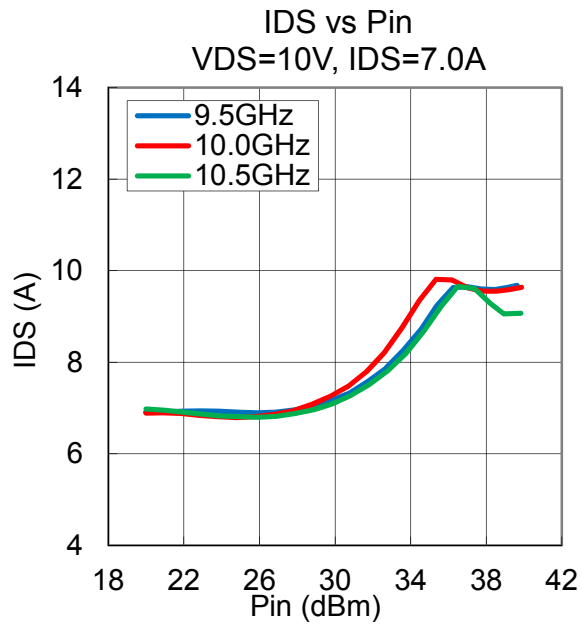
·Pout , Gain , PAE , IDS vs. Pin

VDS= 10 V, IDSset= 7.0 A, f= 9.5, 10.0, 10.5 GHz, Ta= +25 ℃



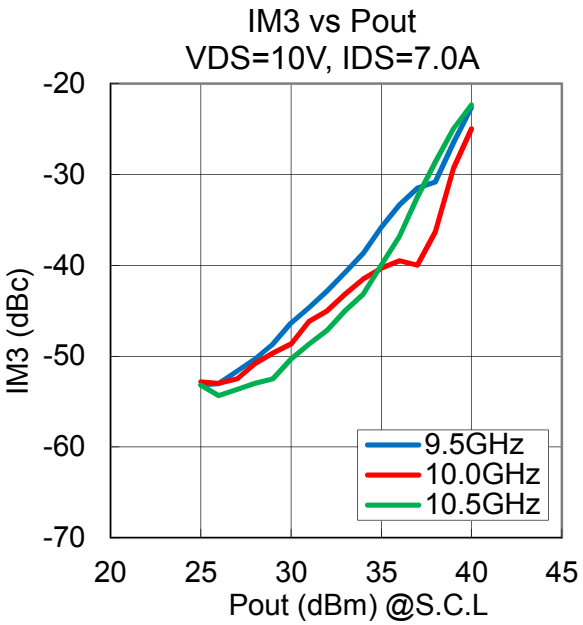






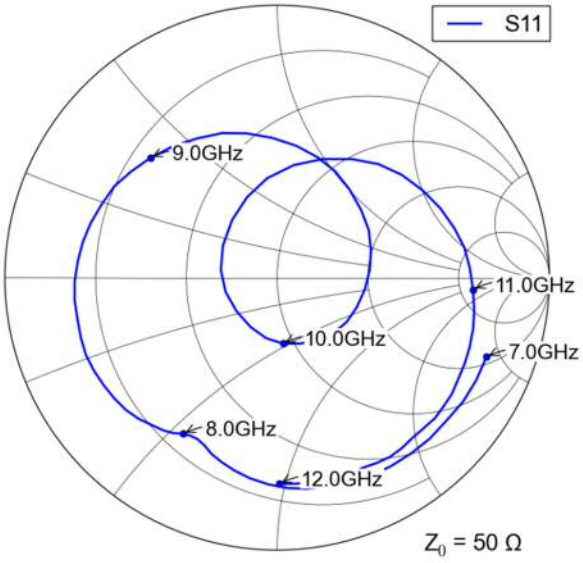
·IM3 vs. Pout

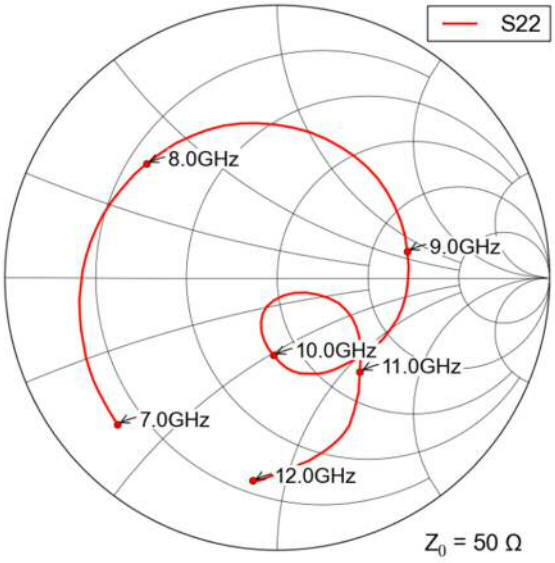
VDS= 10 V, IDSset= 7.0 A, f= 9.5, 10.0, 10.5 GHz, Δf= 5 MHz , Ta= +25 ℃

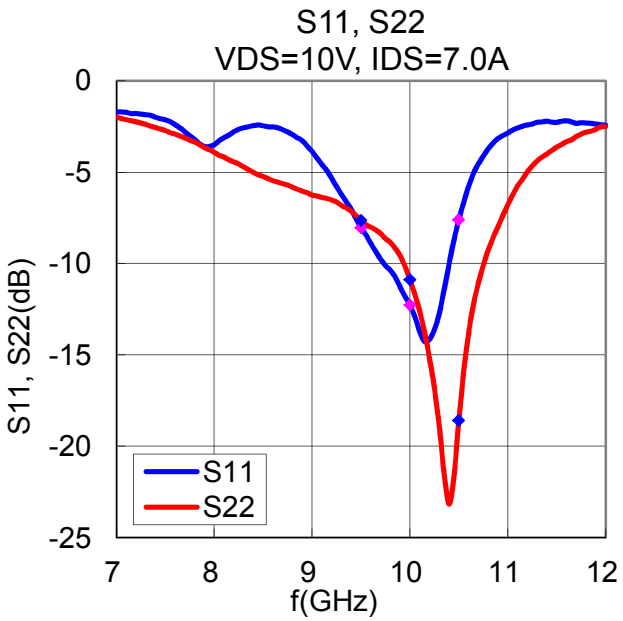


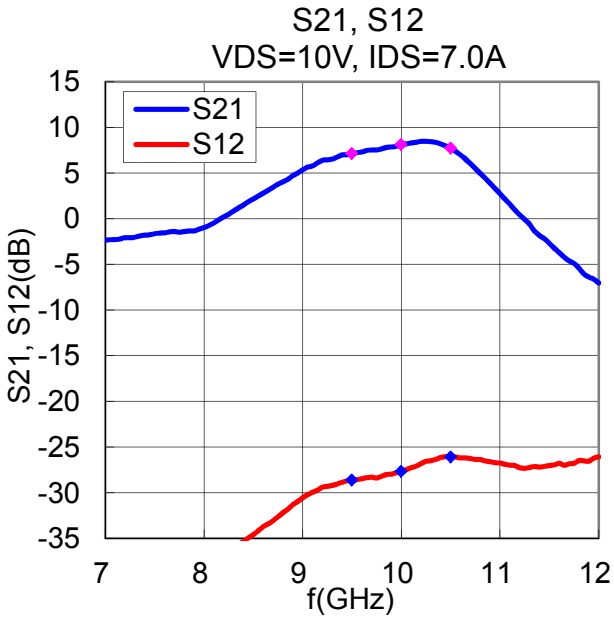
·S-Parameters

VDS= 10 V, IDSset= 7.0 A, f= 7.0 to 12.0 GHz, Ta= +25 ℃









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