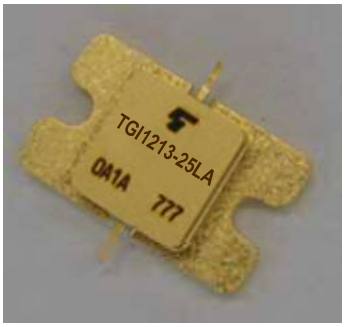
MICROWAVE POWER GaN HEMT
TGI1213-25LA



FEATURES

·BROAD BAND INTERNALLY MATCHED HEMT

·HIGH POWER

Pout= 44.0dBm at Pin= 39.0dBm

·HIGH GAIN

GL= 8.0dB at 12.7GHz to 13.2GHz

·LOW INTERMODULATION DISTORTION WITH WIDE SPACING TONE

IM3(Min.)= -25dBc at Pout= 37.0dBm (Single Carrier Level)

·HERMETICALLY SEALED PACKAGE

RF PERFORMANCE SPECIFICATIONS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Output Power	Pout	VDS= 24V IDSset= 1.0A f = 12.7 to 13.2GHz @Pin= 39dBm	dBm	43.0	44.0	—
Drain Current	IDS1		A	—	2.5	3.0
Power Added Efficiency	PAE		%	—	29	—
Linear Gain	GL	@Pin= 20dBm[x]	dB	7.0	8.0	—
Gain Flatness	ΔG		dB	—	—	±0.8
3rd Order Intermodulation Distortion	IM3	Two-tone Test Po= 37.0dBm (Single Carrier Level) Δf= 5MHz (IM3) Δf= 150MHz (IM3-2)	dBc	-25	-27	—
	IM3-2		dBc	-25	-27	—
Drain Current	IDS2		A	—	1.75	2.25
Channel Temperature Rise	ΔTch	(VDS × IDS + Pin − Pout) × Rth(c-c)	°C	—	110	140

Recommended Gate Resistance(Rg): 13.3 Ω

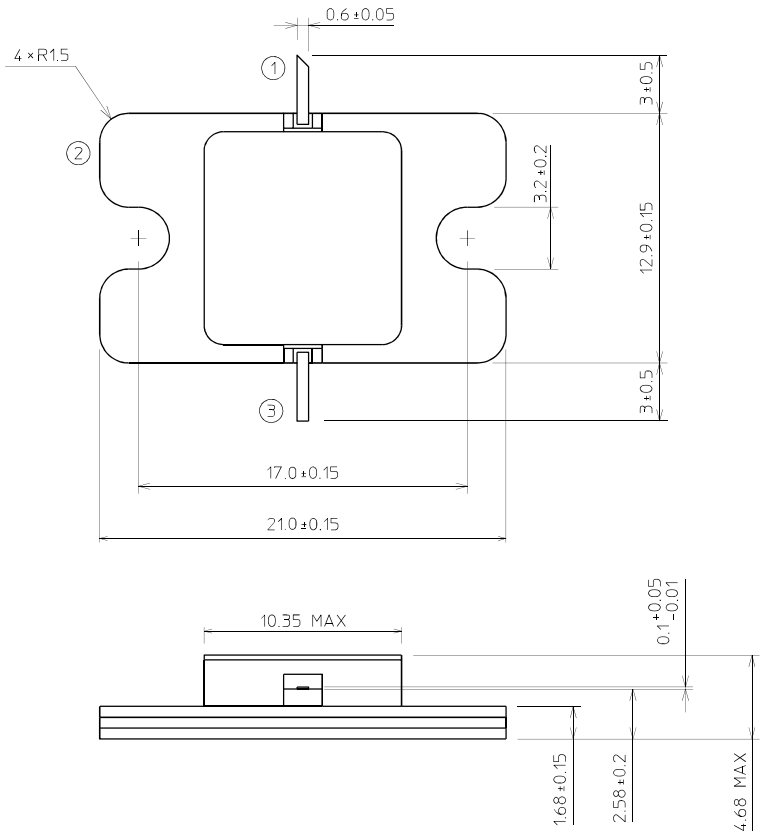
ELECTRICAL CHARACTERISTICS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	VDS= 5V IDS= 2.5A	S	—	2.25	—
Pinch-off Voltage	VGSoff	VDS= 5V IDS= 11.5mA	V	-1.0	-4.0	-6.0
Saturated Drain Current	IDSS	VDS= 5V VGS= 0V	A	—	9.0	—
Gate-Source Breakdown Voltage	VGSO	IGS= -5mA	V	-10	—	—
Thermal Resistance	Rth(c-c)	Channel to Case	°C/W	—	2.8	3.2

ABSOLUTE MAXIMUM RATINGS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	VDS	V	50
Gate-Source Voltage	VGS	V	-10
Drain Current	IDS	A	7.5
Total Power Dissipation (Tc= 25°C)	PT	W	70
Channel Temperature	Tch	°C	250
Storage Temperature	Tstg	°C	-65 to +175

PACKAGE OUTLINE (7-AA07A)



Unit in mm

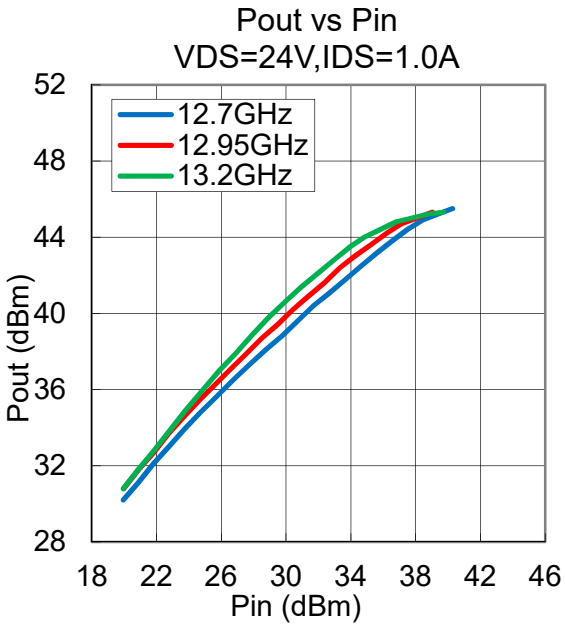
① Gate
② Source
③ Drain

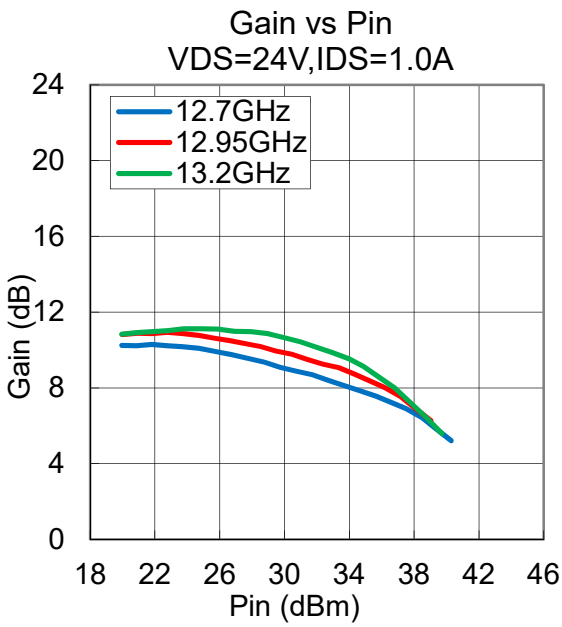
HANDLING PRECAUTIONS FOR PACKAGE MODEL

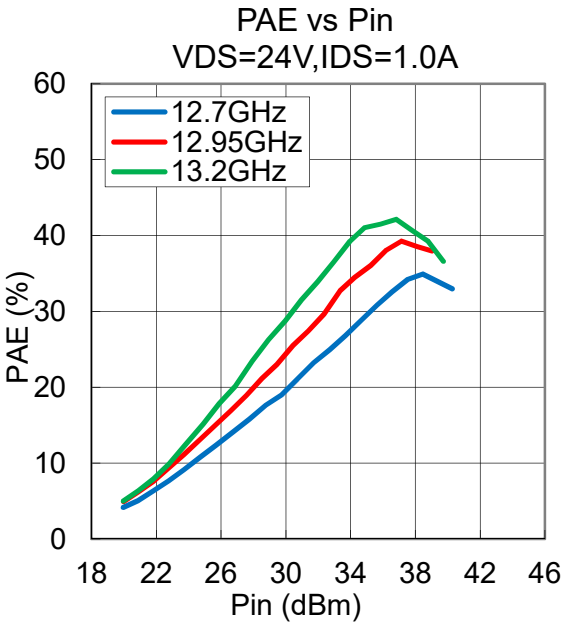
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C or 3 seconds at 350°C.

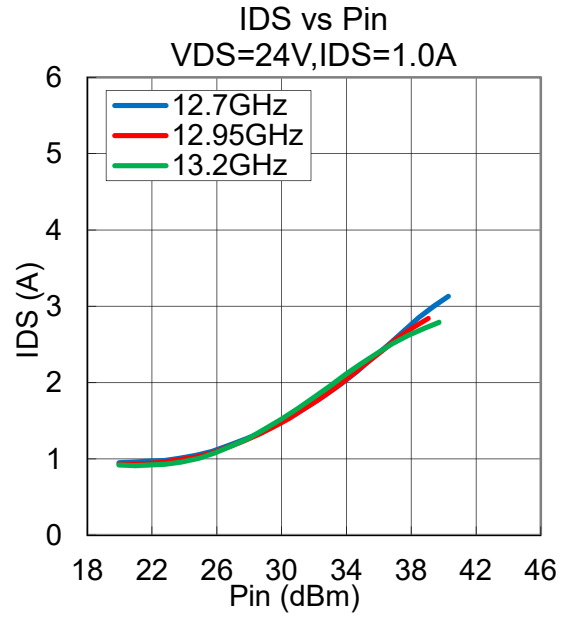
·Pout , Gain , PAE , IDS vs. Pin

VDS= 24 V, IDSset= 1.0 A, f= 12.7, 12.95, 13.2GHz, Ta= +25 ℃



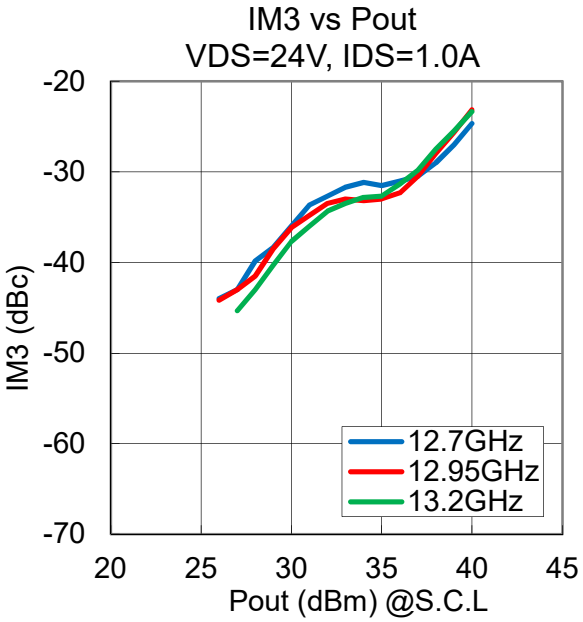


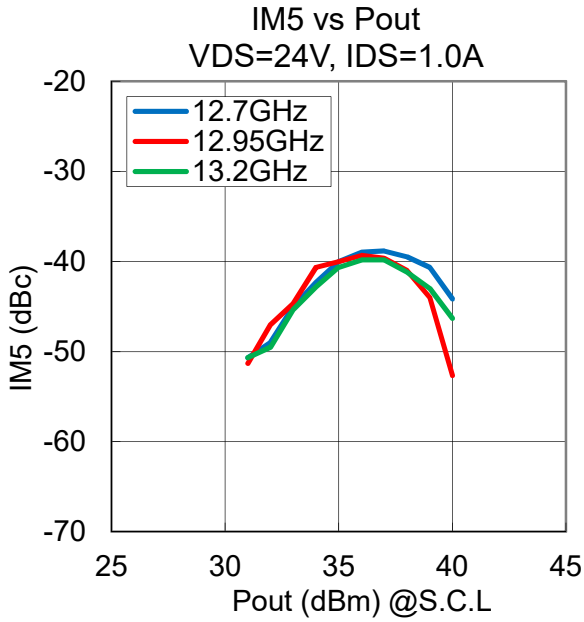




·IM3, IM5 vs. Pout

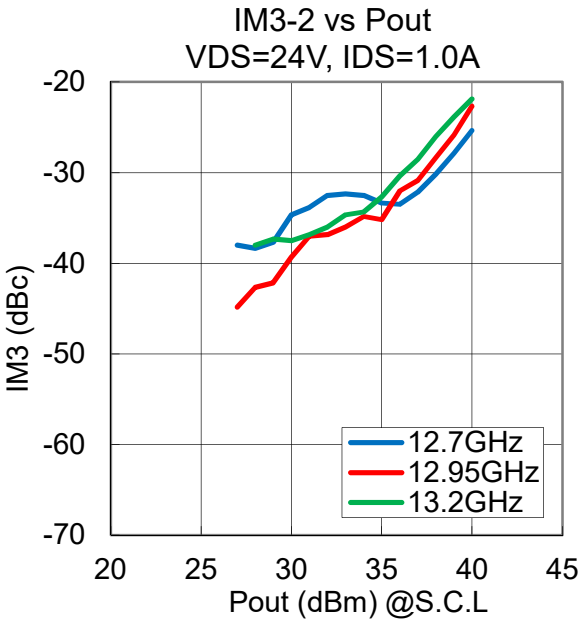
VDS= 24 V, IDSset= 1.0 A, f= 12.7, 12.95, 13.2 GHz, Δf= 5 MHz , Ta= +25 ℃

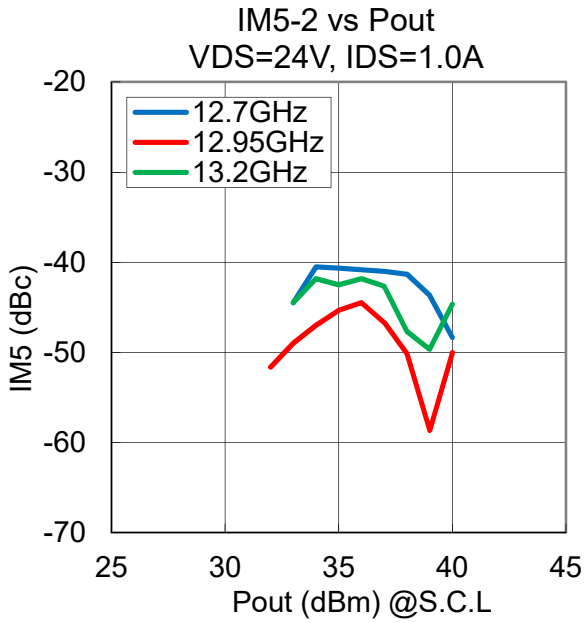




·IM3-2, IM5-2 vs. Pout

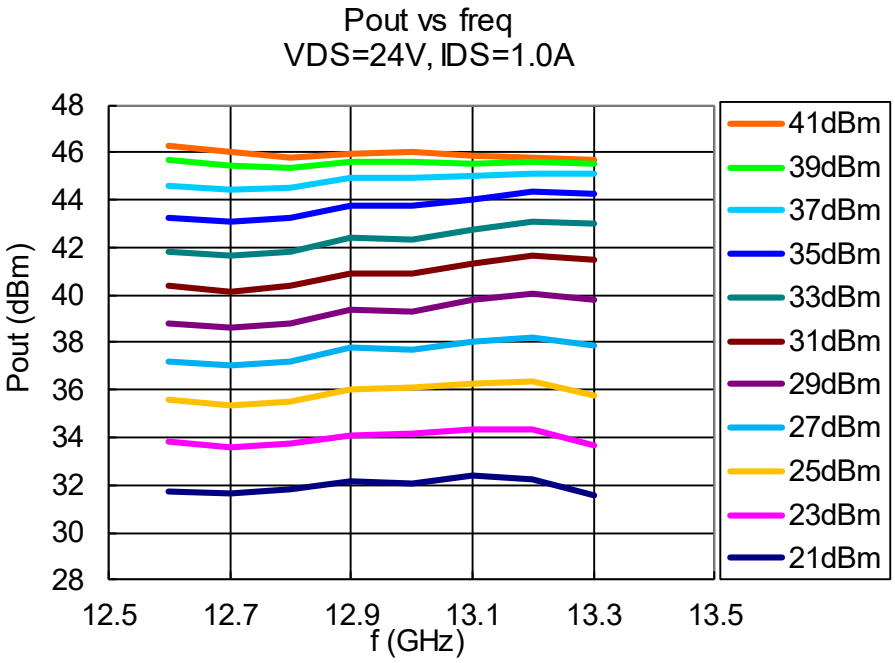
VDS= 24 V, IDSset= 1.0 A, f= 12.7, 12.95, 13.2 GHz, Δf= 150 MHz , Ta= +25 ℃





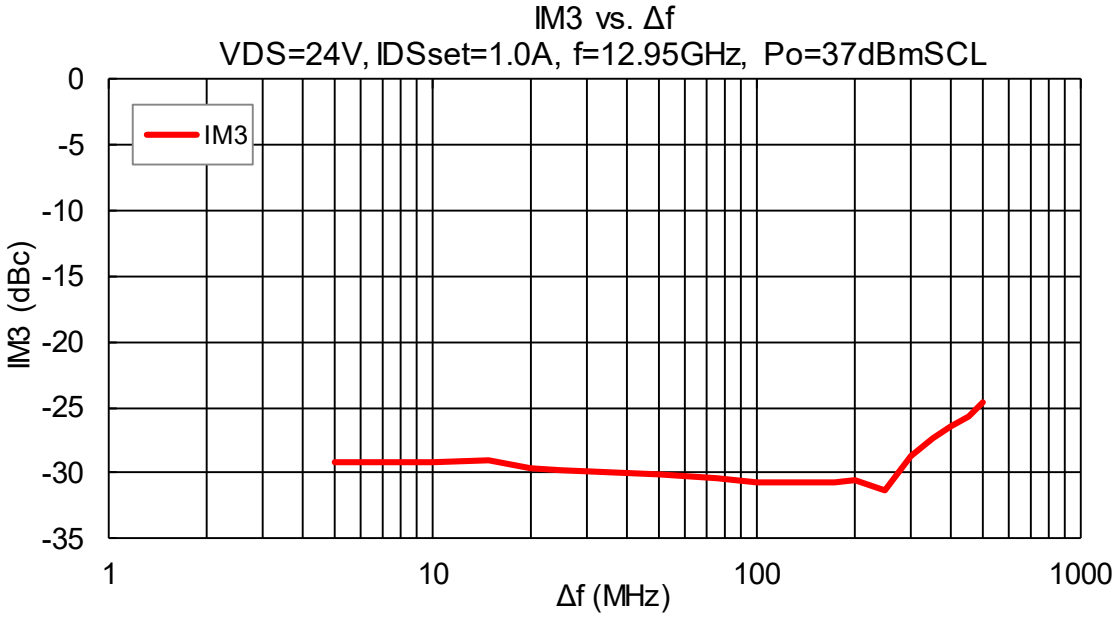
·Pout vs. Frequency

VDS= 24 V, IDSset= 1.0 A, Ta= +25 ℃



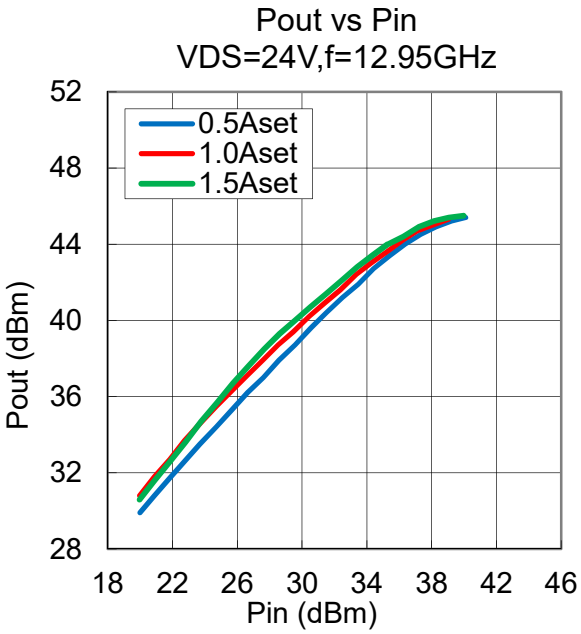
·IM3 vs. Δf (Two tone spacing)

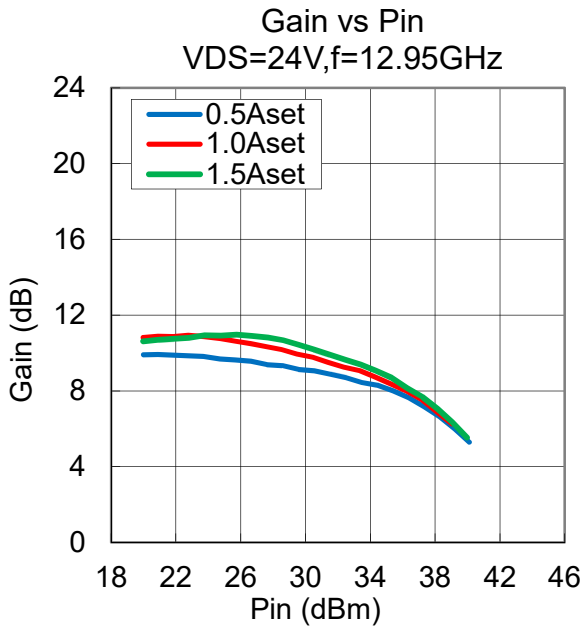
VDS= 24V, IDSset= 1.0A, f= 12.95GHz, Po= 37dBmSCL, Ta= +25°C

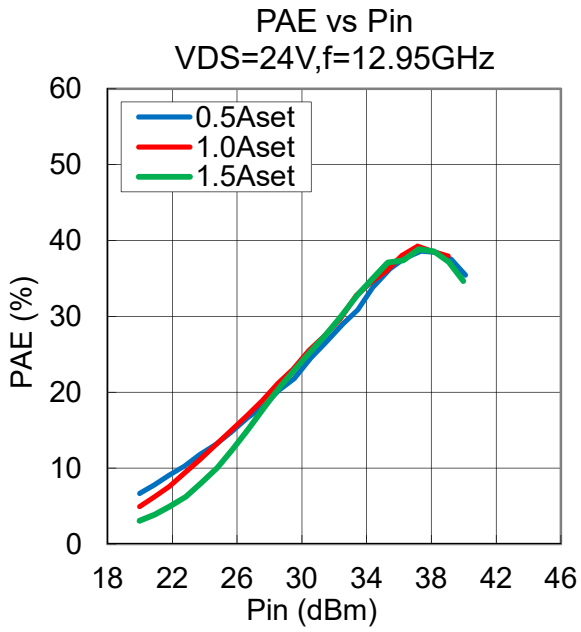


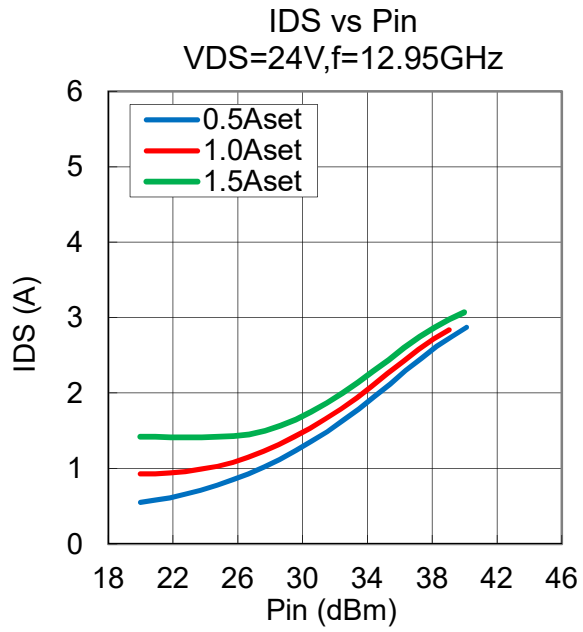
·Pout , Gain , PAE , IDS vs. Pin vs. IDSset

VDS= 24 V, IDSset= 0.5, 1.0, 1.5 A, f= 12.95 GHz, Ta= +25 ℃



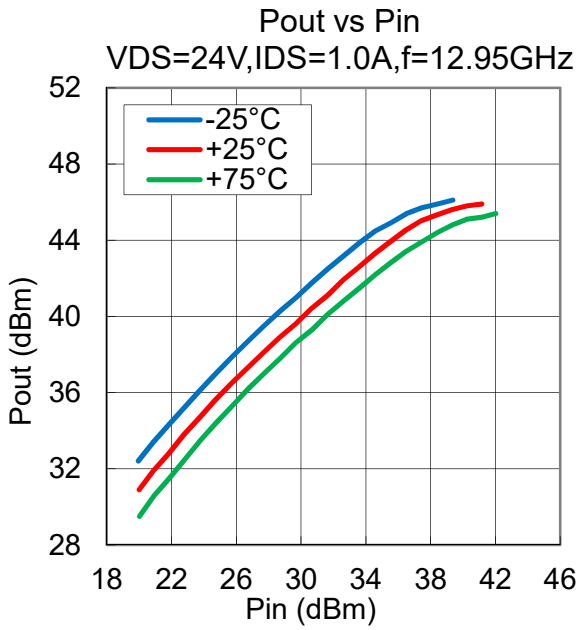


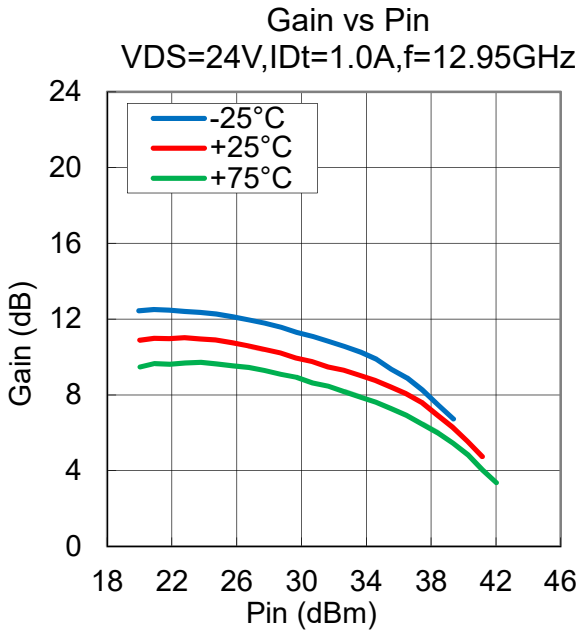


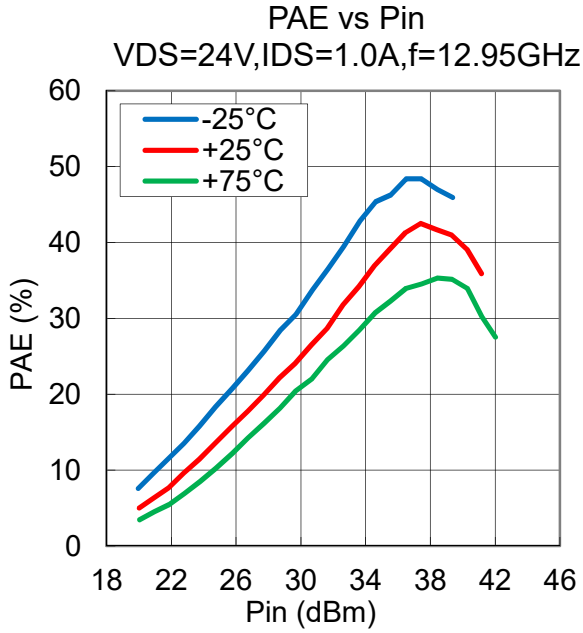


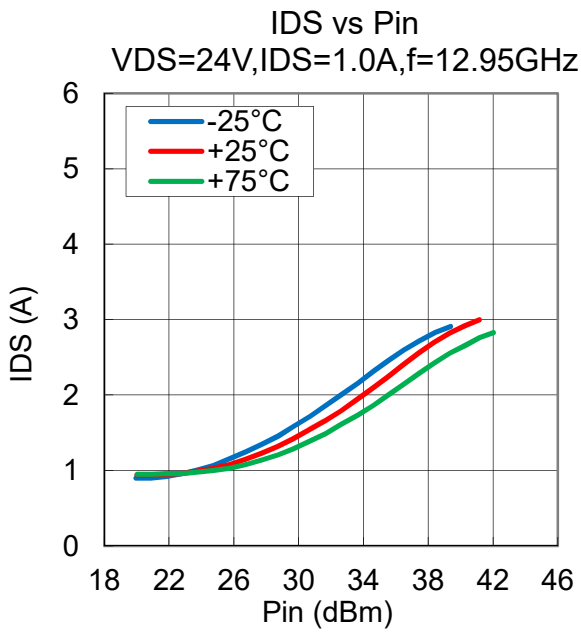
·Pout , Gain , PAE , IDS vs. Pin vs. Temperature

VDS= 24 V, IDSset= 1.0 A, f= 12.95 GHz, Ta= -25, +25, +75 ℃



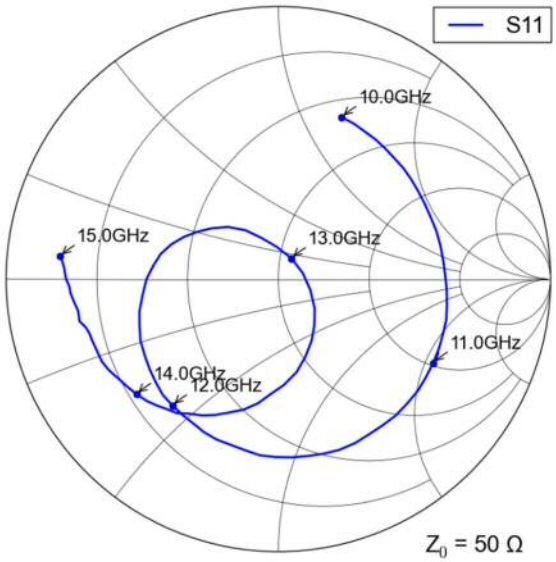


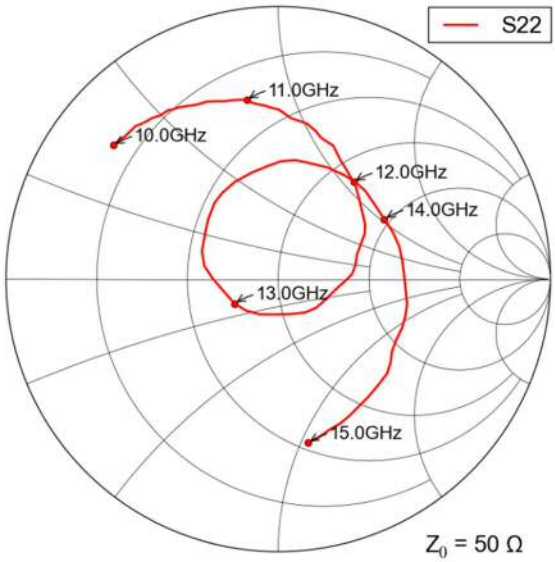


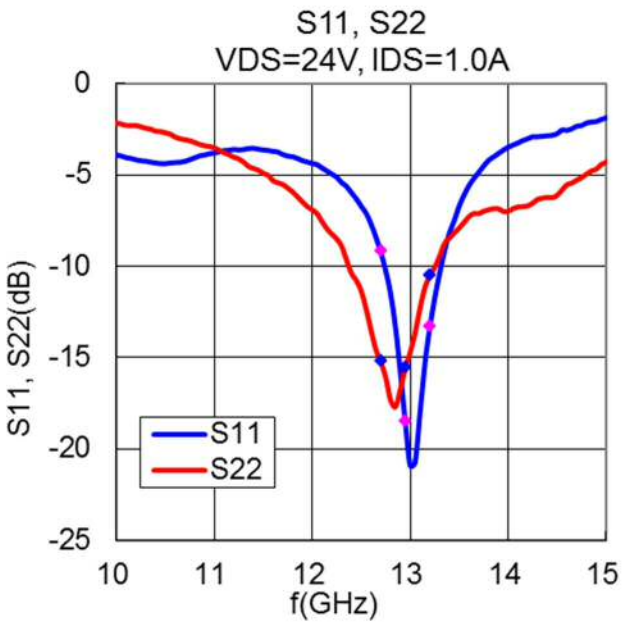


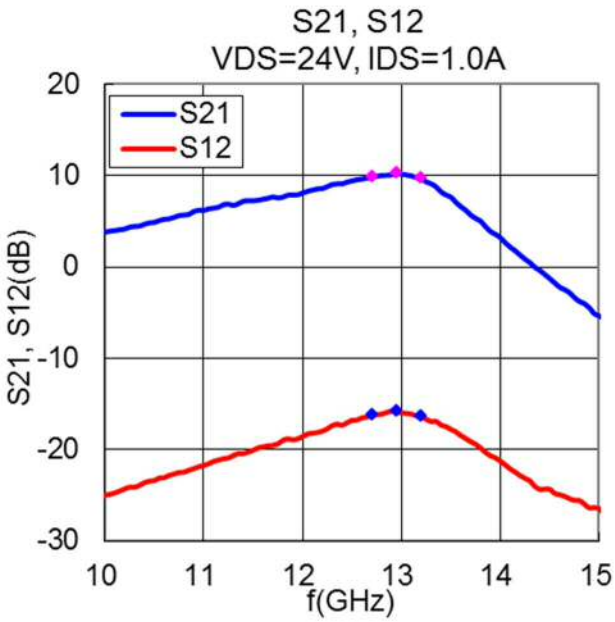
·S-Parameters

VDS= 24 V, IDSset= 1.0 A, f= =10.0 to 15.0 GHz, Ta= +25 ℃









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