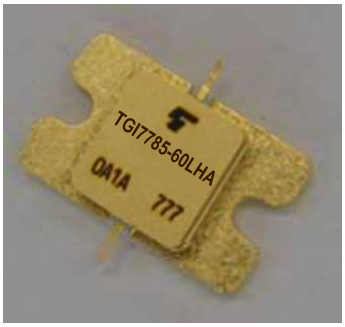
MICROWAVE POWER GaN HEMT
TGI7785-60LHA

FEATURES



- **BROAD BAND INTERNALLY MATCHED HEMT**
- **HIGH POWER**
  Pout= 48.0dBm at Pin= 41dBm
- **HIGH GAIN**
  GL= 11.5dB at Pin= 20dBm
- **LOW INTERMODULATION DISTORTION WITH WIDE SPACING TONE**
  IM3= -25dBc(Min.) at Pout= 29dBm (Single Carrier Level)
- **HERMETICALLY SEALED PACKAGE**

RF PERFORMANCE SPECIFICATIONS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Output Power	Pout	VDS= 40V IDSset= 0.4A f= 7.7 to 8.5GHz @Pin= 41dBm	dBm	47.0	48.0	—
Drain Current	IDS1		A	—	4.0	4.5
Power Added Efficiency	ηadd		%	—	32	—
Linear Gain	GL	@Pin= 20dBm	dB	10.5	11.5	—
Gain flatness	ΔG		dB	—	—	±0.8
3rd Order Intermodulation Distortion	IM3	Two-Tone Test Po= 41dBm, (Single Carrier Level) Δf= 5MHz (IM3) Δf= 150MHz (IM3-2)	dBc	-25	-30	—
	IM3-2		dBc	-25	-27	—
Drain Current	IDS2		A	—	2.0	2.5
Channel Temperature Rise *1	ΔTch		°C	—	120	140

Recommended Gate Resistance(Rg):10 Ω

*1: $\Delta Tch = (VDS \times IDS2 + Pin(two\text{-}tone) - Po(two\text{-}tone)) \times Rth(c\text{-}c)$, calculated using parameters of IM3 test

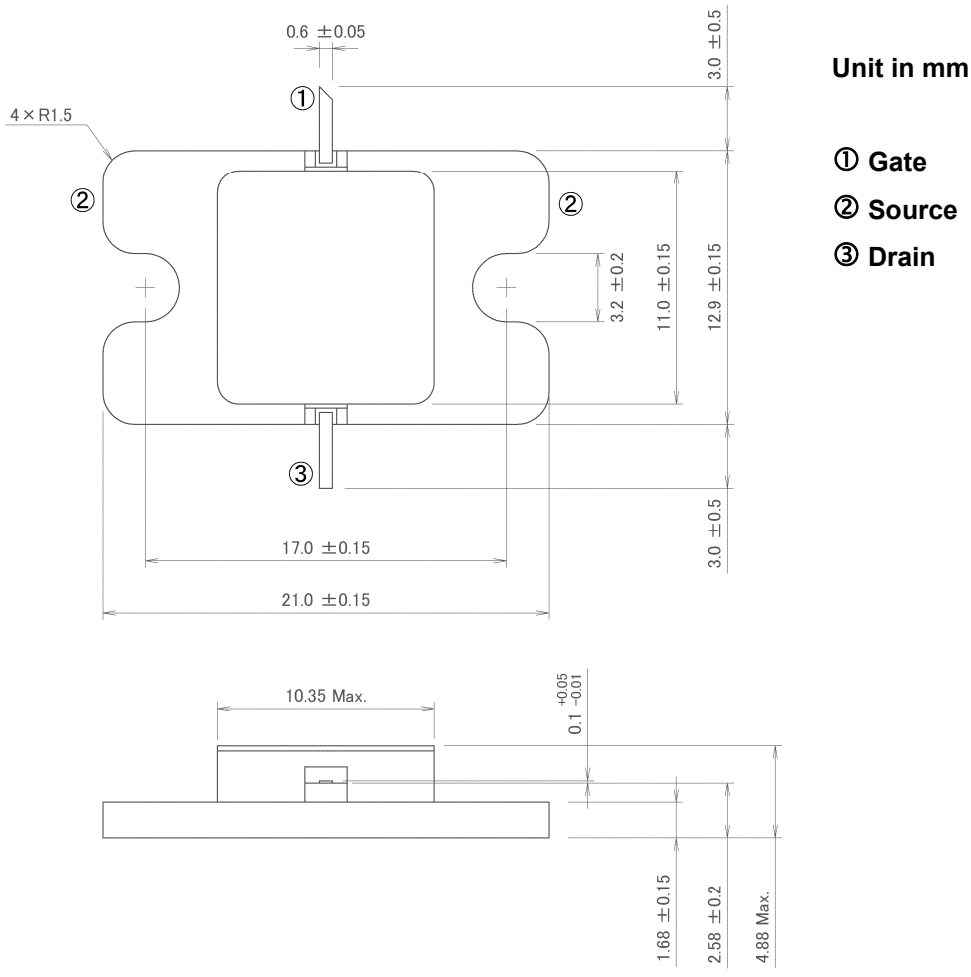
ELECTRICAL CHARACTERISTICS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	VDS= 5V IDS= 5.0A	S	—	4.0	—
Pinch-off Voltage	VGSoff	VDS= 5V IDS= 15mA	V	-2.0	-3.0	-5.0
Saturated Drain Current	IDSS	VDS= 5V VGS= 0V	A	—	10	—
Gate-Source Breakdown Voltage	VGSO	IGS= -12mA	V	-10	—	—
Thermal Resistance	Rth(c-c)	Channel to Case	°C/W	—	1.6	1.8

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	6.0
Total Power Dissipation (Tc= 25 °C)	PT	W	111
Channel Temperature	Tch	°C	225
Storage Temperature	Tstg	°C	-65 to +175

PACKAGE OUTLINE (7-AA04A)



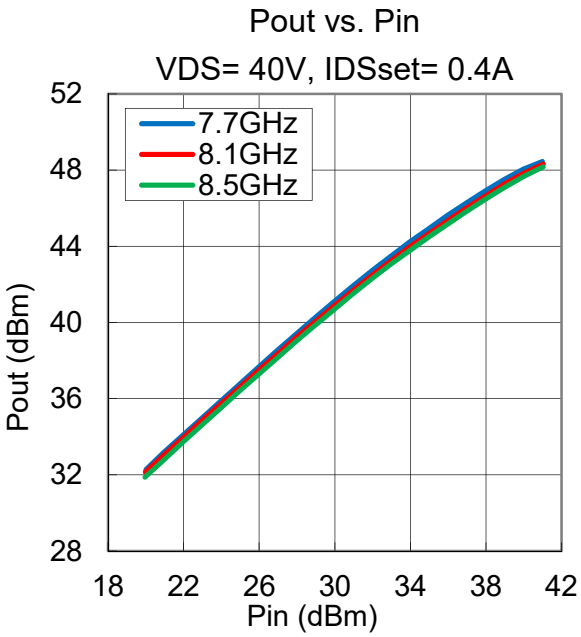
HANDLING PRECAUTIONS FOR PACKAGE MODEL

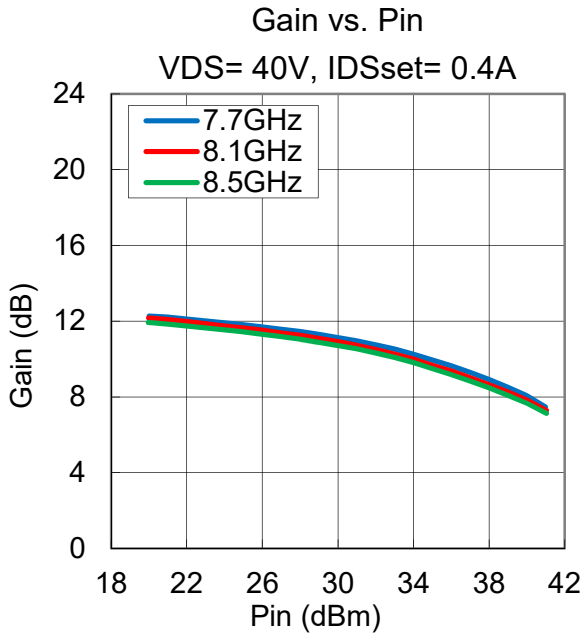
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C or 3 seconds at 350°C.

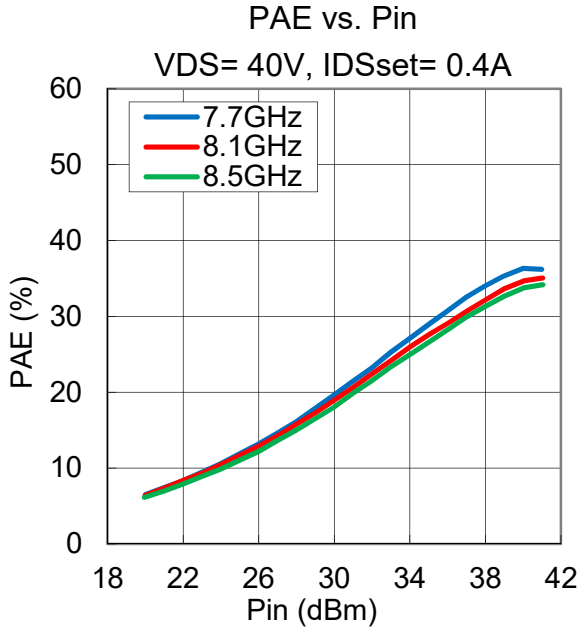
TYPICAL RF PERFORMANCE

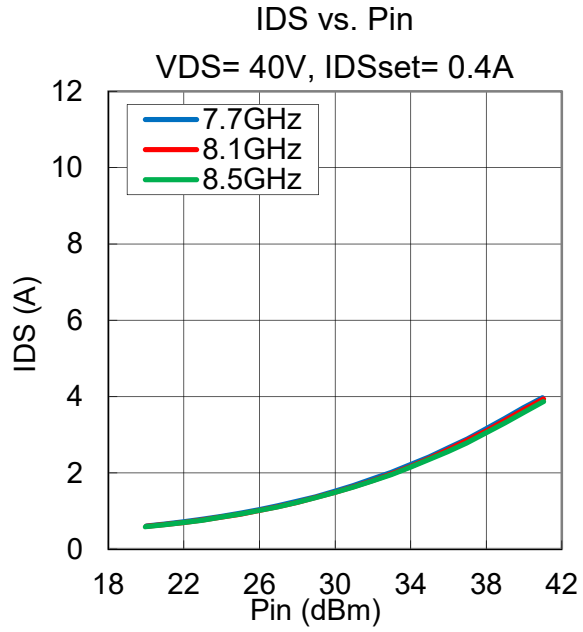
·Pout, Gain, PAE, IDS vs. Pin

VDS= 40V, IDSset= 0.4A, f= 7.7, 8.1, 8.5GHz, Ta= +25°C



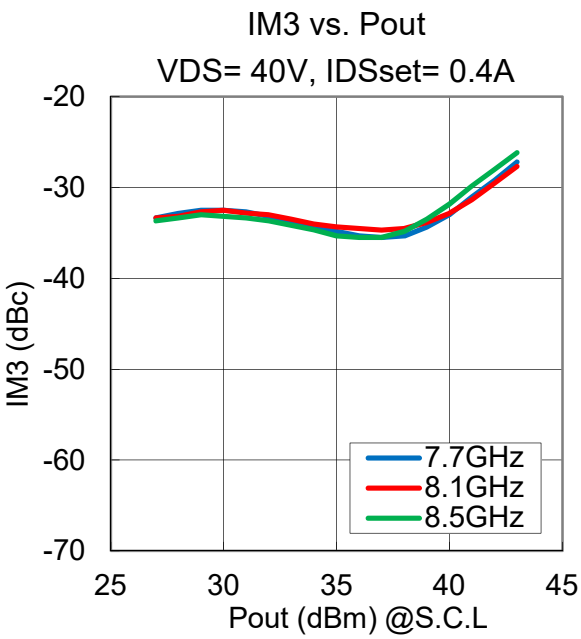


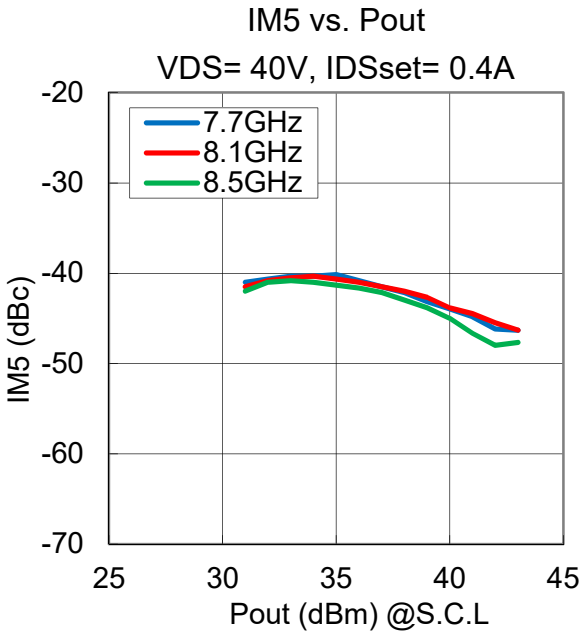




·IM3, IM5 vs. Pout

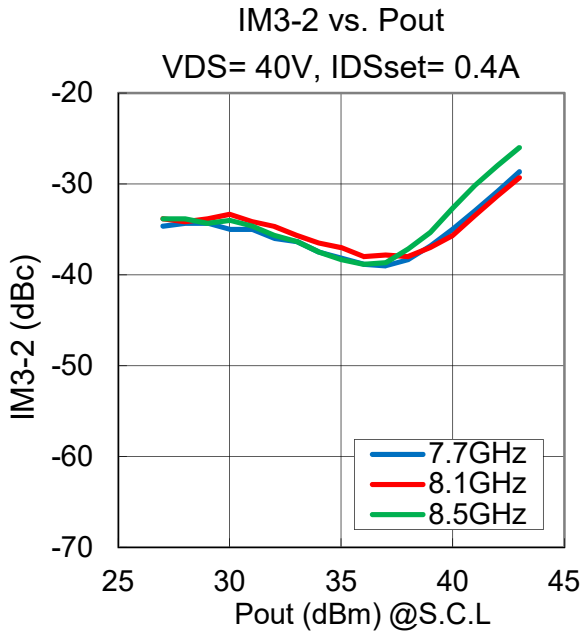
VDS= 40V, IDSset= 0.4A, f= 7.7, 8.1, 8.5GHz, Δf= 5MHz, Ta= +25°C

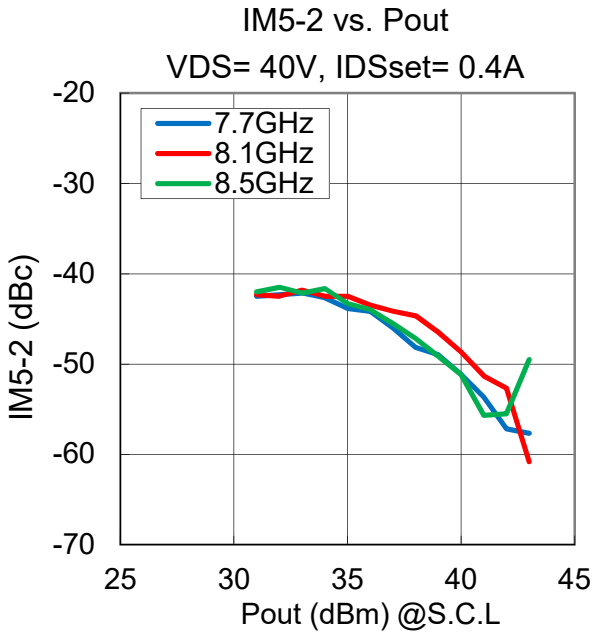




·IM3, IM5 vs. Pout

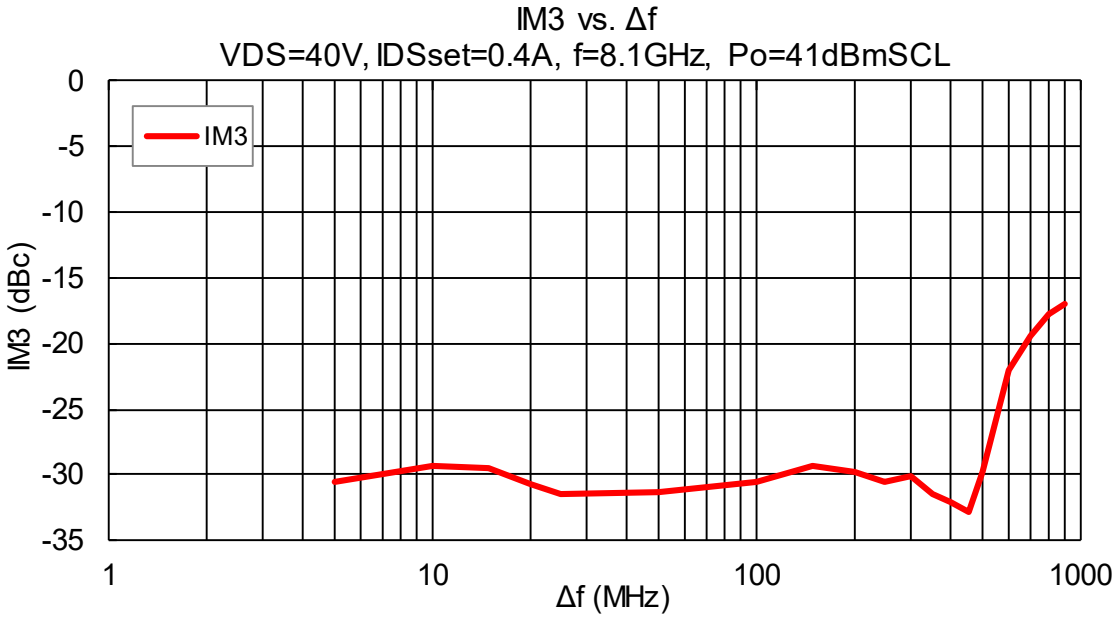
VDS= 40V, IDSset= 0.4A, f= 7.7, 8.1, 8.5GHz, Δf= 150MHz, Ta= +25°C





・IM3 vs. Δf (Two tone spacing)

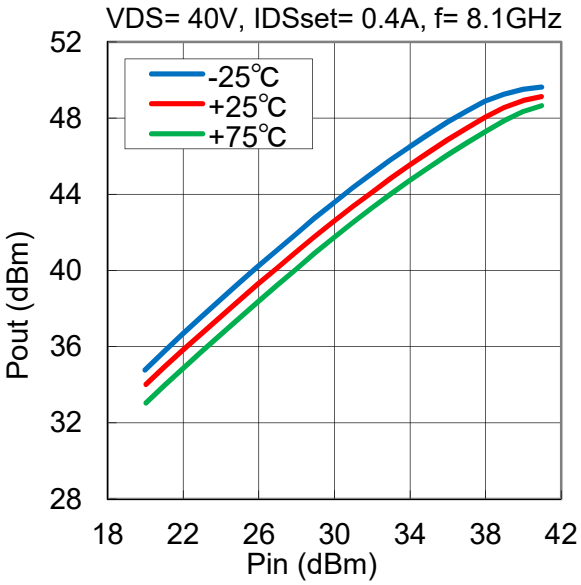
VDS= 40V, IDSset= 0.4A, f= 8.1GHz, Po= 41dBmSCL, Ta= +25°C



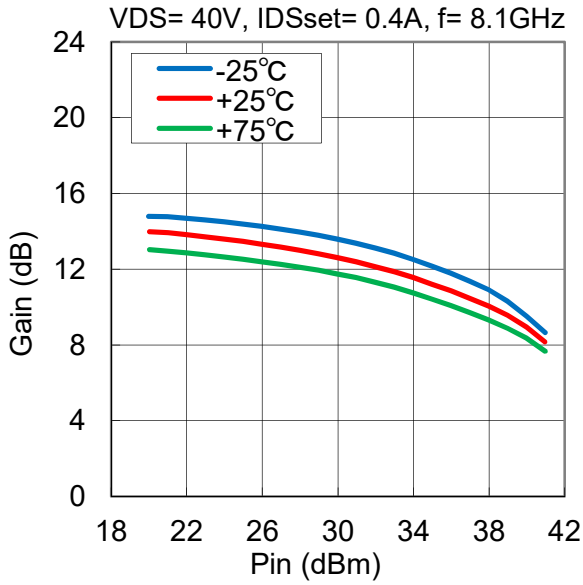
·Pout, Gain, PAE, IDS vs. Pin vs. Temperature

VDS= 40V, IDSset= 0.4A, f= 8.1GHz, Ta= −25, +25, +75°C

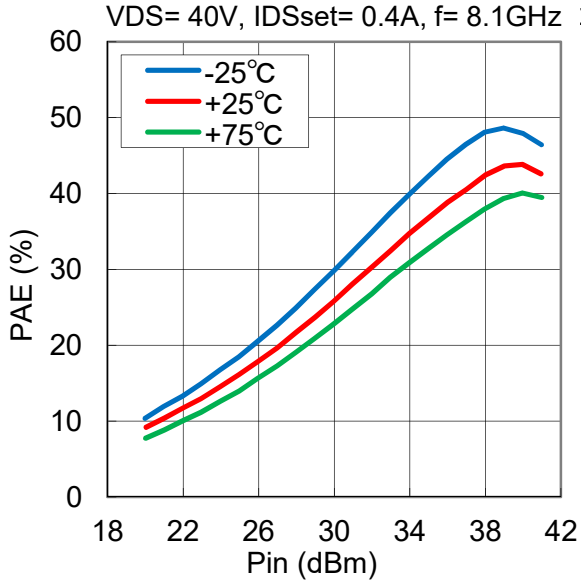
Pout vs. Pin



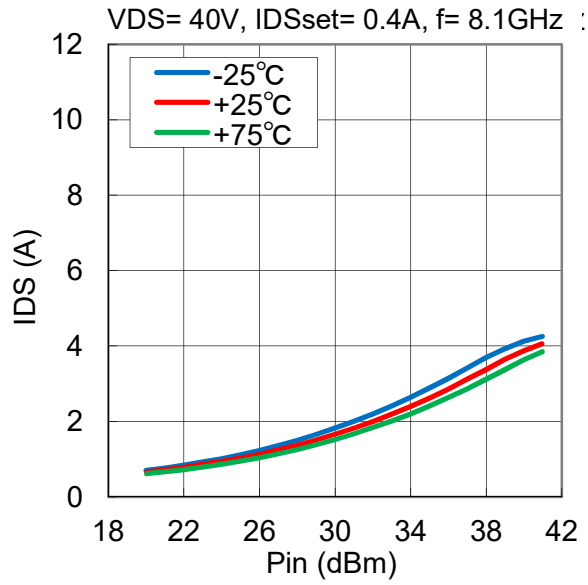
Gain vs. Pin



PAE vs. Pin

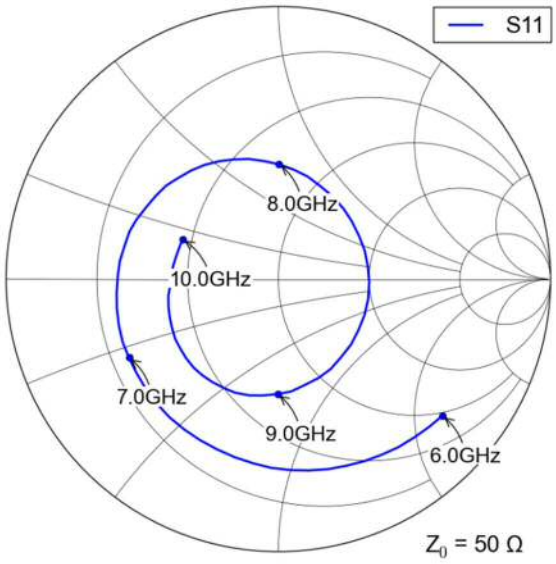


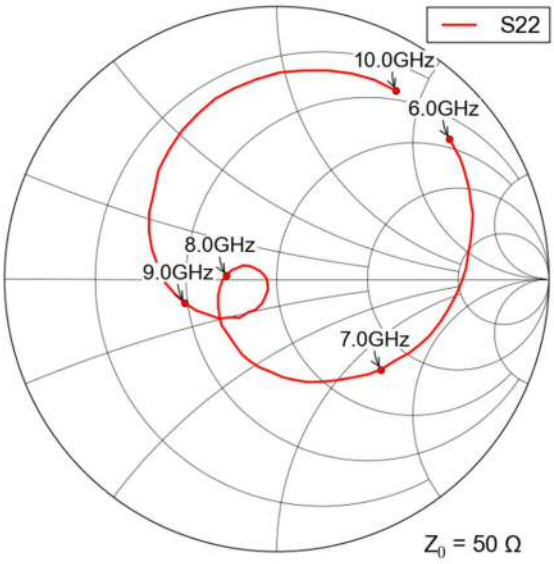
IDS vs. Pin

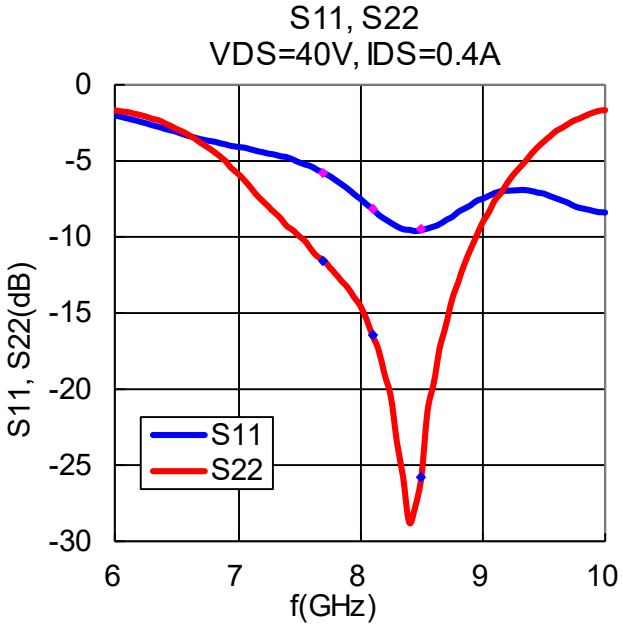


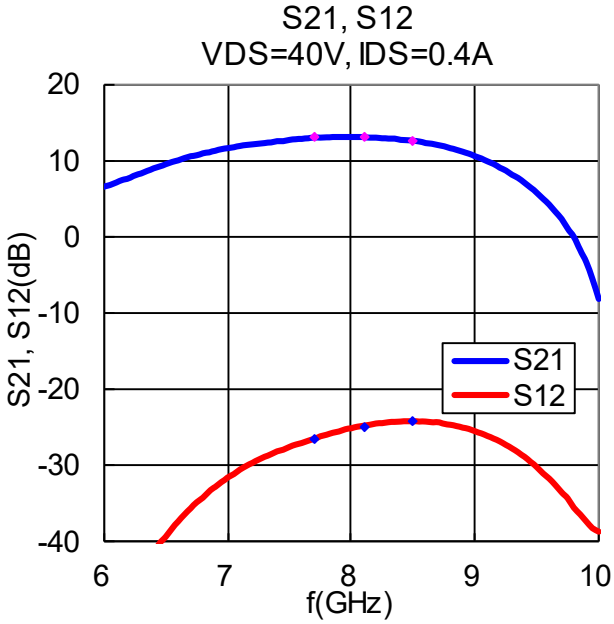
·S-Parameter

VDS= 40V, IDSset= 0.4A, f= 6 to 10GHz, Ta= +25°C









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