

FEATURES

- **BROAD BAND INTERNALLY MATCHED HEMT**
- **HIGH POWER**
 $P_{out} = 51.0\text{dBm}$ at $P_{in} = 44.0\text{dBm}$ (Pulse: $PW = 100\mu\text{s}$, $Duty = 10\%$)
 $P_{out} = 48.5\text{dBm}$ at $P_{in} = 42.0\text{dBm}$ (CW)
- **HIGH GAIN**
 $GL = 11.0\text{dB}$ at $P_{in} = 20.0\text{dBm}$ (Pulse: $PW = 100\mu\text{s}$, $Duty = 10\%$)
- **LOW INTERMODULATION DISTORTION WITH WIDE SPACING TONE**
 $IM3(\text{Min.}) = -25\text{dBc}$ at $P_{out} = 43.0\text{dBm}$ (Single Carrier Level)
- **HERMETICALLY SEALED PACKAGE**



RF PERFORMANCE SPECIFICATIONS ($T_a = 25^\circ\text{C}$)

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Peak Output Power	P_{out}	$V_{DS} = 40\text{V}$ $I_{DSset} = 0.8\text{A}$	dBm	50.0	51.0	—
Peak Drain Current	I_{DS1}	$f = 13.75$ to 14.5GHz $@P_{in} = 44\text{dBm}$ $PW = 100\mu\text{s}$, $Duty = 10\%$	A	—	7.5	9.5
Peak Power Added Efficiency	η_{add1}		%	—	33	—
Linear Gain	GL	$@P_{in} = 20\text{dBm}$ $PW = 100\mu\text{s}$, $Duty = 10\%$	dB	10.0	11.0	—
Gain flatness	ΔG		dB	—	—	± 0.8
3rd Order Intermodulation Distortion	$IM3$	Two-Tone Test $@P_o = 43.0\text{dBm}$ (Single Carrier Level) $\Delta f = 5\text{MHz}$ (IM3) $\Delta f = 150\text{MHz}$, $f = 14.1\text{GHz}$ (IM3-2)	dBc	-25	—	—
	$IM3-2$		dBc	-25	—	—
Drain Current	I_{DS2}		A	—	4.0	5.0
Power Gain	G_{p2}		dB	—	7.5	—
Power Added Efficiency	η_{add2}		%	—	20	—
Channel Temperature Rise *1	ΔT_{ch}		$^\circ\text{C}$	—	120	160

*1: Channel Temperature Rise (ΔT_{ch}) : $(V_{DS} \times I_{DS2} + P_{in}(\text{two tone}) - P_o(\text{two tone})) \times R_{th}(c-c)$

Recommended Gate Resistance (R_g): $10\ \Omega$

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

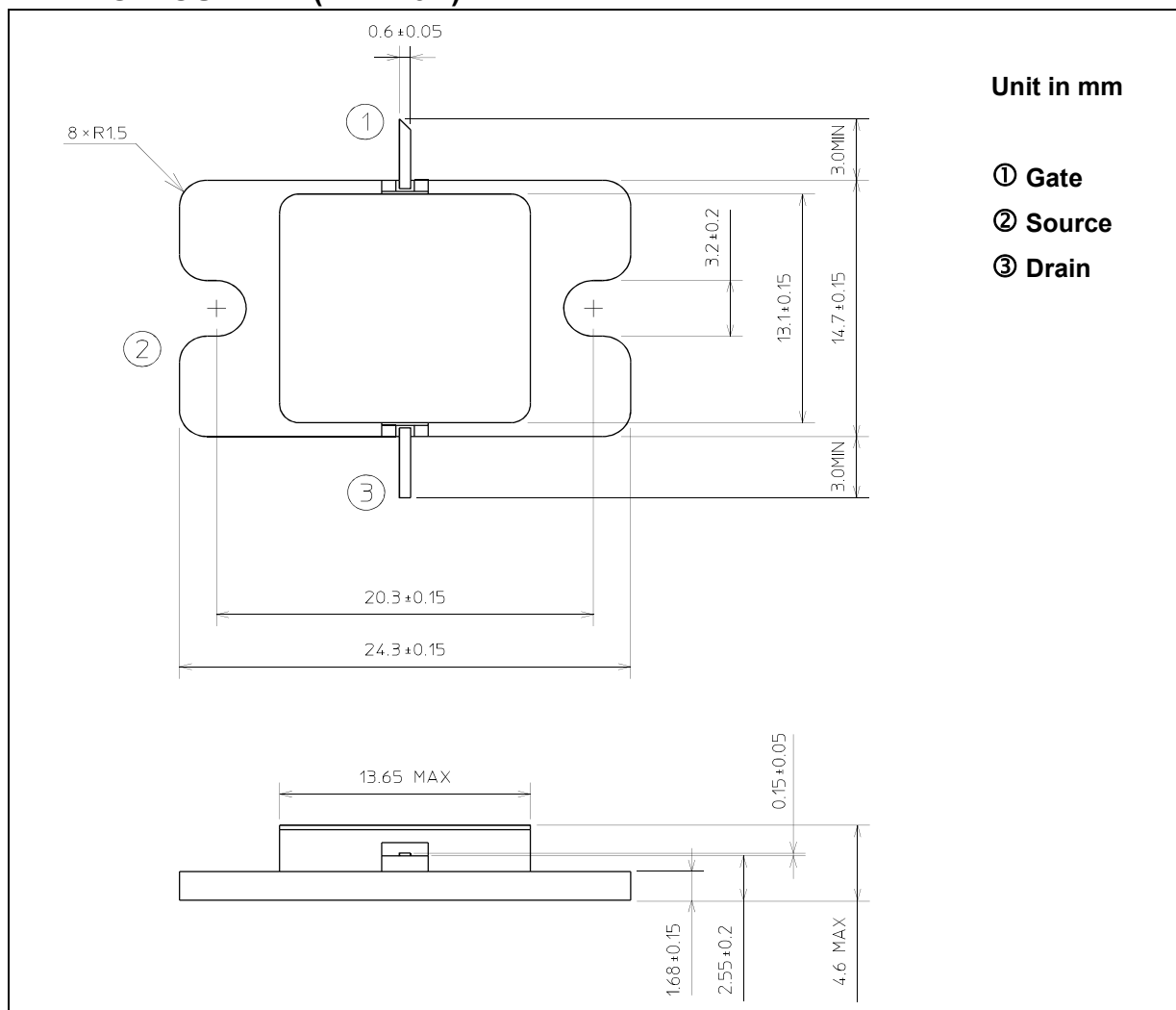
CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Pinch-off Voltage	V_{GSoff}	$V_{DS} = 5\text{V}$ $I_{DS} = 30\text{mA}$	V	-2.0	-3.0	-5.0
Gate-Source Breakdown Voltage	V_{GSO}	$I_{GS} = -25\text{mA}$	V	-10	—	—
Thermal Resistance	$R_{th}(c-c)$	Channel to Case	$^\circ\text{C/W}$	—	0.9	1.1

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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	12.0
Total Power Dissipation (Tc= 25°C)	PT	W	182
Channel Temperature	Tch	°C	225
Storage Temperature	Tstg	°C	-65 to +175

PACKAGE OUTLINE (7-AA13A)

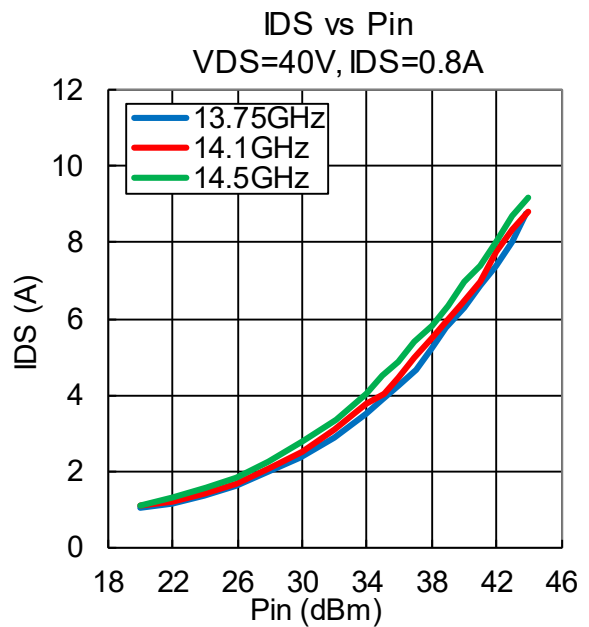
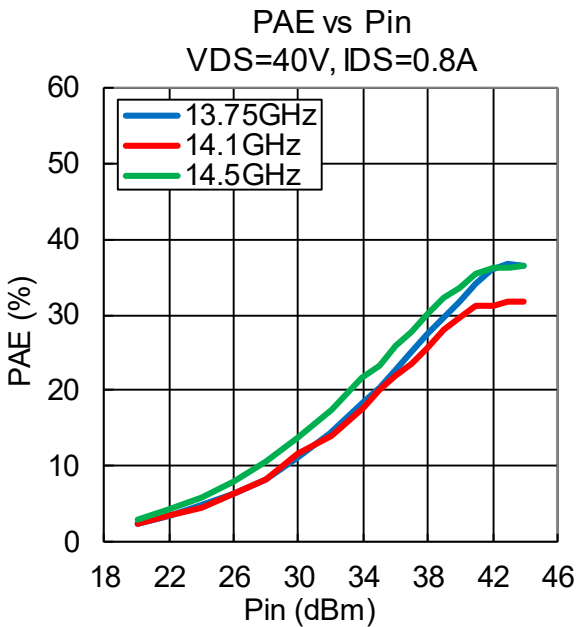
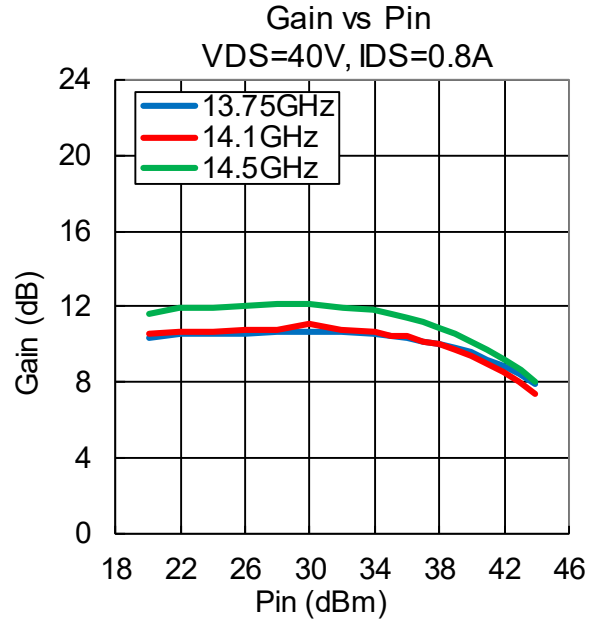
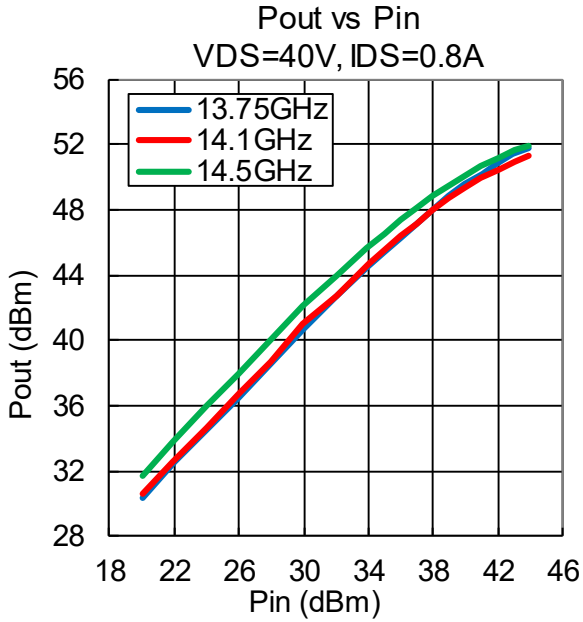


HANDLING PRECAUTIONS FOR PACKAGE MODEL

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

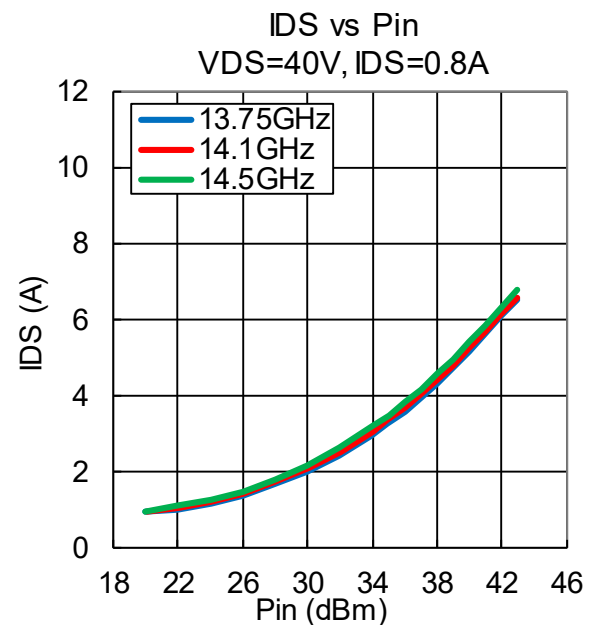
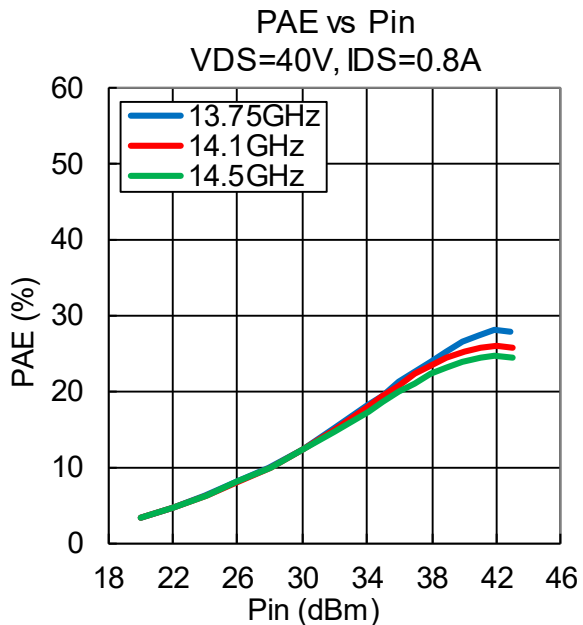
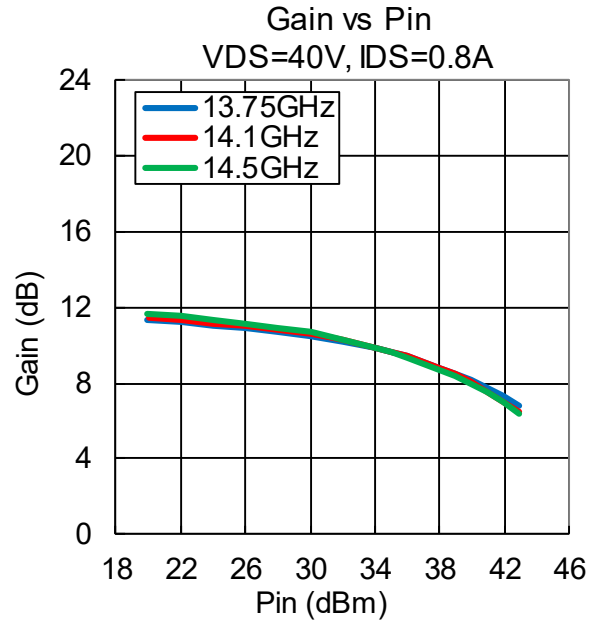
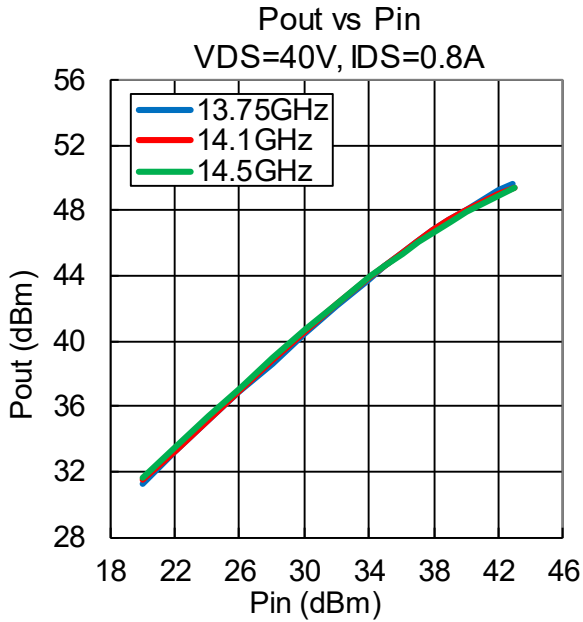
• Pout , Gain , PAE , IDS vs. Pin (Pulse: PW=100us, Duty=10%)

VDS= 40 V, IDSset= 0.8 A, f= 13.75, 14.1, 14.5 GHz, Ta= +25 °C



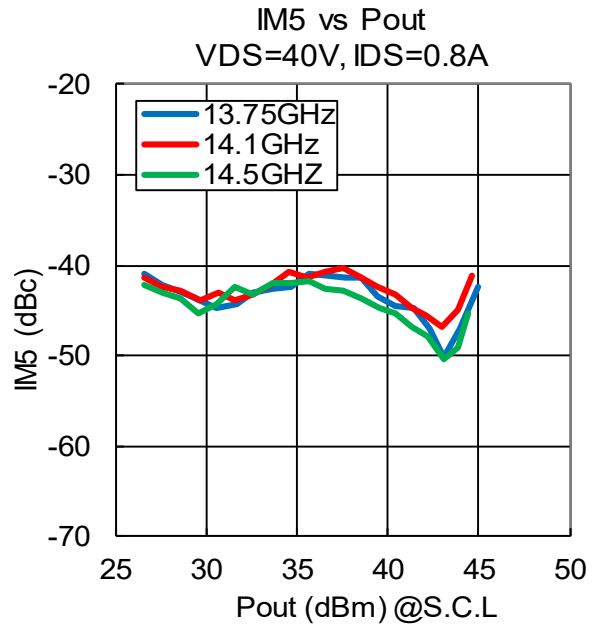
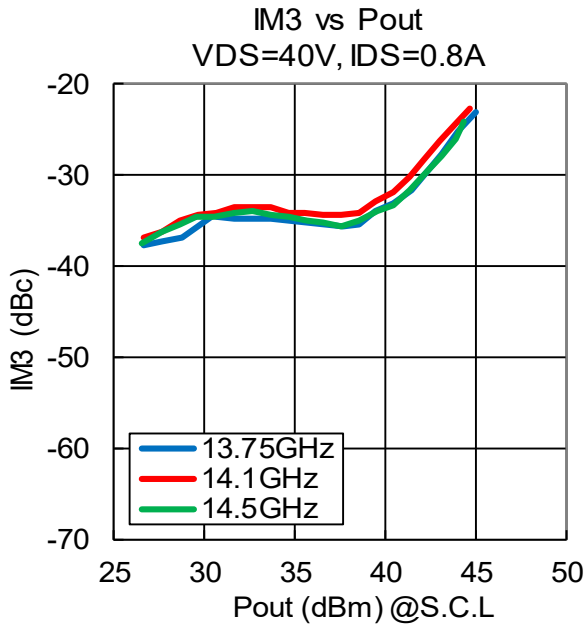
•Pout , Gain , PAE , IDS vs. Pin (CW)

VDS= 40 V, IDSset= 0.8 A, f= 13.75, 14.1, 14.5 GHz, Ta= +25 °C



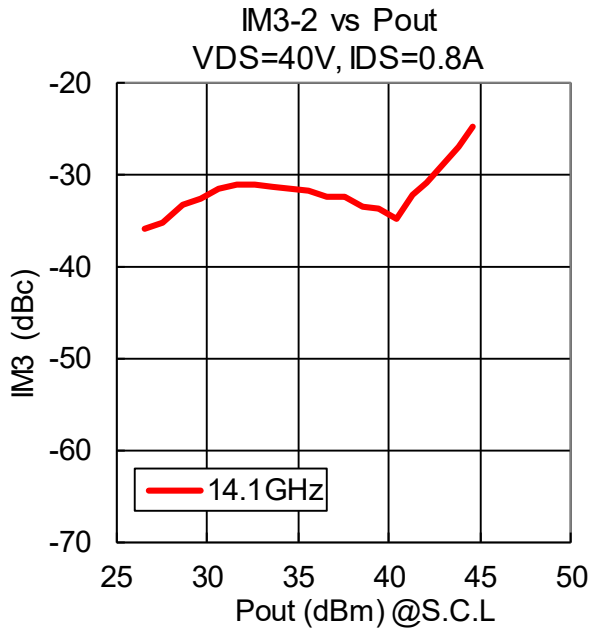
•IM3, IM5 vs. Pout

VDS= 40 V, IDSset= 0.8 A, f= 13.75, 14.1, 14.5 GHz, Δf= 5 MHz , Ta= +25 °C



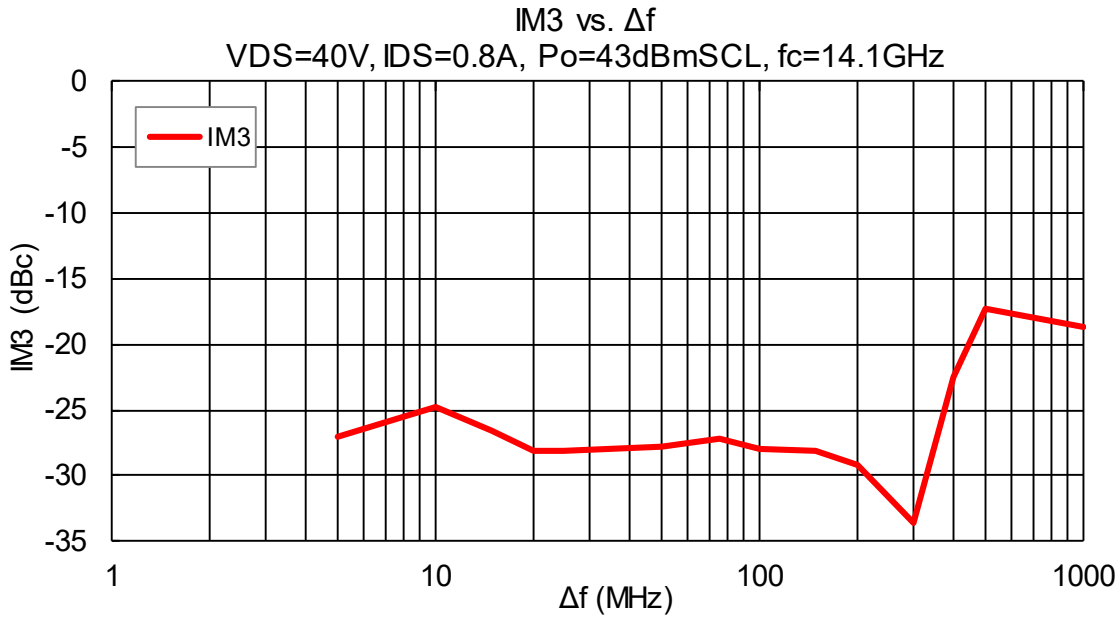
•IM3-2 vs. Pout

VDS= 40 V, IDSset= 0.8 A, f= 14.1 GHz, Δf= 150 MHz , Ta= +25 °C



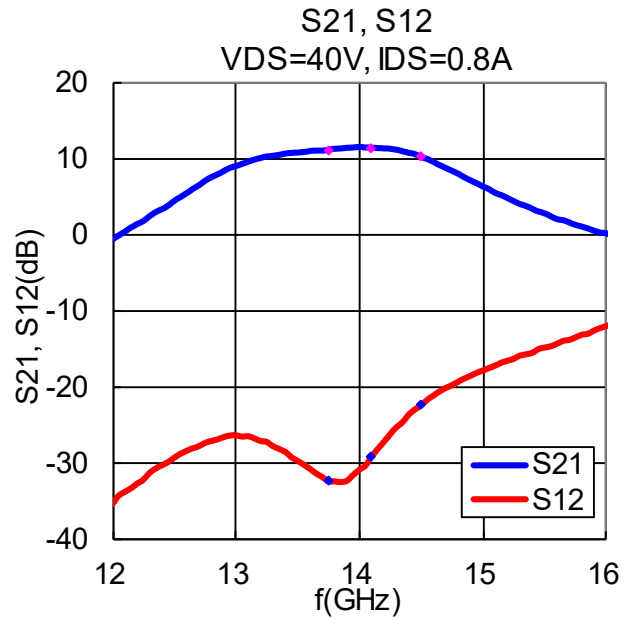
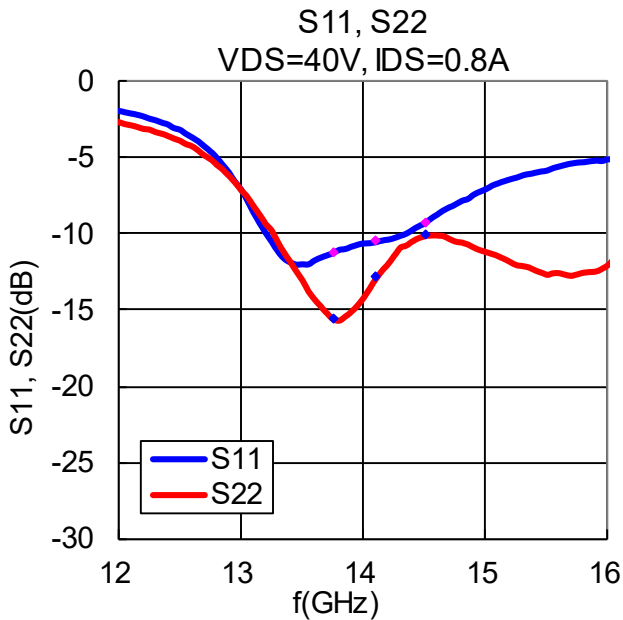
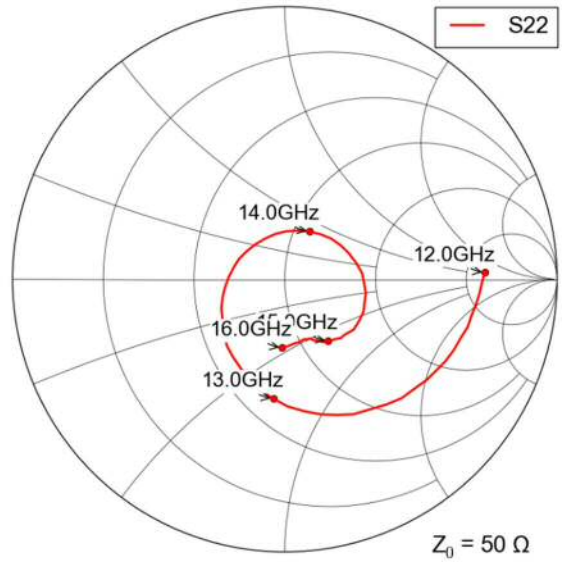
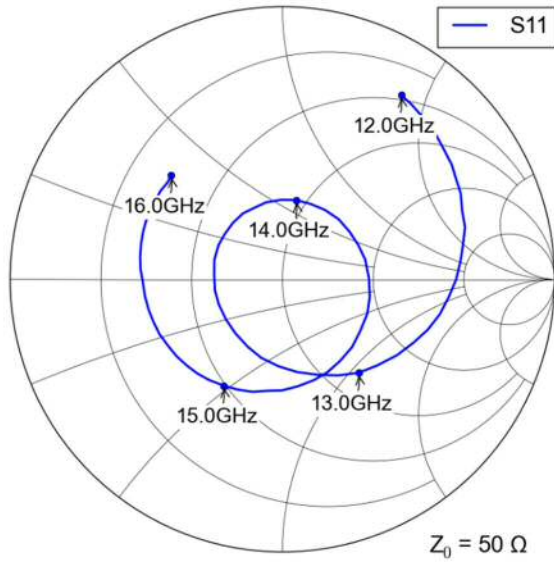
·IM3 vs. Δf (Two tone spacing)

VDS= 40V, IDSset= 0.8A, f= 14.1GHz, Po= 43dBmSCL, Ta= +25°C



-S-Parameters

VDS= 40 V, IDSset= 0.8 A, f= 12.0 to 16.0 GHz, Ta= +25 °C



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