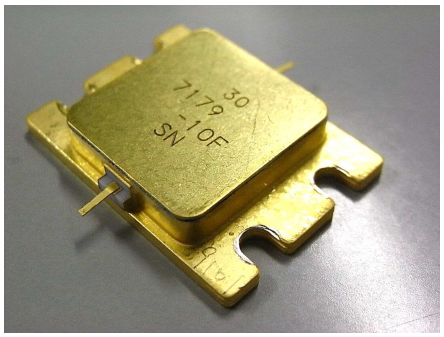
ELM7179-10F

C-band Internally Matched FET

FEATURES

- High Output Power : P1dB=40.5dBm(typ.)
- High Gain : G1dB=9.0dB(typ.)
- High P.A.E. : η add=38%(typ.)
- Broad Band : 7.1 - 7.9GHz
- Impedance Matched Zin/Zout = 50Ω
- Hermetically Sealed Package



DESCRIPTION

The ELM7179-10F is a power GaAs FET that is internally matched for standard communication bands to provide optimum power and gain in a 50Ω system.

SEDI's stringent Quality Assurance Program assures the highest reliability and consistent performance.

ABSOLUTE MAXIMUM RATING

Item	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	15	V
Gata-Source Voltage	V_{GS}	-5	V
Total Power Dissipation	P_T	42.8	W
Storage Temperature	T_{STG}	-65 to +175	deg-C
Channel Temperature	T_{CH}	+ 175	deg-C

RECOMMENDED OPERATING CONDITIONS

Item	Symbol	Condition	Recommend	Unit
DC input Voltage	V_{DS}		< 10	V
Forward Gate Current	I_{GF}	R_G=51Ω	< +27.0	mA
Reverse Gate Current	I_{GR}	R_G=51Ω	< -5.8	mA
Storage Temperature	T_{STG}		-55 to +125	deg-C
Channel Temperature	T_{CH}		+ 155	deg-C

RECOMMENDED OPERATING CONDITIONS (Case Temperature Tc=25 deg-C)

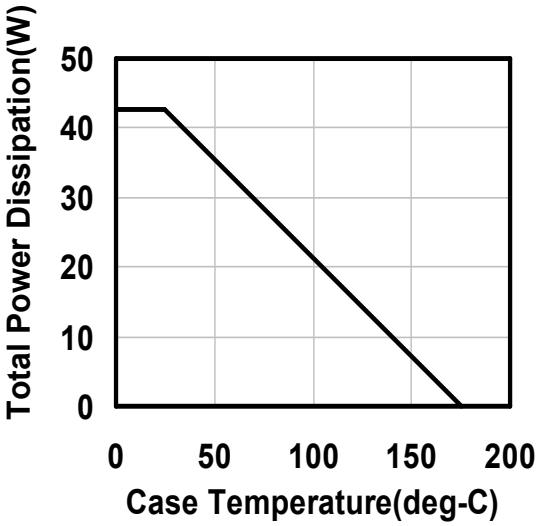
Item	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Drain Current	I_{DSS}	V_{DS}=5V, V_{GS}=0V	—	4000	5600	mA
Transconductance	gm	V_{DS}=5V, I_{DS}=2400mA	—	4000	—	mS
Pinch-off Voltage	V_P	V_{DS}=5V, I_{DS}=240mA	-0.5	-1.5	-3.0	V
Gate-Source Breakdown Voltage	V_{GSO}	I_{GS}=-240uA	-5	—	—	V
Frequency Range	f	VDS=10V	7.1	—	7.9	GHz
Output Power at 1dB G.C.P.	P_{1dB}	IDS(DC)=2600mA(typ.)	39.5	40.5	—	dBm
Power Gain at 1dB G.C.P.	G_{1dB}	Zs=Zl=50Ω	8.0	9.0	—	dB
Drain Current at 1dB G.C.P.	Idsr		—	2600	3000	mA
Power Added Efficiency	η_{add}		—	38	—	%
Gain Flatness	dG		—	—	1.2	dB
3rd Order Inter Modulation Distortion	IM_3	f=7.9GHz, df=10MHz, 2-Tone Test Pout=29.0dBm (S.C.L.)	-44	-46	—	dBc
Thermal Resistance	Rth	Channel to Case	—	3.0	3.5	deg-C/W
Channel Temperature Rise	dTch	(V_{DS} x I_{dsr} - P_{OUT} + P_{IN}) x Rth	—	—	100	deg-C

G.C.P. = Gain Compression Point S.C.L. = Single Carrier Level

Note : RF-Test is measured with Vgs-Constant Circuit

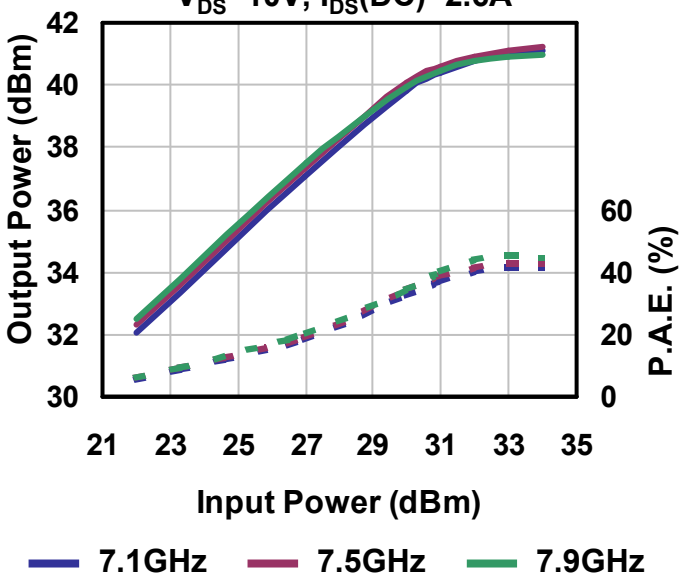
ESD	class 3A	@JEDEC JESD22-A114C.01 (C=100pF, R=1500Ω)
CASE STYLE	IK	
RoHS Compliance	Yes	

Power Derating Curve



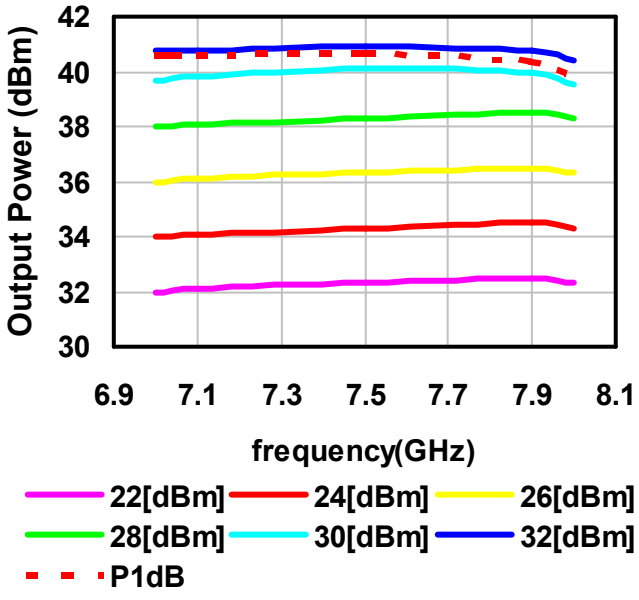
Output Power & P.A.E. v.s. Input Power

V_{DS}=10V, I_{DS}(DC)=2.6A



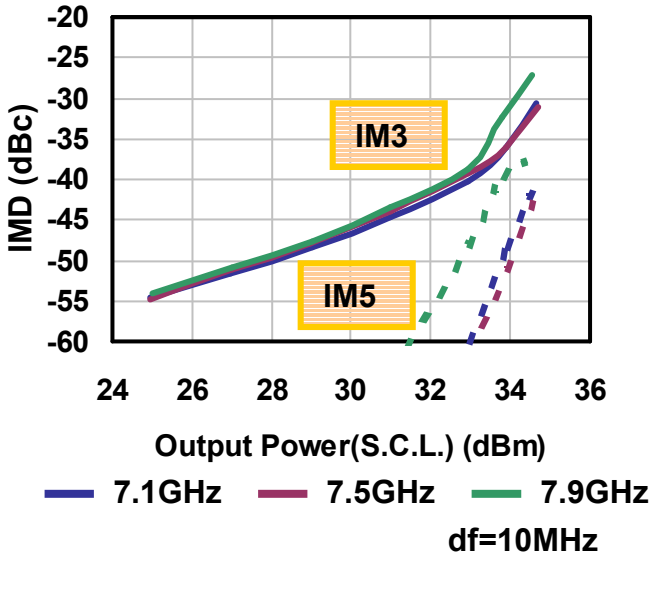
Output Power v.s. Frequency

V_{DS}=10V, I_{DS}(DC)=2.6A

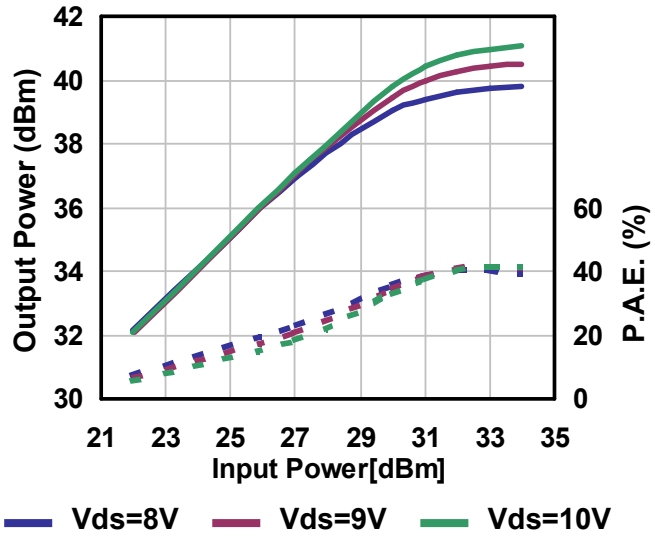


IMD v.s. Output Power

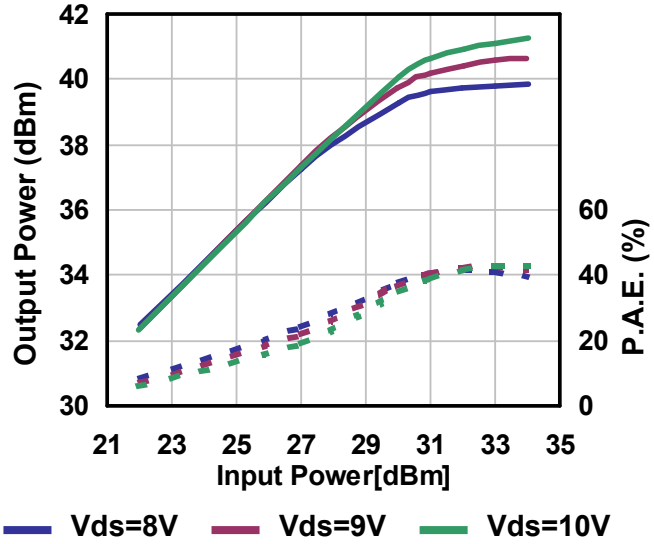
V_{DS}=10V, I_{DS}(DC)=2.6A



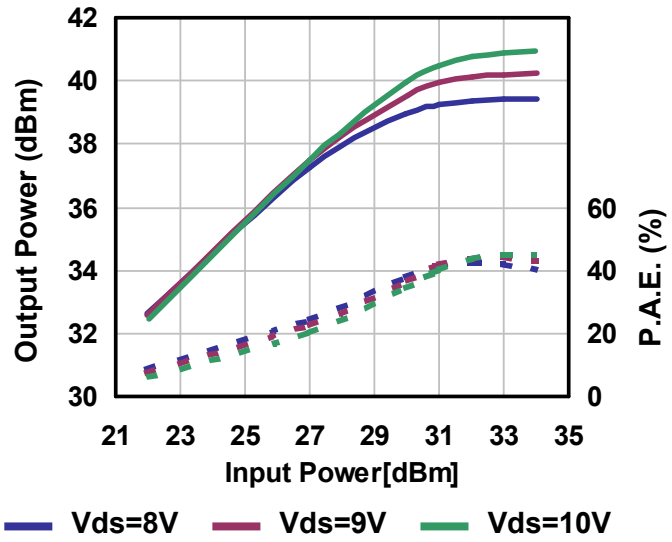
Output Power & P.A.E.
v.s. Input Power by Drain Voltage
I_{DS}(DC)=2.6A@7.1GHz



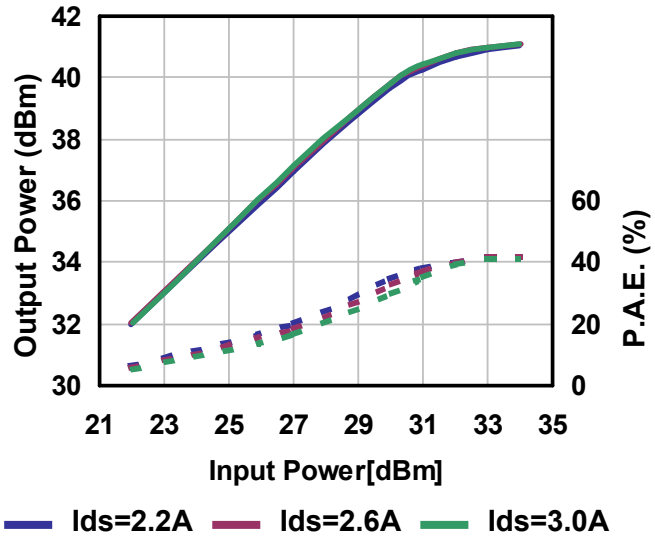
Output Power & P.A.E.
v.s. Input Power by Drain Voltage
I_{DS}(DC)=2.6A@7.5GHz



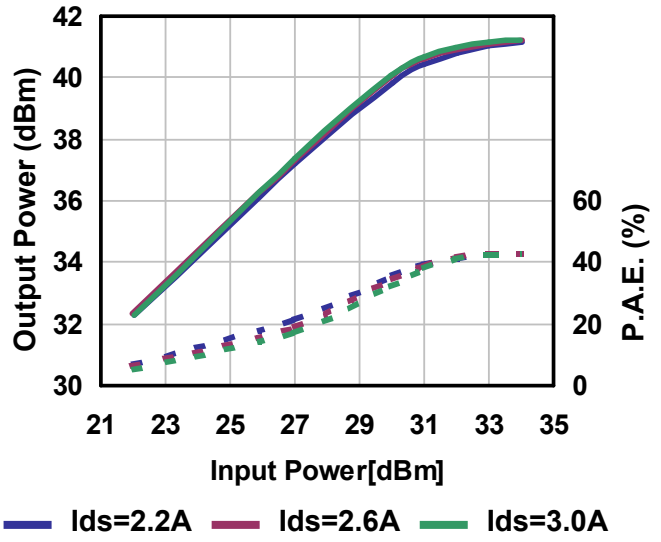
Output Power & P.A.E.
v.s. Input Power by Drain Voltage
I_{DS}(DC)=2.6A@7.9GHz



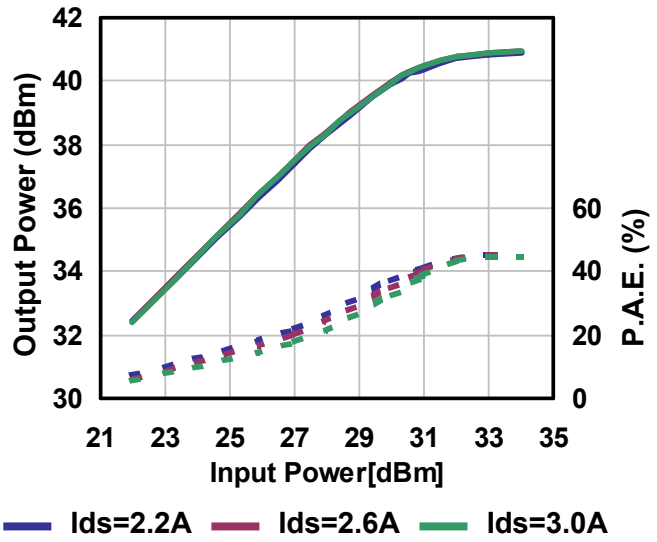
Output Power & P.A.E. v.s. Input Power by Quiescent Drain Current
V_{DS}(DC)=10V@7.1GHz



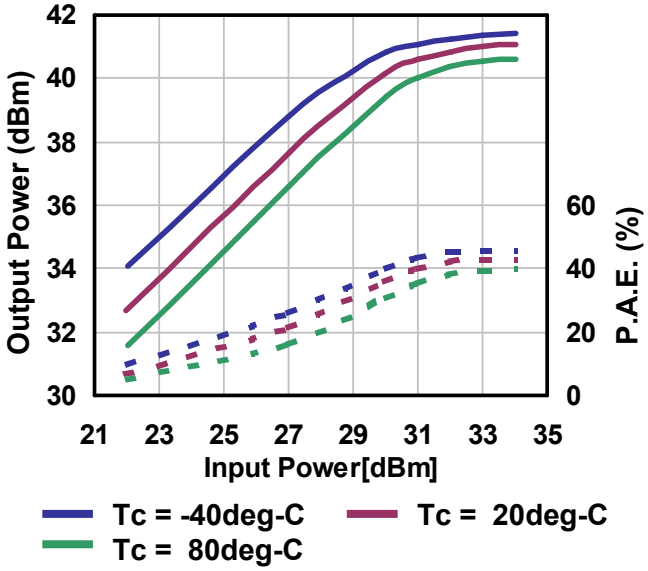
Output Power & P.A.E. v.s. Input Power by Quiescent Drain Current
V_{DS}(DC)=10V@7.5GHz



Output Power & P.A.E. v.s. Input Power by Quiescent Drain Current
V_{DS}(DC)=10V@7.9GHz



Output Power & P.A.E. v.s. Input Power by Temperature
V_{DS}(DC)=10V, IDS(DC)=2.6A@7.1GHz



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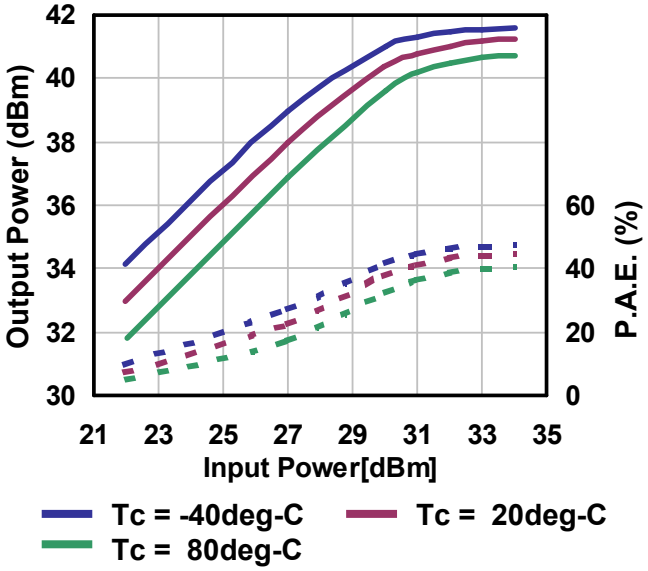

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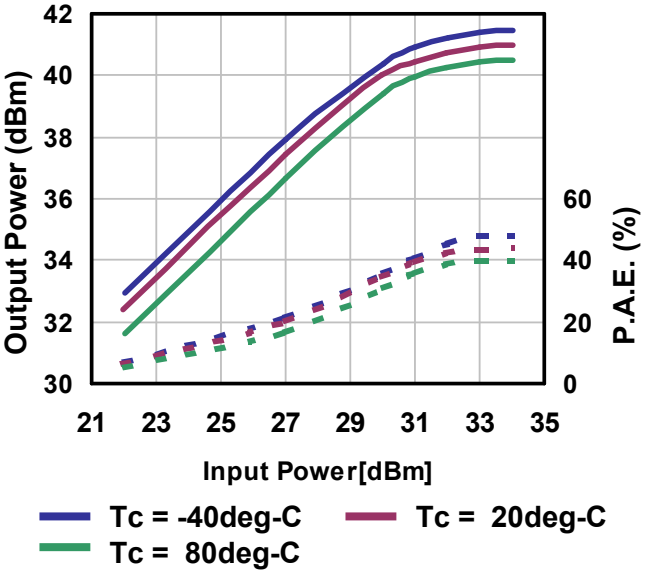
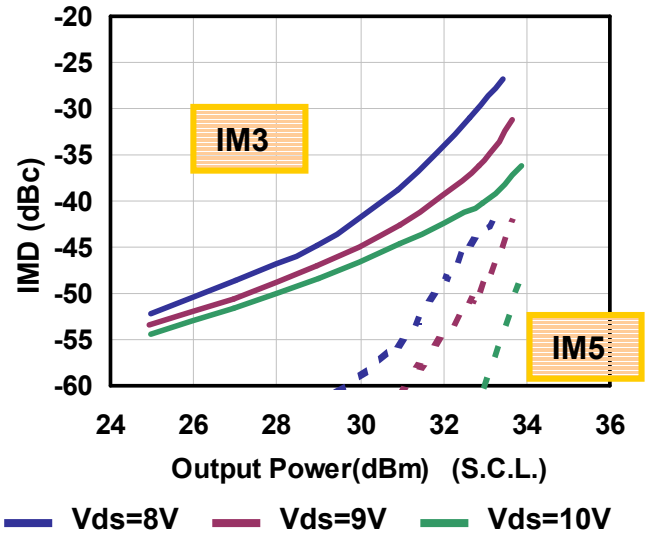
V_{DS}(DC)=10V, IDS(DC)=2.6A@7.9GHz



IMD v.s. Output Power by Drain Voltage
I_{DS}(DC)=2.6A@7.1GHz



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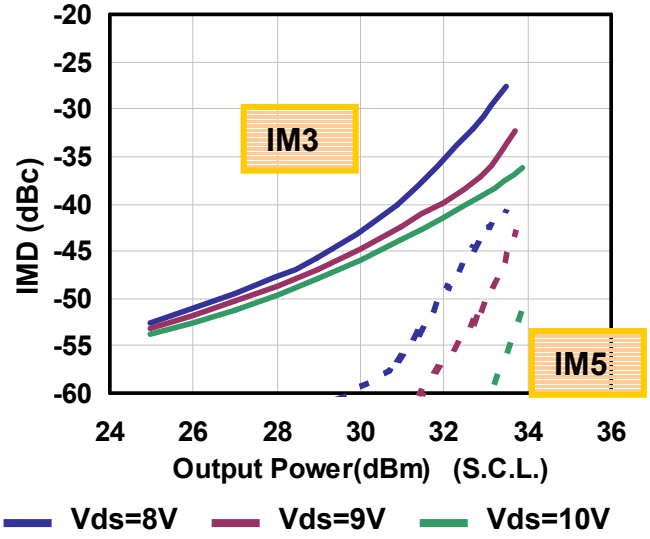

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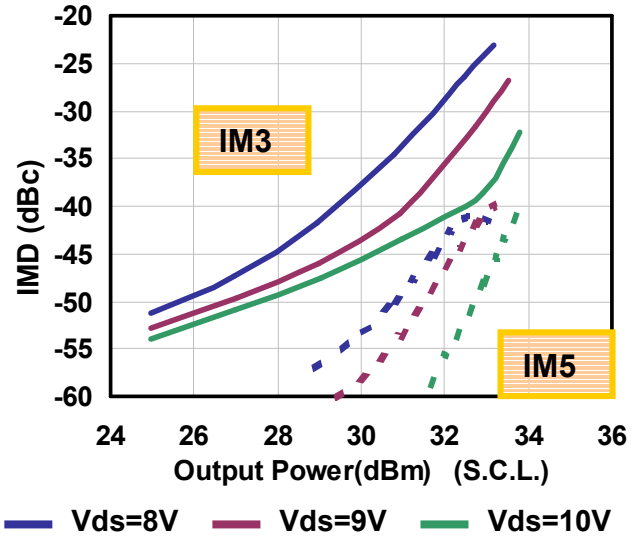
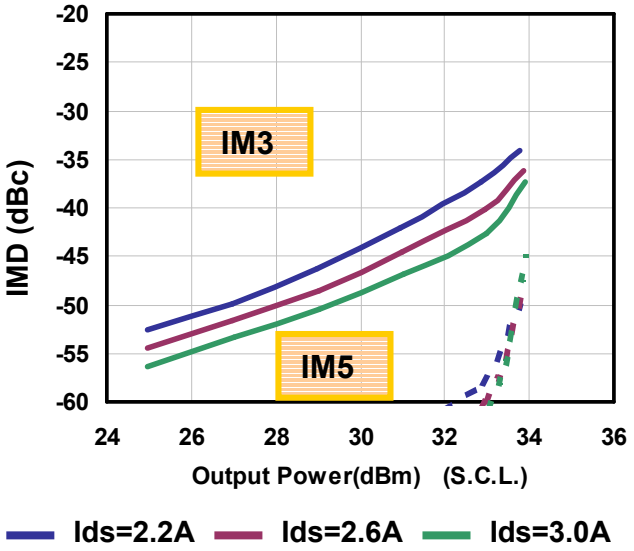


IMD v.s. Output Power
by Quiescent Drain Current
V_{DS}(DC)=10V@7.1GHz



IMD v.s. Output Power
by Quiescent Drain Current
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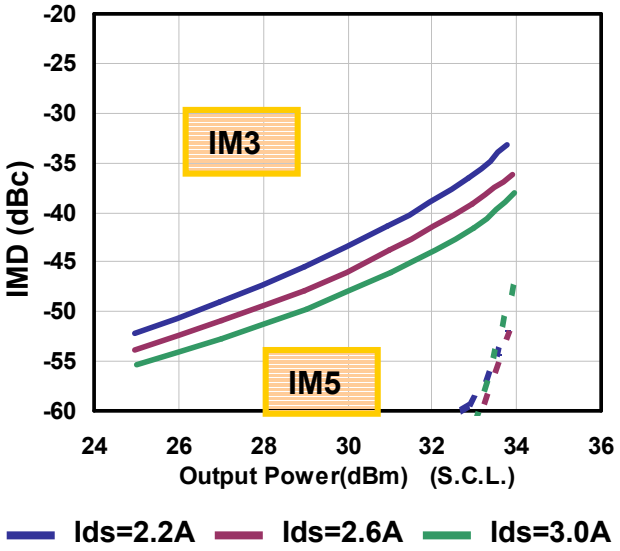

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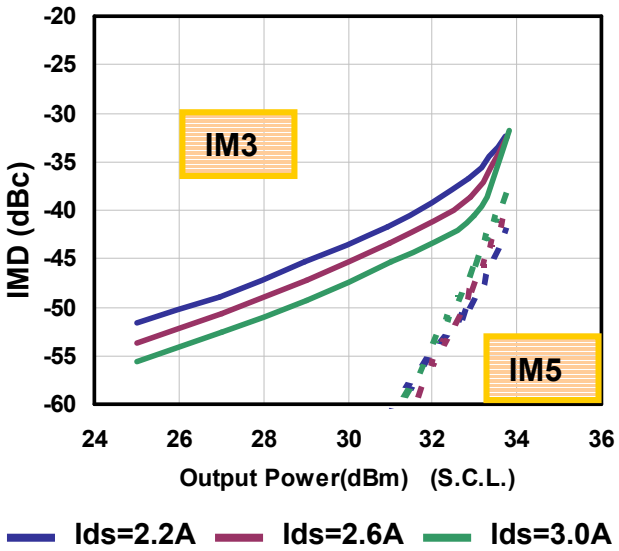
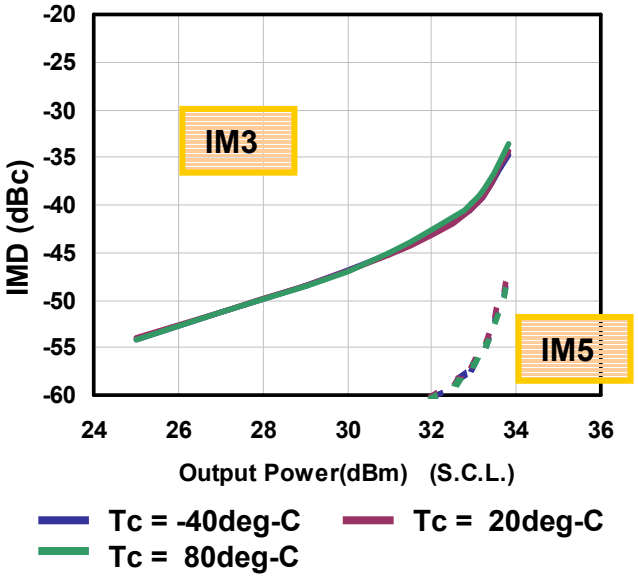
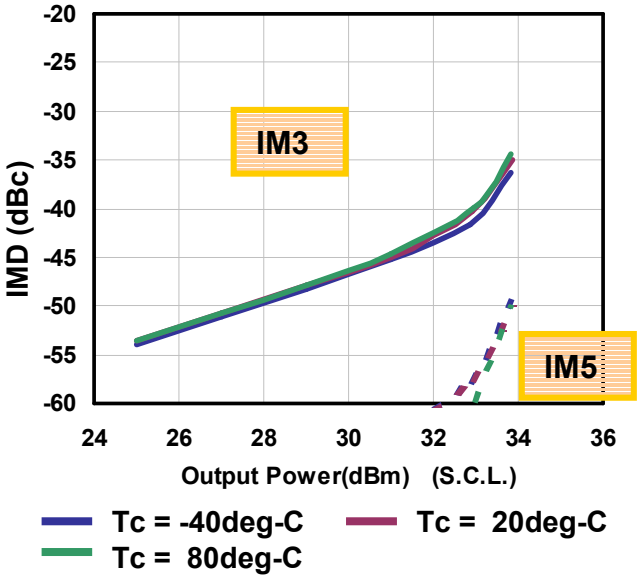


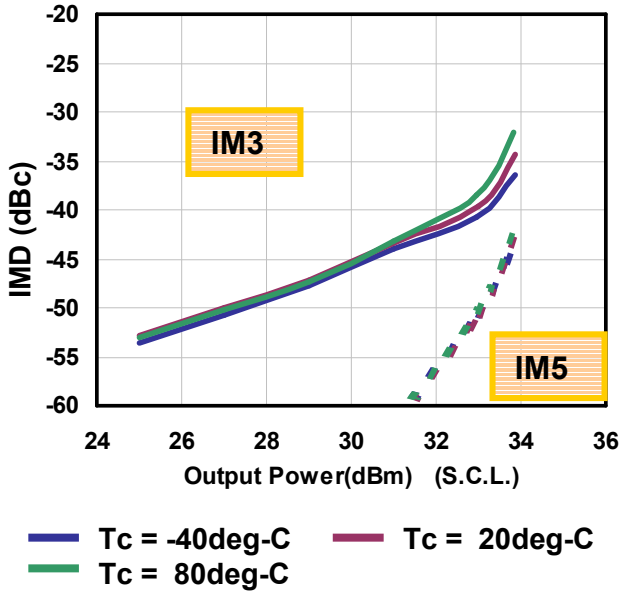
IMD v.s. Output Power by Temperature
V_{DS}(DC)=10V, I_{DS}(DC)=2.6A @ 7.1GHz



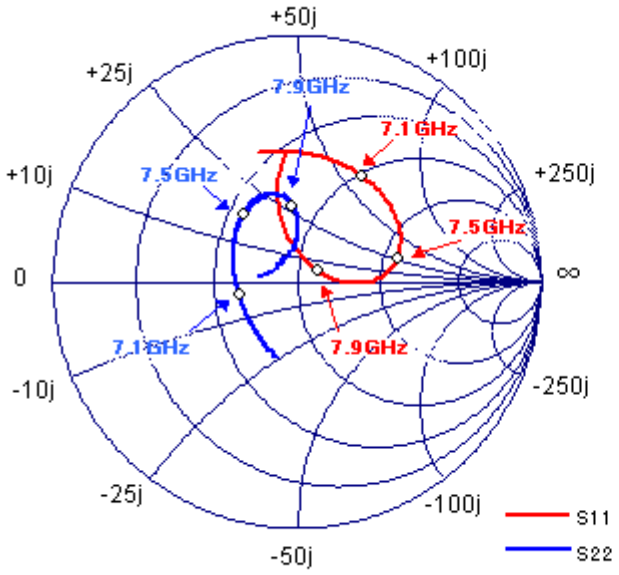
IMD v.s. Output Power by Temperature
V_{DS}(DC)=10V, I_{DS}(DC)=2.6A @ 7.5GHz

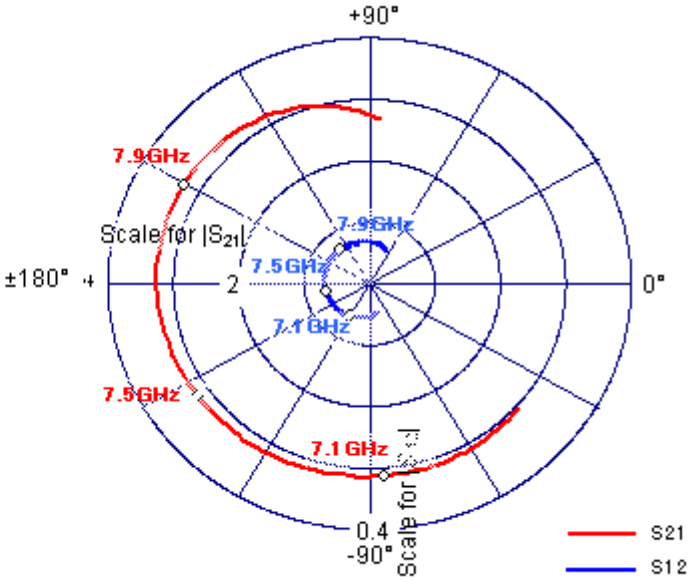


IMD v.s. Output Power by Temperature
V_{DS}(DC)=10V, I_{DS}(DC)=2.6A @ 7.9GHz



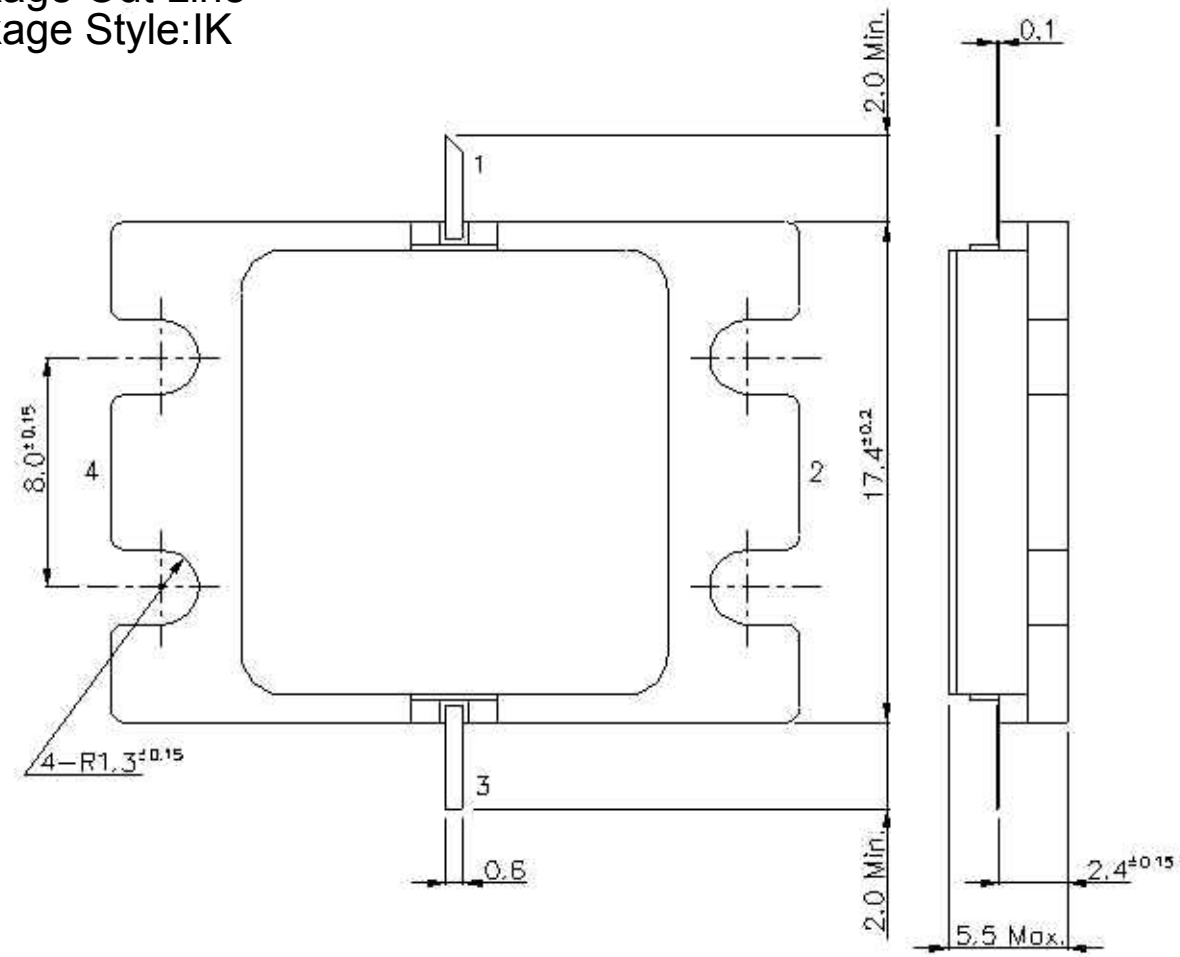
S-parameter

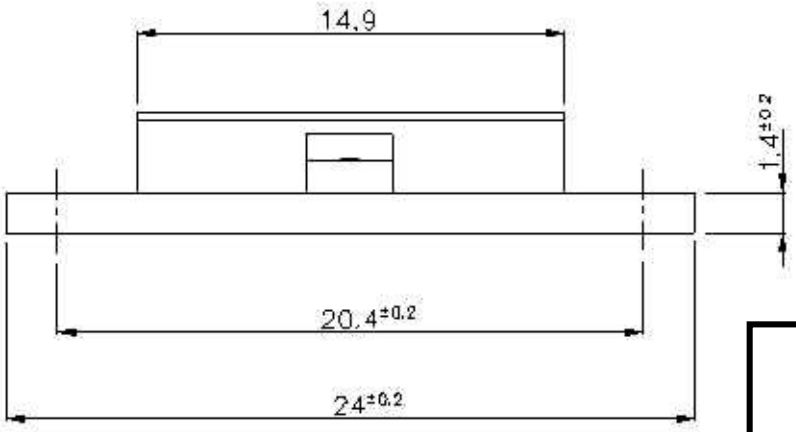




FREQ. (GHz)	S11 mag	S11 angle	S21 mag	S21 angle	S12 mag	S12 angle	S22 mag	S22 angle
6.9	0.526	88.2	3.092	-57.2	0.055	-90.3	0.274	-124.0
7.0	0.510	70.9	3.113	-72.5	0.059	-105.6	0.246	-146.4
7.1	0.503	57.7	3.136	-85.7	0.061	-117.4	0.242	-166.5
7.2	0.495	43.7	3.142	-100.7	0.063	-131.0	0.260	171.6
7.3	0.482	31.9	3.168	-116.1	0.064	-144.7	0.289	153.8
7.4	0.463	22.6	3.178	-129.3	0.066	-155.9	0.320	141.5
7.5	0.426	13.2	3.207	-145.1	0.067	-170.0	0.350	128.9
7.6	0.368	5.5	3.226	-161.3	0.068	175.8	0.371	118.4
7.7	0.299	-0.3	3.240	-175.4	0.069	162.0	0.374	109.7
7.8	0.193	-0.6	3.253	166.9	0.070	145.4	0.351	100.6
7.9	0.090	36.7	3.262	147.8	0.070	126.6	0.298	92.3
8.0	0.157	97.1	3.216	130.4	0.070	109.2	0.221	87.9
8.1	0.339	103.2	3.036	108.3	0.067	86.5	0.112	109.8

Package Out Line
Package Style:IK





PIN ASSIGNMENT
1:Gate
2:Source (Flange)
3:Drain
4:Source (Flange)

For further information please contact :

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CAUTION

Sumitomo Electric Device Innovations, Inc. products contain **gallium arsenide (GaAs)** which can be hazardous to the human body and the environment. For safety, observe the following procedures:

- Do not put these products into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.