

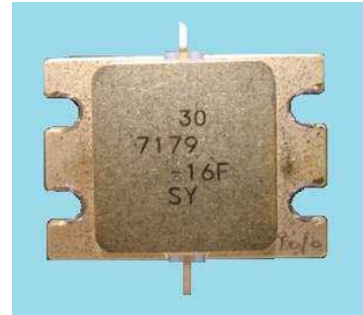
FEATURES

- High Output Power: $P_{1dB}=42.5\text{dBm}(\text{typ.})$
- High Gain : $G_{1dB}=8.5\text{dB}(\text{typ.})$
- High P.A.E. : $\eta_{add}=38\%(\text{typ.})$
- Broad Band : 7.1 to 7.9GHz
- Impedance Matched $Z_{in}/Z_{out} = 50\text{ohm}$
- Hermetically Sealed Package

DESCRIPTION

The ELM7179-16F is a power GaAs FET that is internally matched for standard communication bands to provide optimum power and gain in a 50ohm 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
Gate-Source Voltage	V_{GS}	-5	V
Total Power Dissipation	P_T	46.9	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}	$R_G=51\text{ ohm}$	< +43.0	mA
Reverse Gate Current	I_{GR}	$R_G=51\text{ ohm}$	> -11	mA
Storage Temperature	T_{STG}		-55 to +125	deg.C
Channel Temperature	T_{CH}		+ 155	deg.C

ELECTRICAL CHARACTERISTICS (Case Temperature $T_c=25\text{deg.C}$)

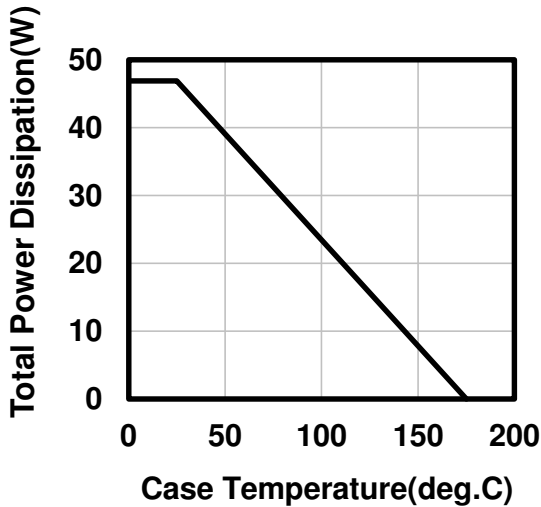
Item	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Drain Current	I_{DSS}	$V_{DS}=5V, V_{GS}=0V$	-	7600	10500	mA
Transconductance	gm	$V_{DS}=5V, I_{DS}=4200\text{mA}$	-	5000	-	mS
Pinch-off Voltage	V_p	$V_{DS}=5V, I_{DS}=300\text{mA}$	-0.5	-1.5	-3.0	V
Gate-Source Breakdown Voltage	V_{GSO}	$I_{GS}=-300\mu A$	-5	-	-	V
Frequency Range	f	$V_{DS}=10V$ $I_{DS}(\text{DC})=2800\text{mA}(\text{Typ.})$ $Z_s=Z_L=50\text{ ohm}$	7.1	-	7.9	GHz
Output Power at 1dB G.C.P.	P_{1dB}		41.5	42.5	-	dBm
Power Gain at 1dB G.C.P.	G_{1dB}		7.5	8.5	-	dB
Drain Current at 1dB G.C.P.	I_{dsr}		-	4000	4600	mA
Power Added Efficiency	η_{add}		-	38	-	%
Gain Flatness	ΔG		-	-	1.2	dB
3rd Order Intermodulation Distortion	IM_3	f=7.9 GHz, $\Delta f=10\text{MHz}$, 2-tone Test $P_{out}=31.5\text{dBm}(\text{S.C.L.})$	-40	-43	-	dBc
Thermal Resistance	R_{th}	Channel to Case	-	2.7	3.2	deg.C/W
Channel Temperature Rise	ΔT_{ch}	$(V_{DS} \times I_{dsr} - P_{OUT} + P_{IN}) \times R_{th}$	-	-	100	deg.C

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

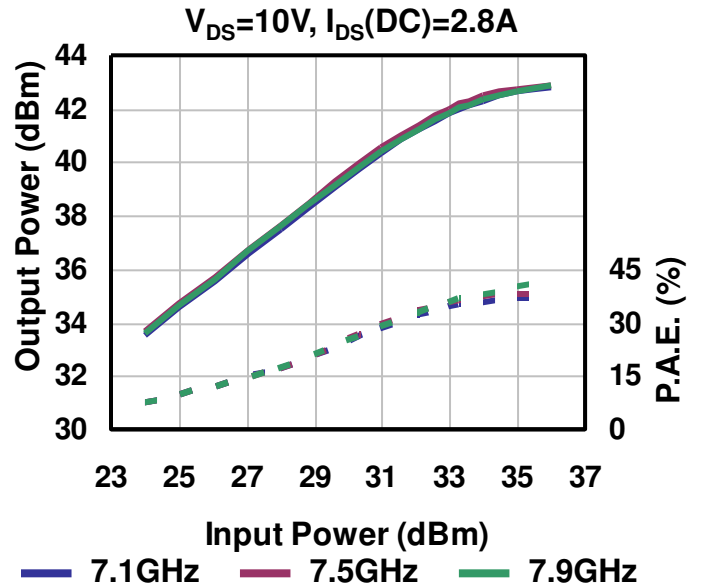
Note: RF-Test is measured with V_{GS} -Constant Circuit

CASE STYLE	IK	
ESD	Class 3A	4000V to 8000V
Note : Based on JEDEC JESD22-A114 (C=100pF, R=1.5kohm)		
RoHS Compliance	Yes	

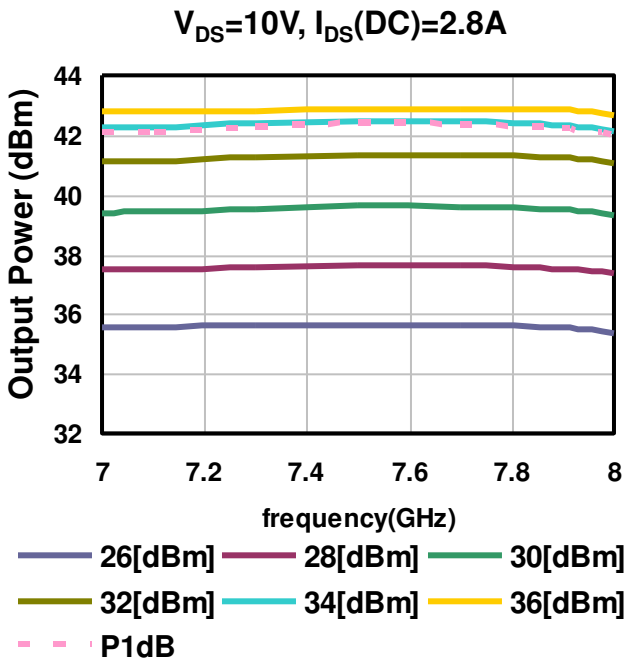
Power Derating Curve



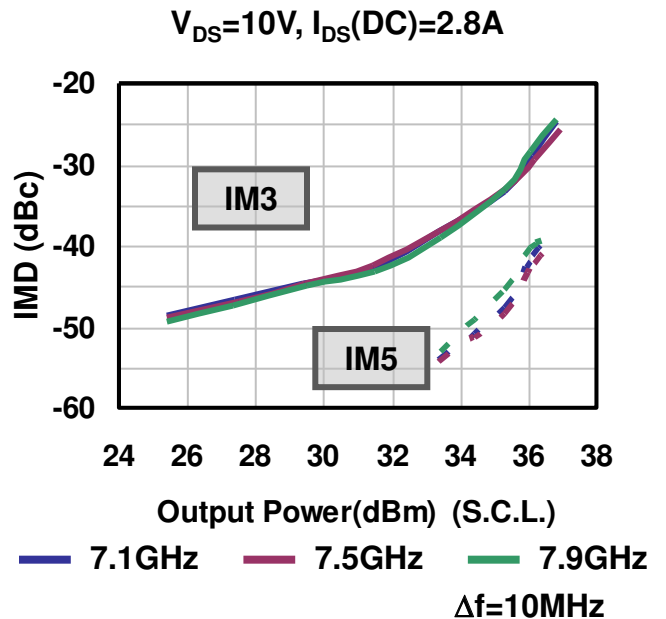
Output Power & P.A.E. v.s. Input Power



Output Power v.s. Frequency

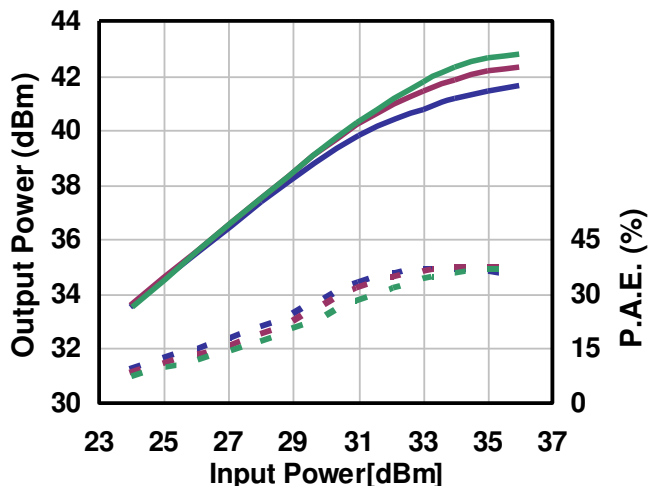


IMD v.s. Output Power



Output Power & P.A.E.
v.s. Input Power by Drain Voltage

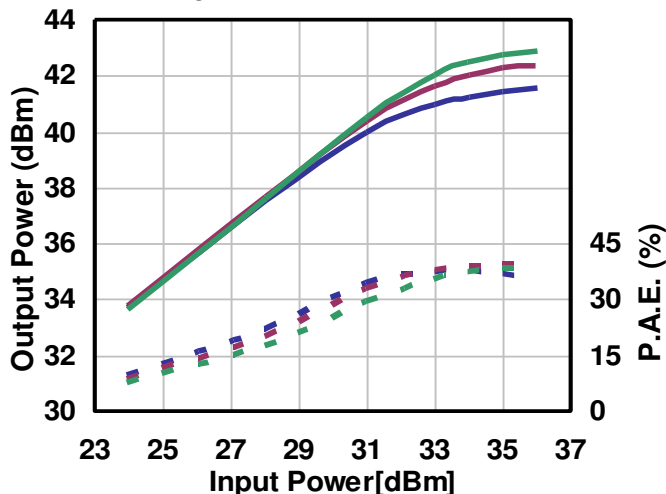
$I_{DS}(DC)=2.8A@7.1GHz$



— Vds=8V — Vds=9V — Vds=10V

Output Power & P.A.E.
v.s. Input Power by Drain Voltage

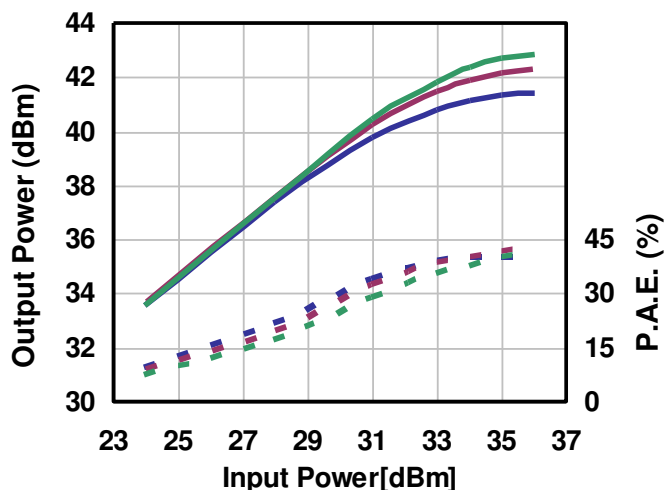
$I_{DS}(DC)=2.8A@7.5GHz$



— Vds=8V — Vds=9V — Vds=10V

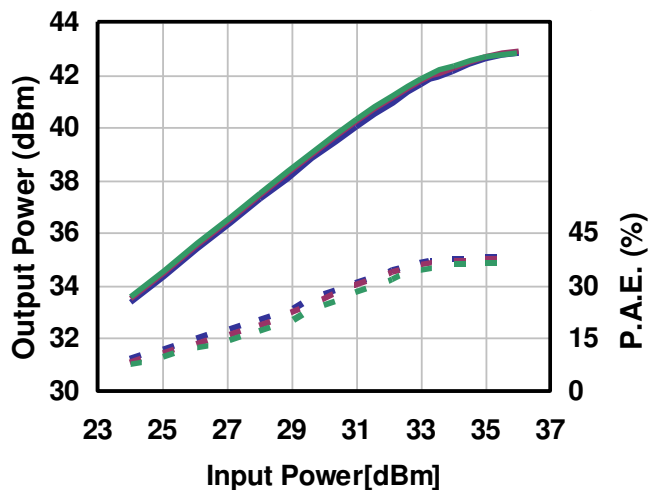
Output Power & P.A.E.
v.s. Input Power by Drain Voltage

$I_{DS}(DC)=2.8A@7.9GHz$



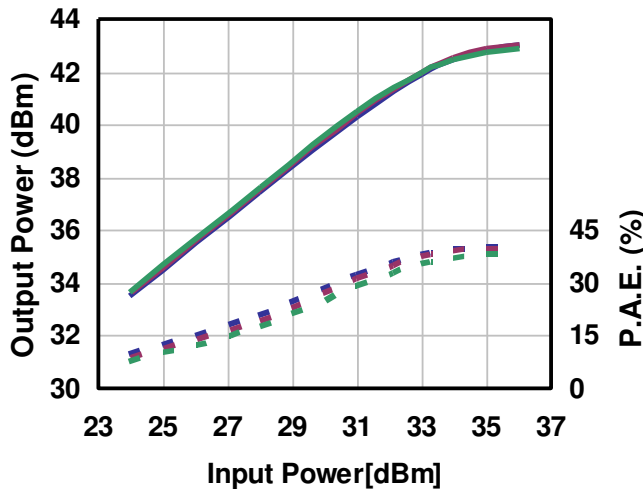
— Vds=8V — Vds=9V — Vds=10V

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



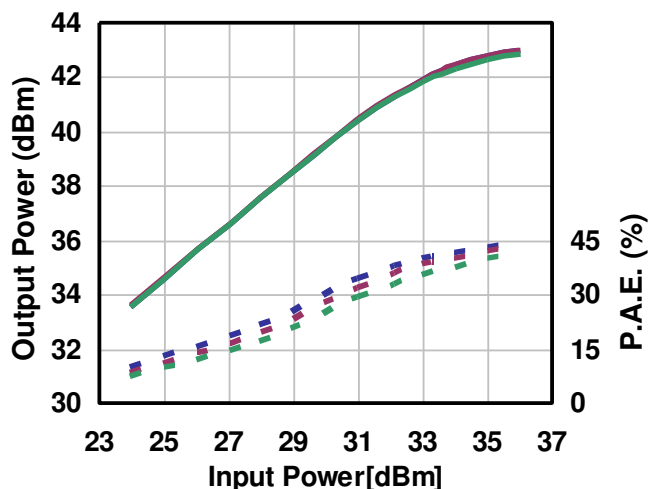
— $I_{ds}=2.0A$ — $I_{ds}=2.4A$ — $I_{ds}=2.8A$

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



— $I_{ds}=2.0A$ — $I_{ds}=2.4A$ — $I_{ds}=2.8A$

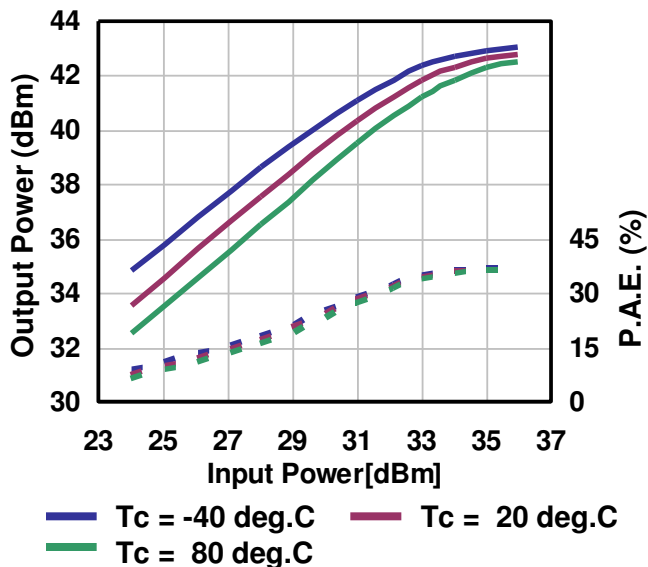
Output Power & P.A.E. v.s. Input Power
by Quiescent Drain Current
 $V_{DS}(DC)=10V@7.9GHz$



— $I_{ds}=2.0A$ — $I_{ds}=2.4A$ — $I_{ds}=2.8A$

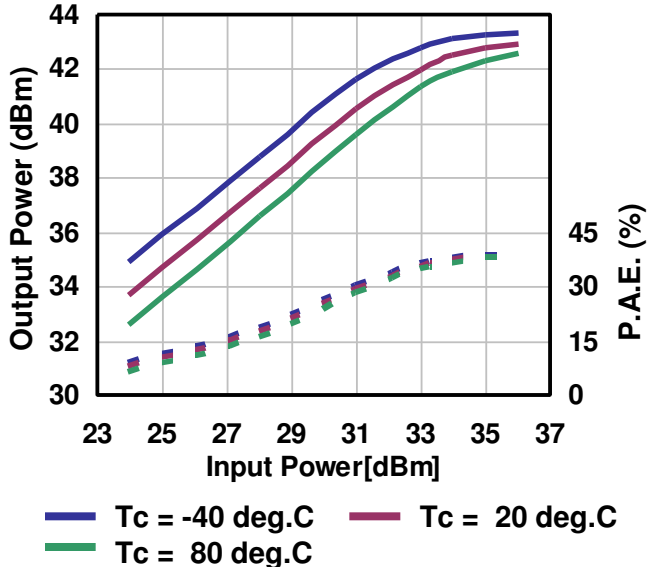
Output Power & P.A.E. v.s. Input Power
by Temperature

$V_{DS}(DC)=10V, I_{DS}(DC)=2.8A@7.1GHz$



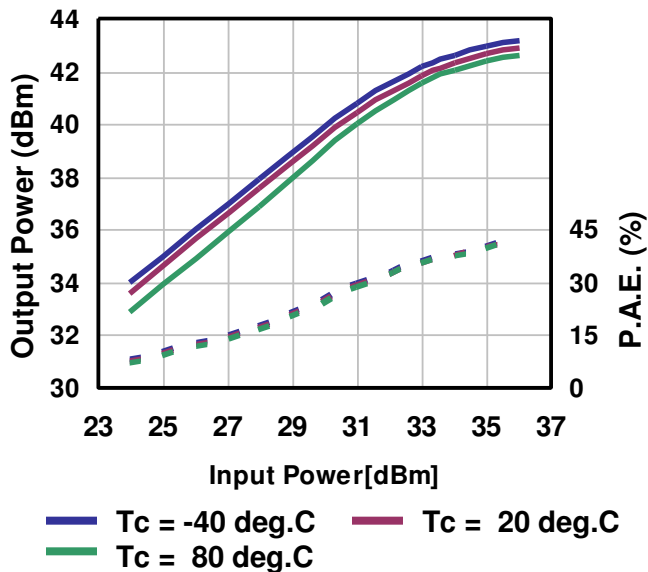
Output Power & P.A.E. v.s. Input Power
by Temperature

$V_{DS}(DC)=10V, I_{DS}(DC)=2.8A@7.5GHz$

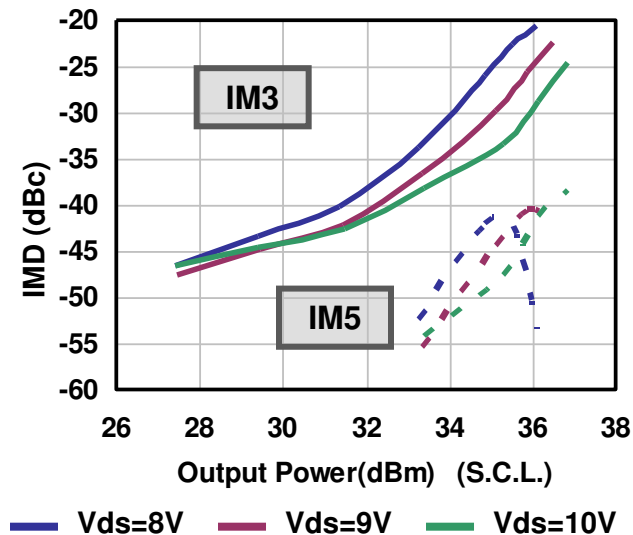


Output Power & P.A.E. v.s. Input Power
by Temperature

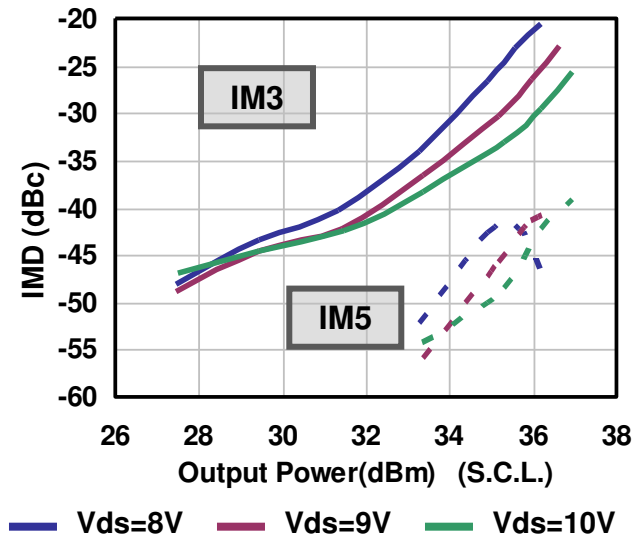
$V_{DS}(DC)=10V, I_{DS}(DC)=2.8A@7.9GHz$



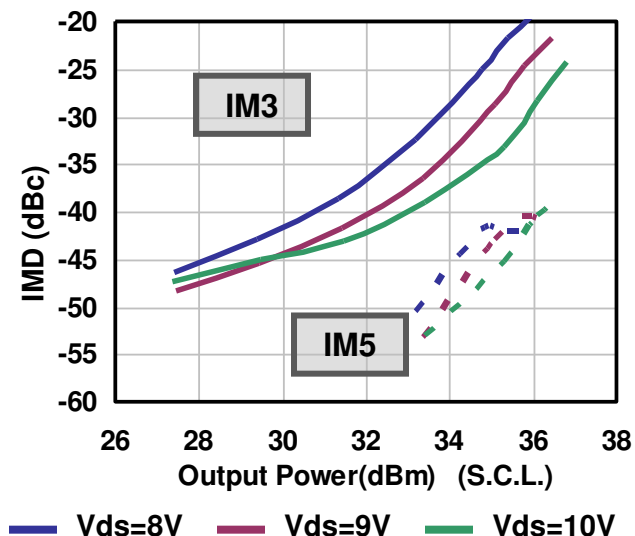
IMD v.s. Output Power by Drain Voltage
 $I_{DS}(DC)=2.8A@7.1GHz$



IMD v.s. Output Power by Drain Voltage
 $I_{DS}(DC)=2.8A@7.5GHz$

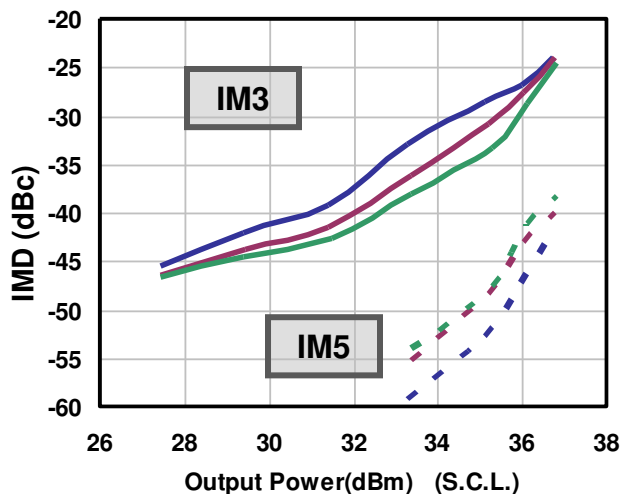


IMD v.s. Output Power by Drain Voltage
 $I_{DS}(DC)=2.8A@7.9GHz$



IMD v.s. Output Power
by Quiescent Drain Current

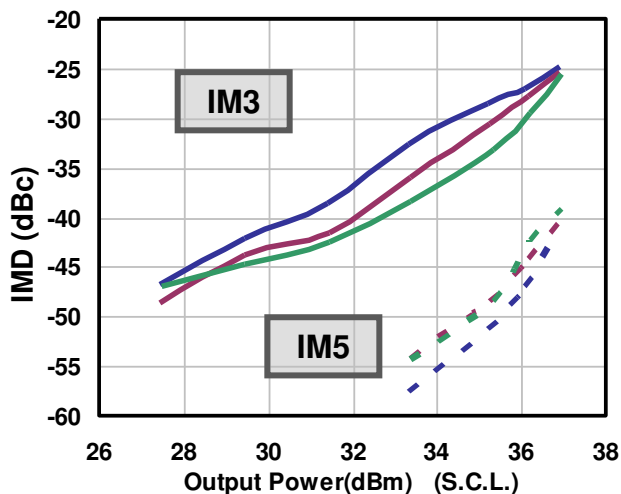
$V_{DS}(DC)=10V@7.1GHz$



— $I_{ds}=2.0A$ — $I_{ds}=2.4A$ — $I_{ds}=2.8A$

IMD v.s. Output Power
by Quiescent Drain Current

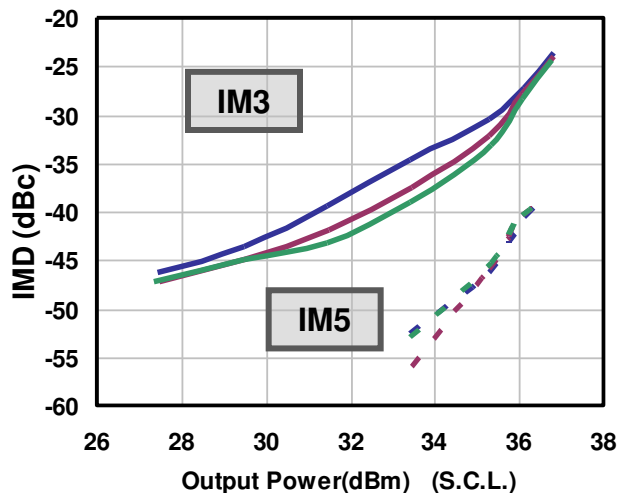
$V_{DS}(DC)=10V@7.5GHz$



— $I_{ds}=2.0A$ — $I_{ds}=2.4A$ — $I_{ds}=2.8A$

IMD v.s. Output Power
by Quiescent Drain Current

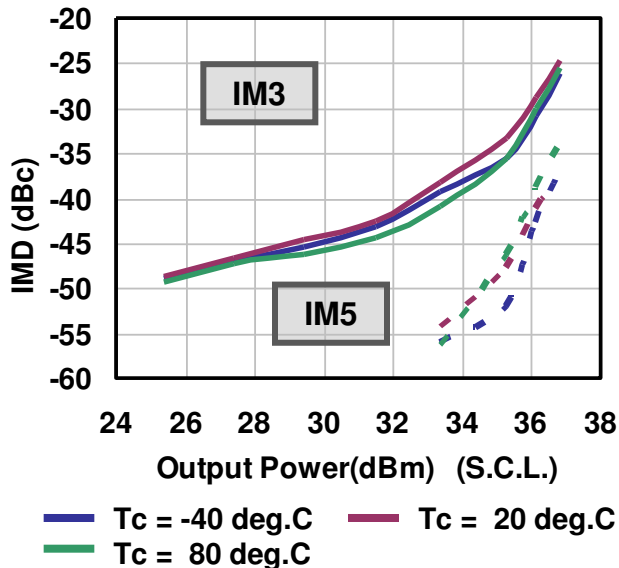
$V_{DS}(DC)=10V@7.9GHz$



— $I_{ds}=2.0A$ — $I_{ds}=2.4A$ — $I_{ds}=2.8A$

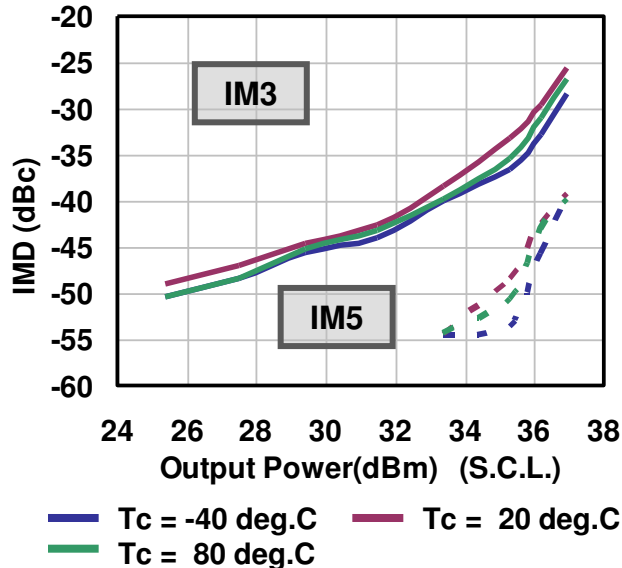
IMD v.s. Output Power by Temperature

$V_{DS}(DC)=10V, I_{DS}(DC)=2.8A @ 7.1GHz$



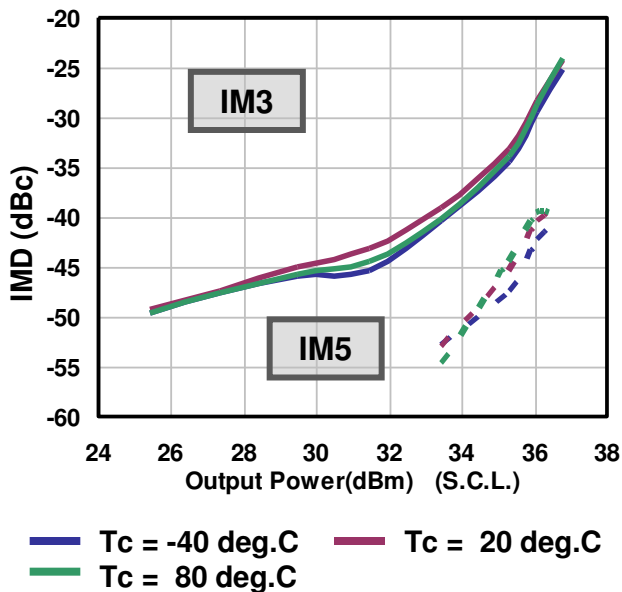
IMD v.s. Output Power by Temperature

$V_{DS}(DC)=10V, I_{DS}(DC)=2.8A @ 7.5GHz$



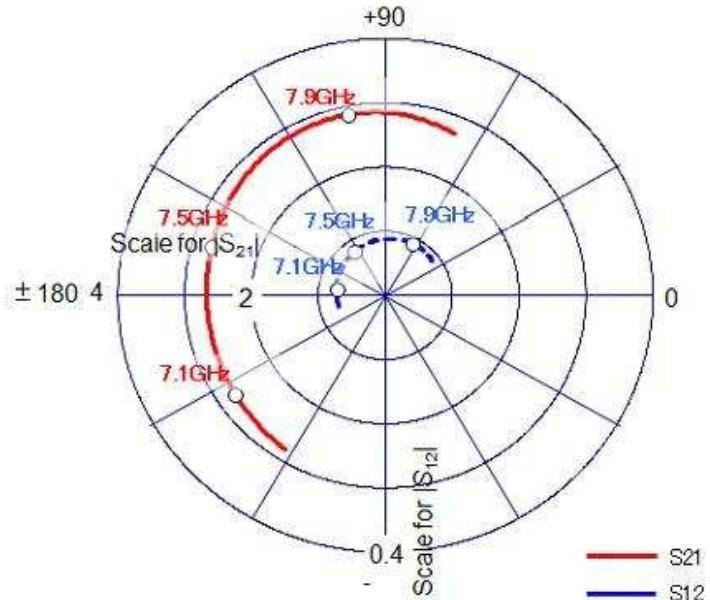
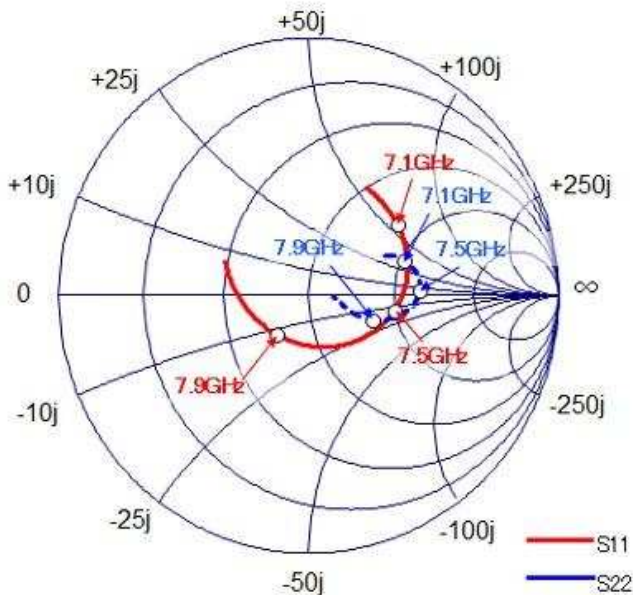
IMD v.s. Output Power by Temperature

$V_{DS}(DC)=10V, I_{DS}(DC)=2.8A @ 7.9GHz$



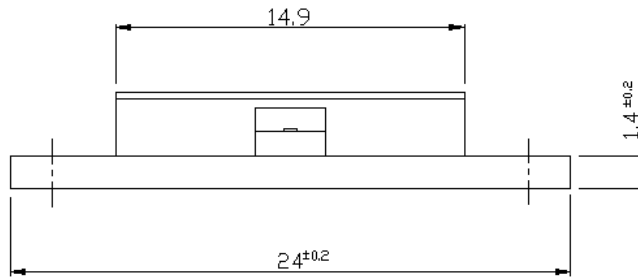
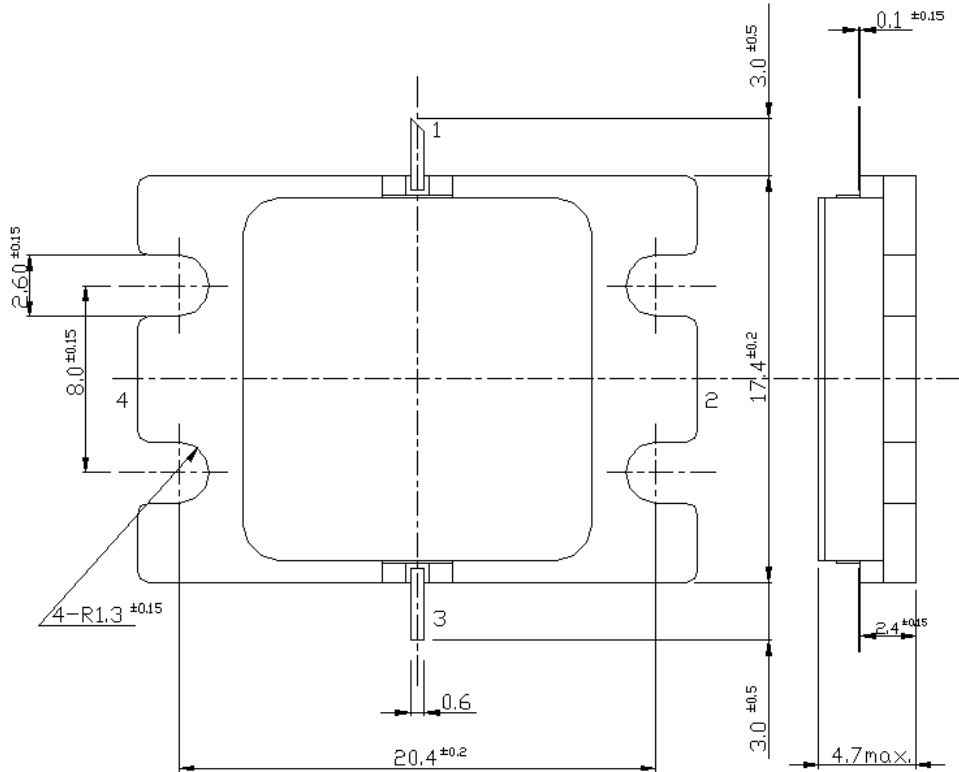
S-parameter

Bias Condition : 10V / 2.8A



FREQUENCY (GHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
6.90	0.480	61.3	2.825	-122.3	0.071	-166.5	0.344	27.4
7.00	0.465	50.1	2.770	-133.4	0.073	-176.9	0.376	23.9
7.10	0.450	38.4	2.719	-145.6	0.074	171.7	0.403	20.0
7.20	0.432	26.8	2.684	-158.3	0.076	159.8	0.425	15.9
7.30	0.412	15.4	2.668	-171.1	0.078	148.0	0.440	11.6
7.40	0.385	4.1	2.677	176.8	0.080	136.5	0.446	7.4
7.50	0.348	-9.1	2.707	163.4	0.082	124.0	0.444	2.5
7.60	0.302	-25.6	2.755	149.3	0.085	110.6	0.429	-2.8
7.70	0.250	-46.6	2.810	135.2	0.087	97.2	0.399	-8.2
7.80	0.201	-81.1	2.860	119.0	0.090	81.5	0.348	-14.5
7.90	0.197	-130.0	2.874	101.4	0.091	64.4	0.270	-20.1
8.00	0.263	-172.8	2.827	83.9	0.090	47.3	0.179	-20.1
8.10	0.358	158.6	2.724	67.7	0.088	31.1	0.097	-1.7

■ Package Outline
Case Style : IK



Pin Assignment

- 1 : Gate
- 2 : Source
- 3 : Drain
- 4 : Source

Unit : mm

For further information please contact:

<http://global-sei.com/Electro-optic/about/office.html>

CAUTION

This product contains **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.