■ Features

- High Voltage Operation : VDS=50V
- High Power : 49.3dBm (typ.) @ Psat
- Proven Reliability

■ Description

Sumitomo Electric's GaN-HEMT offers high efficiency, ease of matching, greater consistency and broad bandwidth for high power L-band amplifiers with 50V operation, and gives you higher gain.

This new product is ideally suited for use from 0.7 to 2.7GHz

W-CDMA & LTE design requirements as it offers high gain, long term reliability and ease of use.

ABSOLUTE MAXIMUM RATINGS (Case Temperature T_c=25deg.C)

Item	Symbol	Condition	Rating	Unit
Operating Voltage	V_{DS}		55	V
Drain-Source Voltage	V_{DS}	V_{GS}=-8V	160	V
Gate-Source Voltage	V_{GS}		-15	V
Total Power Dissipation	P_t		90	W
Storage Temperature	T_{stg}		-65 to +175	deg.C
Channel Temperature	T_{ch}		250	deg.C

RECOMMENDED OPERATING CONDITION

Item	Symbol	Condition	Limit	Unit
DC Input Voltage	V_{DS}		$\leq$ 55	V
Forward Gate Current	I_{GF}	R_G=15 ohm	$\leq$ 63	mA
Reverse Gate Current	I_{GR}	R_G=15 ohm	$\geq$ -2.3	mA
Channel Temperature	T_{ch}		$\leq$ 200	deg.C
Average Output Power	$P_{ave.}$		$\leq$ 46	dBm

ELECTRICAL CHARACTERISTICS (Case Temperature T_c=25deg.C)

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-Off Voltage	V_p	V_{DS}=50V I_{DS}=16mA	-4.0	-	-2.0	V
Saturated Power	Psat *1	V_{DS}=50V	48.1	49.3	-	dBm
Drain Efficiency at Psat	DE *1	$I_{DS(DC)}$=0mA	55	64	-	%
Power Gain	Gp *2	f=2.65GHz	16.5	17.5	-	dB
Thermal Resistance	R_{th}	Channel to Case at 45W P_{DC}	-	2.0	2.5	deg.C/W

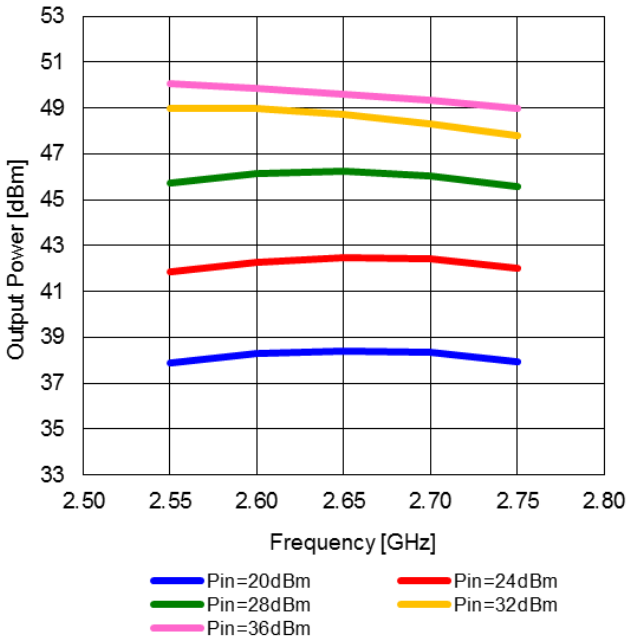
*1 : 10%-duty RF pulse (DC supply constant), Fixed Pin=36dBm

*2 : Pout=41dBm, CW modulation Signal (W-CDMA) f=2.65GHz

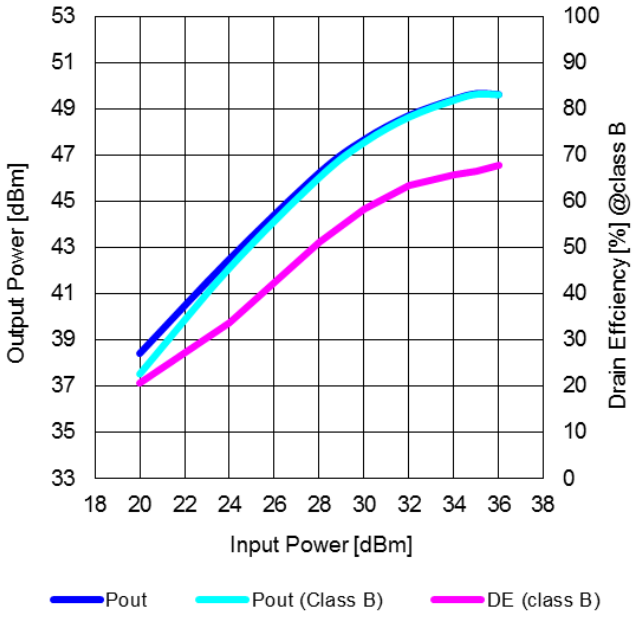
RoHS Compliance	YES

RF characteristics @ f=2.65GHz fine tuned

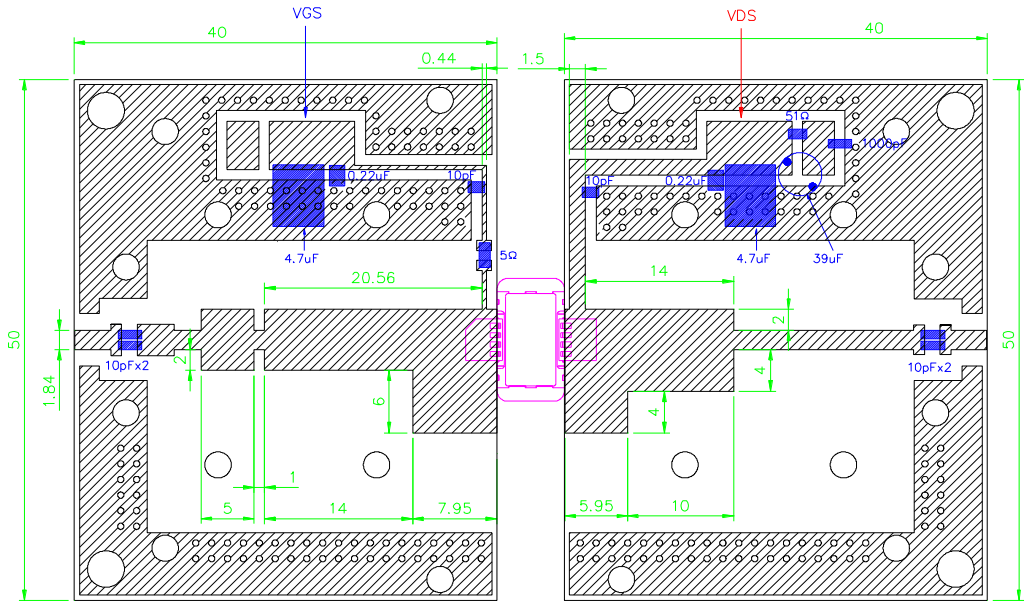
Output Power vs. Frequency
V_{DS}=50V $I_{DS(DC)}$=400mA



Output Power and Drain Efficiency vs. Input Power
V_{DS}=50V $I_{DS(DC)}$=400mA f=2.65GHz

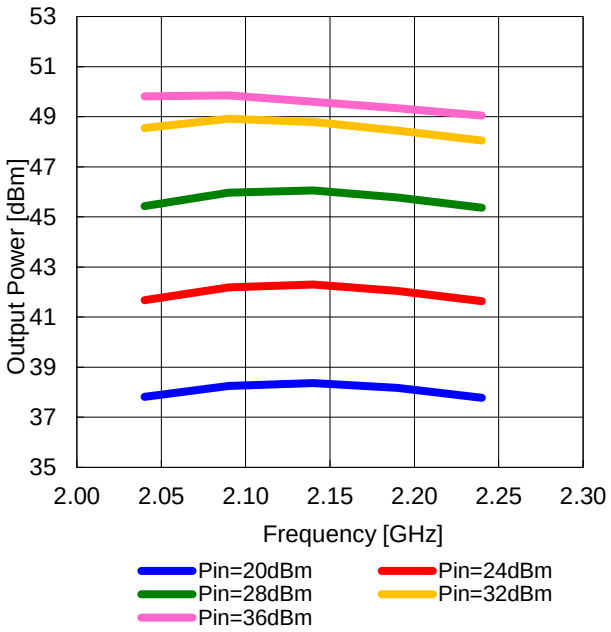


Pulse Signal (10%-duty, DC : constant)

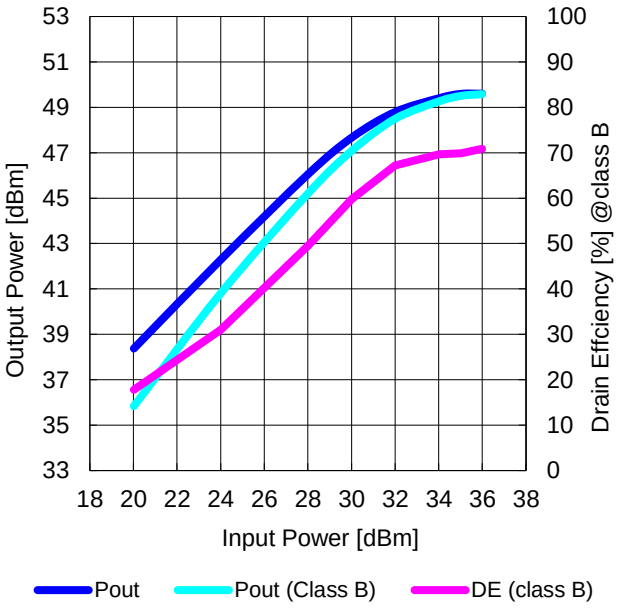


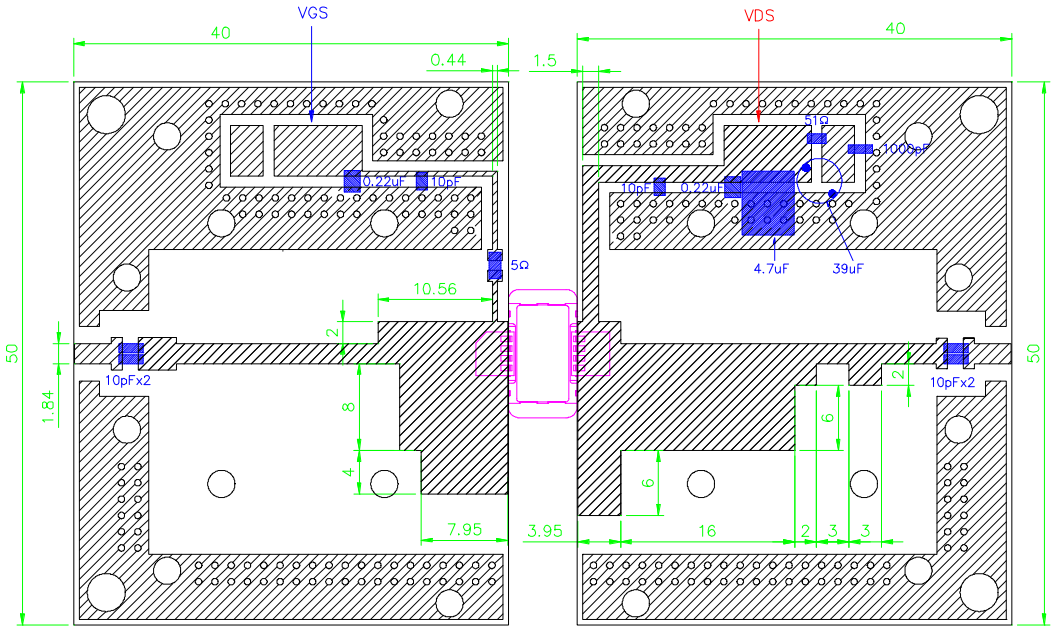
RF characteristics @ f=2.14GHz fine tuned

Output Power vs. Frequency
V_{DS}=50V $I_{DS(DC)}$=400mA



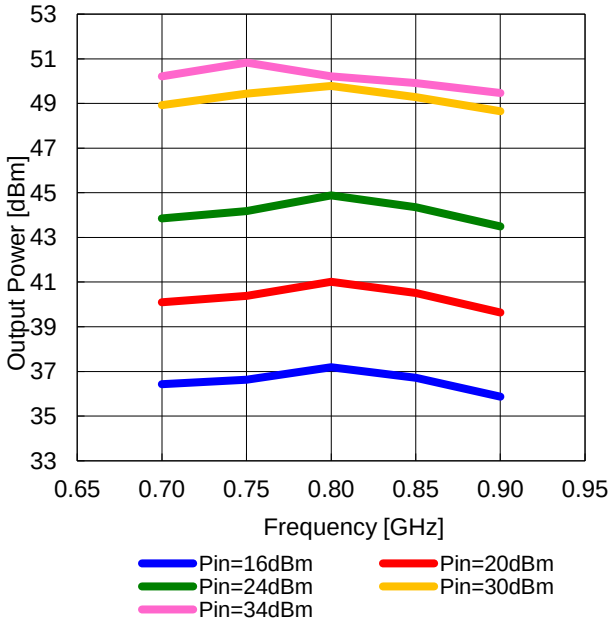
Output Power and Drain Efficiency vs. Input Power
V_{DS}=50V $I_{DS(DC)}$=400mA f=2.14GHz



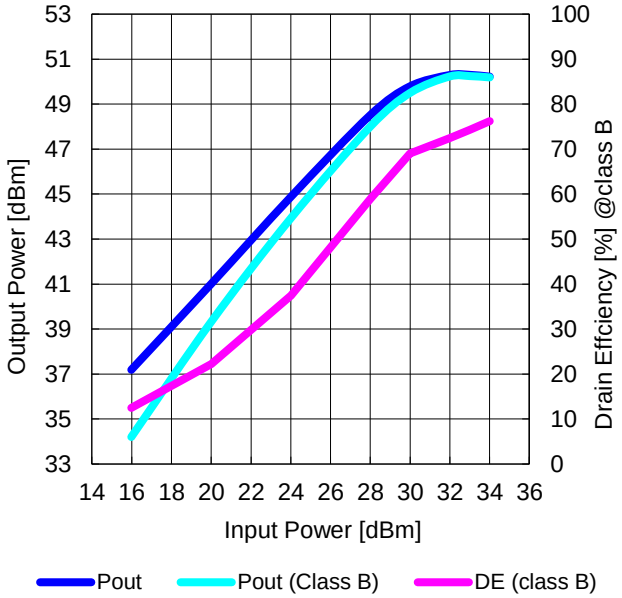


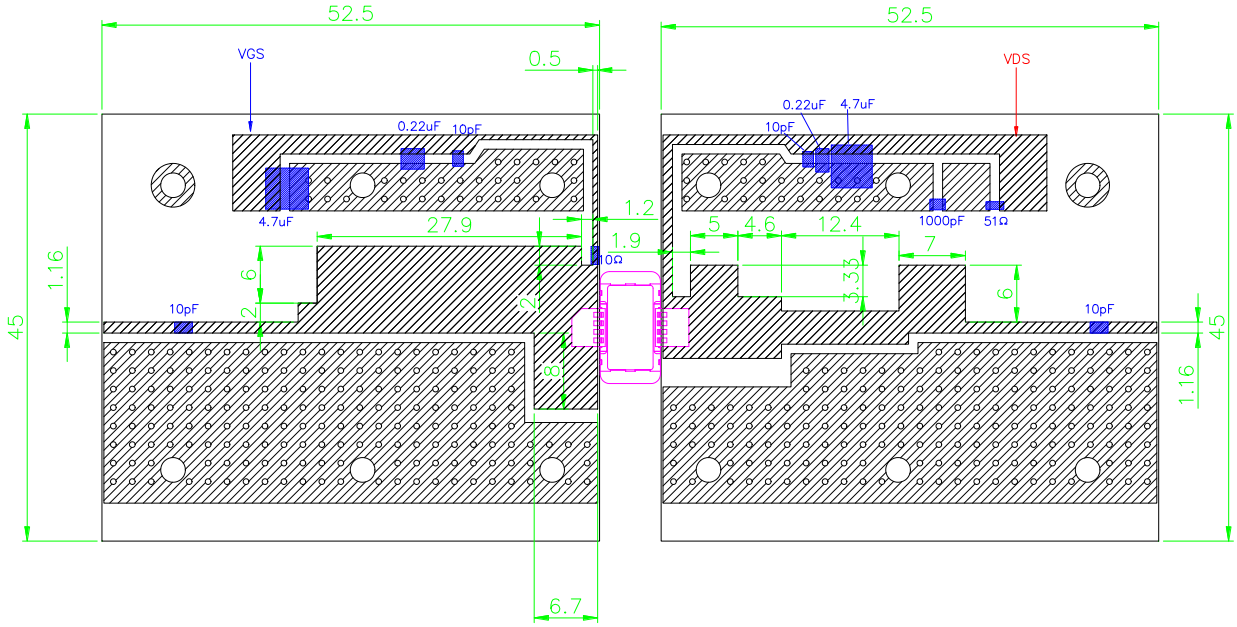
RF characteristics @ f=0.8GHz fine tuned

Output Power vs. Frequency
V_{DS}=50V $I_{DS(DC)}$=400mA



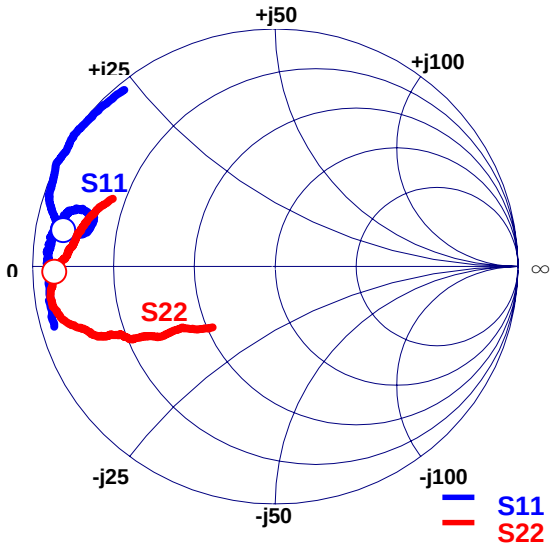
Output Power and Drain Efficiency vs. Input Power
V_{DS}=50V $I_{DS(DC)}$=400mA f=0.8GHz

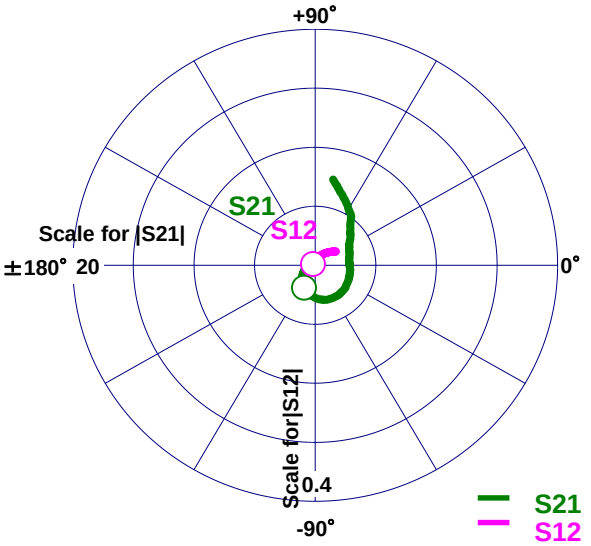




- Reference DATA -

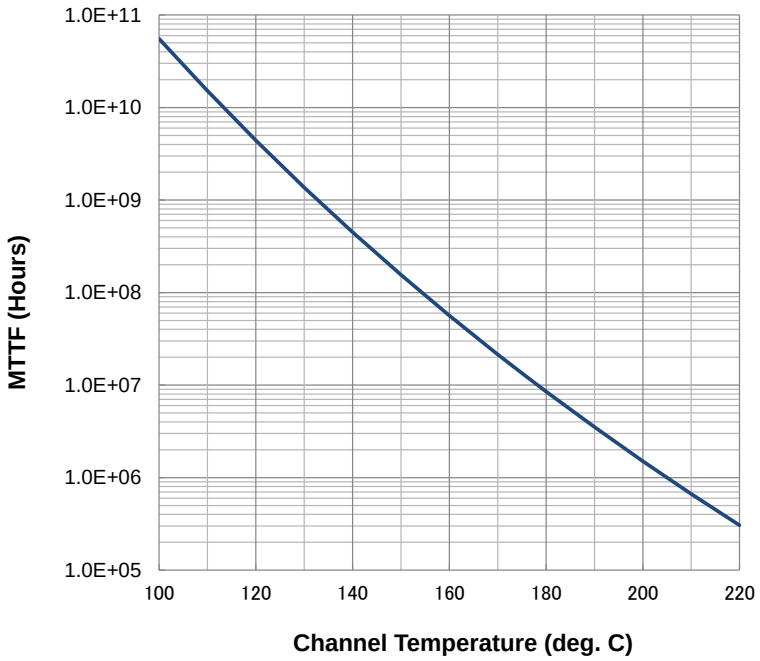
S-Parameters @VDS=50V, IDS(DC)=600mA, f=0.5 to 4.5GHz
Zl = Zs = 50 ohm Marker : 2.65GHz





Freq.	S11		S21		S12		S22	
GHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.50	0.95	-164.44	7.41	78.51	0.01	10.52	0.36	-135.19
0.60	0.94	-172.75	6.10	66.66	0.01	5.41	0.41	-140.10
0.70	0.94	179.47	5.14	54.76	0.01	-3.16	0.46	-145.45
0.80	0.94	178.15	4.51	49.93	0.01	-3.40	0.49	-146.89
0.90	0.93	175.80	4.07	44.78	0.01	-2.58	0.52	-147.24
1.00	0.93	174.94	3.76	39.40	0.01	-4.62	0.55	-147.65
1.10	0.93	173.58	3.43	34.14	0.01	-5.63	0.58	-149.31
1.20	0.93	171.87	3.22	29.25	0.01	-3.23	0.60	-150.88
1.30	0.93	170.51	3.08	24.12	0.01	-5.56	0.63	-151.74
1.40	0.92	169.64	3.00	18.73	0.01	-6.86	0.66	-152.34
1.50	0.92	168.53	2.90	13.21	0.01	-3.77	0.68	-153.99
1.60	0.90	166.90	2.83	7.31	0.01	-7.80	0.70	-155.89
1.70	0.88	165.29	2.83	0.32	0.01	-11.55	0.73	-156.62
1.80	0.88	164.61	2.92	-7.13	0.01	-14.82	0.76	-157.02
1.90	0.85	163.85	2.95	-15.49	0.01	-21.21	0.80	-158.59
2.00	0.83	163.48	3.02	-23.74	0.01	-26.43	0.82	-160.24
2.10	0.81	163.82	3.11	-36.15	0.01	-37.06	0.85	-162.30
2.20	0.78	164.44	3.14	-49.48	0.01	-54.25	0.89	-164.51
2.30	0.78	166.86	3.10	-63.68	0.01	-69.99	0.92	-168.00
2.40	0.79	169.59	2.97	-79.34	0.01	-100.55	0.93	-171.21
2.50	0.82	170.65	2.64	-94.99	0.00	-138.09	0.93	-174.53
2.60	0.87	170.60	2.30	-109.50	0.00	172.96	0.91	-177.54
2.70	0.91	169.20	1.95	-121.24	0.00	140.97	0.90	-179.57
2.80	0.93	167.49	1.65	-131.00	0.01	117.36	0.89	178.76
2.90	0.95	165.82	1.38	-140.18	0.01	105.15	0.87	177.90
3.00	0.97	164.00	1.18	-146.89	0.01	96.65	0.86	176.74
3.10	0.98	162.06	1.02	-153.01	0.01	88.82	0.86	175.58
3.20	0.98	160.10	0.88	-159.37	0.01	83.69	0.85	174.53
3.30	0.98	158.33	0.78	-164.44	0.01	78.39	0.84	173.54
3.40	0.99	156.51	0.69	-169.42	0.01	74.93	0.83	172.95
3.50	1.00	154.76	0.62	-173.76	0.01	71.17	0.83	171.53
3.60	1.00	152.65	0.57	-178.01	0.02	67.58	0.82	170.13
3.70	0.99	150.81	0.52	177.05	0.02	64.91	0.81	169.34
3.80	0.99	148.60	0.48	172.64	0.02	61.06	0.81	168.02
3.90	1.00	146.39	0.45	167.99	0.02	57.97	0.80	166.69
4.00	0.99	144.06	0.42	163.12	0.02	55.25	0.79	165.19
4.10	0.99	142.15	0.39	159.01	0.03	51.04	0.78	163.82
4.20	0.99	139.42	0.37	153.85	0.03	48.10	0.78	162.56
4.30	0.98	136.14	0.36	148.54	0.03	43.51	0.76	160.57
4.40	0.98	133.25	0.34	143.25	0.04	39.02	0.74	158.97
4.50	0.97	129.95	0.34	137.50	0.04	34.65	0.73	156.91

MTTF Calculation
– Estimated MTTF –



Ea=1.6eV
Confidence Level=90%

Channel Temp (deg.C)	MTTF (Hours)
160	5.98×10^7
180	9.02×10^6
200	1.60×10^6

$AF=\exp[(-Ea/k)(1/T_{stress}-1/T_{use})$

$MTTF_{use}=MTTF_{stress}*AF$

Where;

AF: acceleration factor

Ea: activation energy (1.6 eV)

k: Boltzman's constant (8.62×10^{-5} eV/K)

T_{stress}: stress temperature (K)

T_{use}: use temperature (K)

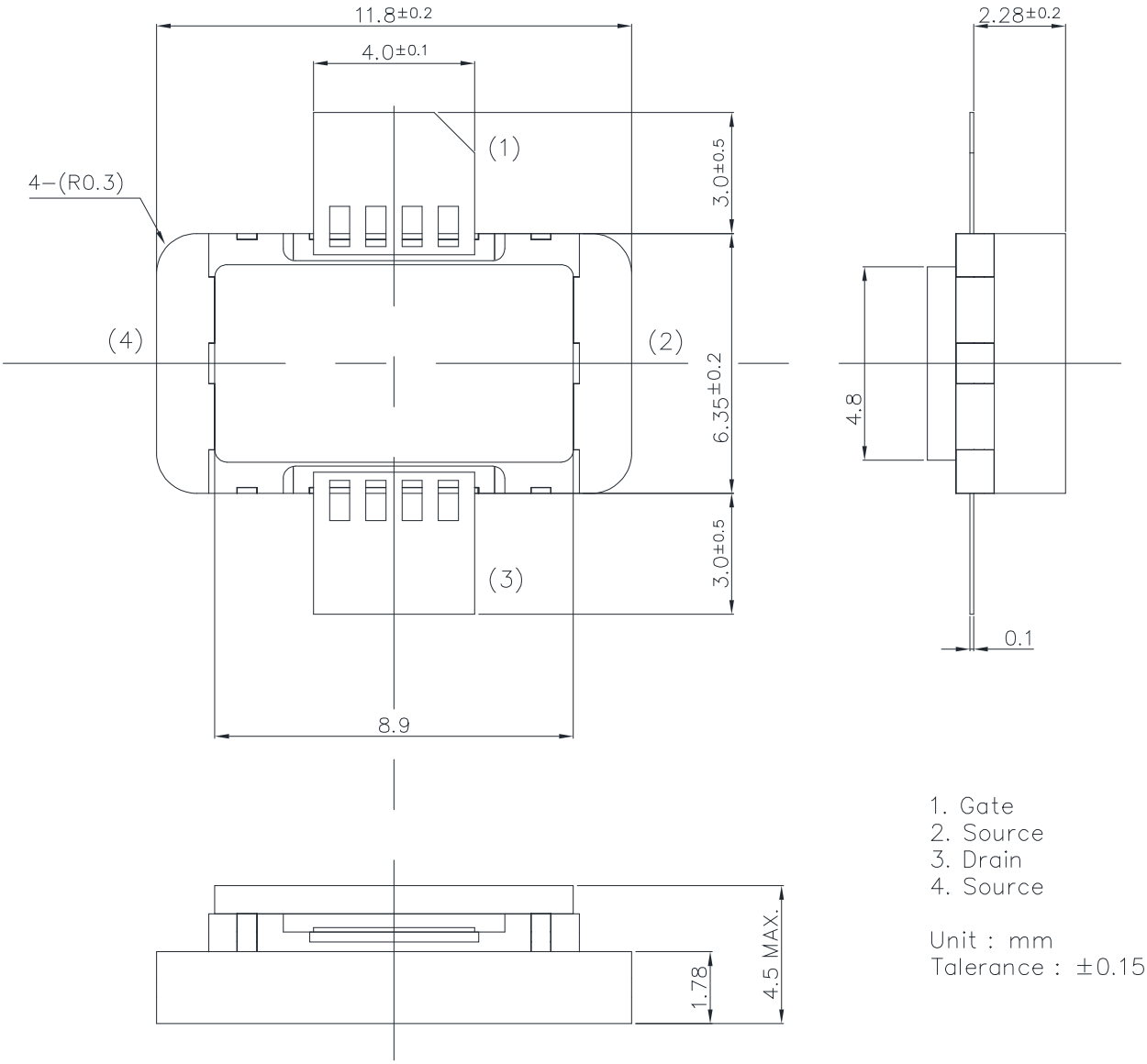
ESD characteristic

Test Methodology	Class
Human Body Model (per JESD22-A114)	1B
Machine Model (per JEIA/ESD22-A115)	A
Device Charged Model (per JESD22-C101)	IV

Ordering Information

Part Number	MOQ / MOU	Tray Style
SGN26H080M1H	No Limitation	30pcs Tray (30 pockets)
SGN26H080M1H/001	No Limitation	JEDEC Tray (100 pockets)

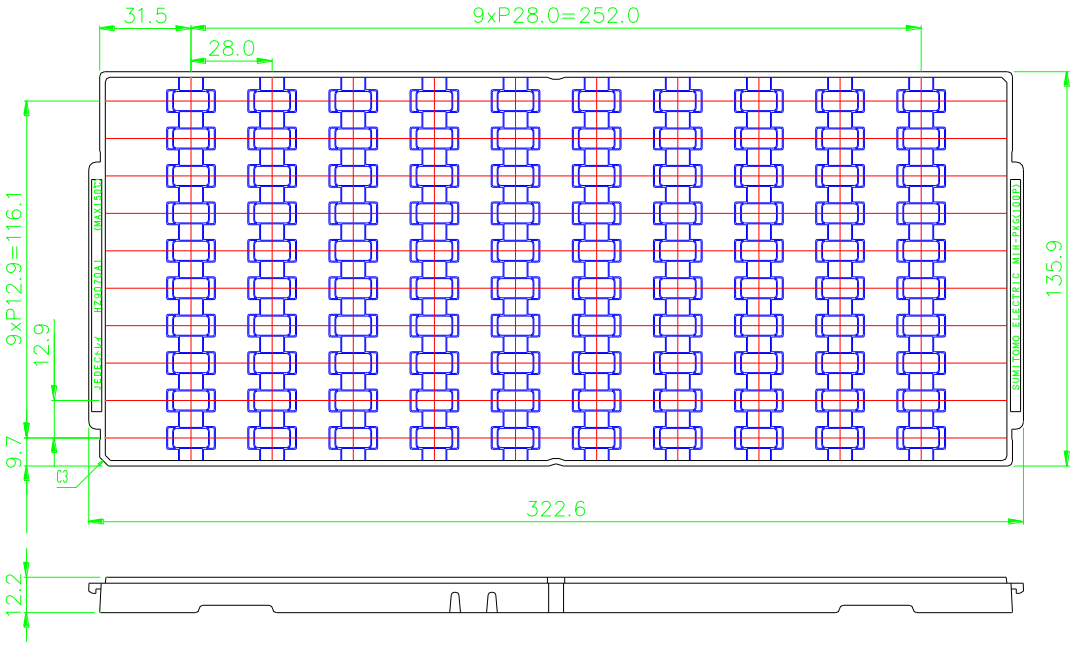
M1H Package Outline
Metal-Ceramic Hermetic Package



1. Gate
2. Source
3. Drain
4. Source

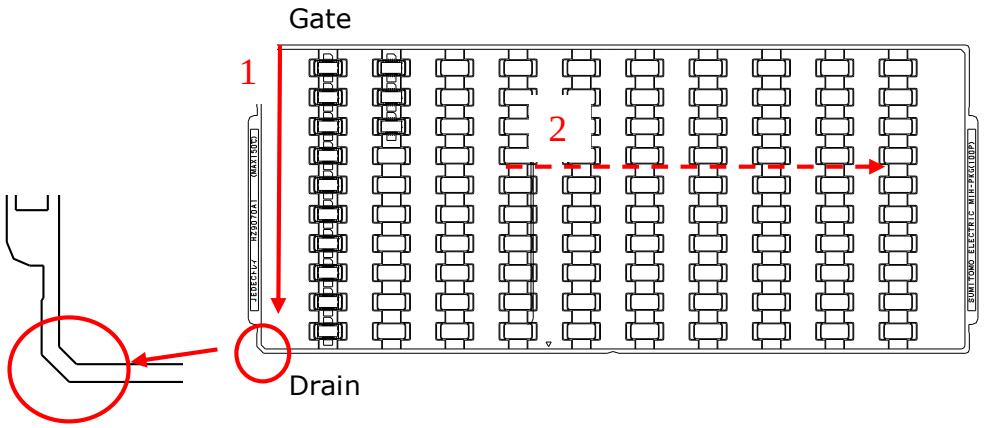
Unit : mm
Talerance : ±0.15

TRAY SIZE : M1H

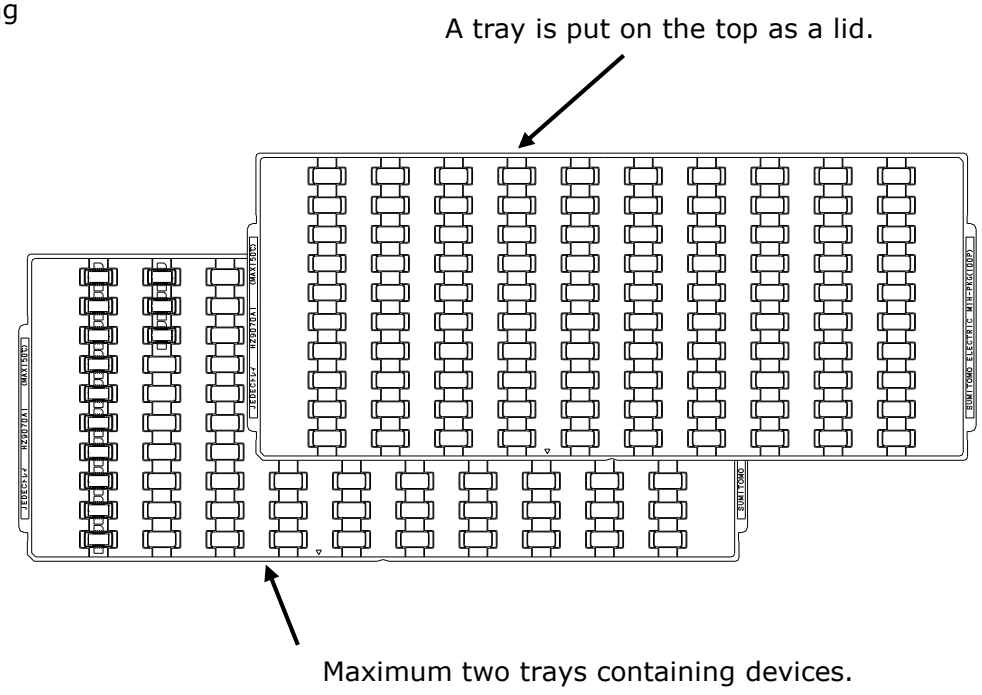


TRAY PACKING

1. Aligning Direction



2. Packing



For Safety, Observe the Following Procedures Environmental Management

- Do not put this product 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.
- Respect all applicable laws of the country when discarding this product.
  This product must be disposed in accordance with methods specified by applicable hazardous waste procedures.

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