

FEATURES:

■ HIGH POWER

$P_{1dB} = 24.0 \text{ dBm @ } f = 23 \text{ GHz}$

■ CHIP FORM

■ HIGH GAIN

$G_{1dB} = 9.5 \text{ dB @ } f = 23 \text{ GHz}$

RF PERFORMANCE SPECIFICATIONS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN	TYP.	MAX.
Output Power at 1dB Compression Point	P1dB	VDS= 4.5V f= 23 GHz	dBm	23.0	24.0	—
Power Gain at 1dB Compression Point	G1dB		dB	7.0	9.5	—
Drain Current	IDS1		mA	—	180	300
Power Added Efficiency	η_{add}		%	—	28	—

ELECTRICAL CHARACTERISTICS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	VDS= 2V IDS= 0.1A	mS	—	200	—
Pinch-Off Voltage	VGSoff	VDS= 2V IDS= 1.5mA	V	-0.7	-1.5	-3.0
Saturated Drain Current	IDSS	VDS= 2V VGS= 0V	mA	—	250	400
Gate-Source Breakdown Voltage	VGSO	IGS= -0.8mA	V	-4.5	—	—

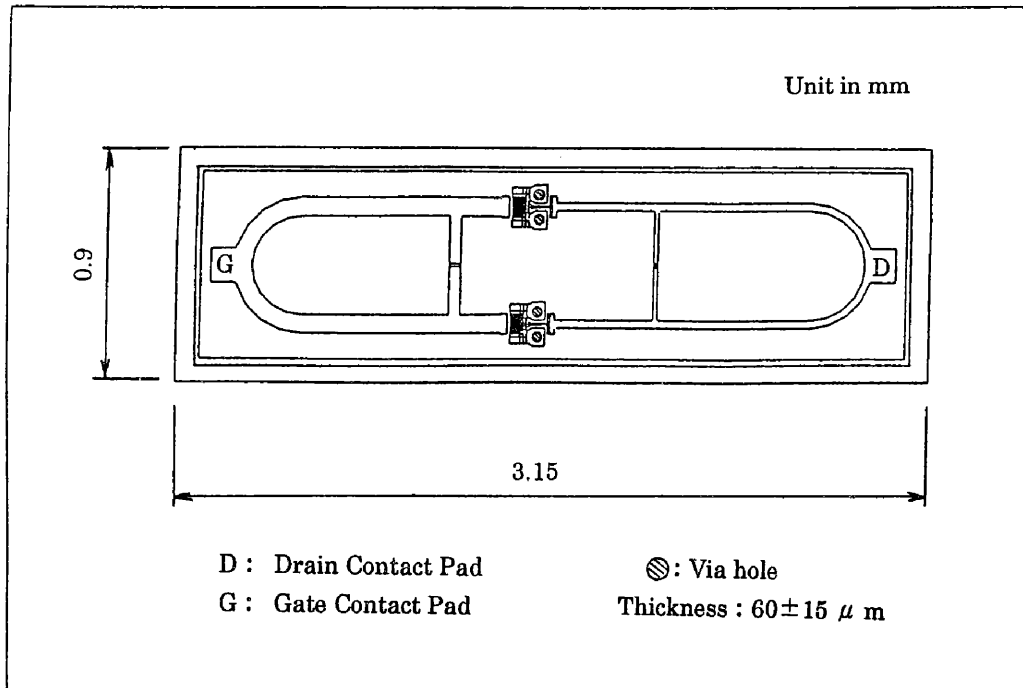
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JS9P08-AS

CHIP OUTLINE



ASSEMBLY PRECAUTIONS FOR CHIP

The operations must be performed in a clean and dry environment. This chips must be kept in the same environment when they are not used. All test instruments , assembly machines , benches , tweezers and operators should be grounded to avoid damage due to electrostatic discharge. Careful attention must be paid in handling chips with tweezers because GaAs is more brittle than Si .

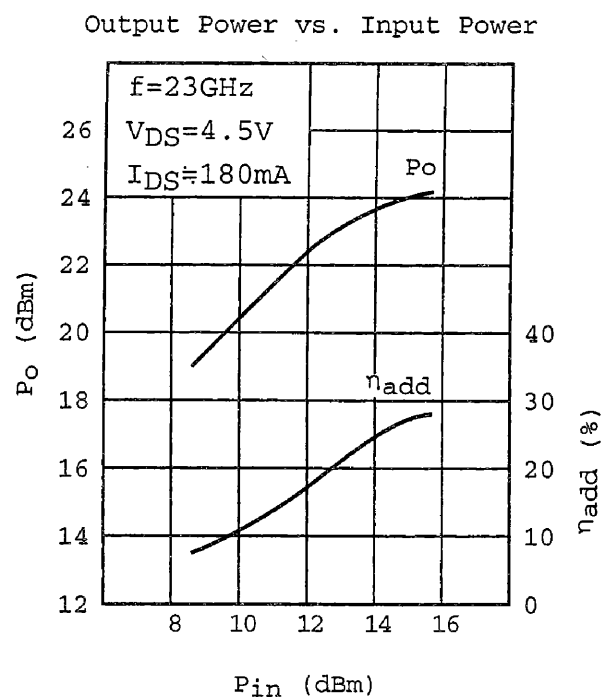
DIE ATTACHMENT

Die attachment can be accomplished with Au-Sn preform in nitrogen atmosphere. The operating temperature must be $290 \pm 10^\circ C$ for the preform to be well melted. The operating time should be kept within one minute.

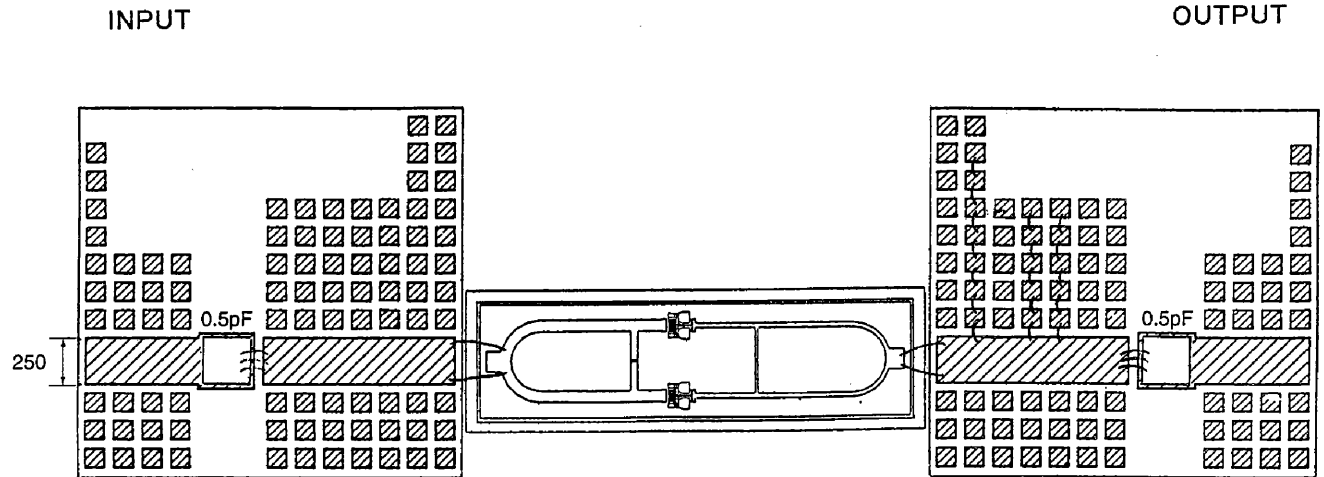
WIRE BONDING

Bonding should be performed with thermal compression wedge bonder in nitrogen atmosphere. The recommended condition of wire bonding are as follows :

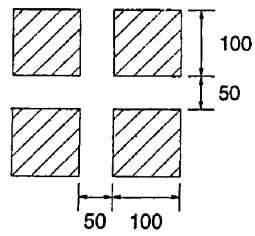
- (1) Operating temperature $200 \pm 10^\circ C$
- (2) Operating time 5 minutes max.
- (3) Bonding wire $25 \mu m$ diameter pure Au



DRAWING OF MATCHING NETWORK



《MATCHING PATTERN》



Unit in μm

Material for Substrate : Al_2O_3 ($\epsilon_r = 9.7$)

Thickness : 0.254mm

JS9P08-AS

S-Parameter of JS9P08-AS

VDS = 4.5 V IDS = 150mA

freq (GHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
20.0	.81	113.0	1.40	-111.9	.041	-164.6	.79	105.1
20.2	.80	100.9	1.44	-115.1	.043	-167.8	.78	103.0
20.4	.79	108.6	1.49	-118.4	.044	-171.2	.77	100.6
20.6	.78	106.0	1.54	-121.6	.046	-174.2	.76	98.2
20.8	.77	103.4	1.60	-124.9	.048	-176.8	.75	95.5
21.0	.75	100.8	1.66	-128.5	.051	-179.6	.75	92.9
21.2	.74	98.2	1.73	-132.2	.054	177.6	.74	90.4
21.4	.71	95.1	1.80	-136.2	.059	173.2	.72	87.6
21.6	.69	91.5	1.87	-140.5	.062	168.0	.70	84.5
21.8	.67	88.2	1.94	-144.8	.064	163.2	.68	80.7
22.0	.65	85.2	2.01	-149.2	.067	159.2	.66	76.8
22.2	.62	81.9	2.08	-154.0	.071	155.3	.65	72.8
22.4	.58	78.8	2.14	-159.0	.076	150.4	.62	69.3
22.6	.54	75.1	2.21	-163.9	.079	143.8	.59	66.1
22.8	.50	71.3	2.28	-168.9	.082	137.2	.55	63.0
23.0	.45	68.2	2.36	-173.9	.082	131.1	.52	58.6
23.2	.42	64.2	2.46	-179.7	.082	127.6	.50	52.1
23.4	.37	59.4	2.52	174.3	.086	124.2	.47	45.1
23.6	.31	54.2	2.59	168.3	.090	119.3	.42	38.6
23.8	.24	48.2	2.65	162.1	.094	113.8	.38	32.3
24.0	.18	41.3	2.71	155.5	.097	107.9	.33	23.9

Including bonding wire inductances