2 - 20 GHz 23dBm MMIC

FEATURES

- Small Chip Size: 43.6 mils x 90 mils
- P_{-1} dB: 23 dBm typical
- Small Signal Gain: 11.5 dB typical
- Bias Condition: 250 mA @ 8 V
- Single Bias supply

DESCRIPTION

The TC1901 is a broadband general-purpose medium power MMIC amplifier that operates in 2 to 20 GHz frequency range. The amplifier provides a 11.5 dB of typical gain and delivers 23 dBm of typical output power. The MMIC is fabricated using a mature GaAs PHEMT process. The process features all passivation for increased performance and reliability. All devices are 100% DC tested to assure consistent quality. Bond pads are gold plated for either thermocompression or thermosonic wire bonding. Backside gold plating is compatible with standard AuSn die-attach.

ELECTRICAL SPECIFICATIONS (at 25 °C)

- For full 2-20GHz freq band -

SYMBOL	DESCRIPTION	MIN	TYP	MAX	UNITS
FREQ	Frequency Range	2		20	GHz
SSG	Small Signal Gain	10	11.5		dB
GOF	Small Signal Gain Flatness		± 0.6	± 0.8	dB
P_{-1} dB	Output Power at 1 dB Gain Compression	21.5	22.5		dBm
IP3	Third Order Intercept Point		30		dBm
VSWR, IN	Input VSWR		2:1		-
VSWR, OUT	Output VSWR		2:1		-
VDD	Supply Voltage		8		Volt
IDD	Current Supply		250		mA

ELECTRICAL SPECIFICATIONS (at 25 °C)

- For 2-8GHz / 8-14GHz / 14-20GHz bands -

SYMBOL	DESCRIPTION	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	UNITS
FREQ	Frequency Range	2.0 - 8.0			8.0 - 14.0			14.0 - 20.0			GHz
SSG	Small Signal Gain	10	11.5		10	11.5		10.5	12		dB
GOF	Small Signal Gain Flatness		±0.5			±0.5			±0.5		dB
GOT	Gain Variation Over Temp.		0.01	0.02		0.01	0.02		0.01	0.02	dB/℃
NF	Noise Figure		3.75			3.75			3.75		dB
P_{-1}dB		23.5	24.5		22.5	23.5		21.5	22.5		dBm
IP3	Third Order Intercept Point		32			31			30		dBm
VSWR, IN	Input VSWR		2:1			2:1			2:1		-
VSWR, OUT	Output VSWR		2:1			2:1			2:1		-
VDD	Supply Voltage		8			8			8		Volt
IDD	Current Supply		250			250			250		mA
OTR	Operating Temp. Range	-45		85	-45		85	-45		85	℃

ABSOLUTE MAXIMUM RATINGS(at 25 °C)

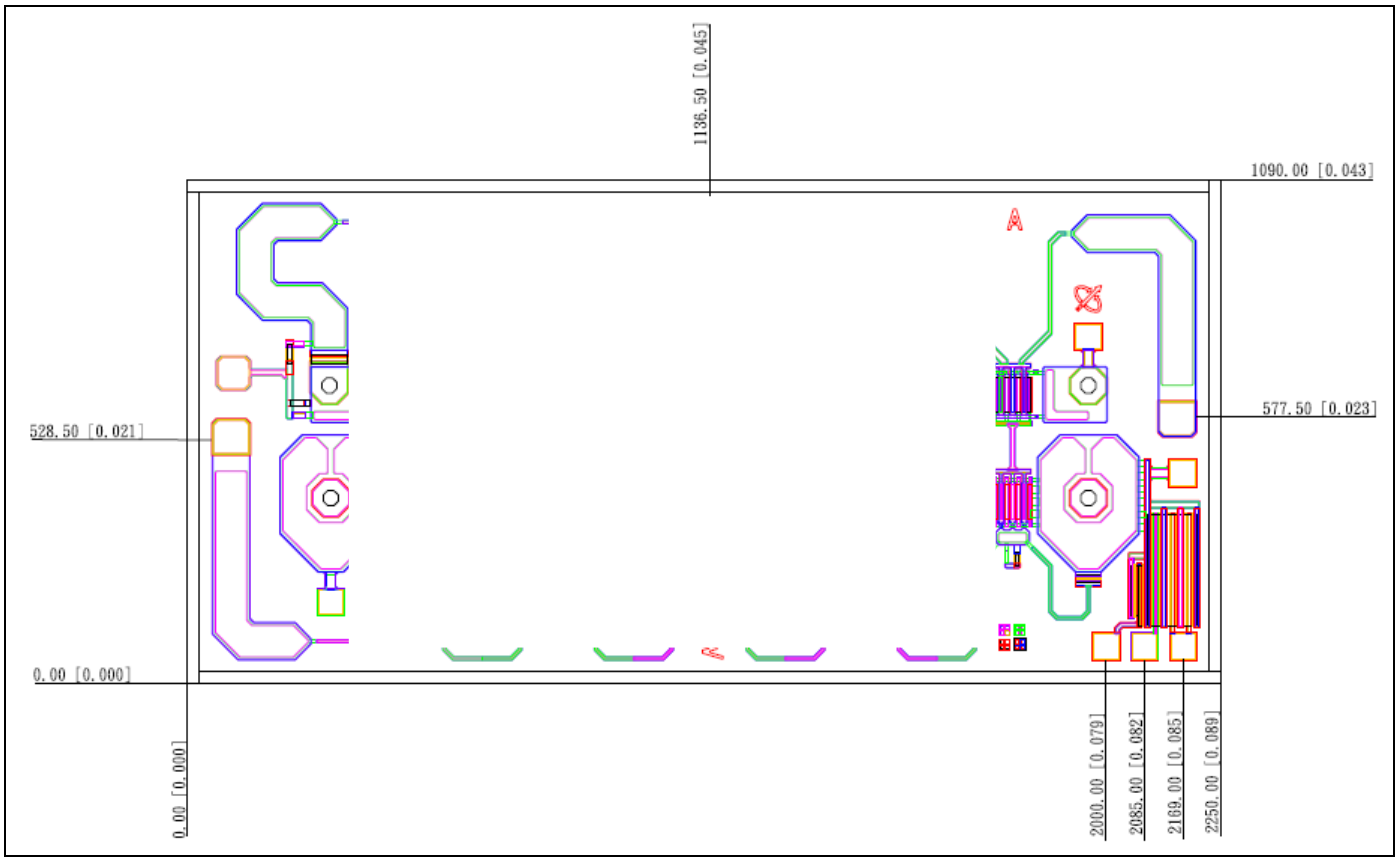
Symbol	Parameter	Rating
V_{DS}	Drain-Source Voltage	+12 V
I_D	Drain Current	350mA
P_T	Continuous Power Dissipation	3W
P_{in}	Input Power	+23dBm
Tch	Channel Temperature	+175°C
T_{STG}	Storage Temperature	- 50 °C to +150 °C

MECHANICAL OUTLINE

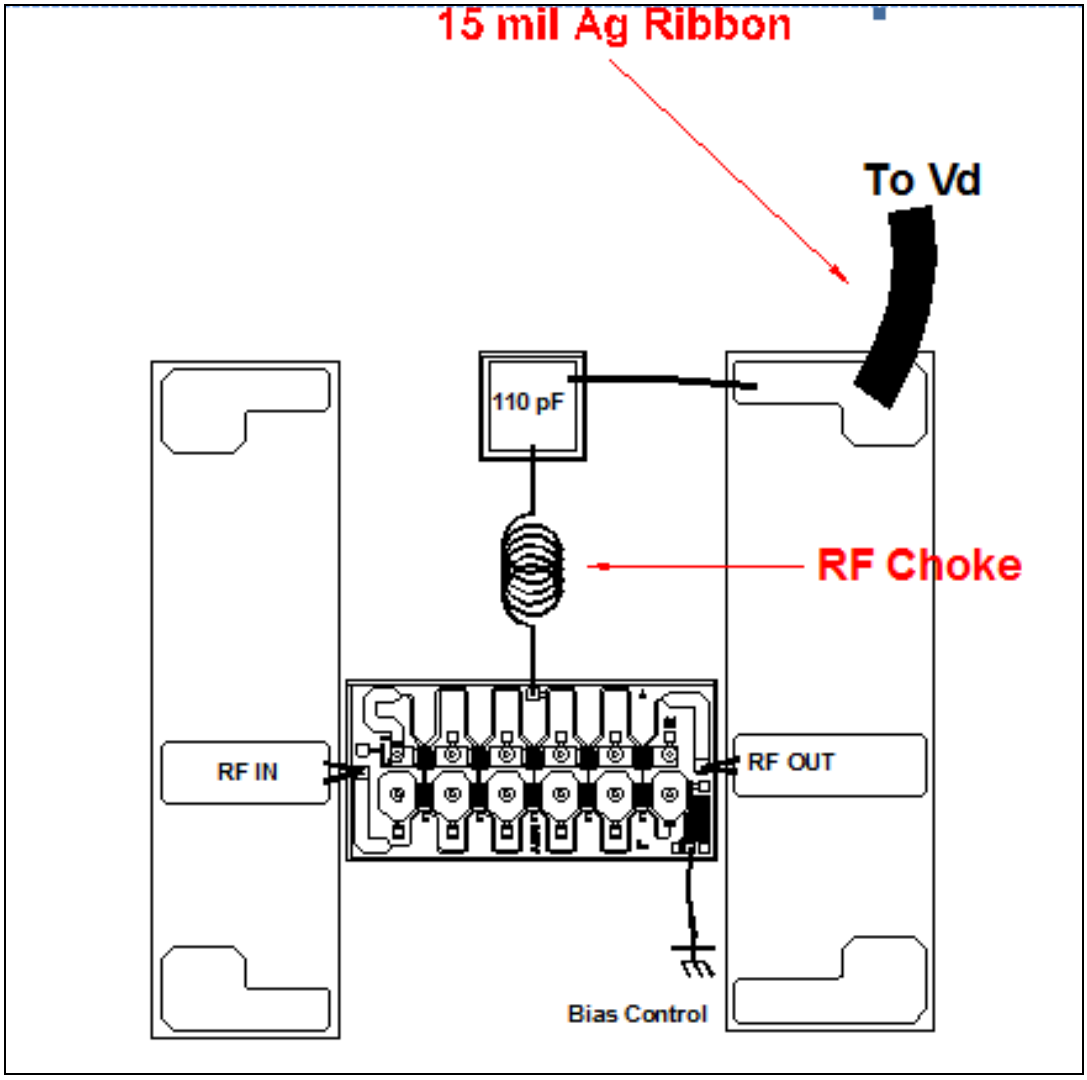
Units: micrometer (inch)

Thickness: 76.2 (0.003)

Chip Size: ± 58 (0.002)



ASSEMBLY DIAGRAM



Note:

1.Rs tuning Pads are for gate bias control.

2.The left pad can get lower Ids and the right pad can get higher Ids.

3.Using 0.7mil Au wire except marked specially.