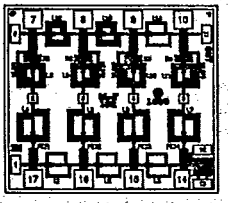
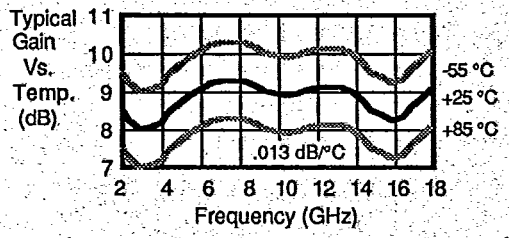
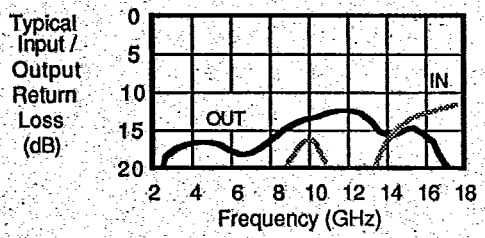
MwT-102
2-18 GHz
MMIC AMPLIFIER CHIP

MICROWAVE TECHNOLOGY 4268 Solar Way Fremont, CA 94538 415-651-6700 FAX 415-651-2208



- 30 dB TYPICAL REVERSE ISOLATION
- ±0.5 dB TYPICAL OUTPUT POWER FLATNESS
- 7.5 mA/dB TYPICAL GAIN EFFICIENCY
- -16 dBc TYPICAL SECOND HARMONICS AT Psat
- DIAMOND LIKE CARBON (DLC) PASSIVATION
- SINGLE SUPPLY BIAS





ELECTRICAL SPECIFICATIONS[1] (Ta=25°C, VDD=8.0V, 2-18 GHz)

MwT-102-GFP (Model Number)

GAIN (dB)

"G"	MIN	TYP
-6	6	7
-7	7	8

GAIN FLATNESS (±dB)

"F"	TYP	MAX
-7	0.6	0.75
-1	0.75	1.0

POWER[2] (dBm) IDD (mA)

"P"	MIN	TYP	TYP	MAX
-1	11	12	35	45
-3	13	14	45	60
-5	15	16	60	100

Example: MwT-102-713 = 7 dB Gain, ±1.0 dB Gain Flatness, +13 dBm P1dB

SYMBOL	PARAMETERS	UNITS	MIN	TYP	MAX
FREQ	Frequency Range	GHz	2.0[3]		18.0
VSWR, IN	Input VSWR	—		1.9:1	2.2:1
VSWR, OUT	Output VSWR	—		1.7:1	2.0:1
NF	Noise Figure	dB		7.5	8.5
ISO	Reverse Isolation	dB		30	
RTH	Thermal Resistance	°C/W		65	

NOTES:

1. Wafers are 100% DC probed and chips are categorized into low (30-60 mA), medium (60-90 mA), and high (90-120 mA) current bins. Four evaluation samples from each of these current bins are assembled per the Assembly Diagram on p. 4 and RF tested. Model numbers are assigned to each bin based on the minimum performance of three out of four of these samples. Chip products are not individually RF tested.
2. Values shown are at 1 dB gain compression. One dB compressed output power above these values may be achieved with increased voltage and/or current.
3. Minimum frequency of operation is limited only by off-chip bias circuitry and may be extended as desired. Contact MwT for details.

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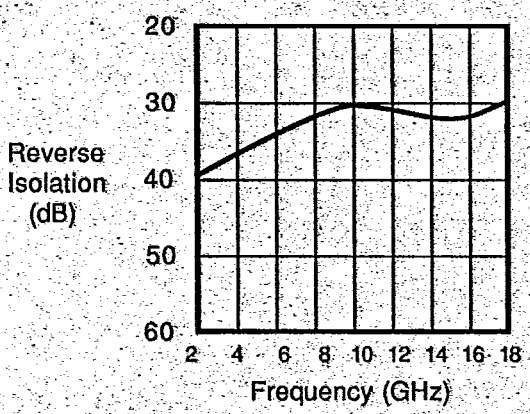
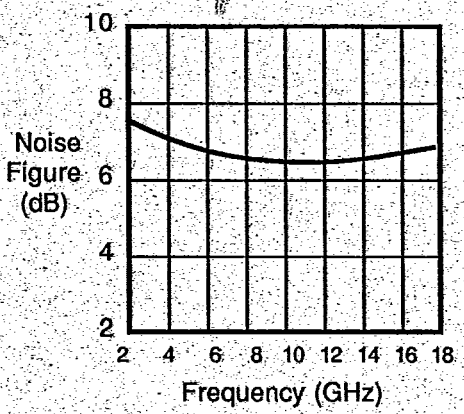
MAXIMUM RATINGS AT Ta=25° C

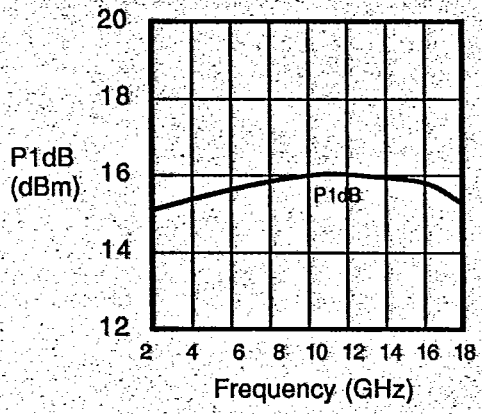
SYMBOL	PARAMETER	UNITS	CONT MAX [1]	ABSOLUTE MAX [2]
VDD	Supply Voltage	V	10.0	12.0
IDD	Supply current	mA	120	150
Tch	Channel Temperature	°C	+150	+175
Tst	Storage Temperature	°C	-55 to +150	-65 to +175

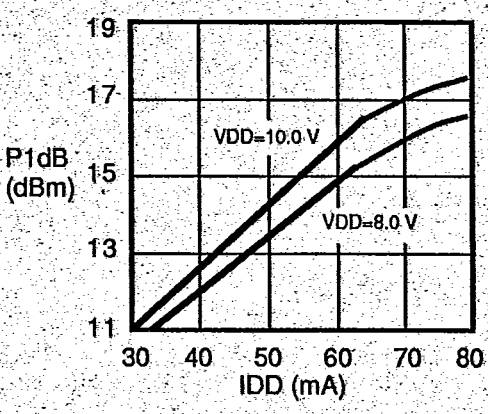
NOTES: 1. Exceeding any one of these limits in continuous operation may reduce the mean-time-to-failure below the design goals.
2. Exceeding any one of these limits may cause permanent damage.

Typical Performance at Ta=25 °C, VDD = 8.0V, IDD = 60 mA









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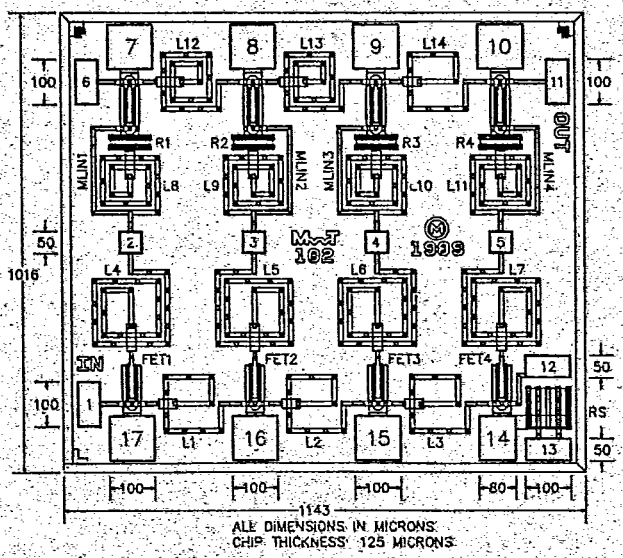
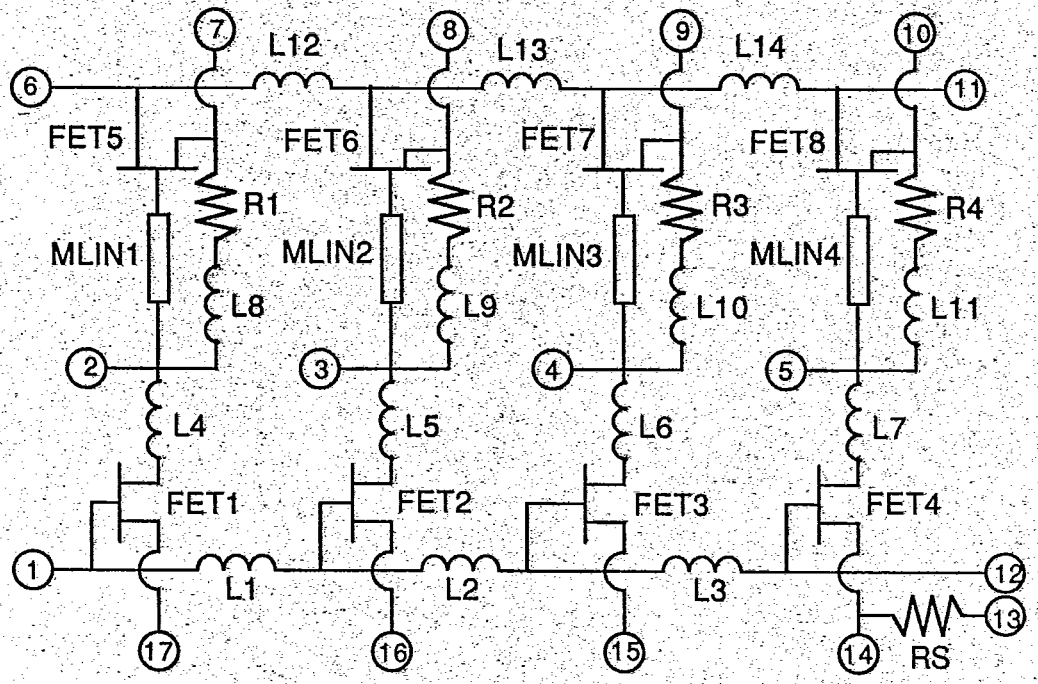
DEVICE LAYOUT



DEVICE SCHEMATIC



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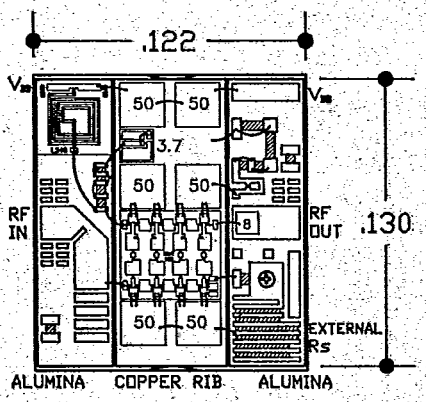
ASSEMBLY DIAGRAM



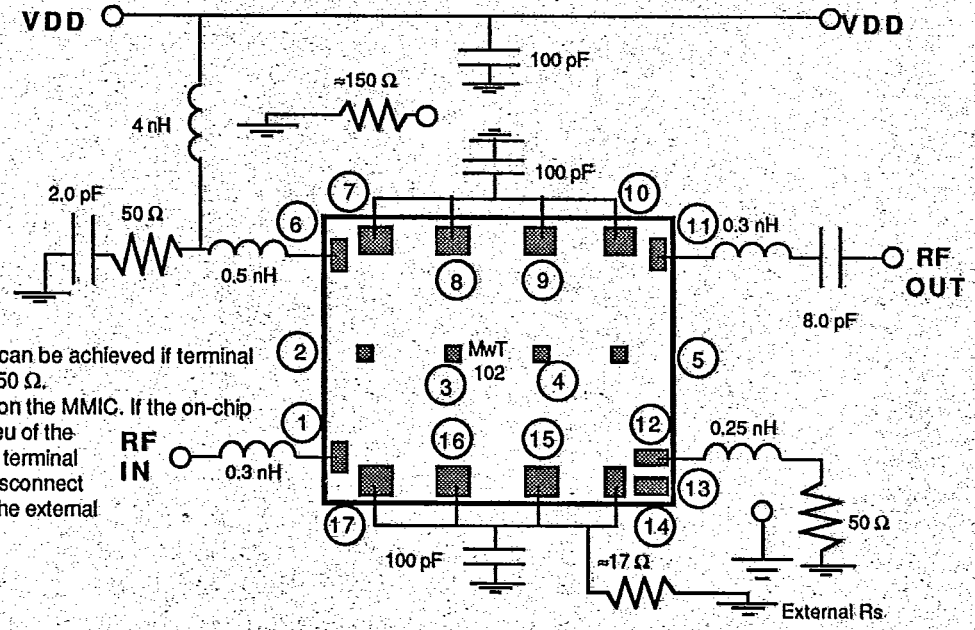
KEY:

- Via Hole
- Metal Pattern
- Resistor
- XX Capacitor with value in pF

NOTES:

1. MwT recommends MNOS type capacitors.
2. Alumina substrates, ridges, and carriers are available from MwT.
3. Bias choke "L240" is available from M/A COM.
4. Refer to "Assembly Procedures" for assembly details.

SCHEMATIC DIAGRAM



NOTES:

1. Higher output power can be achieved if terminal (8) is connected to 150 Ω.
2. There is a built-in Rs on the MMIC. If the on-chip Rs is to be used in lieu of the external Rs, connect terminal (13) to ground and disconnect terminal (15) from the external 17 Ω resistor.

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