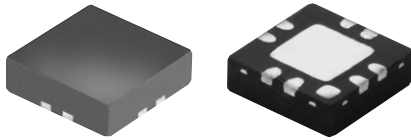


Surface Mount

Monolithic Amplifiers

MNA-SERIES

High Directivity, 50Ω, 0.5 to 5.9 GHz



CASE STYLE:DQ849

Features

- 3V & 5V operation
- micro-miniature size .120"x.120"
- no external biasing circuit required
- high directivity, 20 dB typ.
- wide bandwidth, 0.5 to 5.9 GHz
- low noise figure, 2.9 dB typ. (MNA-6)
- output power, up to +19 dBm typ.
- excellent repeatability
- low cost

Applications

- buffer amplifier
- cellular
- PCN

Electrical Specifications at T_{AMB}=25°C

MODEL NO.	FREQ. (GHz)	DC VOLTS (V)	GAIN, dB Typical							MAXIMUM POWER (dBm)		DYNAMIC RANGE			VSWR' (:1) Typ.		DIRECTIVITY (dB) (Isolation-Gain)		DC OPERATING CURRENT @ Pin 3 (mA)		THERMAL RESISTANCE		CASE STYLE	CONNECTION	PRICE \$
			over frequency, GHz						Min. at 2 GHz	Output (1 dB Comp.) Typ.	f _L	f _U	NF (dB) Typ.	IP3 (dBm) Typ.	at1 GHz	at1 GHz	at2 GHz	In	Out	Typ.	Typ.	Max.			θjc Typ. °C/W
	0.5		1.0	1.5	2.0	2.5																			
	f _L - f _U		0.5	1.0	1.5	2.0	2.5																		
MNA-2	0.5-2.5	5.0 2.8	10.6 9.6	12.8 11.5	12.8 11.2	12.3 10.7	11.9 10.2	10.3 —	17.7 12.9	14.9 12.4	5.4 5.4	26.5 23.2	28.0 24.0	1.5 1.5	1.6 1.6	20 20	76 60	95 —	78	DQ849	nt	1.90			
MNA-3	0.5-2.5	5.0 2.8	14.6 14.2	16.2 15.2	16.1 15.0	15.0 14.0	11.8 11.0	13.0 —	11.4 9.7	9.5 8.0	4.9 4.8	19.6 18.0	21.3 19.9	1.9 1.9	1.5 1.5	17 17	30 28	40 —	78	DQ849	nt	1.60			
MNA-4	0.5-2.5	5.0 2.8	15.6 14.3	16.6 14.6	16.4 14.5	15.8 14.1	13.3 11.7	14.0 —	19.0 13.4	17.0 13.7	4.8 4.8	28.4 23.9	29.0 24.9	1.5 1.5	1.7 1.7	20 20	75 67	90 —	78	DQ849	nt	1.90			
MNA-5	0.5-2.5	5.0 2.8	18.5 18.0	22.8 21.4	21.9 20.5	20.6 19.4	18.0 17.4	17.0 —	12.2 10.1	8.0 6.5	3.5 3.5	19.4 18.0	21.0 20.0	1.6 1.6	1.9 1.9	17 17	28 26	40 —	78	DQ849	nt	1.60			
MNA-6	0.5-2.5	5.0 2.8	19.4 18.6	23.5 21.5	23.6 21.2	23.0 21.0	20.2 19.0	21.5 —	18.0 14.1	15.8 13.2	2.9 2.9	27.1 23.4	28.0 25.0	1.5 1.5	1.6 1.9	17 17	81 65	95 —	78	DQ849	rt	2.25			
MNA-7	1.5-5.9	5.0 2.8	over frequency, GHz						15.6 12.7	15.9 13.1	at2 GHz	at2 GHz	at5.9 GHz	2.0 2.0	1.5 1.5	20 24	73 65	96 —	78	DQ849	nt	2.25			
			1.5	2.0	3.5	5.0	5.9																		
			15.9 13.7	17.2 15.4	17.4 15.8	17.2 16.7	10.8 9.8																		

* VSWR above .75 GHz

Maximum Ratings

Operating Temperature -40°C to 85°C

Storage Temperature -55°C to 100°C

DC Voltage 7V at pin 7[†]

10V at pins 2&5

Power 500mW

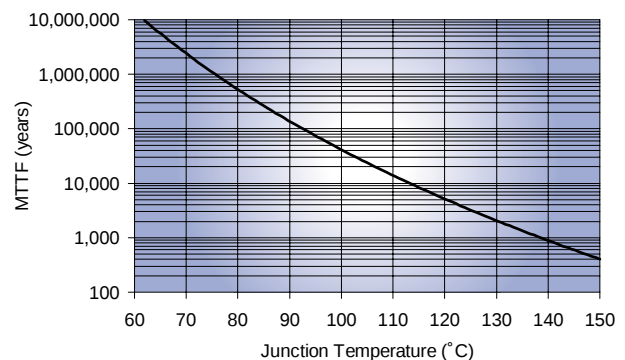
Input Power (no damage) 10 dBm

[†]Refer to pin configuration for DC

Pin Configuration

PORT	(nt)
RF IN	2
RF OUT	5
DC	7, with 1000 pF bypass to ground; connect pin 8 via 33 ohms to pin 7 externally
GNEXT.	3,4 and paddle in center of bottom
OPTIONAL	1,6 No internal connection; recommended use: per PCB Layout (see next sheet)
DEMO BOARD	TB-186

MTTF vs. Junction Temp. (MNA)



designers kit available

KIT No.	No. of Units in KIT	Description	Price \$ per KIT
K1-MNA	40	10 of each: MNA-2, -3, -5, -6	69.95
K2-MNA	60	10 of each: MNA-2, -3, -4, -5, -6, -7	99.95



Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified

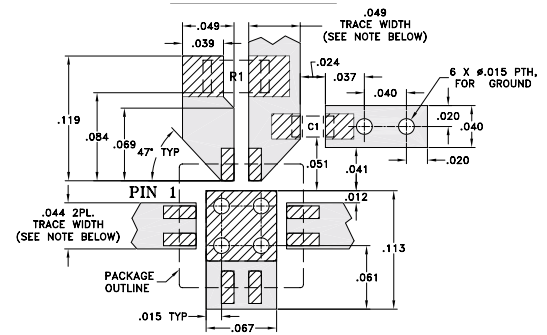
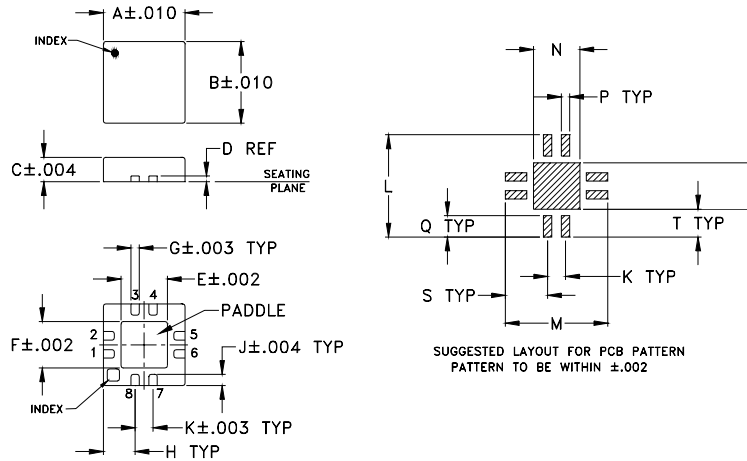
INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

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 FL/TP/CP
 11/028
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Suggested PCB Layout (PL-078)



RESISTOR R1: 33.2 Ohm, 0603 SIZE
CAPACITOR C1: 1000 pF $\pm$ 10%, X7R , 0402 SIZE

NOTE: TRACE WIDTH IS SHOWN FOR ROGERS RO4350 WITH DIELECTRIC THICKNESS 0.020" ± 0.0015", COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

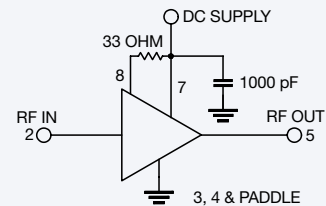
 DENOTES PCB COPPER LAYOUT

 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

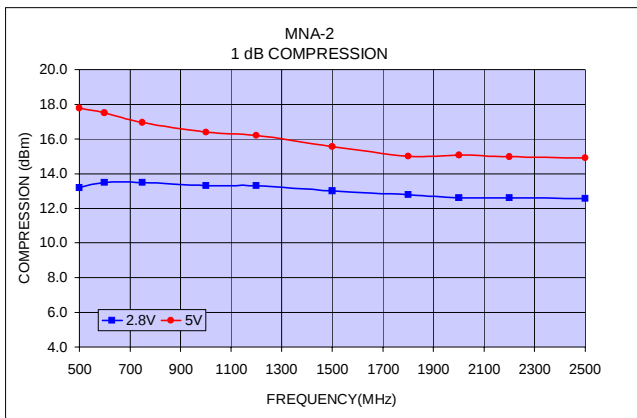
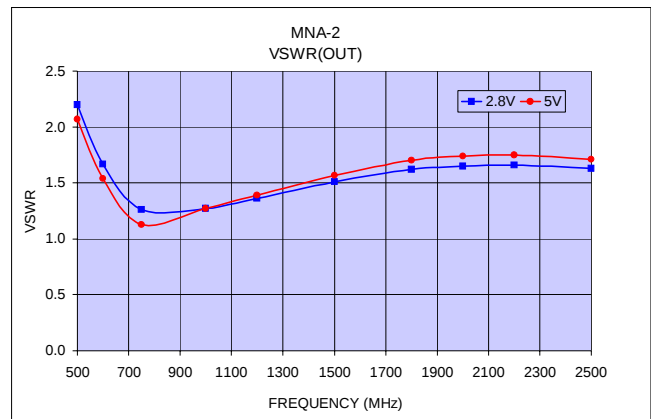
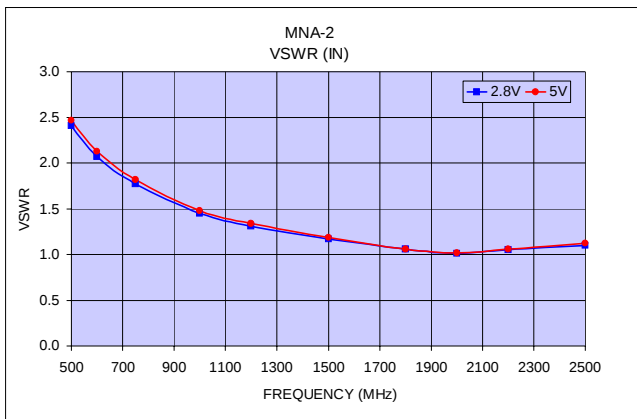
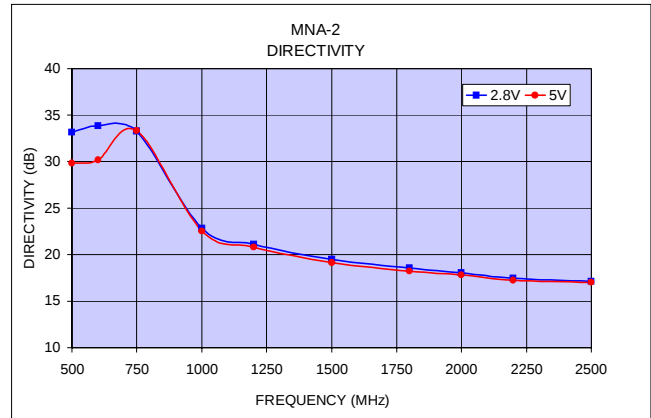
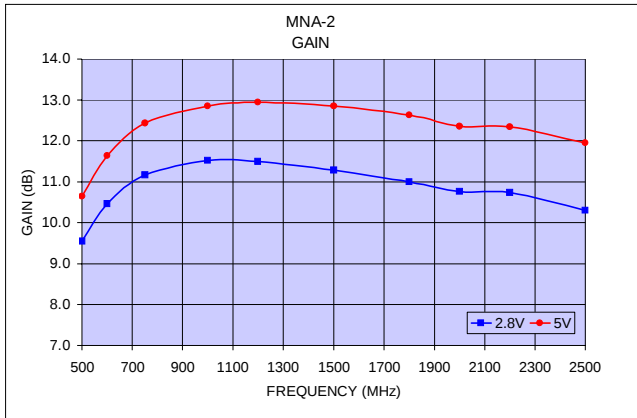
Outline Dimensions (inch mm)

A	B	C	D	E	F	G	H	J	
.118	.130	.035	.008	.067	.067	.012	.046	.016	
3.00	3.00	0.89	0.20	1.70	1.70	0.30	1.17	0.41	
K	L	M	N	P	Q	R	S	T	wt.
.026	.148	.148	.067	.012	.031	.067	.061	.041	grams
0.66	3.76	3.76	1.70	0.30	0.79	1.70	1.55	1.04	.02

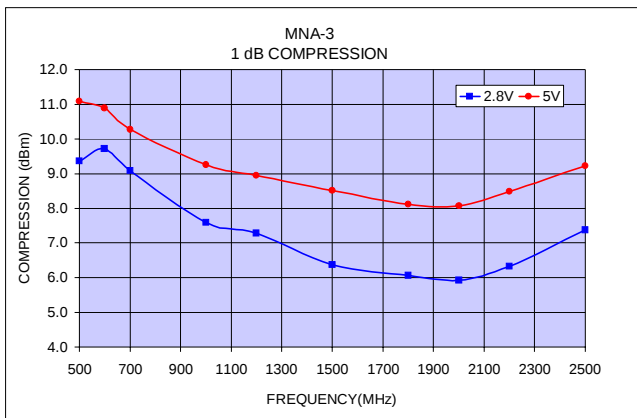
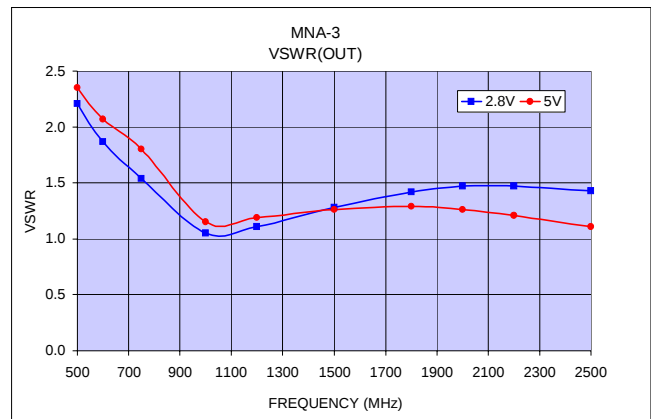
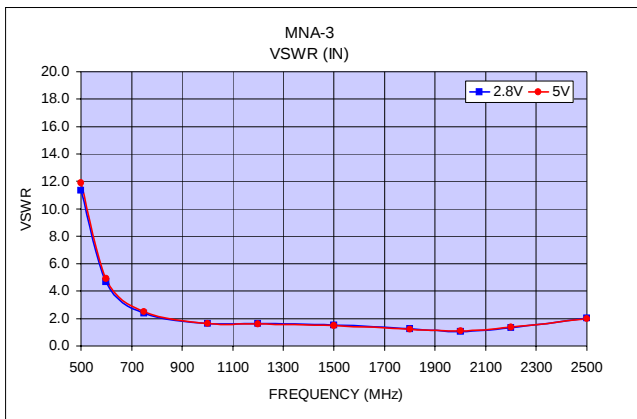
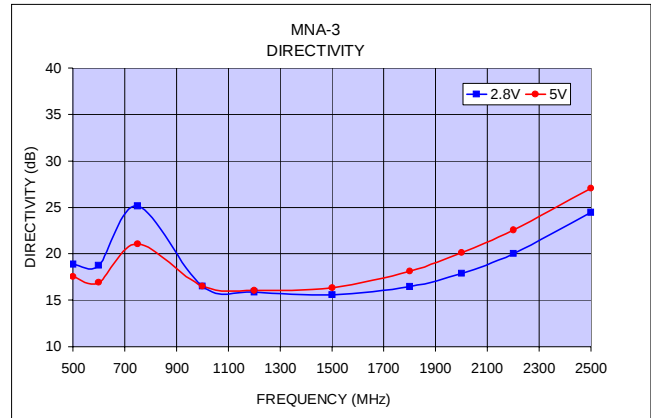
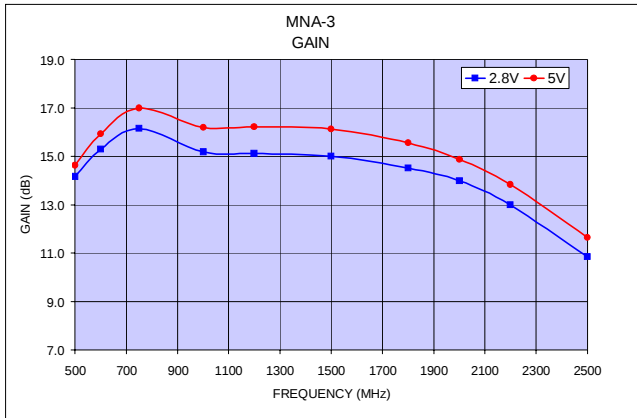
Biassing configuration



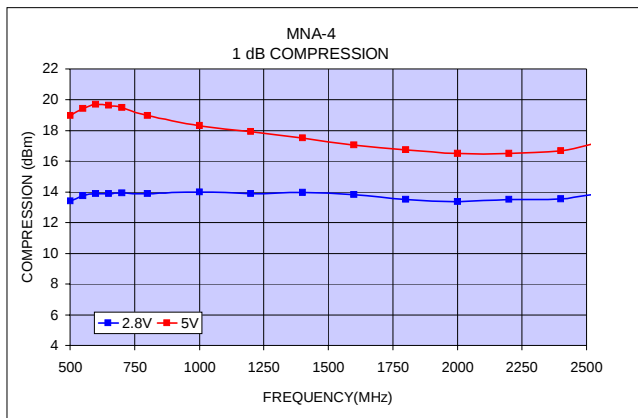
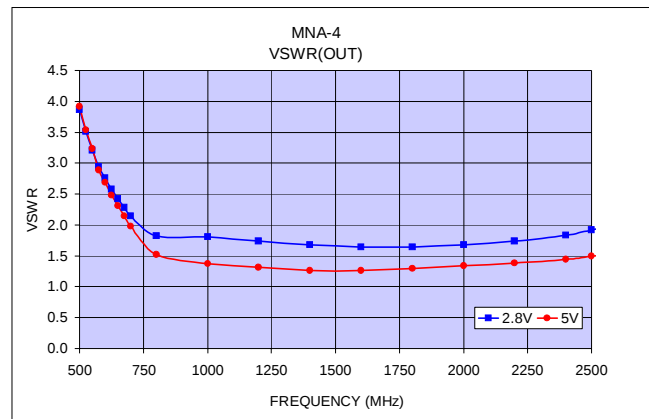
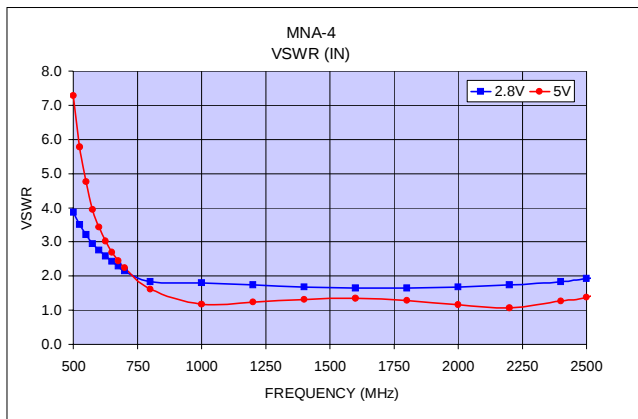
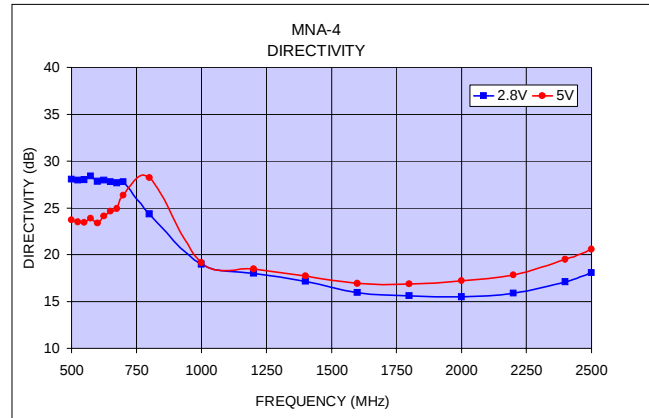
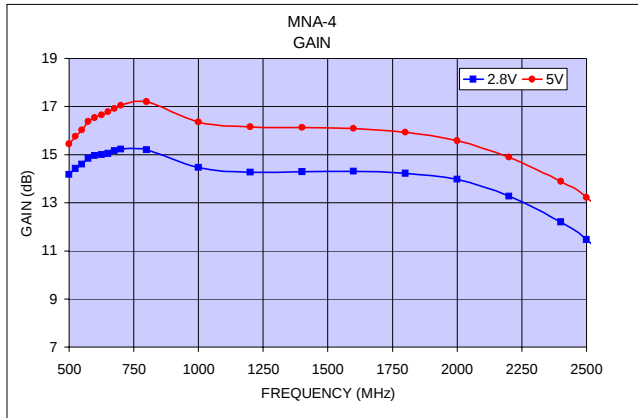
MNA-2 Performance Curves



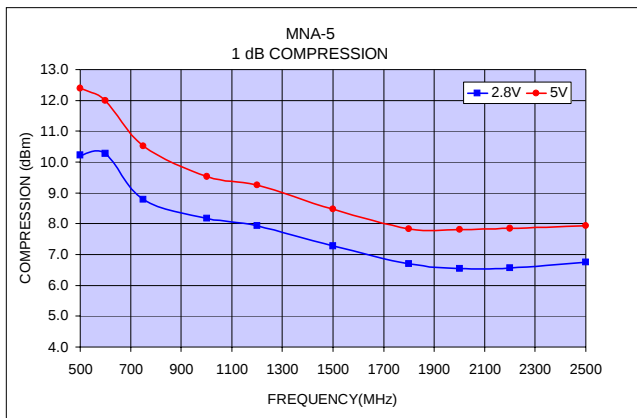
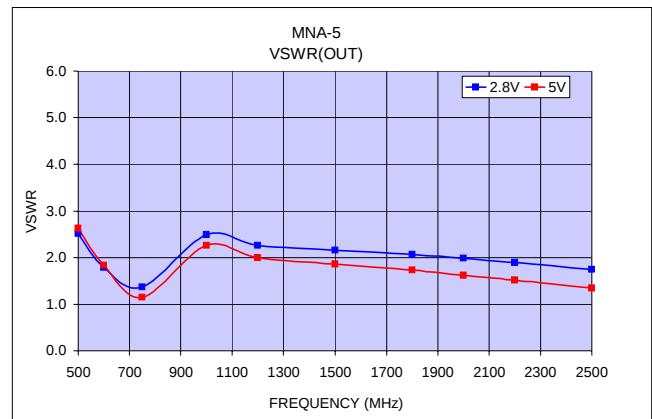
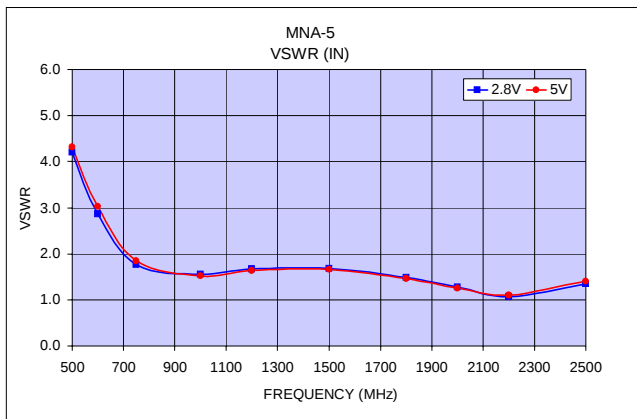
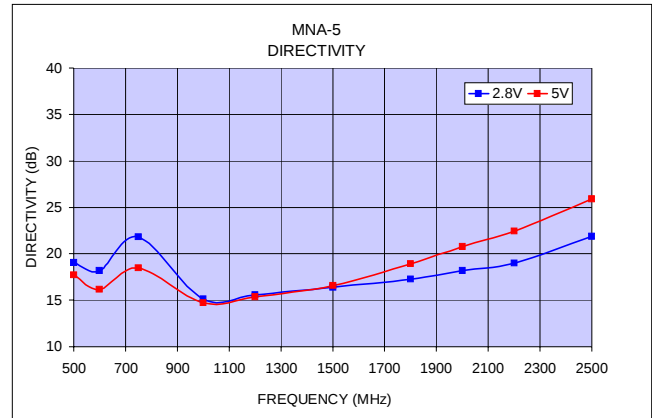
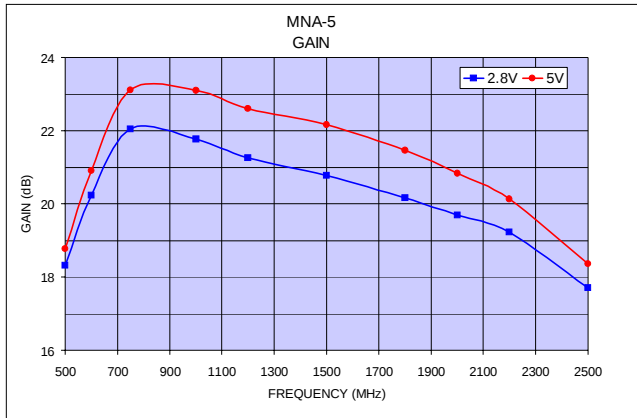
MNA-3 Performance Curves



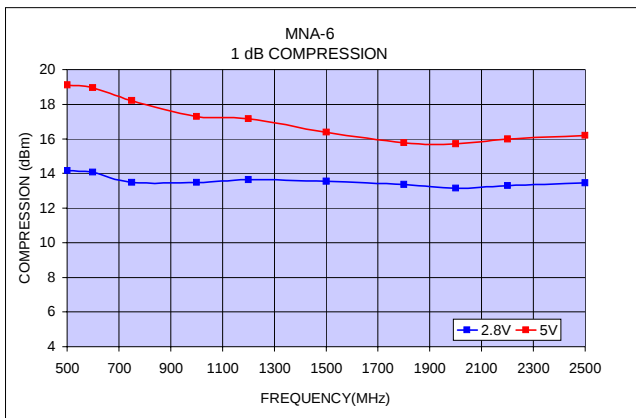
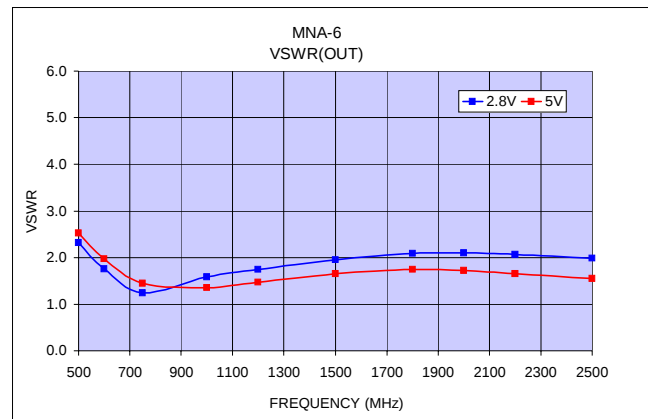
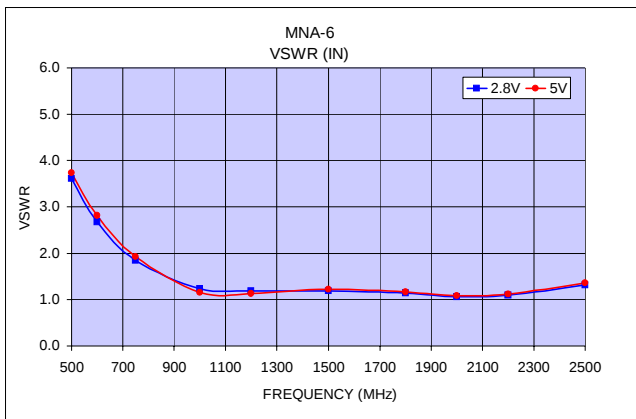
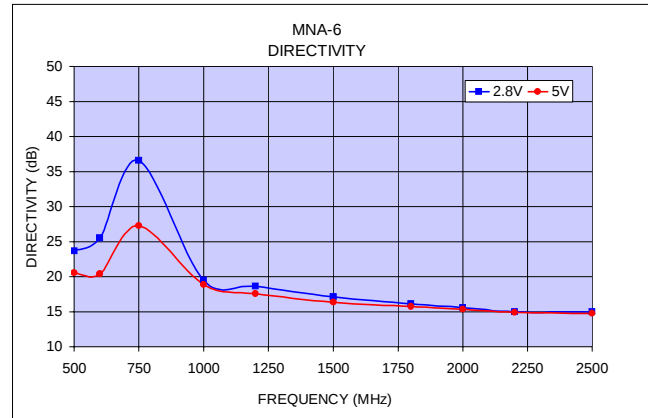
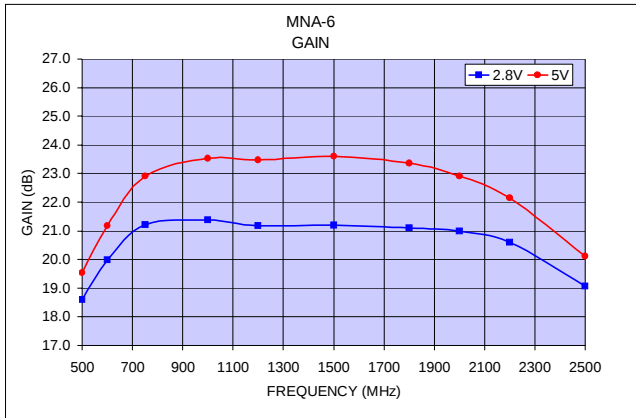
MNA-4 Performance Curves



MNA-5 Performance Curves



MNA-6 Performance Curves



MNA-7 Performance Curves

