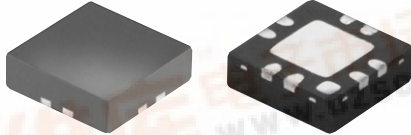


Surface Mount

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) f _L - f _U	DC VOLTS (V)	GAIN, dB Typical						MAXIMUM POWER (dBm)		DYNAMIC RANGE			VSWR* (:1)		DIRECTIVITY (dB) (Isolation-Gain) Typ.	DC OPERATING CURRENT @ Pin 3 (mA)		THERMAL RESISTANCE θ _{jc} Typ. °C/W	CASE STYLE	CONNECTION	PRICE \$ Qty. (30)
			over frequency, GHz						f _L	f _U	NF (dB) Typ.	IP3 (dBm) Typ.	at 1 GHz	at 1 GHz	at 2 GHz		In	Out				
MNA-2	0.5-2.5	5.0	10.6	12.8	12.8	12.3	11.9	10.3	17.7	14.9	5.4	26.5	28.0	1.5	1.6	20	76	95	78	DQ849	nt	1.90
		2.8	9.6	11.5	11.2	10.7	10.2	—	12.9	12.4	5.4	23.2	24.2	1.5	1.6		60	—				
MNA-3	0.5-2.5	5.0	14.6	16.2	16.1	15.0	11.8	13.0	11.4	9.5	4.9	19.6	21.3	1.9	1.5	17	30	40	78	DQ849	nt	1.60
		2.8	14.2	15.2	15.0	14.0	11.0	—	9.7	8.0	4.8	18.0	19.9	1.9	1.5		28	—				
MNA-4	0.5-2.5	5.0	15.6	16.6	16.4	15.8	13.3	14.0	19.0	17.0	4.8	28.4	29.0	1.5	1.7	20	75	90	78	DQ849	nt	1.90
		2.8	14.3	14.6	14.5	14.1	11.7	—	13.4	13.7	4.8	23.9	24.9	1.5	1.7		67	—				
MNA-5	0.5-2.5	5.0	18.5	22.8	21.9	20.6	18.0	17.0	12.2	8.0	3.5	19.4	21.0	1.6	1.9	17	28	40	78	DQ849	nt	1.60
		2.8	18.0	21.4	20.5	19.4	17.4	—	10.1	6.5	3.5	18.0	20.0	1.6	1.9		26	—				
MNA-6	0.5-2.5	5.0	19.4	23.5	23.6	23.0	20.2	21.5	18.0	15.8	2.9	27.1	28.0	1.5	1.6	17	81	95	78	DQ849	nt	2.25
		2.8	18.6	21.5	21.2	21.0	19.0	—	14.1	13.2	2.9	23.4	25.0	1.5	1.9		65	—				
MNA-7	1.5-5.9	5.0	over frequency, GHz						15.6	15.9	at 2 GHz	at 2 GHz	at 5.9 GHz	2.0	1.5	20	73	96	78	DQ849	nt	2.25
		2.8	15.9	17.2	17.4	17.2	10.8	15.0	12.7	13.1	6.9	28.4	28.6	2.0	1.5		65	—				

* VSWR above .75 GHz

Maximum Ratings

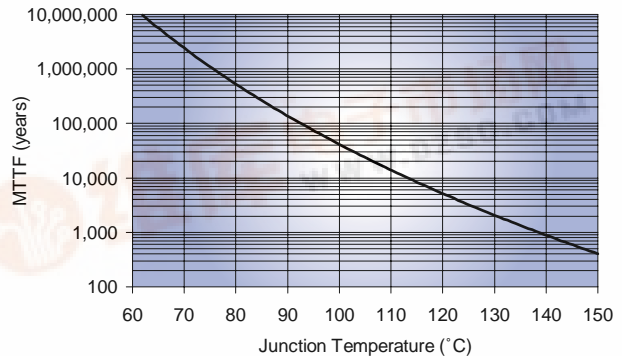
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
DC Voltage	7V at pin 7 ¹ 10V at pins 2&5
Power	500mW
Input Power (no damage)	10 dBm

¹Refer 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
GNDEXT.	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)



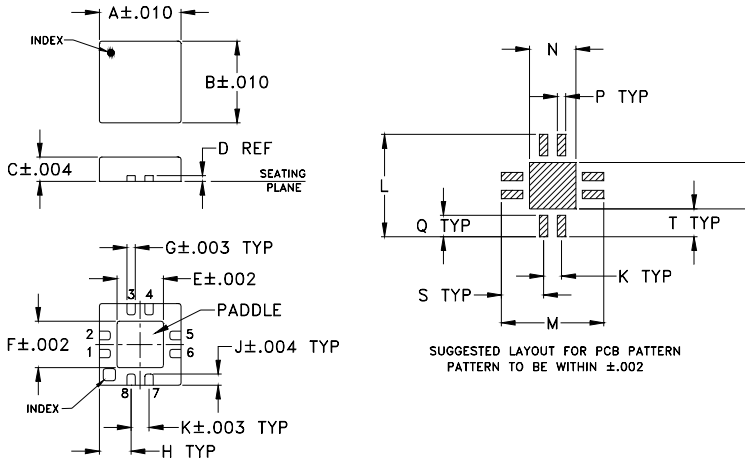
designers kit available

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

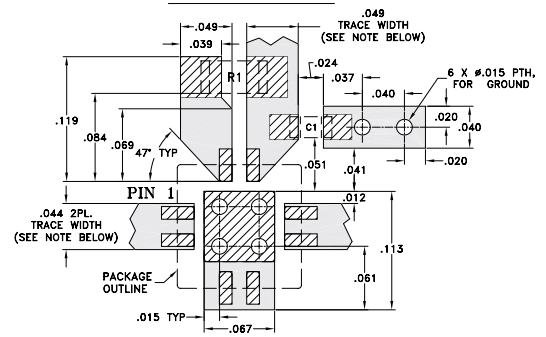


MNA-SERIES

Outline Drawing



Suggested PCB Layout (PL-078)



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

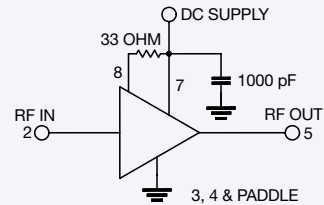
NOTE: TRACE WIDTH IS SHOWN FOR ROGERS RO4350 WITH DIELECTRIC THICKNESS 0.020" ± 0.0015", COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

- DENOTES PCB COPPER LAYOUT
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

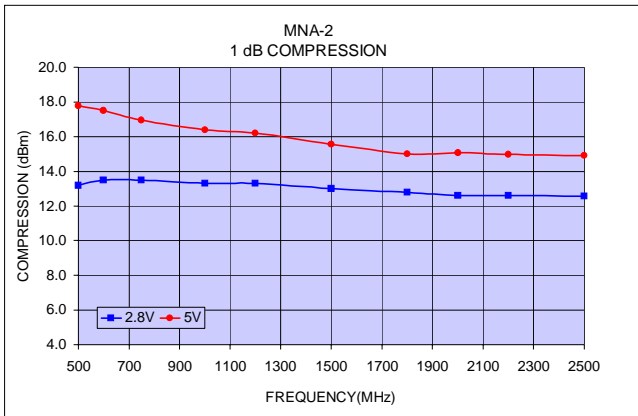
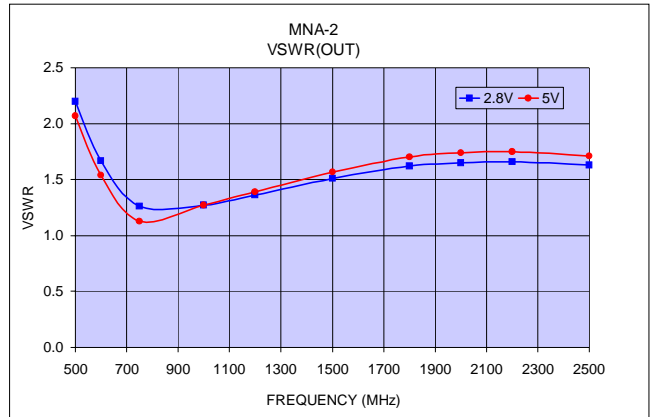
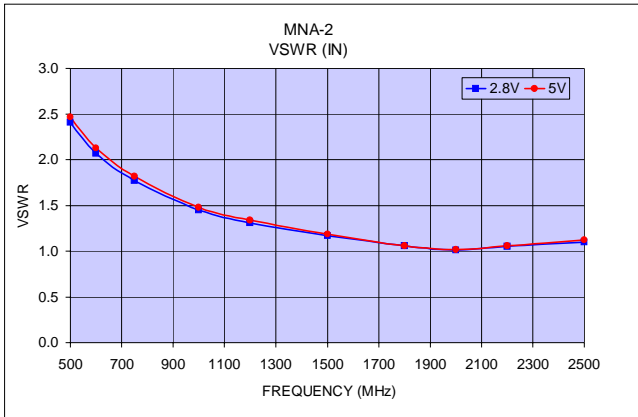
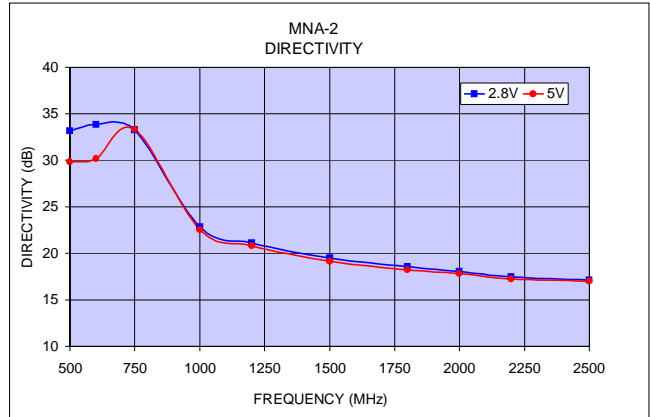
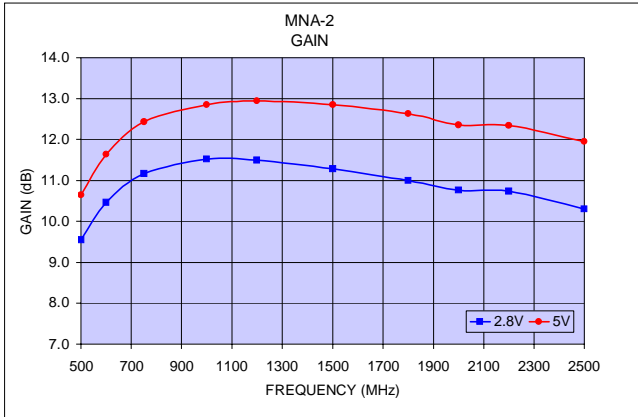
Outline Dimensions (inch mm)

A	B	C	D	E	F	G	H	J	
.118	.118	.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

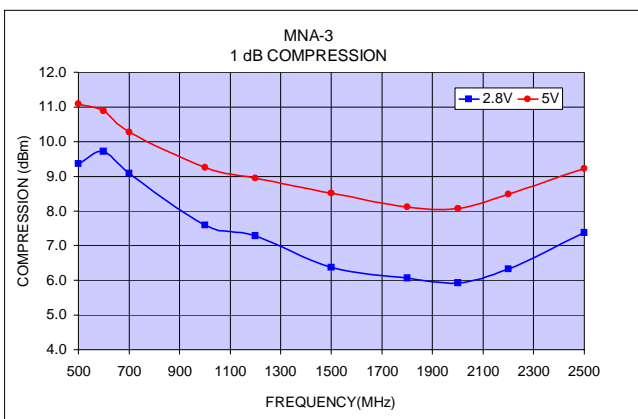
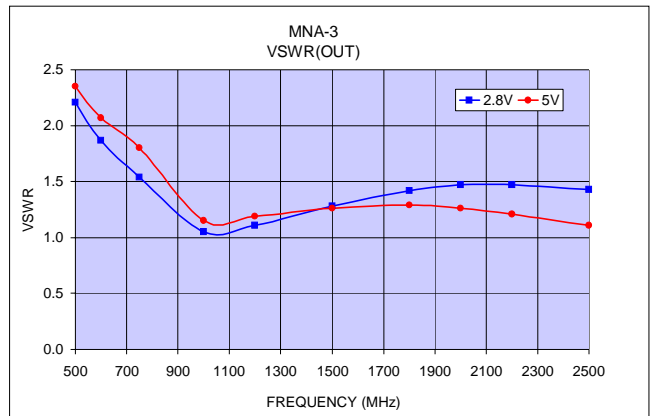
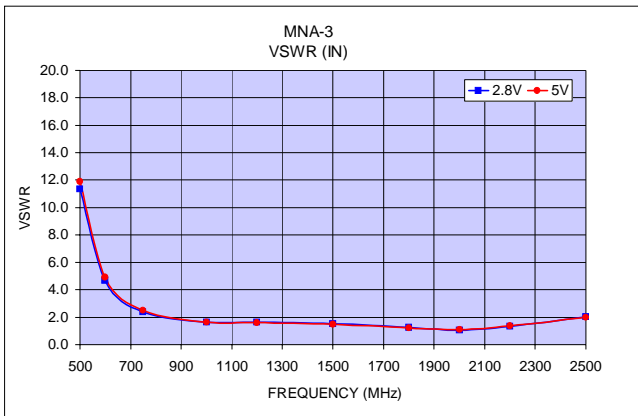
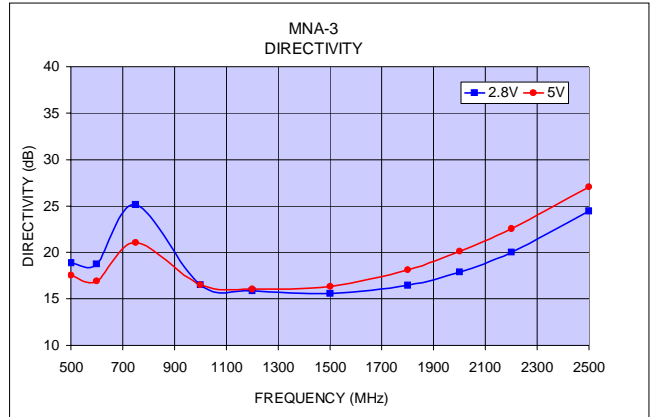
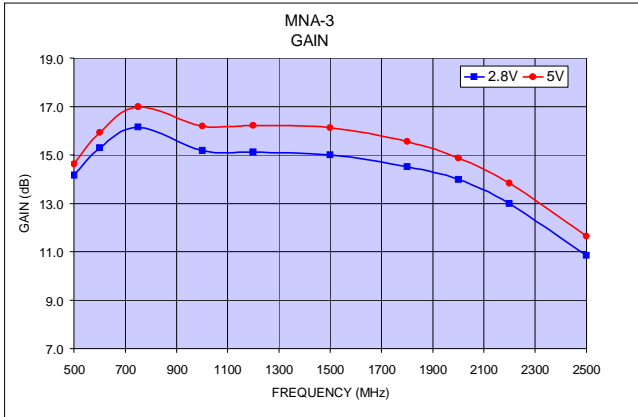
Biasing configuration



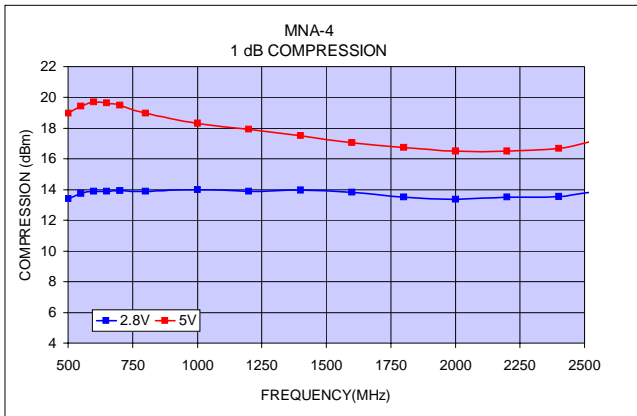
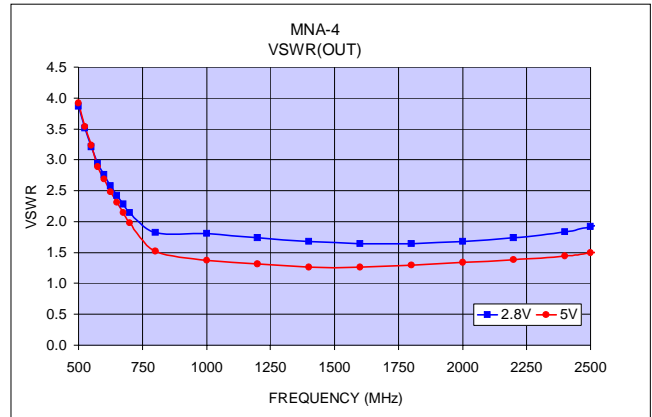
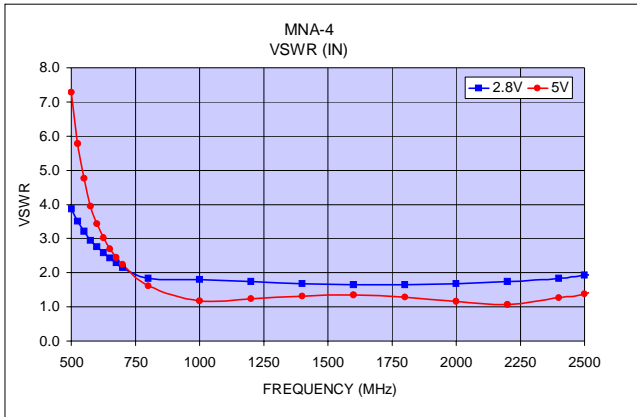
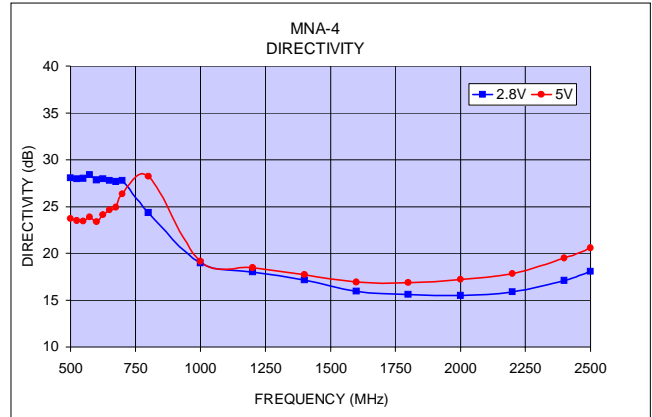
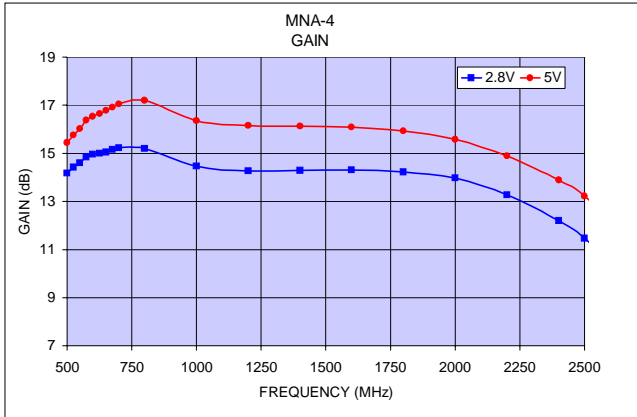
MNA-2 Performance Curves



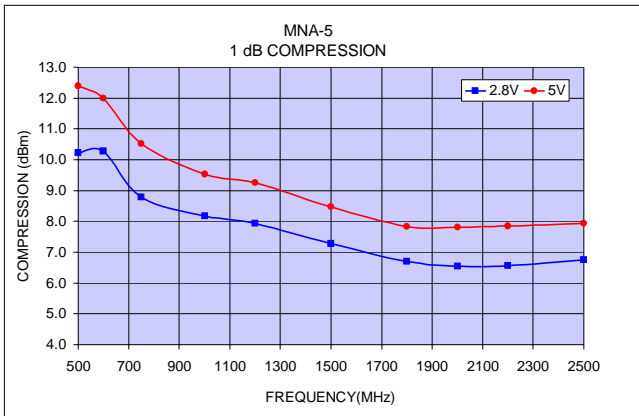
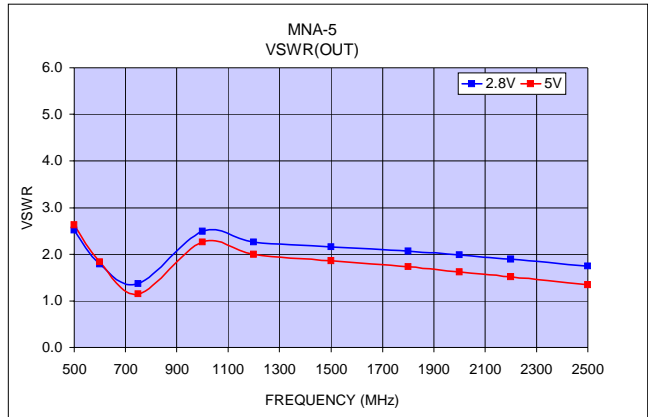
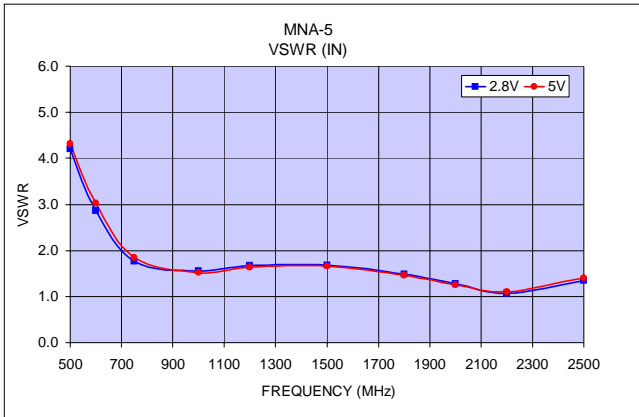
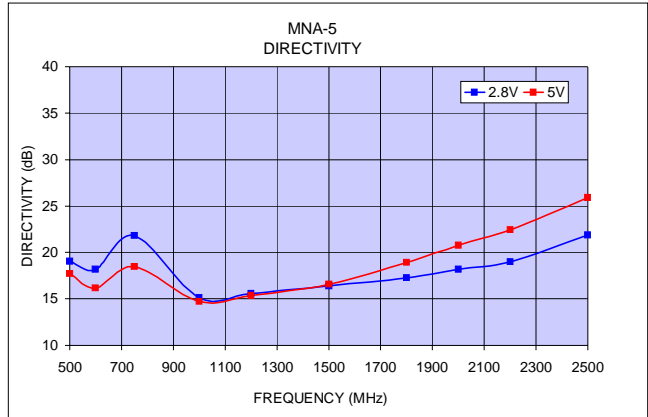
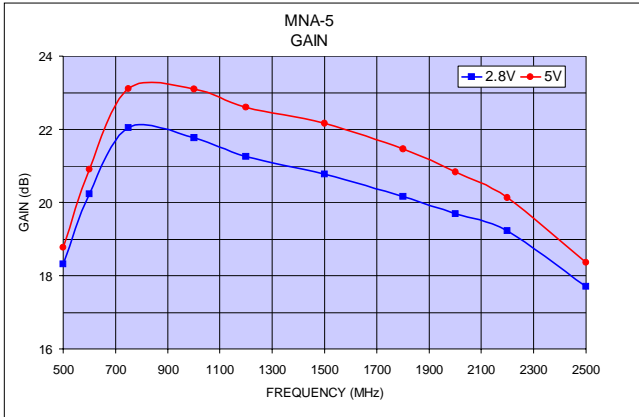
MNA-3 Performance Curves



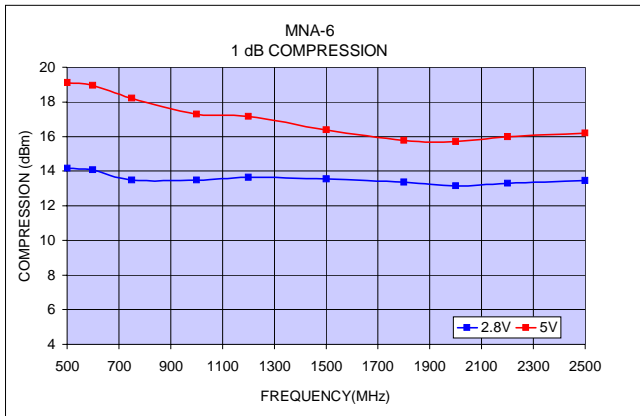
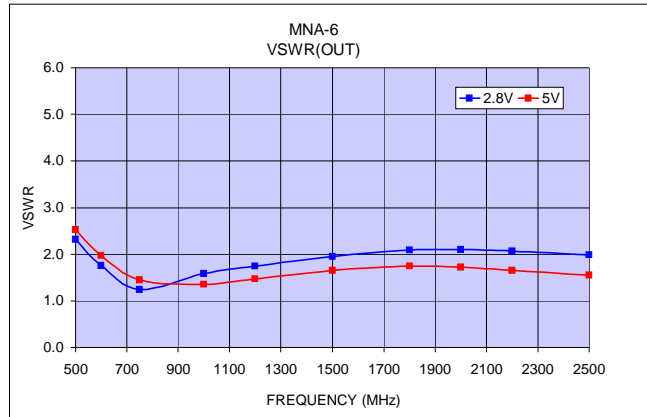
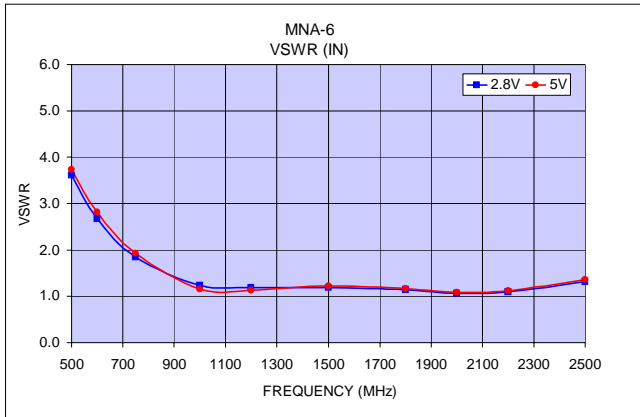
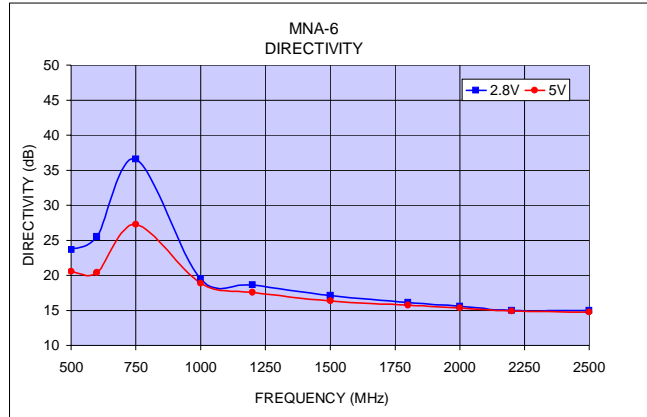
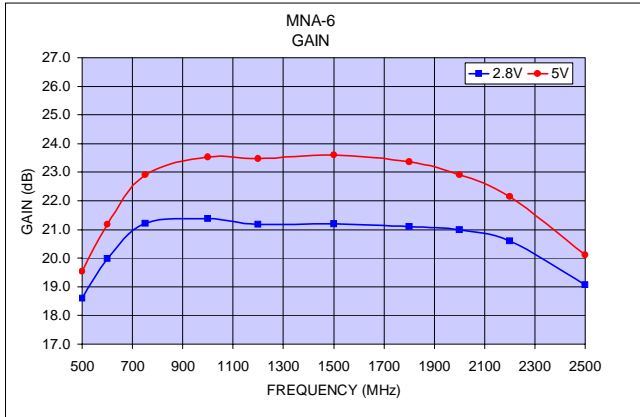
MNA-4 Performance Curves



MNA-5 Performance Curves



MNA-6 Performance Curves



MNA-7 Performance Curves

