

### VARIABLE GAIN 10 to 1200 MHz

up to 20 mW (+13 dBm) output

MODEL NO.	FREQ. (MHz) $f_L$ - $f_U$	GAIN (dB)			MAXIMUM POWER (dBm)		DYNAMIC RANGE		VSWR		DC POWER		CASE STYLE	CONNECTION	PRICE \$ Qty. (1-9)
		Min.	Flatness Max.	Control range	Output (1 dB Comp.)	Input (no damage)	NF (dB) Typ.	IP3 (dBm) Typ.	In	Out	Volt (V)	Current (mA)			
ZFL-1000GH *	10-1200	24	±1.5	30**	+13	+10	15	+25	2.2:1	2:1	15	170	Y39	-	219.00
ZFL-1000G *	10-1000	17	±1.5	30**	+3	+10	12	+13	2:1	2:1	15	100	Y39	-	199.00

\* ZFL-1000GH and ZFL-1000G, all specifications at 0 Volts control voltage.

\*\* Response time (10% to 90%) 25µsec., control voltage 0 to 5 volts.

### HIGH ISOLATION 2 to 2000 MHz

up to 500 mW (+27 dBm) output

MODEL NO.	FREQ. (MHz) $f_L$ - $f_U$	GAIN (dB)			MAXIMUM POWER (dBm)			DYNAMIC RANGE		VSWR Typ.		ACTIVE DIRECTIVITY* (dB)				DC POWER		CASE STYLE	CONNECTION	PRICE \$ Qty. (1-9)
		Min.	Flatness Max. m	Total range	Output (1 dB Comp.) $L_w$ U	Input (no damage)	NF (dB) Typ.	IP3 (dBm) Typ.	In	Out	$L_w$ Typ.	U Typ.	Min	Typ.	Min	Typ.	Volt (V)			
MAN-1AD	5-500	16	±0.5	±1.0	+7 +6	+15	7.2	+20	1.6	1.7	35	25	30	20	12	85	A05	CC	26.45	
MAN-11AD	2-2000	8	±0.5	±1.5	-2 -3.5 <sup>(a)</sup>	+10	6.5	+14	3.0	2.0	21	14	16	12	15	22	A06	CC	31.95	
MAN-2AD	2-1000	9	±0.4	±0.7	-2 -3.5	+10	6.5	+14	2.0	2.0	24	19	19	14	15	22	A06	CC	23.95	
ZFL-11AD	2-2000	8	±0.5	±1.3	-2 -3.5 <sup>(a)</sup>	+10	6.5	+14	2.5	2.0	21	14	16	12	15	22	Y39	-	91.95	
ZFL-2AD	2-1000	9	±0.4	±0.5	-2 -3.5	+10	6.5	+14	2.0	2.0	24	19	19	14	15	22	Y39	-	83.95	
ZFL-1HAD**	10-500	10	—	±1.0	+20 +20	+17	7.5	+30	1.3	1.35	30	20	25	18	15	115	SS98	-	210.00	
ZFL-2HAD	50-1000	11	±0.7	±1.0	+20 +20	+15	5.0	+33	2.0	2.0	30	20	21	15	15	110	SS98	-	264.95	
▲ ZHL-1HLD	225-400	23	—	±1.0	+27 +27	+10	2.5	+40	2.0	2.0	34	28	34	28	24	525	T34	-	395.00	

$L_w$  = low range [ $f_L$  to  $f_U/2$ ]

m = mid range [ $2f_L$  to  $f_U/2$ ]

U = upper range [ $f_U/2$  to  $f_U$ ]

\* Active Directivity (dB) = Isolation (dB) - Gain (dB)

\*\*Input VSWR of ZFL-1HAD in 10-20 MHz band increases to 1.45:1 at -55 deg.C.

Below 50 MHz, NF increases to 11 dB typ at 10 MHz.

<sup>(a)</sup>Above 1 GHz, -5 dBm min.

#### NOTES:

- ✦ Max. voltage Vdc
- \* Available only with BNC connectors
- ▲ Available only with SMA connectors
- ▼ SMA standard: Also available with BNC or type N connectors, please consult factory.
- B. Connector types and case mounted options, case finishes are given in section 0, see "Case styles & outline drawings".
- C. Prices and specifications subject to change without notice.
- D. For Quality Control Procedures see Table of Contents, Section 0, "Mini-Circuits Guarantees Quality" article. For Environmental Specifications see Amplifier Selection Guide.
- 1. Absolute maximum power, voltage and current rating (for medium-pwr see note ✦)
  - 1a. AMP models, 17V DC
  - 1b. 12-V MAN models, 12.5V DC (except MAN-1AD, 14 V DC), 15-V MAN models, 16V DC
  - 1c. ZFL models, 17V DC (except ZFL-AD, 16V DC)
  - 1d. ZHL-1HLD, 25V DC
  - 1e. ZJL models, 13V DC
- 2. Open load is not recommended, potentially can cause damage. With no load, derate max input power by 20 dB.

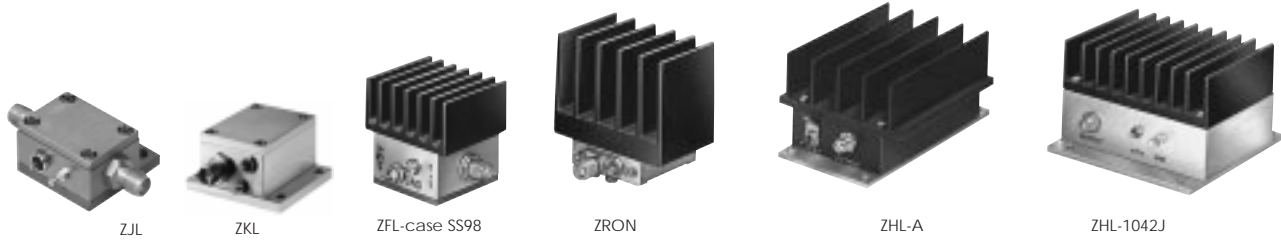
#### NSN GUIDE

MCL NO.	NSN
ZFL-1000G	5996-01-464-8970
ZFL-1000H	5996-01-299-5588
ZFL-1000VH	5996-01-454-6938
ZFL-2000	5996-01-220-2213
ZFL-2000B	5996-01-220-2213
ZHL-6A	5996-01-330-3533

#### pin connections

PORT	cc	cd	ce
RF IN	1	2	5
RF OUT	8	4	11
DC	5	1	2
CASE GND	2,3,4,6	3	1,3,4,6,7,8,9,10,12
NOT USED	7	—	—

# 50 Ω



## Low POWER 50 kHz to 7000 MHz

up to 16 mW (+12 dBm) output

MODEL NO.	FREQ. (MHz) $f_l$ - $f_u$	GAIN (dB)				MAXIMUM POWER (dBm)			DYNAMIC RANGE <sup>(1)</sup>		VSWR Typ.		DC POWER		CASE STYLE	NOTE	PRICE \$
		Typ.	Min.	Flatness Typ. <sup>(1)</sup>	Max.	Output (1 dB Comp.) $L_w$	Input (no damage) $U$	NF (dB) Typ.	IP3 (dBm) Typ.	In	Out	Volt (V)	Current (mA)	Note B			
ZJL-7G	20-7000	10	7.5	±1.0	—	+8	+9	+15	5.0	+24	1.5:1	1.5:1	12	50	BW459	—	99.95
ZJL-6G	20-6000	13	10	±1.6	—	+9	+10	+15	4.5	+24	1.5:1	1.4:1	12	50	BW459	—	114.95
ZJL-3G	20-3000	19	14	±2.2	—	+8	+8	+13	3.8	+22	1.4:1	1.6:1	12	45	BW459	—	114.95
▼ ZFL-500	0.05-500	—	20	—	±1.0	—	+9	+5	5.3	+18	1.9:1	1.9:1	15	80	Y460	—	69.95
ZFL-750	0.2-750	—	18	—	±0.5	—	+9	+5	6.0	+18	1.5:1	2:1	15	90	Y460	—	74.95
ZFL-1000	0.1-1000	—	17	—	±0.6	—	+9	+5	6.0	+18	1.5:1	2:1*	15	105	Y460	—	79.95
AMP-3G	30-3000	—	8	—	±0.75	+9.5	+9.5	+13	3.5**	+20	2.6:1	2.5:1	15	55	PP230	cd	89.95
MAN-1	0.5-500	—	28	—	±1.4	+8	+8	+15	4.5	+18	1.8:1	1.8:1	12	60	A05	cc	15.95
MAN-2	0.5-1000	—	18	—	±1.5	+9	+7	+15	6.0	+19	1.8:1	1.8:1	12	85	A05	cc	19.95

$L_w$  = low range [ $f_l$  to  $f_u/2$ ]

$U$  = upper range [ $f_u/2$  to  $f_u$ ]

\* ZFL-1000 output VSWR 2.8:1 maximum over 750-1000 MHz; 1 dB compression +7 dBm at 500-1000 MHz  
 \*\* NF increases with decreasing frequency, 5 dB typical at 300 MHz, and 10 dB typical at 30 MHz.  
 \*\*\* +7 dBm from 500 to 750 MHz.  
 (1) ZJL models: Flatness specified to 0.75  $f_u$ , dynamic range at 2 GHz

## MEDIUM POWER 2.5 kHz to 8000 MHz

up to 320 mW (+25 dBm) output

MODEL NO.	FREQ. (MHz) $f_l$ - $f_u$	GAIN (dB)				MAXIMUM POWER (dBm)			DYNAMIC RANGE <sup>(1)</sup>		VSWR Typ.		DC POWER		CASE STYLE	NOTE	PRICE \$
		Typ.	Min.	Flatness Typ. <sup>(1)</sup>	Max.	Output (1 dB Comp.) $L_w$	Input (no damage) $U$	NF (dB) Typ.	IP3 (dBm) Typ.	In	Out	Volt (V)	Current (mA)	Note B			
AMP-2000	10-2000	—	20	—	±1.5	+15	+5	5	+25	2:1	2:1	15	100	QQ96	ce	139.95	
ZFL-2000	10-2000	—	20	—	±1.5	+16*	+5	7	+25	2:1	2:1	15	120	SS98	—	219.00	
ZFL-2500	500-2500	—	28	—	±1.5	+15	+5	8	+27	2.5:1	2.5:1	5	220	Y460	—	99.95	
ZFL-2500VH	10-2500	—	20	—	±1.5	+23	+10	5.5	+35	1.7:1*	2:1*	15	300	SS98	—	264.95	
ZFL-1000H	10-1000	—	28	—	±1.0	+20	+5	5	+33	2:1	2:1	15	160	SS98	—	219.00	
ZFL-1000VH	10-1000	—	20	—	±1.0	+25	+15	4.5	+38	2:1**	2.5:1	15	320	SS98	—	229.00	
ZFL-1000VH2	10-1000	28	26	—	±1.0	+25	+15	5.0	+38	2:1	2.5:1	15	320	SS98	—	249.00	
ZRON-8G	2000-8000	—	20	—	±1.5★	+20	+10	6	+30	2:1	2:1	15	310	AV243	—	495.00	
* ZHL-6A	.0025-500	25	21	—	±1.2	+22	+10	9.5***	+34	1.8:1	2:1***	24	350	S32	—	199.00	
ZHL-1042J	10-4200	—	25	—	±1.5	+20	+10	6	+30	2.5:1	2.5:1	15	330	NN92	—	495.00	
ZJL-4G	20-4000	12.4	10.0	±0.25	—	+13.5	+11	5.5	+30.5	1.4:1	1.6:1	12	75	BW459	—	129.95	
ZJL-4HG	20-4000	17.0	13.0	±1.5	—	+15.0	+12	4.5	+30.5	1.5:1	1.4:1	12	75	BW459	—	129.95	
ZJL-5G	20-5000	9.0	7.0	±0.55	—	+15.0	+9.5	8.5	+32	1.6:1	1.3:1	12	80	BW459	—	129.95	
ZKL-2R7	10-2700	24.0	20.0	—	±0.7	+13	+11	5.0	+30	1.3:1	1.4:1	12	120	BY493	—	149.95	
ZKL-2R5	10-2500	30.0	26.0	—	±1.5	+15	+15	5.0	+31	1.4:1	1.4:1	12	120	BY493	—	149.95	
ZKL-2	10-2000	33.5	29.0	—	±1.0	+15	+15	4.0	+31	1.4:1	1.4:1	12	120	BY493	—	149.95	
ZKL-1R5	10-1500	40.0	36.0	—	±1.2	+15	+15	3.0	+31	1.4:1	1.6:1	12	115	BY493	—	149.95	

$L_w$  = low range [ $f_l$  to  $f_u/2$ ]

$U$  = upper range [ $f_u/2$  to  $f_u$ ]

\* +15 dBm below 1000 MHz  
 \*\* Input VSWR 2:1 max, increasing below 20 MHz to 2.25:1 max at 10 MHz.  
 \*\*\* NF continually increases from 70 MHz to 10 MHz by approximately 4 dB; output VSWR 2.8:1 below 30 MHz.  
 • Max. VSWR In 2.0:1, Out 2.5:1  
 ★ Measured at 25°C.  
 (1) ZJL models: Flatness specified to 0.75  $f_u$ , dynamic range at 2 GHz.