Bird Technologies®

www.birdrf.com

Isolators & Loads

Isolators, Circulators & Loads

118-960 MHz

Bird Technologies Group, TX RX Systems brand, isolators are designed to provide the specified isolation under continuous duty at maximum power. Their conservative, rugged design and construction have a record of excellent reliability and high performance established through over 20 years of service in critical systems.

ISOLATORS

Provides rated isolation at rated continuous power

Standard isolator loads rated to protect against antenna system failure

81-87A-15-20

81-70-15-00

CIRCULATORS

Available dual or single junction versions from 118-250 MHz, 300-530 MHz and 746-960 MHz

Small package outline

Up to 250 watts power handling

High isolation throughout bandwidth (no-tuning)

Low insertion loss

Low PIM Design

Wide operation temperature range

RoHS compliant

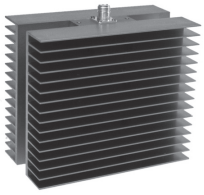
Various connector options available

Ideal for applications with minimal guard band between transmit and receive frequencies

81-70-16-00

81-70-16-50

Bird Technologies Group, TX RX Systems brand, natural convection, air-cooled dry RF loads are designed as precision, heavy-duty 50-ohm terminations for isolators and specialized hybrid combining applications operating up to 1000 MHz. These loads have power density factors (ratio of rated power to heatsink surface area) that are among the lowest in the industry which means lower heatsink surface temperatures for a particular power dissipation. They also have excellent return loss characteristics over their entire operating range, making them ideal for use in test as well as operational applications.



82-01-19

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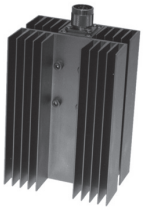
LOADS

Precision 50-ohm loads for all termination applications

High heatsink surface area for lower heatsink surface temperatures

>30 dB return loss up to 1000 MHz

82-01-05



82-01-15

tel: 866.695.4569 fax: 716.549.4772 e: sales@bird-technologies.com

SINGLE-JUNCTION CIRCULATORS AND ISOLATORS

Model Number / Frequency	**81-35A-15-00**	118-136 MHz
	81-35A-15-20	118-136 MHz
	81-35A-15-50	118-136 MHz
	81-35A-15-60	118-136 MHz
	81-35A-15-100	118-136 MHz
	81-36-15-00	**132-150 MHz**
	81-36-15-20	**132-150 MHz**
	81-36-15-50	**132-150 MHz**
	81-36-15-60	**132-150 MHz**
	81-36-15-100	**132-150 MHz**
Number of Junctions		1
Junction Type		Lumped constant
Max Continuous Input Power		81-35A-15-xx:100 W; all others:150 W
RF Load Model Number	**81-35A-15-00**/81-36-15-00	None
	81-35A-15-20/81-36-15-20	82-01-05
	81-35A-15-50/81-36-15-50	82-01-16
	81-35A-15-60/81-36-15-60	82-01-17
	81-35A-15-100/81-36-15-100	82-01-15
Continuous RF Load Power	**81-35A-15-00**/81-36-15-00	None
	81-35A-15-20/81-36-15-20	5 W
	81-35A-15-50/81-36-15-50	25 W
	81-35A-15-60/81-36-15-60	60 W
	81-35A-15-100/81-36-15-100	100 W
Isolation Bandwidth		2.5% of center frequency
Typical Insertion Loss		0.45 dB
Max Insertion Loss		0.5 dB
Peak Reverse Isolation		>30 dB
Min Reverse Isolation		>25 dB
Nominal Impedance		50 ohm
Min Return Loss (VSWR)		20 dB (1:22: 1)
Temperature Range		-30 to +60 Celsius
Connectors, Input/ Output/Load		N
Dimensions, HxWxD,	**81-35A-15-00** /81-36-15-00	3.94”x3.75”x1.78”
	81-35A-15-20/81-36-15-20	5.0”x3.75”x1.78”
	81-35A-15-50/81-36-15-50	8.81”x3.75”x1.78”
	81-35A-15-60/81-36-15-60	9.91”x3.9”x1.78”
	81-35A-15-100/81-36-15-100	9.91”x3.9”x2.9”
Dimensions, HxWxD,	**81-35A-15-00** /81-36-15-00	100x95x45 mm
	81-35A-15-20/81-36-15-20	127x95x45 mm
	81-35A-15-50/81-36-15-50	223x95x45 mm
	81-35A-15-60/81-36-15-60	252x99x45 mm
	81-35A-15-100/81-36-15-100	252x99x45 mm
Weight, lb (Kg)	**81-35A-15-00**/81-36-15-00	1.40 (0.64)
	81-35A-15-20/81-36-15-20	1.58 (0.72)
	81-35A-15-50/81-36-15-50	2.04 (0.93)
	81-35A-15-60/81-36-15-60	2.68 (1.21)
	81-35A-15-100/81-36-15-100	3.41 (1.54)

Model Number / Frequency	**81-37-15-00**	144-174 MHz
	81-37-15-20	144-174 MHz
	81-37-15-50	144-174 MHz
	81-37-15-60	144-174 MHz
	81-37-15-100	144-174 MHz
	81-52-15-00	215-250 MHz
	81-52-15-20	215-250 MHz
	81-52-15-50	215-250 MHz
	81-52-15-60	215-250 MHz
	81-52-15-100	215-250 MHz
Number of Junctions		1
Junction Type		Lumped constant
Max Continuous Input Power		150 W
RF Load Model Number	**81-37-15-00/81-52-15-00**	None
	81-37-15-20	82-01-05
	81-37-15-50/81-52-15-50	82-01-16
	81-37-15-60/81-52-15-60	82-01-17
	81-37-15-100/81-52-15-100	82-01-15
Continuous RF Load Power	**81-37-15-00/81-52-15-00**	None
	81-37-15-20	5 W
	81-37-15-50/81-52-15-50	25 W
	81-37-15-60/81-52-15-60	60 W
	81-37-15-100/81-52-15-100	100 W
Isolation Bandwidth		2.5% of center frequency
Typical Insertion Loss		0.45 dB
Max Insertion Loss		0.5 dB
Peak Reverse Isolation		>30 dB
Min Reverse Isolation		>25 dB
Nominal Impedance		50 ohm
Min Return Loss (VSWR)		20 dB (1:22: 1)
Temperature Range		-30 to +60 Celsius
Connectors, Input/ Output/Load		N
Dimensions, HxWxD,	**81-37-15-00/81-52-15-00**	3.94”x3.75”x1.78”
	81-37-15-20	5.0”x3.75”x1.78”
	81-37-15-50/81-52-15-50	8.81”x3.75”x1.78”
	81-37-15-60/81-52-15-60	9.91”x3.9”x1.78”
	81-37-15-100/81-52-15-100	9.91”x3.9”x2.9”
Dimensions, HxWxD,	**81-37-15-00/81-52-15-00**	100x95x45 mm
	81-37-15-20	127x95x45 mm
	81-37-15-50/81-52-15-50	223x95x45 mm
	81-37-15-60/81-52-15-60	252x99x45 mm
	81-37-15-100/81-52-15-100	252x99x45 mm
Weight, lb (Kg)	**81-37-15-00/81-52-15-00**	1.40 (0.64)
	81-37-15-20	1.58 (0.72)
	81-37-15-50/81-52-15-50	2.04 (0.93)
	81-37-15-60/81-52-15-60	2.68 (1.21)
	81-37-15-100/81-52-15-100	3.41 (1.54)

CIRCULATORS & ISOLATORS

Technical Specifications

118-174 MHz

DUAL-JUNCTION CIRCULATORS AND ISOLATORS

Model Number / Frequency	**81-35A-25-00**	118-136 MHz
	81-35A-25-20	118-136 MHz
	81-35A-25-50	118-136 MHz
	81-35A-25-60	118-136 MHz
	81-35A-25-100	118-136 MHz
	81-36-25-00	132-150 MHz
	81-36-25-20	132-150 MHz
	81-36-25-50	132-150 MHz
	81-36-25-60	132-150 MHz
	81-36-25-100	132-150 MHz
Number of Junctions		2
Junction Type		Lumped constant
Max Continuous Input Power		81-35A-25-xx:100 W; all others:150 W
RF Load Model Number	**81-35A-25-00/81-36-25-00**	None
	81-35A-25-20/81-36-25-20	82-01-05/82-01-05
	81-35A-25-50/81-36-25-50	82-01-05/82-01-16
	81-35A-25-60/81-36-25-60	82-01-05/82-01-17
	81-35A-25-100/81-36-25-100	82-01-05/82-01-15
Continuous RF Load Power	**81-35A-25-00/81-36-25-00**	None
	81-35A-25-20/81-36-25-20	5/5 W
	81-35A-25-50/81-36-25-50	5/25 W
	81-35A-25-60/81-36-25-60	5/60 W
	81-35A-25-100/81-36-25-100	5/100 W
Isolation Bandwidth		2.5% of center frequency
Typical Insertion Loss		0.9 dB
Max Insertion Loss		1.1 dB
Peak Reverse Isolation		>60 dB
Min Reverse Isolation		>50 dB
Nominal Impedance		50 ohm
Min Return Loss (VSWR)		20 dB (1:22: 1)
Temperature Range		-30 to +60 Celsius
Connectors, Input/ Output/Load		N
Dimensions, HxWxD,	**81-35A-25-00/81-36-25-00**	3.94x6.25x1.78”
	81-35A-25-20/81-36-25-20	5.0x6.25x1.78”
	81-35A-25-50/81-36-25-50	8.81x6.25x1.78”
	81-35A-25-60/81-36-25-60	9.91x6.39x1.78”
	81-35A-25-100/81-36-25-100	9.91x6.39x2.9”
Dimensions, HxWxD,	**81-35A-25-00/81-36-25-00**	100x159x45 mm
	81-35A-25-20/81-36-25-20	127x159x45 mm
	81-35A-25-50/81-36-25-50	223x159x45 mm
	81-35A-25-60/81-36-25-60	252x162x45 mm
	81-35A-25-100/81-36-25-100	252x162x74 mm
Weight, lb (Kg)	**81-35A-25-00/81-36-25-00**	2.60 (1.18)
	81-35A-25-20/81-36-25-20	2.78 (1.26)
	81-35A-25-50/81-36-25-50	3.24 (1.47)
	81-35A-25-60/81-36-25-60	3.88 (1.76)
	81-35A-25-100/81-36-25-100	4.60 (2.09)

Model Number / Frequency	**81-37-25-00**	144-174 MHz
	81-37-25-20	144-174 MHz
	81-37-25-50	144-174 MHz
	81-37-25-60	144-174 MHz
	81-37-25-100	144-174 MHz
Number of Junctions		2
Junction Type		Lumped constant
Max Continuous Input Power		150 W
RF Load Model Number	**81-37-25-00**	None
	81-37-25-20	82-01-05
	81-37-25-50	82-01-16
	81-37-25-60	82-01-17
	81-37-25-100	82-01-15
Continuous RF Load Power	**81-37-25-00**	None
	81-37-25-20	5 W
	81-37-25-50	25 W
	81-37-25-60	60 W
	81-37-25-100	100 W
Isolation Bandwidth		2.5% of center frequency
Typical Insertion Loss		0.9 dB
Max Insertion Loss		0.1 dB
Peak Reverse Isolation		>60 dB
Min Reverse Isolation		>50 dB
Nominal Impedance		50 ohm
Min Return Loss (VSWR)		20 dB (1:22: 1)
Temperature Range		-30 to +60 Celsius
Connectors, Input/ Output/Load		N
Dimensions, HxWxD,	**81-37-25-00**	3.94x6.25x1.78”
	81-37-25-20	5.0x6.25x1.78”
	81-37-25-50	8.81x6.25x1.78”
	81-37-25-60	9.91x6.39x1.78”
	81-37-25-100	9.91x6.39x2.9”
Dimensions, HxWxD,	**81-37-25-00**	100x159x45 mm
	81-37-25-20	127x159x45 mm
	81-37-25-50	223x159x45 mm
	81-37-25-60	252x162x45 mm
	81-37-25-100	252x162x74 mm
Weight, lb (Kg)	**81-37-25-00**	2.60 (1.18)
	81-37-25-20	2.78 (1.26)
	81-37-25-50	3.24 (1.47)
	81-37-25-60	3.88 (1.76)
	81-37-25-100	4.60 (2.09)

15 SERIES SINGLE-JUNCTION CIRCULATORS AND ISOLATORS

Model Number / Isolation BW	81-55A-15-00***	300-350 MHz
	81-55B-15-00***	350-406 MHz
	81-56A-15-00	380-400 MHz
	81-65-15-00	406-430 MHz
	81-65A-15-00	430-450 MHz
	81-70-15-00	450-470 MHz
	81-71-15-00	470-490 MHz
	81-72-15-00	490-512 MHz
	81-75-15-00	512-530 MHz
Isolation dB Min		25 18***
INS Loss dB Max	81-55A-15-00	0.60
	81-55B-15-00	0.60
	81-65-15-00	0.35
	all other*	0.44
RET Loss dB Max		21 18***
VSWR Max		1.2:1 1.3:1***
PWR (W) Max FWD/RE		250/250
Operating Temp		-30~+60 ºC
Connector Type		Port 1~3: N-F
Length		57.5 mm, 2.26 inch
Width		52.0 mm, 2.05 inch
Height		22.0 mm , 0.87 inch
Tolerance		±0.1 mm, ±0.01 inch

16 SERIES SINGLE-JUNCTION CIRCULATORS AND ISOLATORS

Model Number / Isolation BW	81-55A16-00***	300-350 MHz
	81-55B-16-00***	350-406 MHz
	81-56A-16-00	380-400 MHz
	81-65-16-00	406-430 MHz
	81-65A-16-00	430-450 MHz
	81-70-16-00	450-470 MHz
	81-71-16-00	470-490 MHz
	81-72-16-00	490-512 MHz
	81-75-16-00	512-530 MHz
Isolation dB Min		25 18***
INS Loss dB Max		0.35 0.60***
RET Loss dB Max		21 18***
VSWR Max		1.2:1 1.3:1***
PWR (W) Max FWD/RE		250/250
Operating Temp		-30~+60 ºC
Connector Type		Port 1~3: N-F
Length		56.5 mm, 2.22 in
Width		55.0 mm, 2.17 in
Height		22.0 mm , 0.87 inch
Tolerance		±0.1 mm, ±0.01 inch

DUAL-JUNCTION CIRCULATORS AND ISOLATORS

Model Number / Isolation BW	81-55A-26-xx***	300-350 MHz
	81-55B-26-xx***	350-400 MHz
	81-56A-26-xx	380-400 MHz
	81-65-26-xx	406-430 MHz
	81-65A-26-xx	430-450 MHz
	81-70-26-xx	450-470 MHz
	81-71-26-xx	470-490 MHz
	81-72-26-xx	490-512 MHz
	81-75-26-xx	512-530 MHz
Isolation dB Min		50 46***
INS Loss dB Max		0.44
RET Loss dB Max		21
VSWR Max		1.2:1
PWR (W) Max FWD/RE		250/**
Operating Temp		-30~+60 ºC
Connector Type		Port 1~3: N-F, Port 4:10W
Length		58.0 mm, 2.28 inch
Width		106.0 mm, 4.17 inch
Height		22.0 mm, 0.87 inch
Tolerance		±0.1 mm, ±0.01 inch

***xx=load - 50=25 watts, 60=60 watts, 100=100 watts**
****load dependent**
*****Isolators with a bandwidth greater than 25 MHz**

CIRCULATORS & ISOLATORS
Technical Specifications
746-960 MHz

SINGLE-JUNCTION CIRCULATORS AND ISOLATORS

Model Number / Frequency	81-83C-15-00	746-776 MHz
	81-83C-15-20	746-776 MHz
	81-83C-15-50	746-776 MHz
	81-83C-15-60	746-776 MHz
	81-83C-15-100	746-776 MHz
	81-86A-15-00	806-824 MHz
	81-86A-15-20	806-824 MHz
	81-86A-15-50	806-824 MHz
	81-86A-15-60	806-824 MHz
	81-86A-15-100	806-824 MHz
Number of Junctions		1
Junction Type		Distributed Parameter
Max Continuous Input Power		150 W
RF Load Model Number	81-83C-15-00/81-86A-15-00	None
	81-83C-15-20/81-86A-15-20	82-01-05
	81-83C-15-50/81-86A-15-50	82-01-16
	81-83C-15-60/81-86A-15-60	82-01-17
	81-83C-15-100/81-86A-15-100	82-01-15
Continuous RF Load Power	81-83C-15-00/81-86A-15-00	None
	81-83C-15-20/81-86A-15-20	10 W
	81-83C-15-50/81-86A-15-50	25 W
	81-83C-15-60/81-86A-15-60	60 W
	81-83C-15-100/81-86A-15-100	100 W
Isolation Bandwidth		2.5% of center frequency
Typical Insertion Loss		0.25 dB
Max Insertion Loss		0.3 dB
Peak Reverse Isolation		>30 dB
Min Reverse Isolation		>25 dB
Nominal Impedance		50 ohm
Min Return Loss (VSWR)		20 dB (1:22: 1)
Temperature Range		-30 to +60 Celsius
Connectors, Input/ Output/Load		N
Dimensions, HxWxD,	81-83C-15-00/81-86A-15-00	5.63x3.15x1.84”
	81-83C-15-20/81-86A-15-20	6.66x3.15x1.84”
	81-83C-15-50/81-86A-15-50	10.41x3.15x1.84”
	81-83C-15-60/81-86A-15-60	11.59x3.15x1.84”
	81-83C-15-100/81-86A-15-100	11.59x3.94x2.90”
Dimensions, HxWxD,	81-83C-15-00/81-86A-15-00	143x80x47 mm
	81-83C-15-20/81-86A-15-20	169x80x47 mm
	81-83C-15-50/81-86A-15-50	264x80x47 mm
	81-83C-15-60/81-86A-15-60	294x80x47 mm
	81-83C-15-100/81-86A-15-100	294x100x74 mm
Weight, lb (Kg)	81-83C-15-00/81-86A-15-00	1.32 (0.60)
	81-83C-15-20/81-86A-15-20	1.50 (0.68)
	81-83C-15-50/81-86A-15-50	1.97 (0.89)
	81-83C-15-60/81-86A-15-60	2.60 (1.18)
	81-83C-15-100/81-86A-15-100	3.33 (1.51)

Model Number / Frequency	81-87A-15-00	851-869 MHz
	81-87A-15-20	851-869 MHz
	81-87A-15-50	851-869 MHz
	81-87A-15-60	851-869 MHz
	81-87A-15-100	851-869 MHz
	81-93A-15-00	870-894 MHz
	81-93A-15-20	870-894 MHz
	81-93A-15-50	870-894 MHz
	81-93A-15-60	870-894 MHz
	81-93A-15-100	870-894 MHz
Number of Junctions		1
Junction Type		Distributed Parameter
Max Continuous Input Power		150 W
RF Load Model Number	81-87A-15-00/81-93A-15-00	None
	81-87A-15-20/81-93A-15-20	82-01-05
	81-87A-15-50/81-93A-15-50	82-01-16
	81-87A-15-60/81-93A-15-60	82-01-17
	81-87A-15-100/81-93A-15-100	82-01-15
Continuous RF Load Power	81-87A-15-00/81-93A-15-00	None
	81-87A-15-20/81-93A-15-20	5 W
	81-87A-15-50/81-93A-15-50	25 W
	81-87A-15-60/81-93A-15-60	60 W
	81-87A-15-100/81-93A-15-100	100 W
Isolation Bandwidth		2.5% of center frequency
Typical Insertion Loss		0.25 dB
Max Insertion Loss		0.3 dB
Peak Reverse Isolation		>30 dB
Min Reverse Isolation		>25 dB
Nominal Impedance		50 ohm
Min Return Loss (VSWR)		20 dB (1:22: 1)
Temperature Range		-30 to +60 Celsius
Connectors, Input/ Output/Load		N
Dimensions, HxWxD,	81-87A-15-00/81-93A-15-00	5.63x3.15x1.84”
	81-87A-15-20/81-93A-15-20	6.66x3.15x1.84”
	81-87A-15-50/81-93A-15-50	10.41x3.15x1.84”
	81-87A-15-60/81-93A-15-60	11.59x3.15x1.84”
	81-87A-15-100/81-93A-15-100	11.59x3.94x2.90”
Dimensions, HxWxD,	81-87A-15-00/81-93A-15-00	143x80x47 mm
	81-87A-15-20/81-93A-15-20	169x80x47 mm
	81-87A-15-50/81-93A-15-50	264x80x47 mm
	81-87A-15-60/81-93A-15-60	294x80x47 mm
	81-87A-15-100/81-93A-15-100	294x100x74 mm
Weight, lb (Kg)	81-87A-15-00/81-93A-15-00	1.32 (0.60)
	81-87A-15-20/81-93A-15-20	1.50 (0.68)
	81-87A-15-50/81-93A-15-50	1.97 (0.89)
	81-87A-15-60/81-93A-15-60	2.60 (1.18)
	81-87A-15-100/81-93A-15-100	3.33 (1.51)

SINGLE-JUNCTION CIRCULATORS AND ISOLATORS

Model Number / Frequency	**81-96B-15-00**	**925-935** MHz
	81-96B-15-20	**925-935** MHz
	81-96B-15-50	**925-935** MHz
	81-96B-15-60	**925-935** MHz
	81-96B-15-100	**925-935** MHz
	81-95-15-00	**935-940 MHz**
	81-95-15-20	**935-940 MHz**
	81-95-15-50	**935-940 MHz**
	81-95-15-60	**935-940 MHz**
	81-95-15-100	**935-940 MHz**
Number of Junctions		1
Junction Type		Distributed Parameter
Max Continuous Input Power		150 W
RF Load Model Number	**81-96B-15-00/81-95-15-00**	None
	81-96B-15-20/81-95-15-20	82-01-05
	81-96B-15-50/81-95-15-50	82-01-16
	81-96B-15-60/81-95-15-60	82-01-17
	81-96B-15-100/81-95-15-100	82-01-15
Continuous RF Load Power	**81-96B-15-00/81-95-15-00**	None
	81-96B-15-20/81-95-15-20	10 W
	81-96B-15-50/81-95-15-50	25 W
	81-96B-15-60/81-95-15-60	60 W
	81-96B-15-100/81-95-15-100	100 W
Isolation Bandwidth		2.5% of center frequency
Typical Insertion Loss		0.25 dB
Max Insertion Loss		0.3 dB
Peak Reverse Isolation		>30 dB
Min Reverse Isolation		>25 dB
Nominal Impedance		50 ohm
Min Return Loss (VSWR)		20 dB (1:22: 1)
Temperature Range		-30 to +60 Celsius
Connectors, Input/ Output/Load		N
Dimensions, HxWxD,	**81-96B-15-00/81-95-15-00**	5.63x3.15x1.84”
	81-96B-15-20/81-95-15-20	6.66x3.15x1.84”
	81-96B-15-50/81-95-15-50	10.41x3.15x1.84”
	81-96B-15-60/81-95-15-60	11.59x3.15x1.84”
	81-96B-15-100/81-95-15-100	11.59x3.94x2.90”
Dimensions, HxWxD,	**81-96B-15-00/81-95-15-00**	143x80x47 mm
	81-96B-15-20/81-95-15-20	169x80x47 mm
	81-96B-15-50/81-95-15-50	264x80x47 mm
	81-96B-15-60/81-95-15-60	294x80x47 mm
	81-96B-15-100/81-95-15-100	294x100x74 mm
Weight, lb (Kg)	**81-96B-15-00/81-95-15-00**	1.32 (0.60)
	81-96B-15-20/81-95-15-20	1.50 (0.68)
	81-96B-15-50/81-95-15-50	1.97 (0.89)
	81-96B-15-60/81-95-15-60	2.60 (1.18)
	81-96B-15-100/81-95-15-100	3.33 (1.51)

Model Number / Frequency	**81-98-15-00**	**940-960** MHz
	81-98-15-20	**940-960** MHz
	81-98-15-50	**940-960** MHz
	81-98-15-60	**940-960** MHz
	81-98-15-100	**940-960** MHz
Number of Junctions		1
Junction Type		Distributed Parameter
Max Continuous Input Power		150 W
RF Load Model Number	**81-98-15-00**	None
	81-98-15-20	82-01-05
	81-98-15-50	82-01-16
	81-98-15-60	82-01-17
	81-98-15-100	82-01-15
Continuous RF Load Power	**81-98-15-00**	None
	81-98-15-20	5 W
	81-98-15-50	25 W
	81-98-15-60	60 W
	81-98-15-100	100 W
Isolation Bandwidth		2.5% of center frequency
Typical Insertion Loss		0.25 dB
Max Insertion Loss		0.3 dB
Peak Reverse Isolation		>30 dB
Min Reverse Isolation		>25 dB
Nominal Impedance		50 ohm
Min Return Loss (VSWR)		20 dB (1:22: 1)
Temperature Range		-30 to +60 Celsius
Connectors, Input/ Output/Load		N
Dimensions, HxWxD,	**81-98-15-00**	5.63x3.15x1.84”
	81-98-15-20	6.66x3.15x1.84”
	81-98-15-50	10.41x3.15x1.84”
	81-98-15-60	11.59x3.15x1.84”
	81-98-15-100	11.59x3.94x2.90”
Dimensions, HxWxD,	**81-98-15-00**	143x80x47 mm
	81-98-15-20	169x80x47 mm
	81-98-15-50	264x80x47 mm
	81-98-15-60	294x80x47 mm
	81-98-15-100	294x100x74 mm
Weight, lb (Kg)	**81-98-15-00**	1.32 (0.60)
	81-98-15-20	1.50 (0.68)
	81-98-15-50	1.97 (0.89)
	81-98-15-60	2.60 (1.18)
	81-98-15-100	3.33 (1.51)

CIRCULATORS & ISOLATORS
Technical Specifications
746-960 MHz

DUAL-JUNCTION CIRCULATORS AND ISOLATORS

Model Number / Frequency	**81-83C-25-00**	**764-776** MHz
	81-83C-25-20	**764-776** MHz
	81-83C-25-50	**764-776** MHz
	81-83C-25-60	**764-776** MHz
	81-83C-25-100	**764-776** MHz
	81-86A-25-00	**806-824 MHz**
	81-86A-25-20	**806-824 MHz**
	81-86A-25-50	**806-824 MHz**
	81-86A-25-60	**806-824 MHz**
	81-86A-25-100	**806-824 MHz**
Number of Junctions		2
Junction Type		Distributed Parameter
Max Continuous Input Power		150 W
RF Load Model Number	**81-83C-25-00/81-86A-15-00**	None
	81-83C-25-20/81-86A-15-20	82-01-05/82-01-05
	81-83C-25-50/81-86A-15-50	82-01-05/82-01-16
	81-83C-25-60/81-86A-15-60	82-01-05/82-01-17
	81-83C-25-100/81-86A-25-100	82-01-05/82-01-15
Continuous RF Load Power	**81-83C-25-00/81-86A-15-00**	None
	81-83C-25-20/81-86A-15-20	10/5 W
	81-83C-25-50/81-86A-15-50	10/25 W
	81-83C-25-60/81-86A-15-60	10/60 W
	81-83C-25-100/81-86A-25-100	10/100 W
Isolation Bandwidth		2.5% of center frequency
Typical Insertion Loss		0.5 dB
Max Insertion Loss		0.65 dB
Peak Reverse Isolation		>60 dB
Min Reverse Isolation		>50 dB
Nominal Impedance		50 ohm
Min Return Loss (VSWR)		20 dB (1:22: 1)
Temperature Range		-30 to +60 Celsius
Connectors, Input/ Output/Load		N
Dimensions, HxWxD,	**81-83C-25-00/81-86A-15-00**	5.63x6.38x1.84”
	81-83C-25-20/81-86A-15-20	6.66x6.38x1.84”
	81-83C-25-50/81-86A-15-50	10.41x6.38x1.84”
	81-83C-25-60/81-86A-15-60	11.59x6.38x1.84”
	81-83C-25-100/81-86A-25-100	11.59x6.77x2.90”
Dimensions, HxWxD,	**81-83C-25-00/81-86A-15-00**	143x162x47 mm
	81-83C-25-20/81-86A-15-20	169x162x47 mm
	81-83C-25-50/81-86A-15-50	264x162x47 mm
	81-83C-25-60/81-86A-15-60	294x162x47 mm
	81-83C-25-100/81-86A-25-100	294x172x74 mm
Weight, lb (Kg)	**81-83C-25-00/81-86A-15-00**	2.79 (1.27)
	81-83C-25-20/81-86A-15-20	3.15 (1.43)
	81-83C-25-50/81-86A-15-50	3.61 (1.64)
	81-83C-25-60/81-86A-15-60	4.25 (1.93)
	81-83C-25-100/81-86A-25-100	4.97 (2.26)

Model Number / Frequency	**81-87A-25-00**	**851-869** MHz
	81-87A-25-20	**851-869** MHz
	81-87A-25-50	**851-869** MHz
	81-87A-25-60	**851-869** MHz
	81-87A-25-100	**851-869** MHz
	81-93A-25-00	**870-894 MHz**
	81-93A-25-20	**870-894 MHz**
	81-93A-25-50	**870-894 MHz**
	81-93A-25-60	**870-894 MHz**
	81-93A-25-100	**870-894 MHz**
Number of Junctions		2
Junction Type		Distributed Parameter
Max Continuous Input Power		150 W
RF Load Model Number	**81-87A-25-00/81-93A-25-00**	None
	81-87A-25-20/81-93A-25-20	82-01-05/82-01-05
	81-87A-25-50/81-93A-25-50	82-01-05/82-01-16
	81-87A-25-60/81-93A-25-60	82-01-05/82-01-17
	81-87A-25-100/81-93A-25-100	82-01-05/82-01-15
Continuous RF Load Power	**81-87A-25-00/81-93A-25-00**	None
	81-87A-25-20/81-93A-25-20	10/5 W
	81-87A-25-50/81-93A-25-50	10/25 W
	81-87A-25-60/81-93A-25-60	10/60 W
	81-87A-25-100/81-93A-25-100	10/100 W
Isolation Bandwidth		2.5% of center frequency
Typical Insertion Loss		0.5 dB
Max Insertion Loss		0.65 dB
Peak Reverse Isolation		>60 dB
Min Reverse Isolation		>50 dB
Nominal Impedance		50 ohm
Min Return Loss (VSWR)		20 dB (1:22: 1)
Temperature Range		-30 to +60 Celsius
Connectors, Input/ Output/Load		N
Dimensions, HxWxD,	**81-87A-25-00/81-93A-25-00**	5.63x6.38x1.84”
	81-87A-25-20/81-93A-25-20	6.66x6.38x1.84”
	81-87A-25-50/81-93A-25-50	10.41x6.38x1.84”
	81-87A-25-60/81-93A-25-60	11.59x6.38x1.84”
	81-87A-25-100/81-93A-25-100	11.59x6.77x2.90”
Dimensions, HxWxD,	**81-87A-25-00/81-93A-25-00**	143x162x47 mm
	81-87A-25-20/81-93A-25-20	169x162x47 mm
	81-87A-25-50/81-93A-25-50	264x162x47 mm
	81-87A-25-60/81-93A-25-60	294x162x47 mm
	81-87A-25-100/81-93A-25-100	294x172x74 mm
Weight, lb (Kg)	**81-87A-25-00/81-93A-25-00**	2.79 (1.27)
	81-87A-25-20/81-93A-25-20	3.15 (1.43)
	81-87A-25-50/81-93A-25-50	3.61 (1.64)
	81-87A-25-60/81-93A-25-60	4.25 (1.93)
	81-87A-25-100/81-93A-25-100	4.97 (2.26)

tel: 866.695.4569 fax: 716.549.4772 e: sales@bird-technologies.com

CIRCULATORS & ISOLATORS
Technical Specifications
746-960 MHz

Model Number / Frequency	**81-96B-25-00**	**925-935** MHz
	81-96B-25-20	**925-935** MHz
	81-96B-25-50	**925-935** MHz
	81-96B-25-60	**925-935** MHz
	81-96B-25-100	**925-935** MHz
	81-95-25-00	**935-940 MHz**
	81-95-25-20	**935-940 MHz**
	81-95-25-50	**935-940 MHz**
	81-95-25-60	**935-940 MHz**
	81-95-25-100	**935-940 MHz**
Number of Junctions		2
Junction Type		Distributed Parameter
Max Continuous Input Power		150 W
RF Load Model Number	**81-96B-25-00/81-95-25-00**	None
	81-96B-25-20/81-95-25-20	82-01-05/82-01-05
	81-96B-25-50/81-95-25-50	82-01-05/82-01-16
	81-96B-25-60/81-95-25-60	82-01-05/82-01-17
	81-96B-25-100/81-95-25-100	82-01-05/82-01-15
Continuous RF Load Power	**81-96B-25-00/81-95-25-00**	None
	81-96B-25-20/81-95-25-20	10/5 W
	81-96B-25-50/81-95-25-50	10/25 W
	81-96B-25-60/81-95-25-60	10/60 W
	81-96B-25-100/81-95-25-100	10/100 W
Isolation Bandwidth		2.5% of center frequency
Typical Insertion Loss		0.5 dB
Max Insertion Loss		0.65 dB
Peak Reverse Isolation		>60 dB
Min Reverse Isolation		>50 dB
Nominal Impedance		50 ohm
Min Return Loss (VSWR)		20 dB (1:22: 1)
Temperature Range		-30 to +60 Celsius
Connectors, Input/ Output/Load		N
Dimensions, HxWxD,	**81-96B-25-00/81-95-25-00**	5.63x6.38x1.84”
	81-96B-25-20/81-95-25-20	6.66x6.38x1.84”
	81-96B-25-50/81-95-25-50	10.41x6.38x1.84”
	81-96B-25-60/81-95-25-60	11.59x6.38x1.84”
	81-96B-25-100/81-95-25-100	11.59x6.77x2.90”
Dimensions, HxWxD,	**81-96B-25-00/81-95-25-00**	143x162x47 mm
	81-96B-25-20/81-95-25-20	169x162x47 mm
	81-96B-25-50/81-95-25-50	264x162x47 mm
	81-96B-25-60/81-95-25-60	294x162x47 mm
	81-96B-25-100/81-95-25-100	294x172x74 mm
Weight, lb (Kg)	**81-96B-25-00/81-95-25-00**	2.79 (1.27)
	81-96B-25-20/81-95-25-20	3.15 (1.43)
	81-96B-25-50/81-95-25-50	3.61 (1.64)
	81-96B-25-60/81-95-25-60	4.25 (1.93)
	81-96B-25-100/81-95-25-100	4.97 (2.26)

DUAL-JUNCTION CIRCULATORS AND ISOLATORS

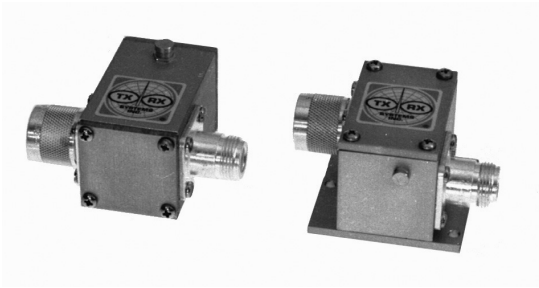
Model Number / Frequency	**81-98-25-00**	**940-960** MHz
	81-98-25-20	**940-960** MHz
	81-98-25-50	**940-960** MHz
	81-98-25-60	**940-960** MHz
	81-98-25-100	**940-960** MHz
Number of Junctions		2
Junction Type		Distributed Parameter
Max Continuous Input Power		150 W
RF Load Model Number	**81-98-25-00**	None
	81-98-25-20	82-01-05/82-01-05
	81-98-25-50	82-01-05/82-01-16
	81-98-25-60	82-01-05/82-01-17
	81-98-25-100	82-01-05/82-01-15
Continuous RF Load Power	**81-98-25-00**	None
	81-98-25-20	10/5 W
	81-98-25-50	10/25 W
	81-98-25-60	10/60 W
	81-98-25-100	10/100 W
Isolation Bandwidth		2.5% of center frequency
Typical Insertion Loss		0.5 dB
Max Insertion Loss		0.65 dB
Peak Reverse Isolation		>60 dB
Min Reverse Isolation		>50 dB
Nominal Impedance		50 ohm
Min Return Loss (VSWR)		20 dB (1:22: 1)
Temperature Range		-30 to +60 Celsius
Connectors, Input/ Output/Load		N
Dimensions, HxWxD,	**81-98-25-00**	5.63x6.38x1.84”
	81-98-25-20	6.66x6.38x1.84”
	81-98-25-50	10.41x6.38x1.84”
	81-98-25-60	11.59x6.38x1.84”
	81-98-25-100	11.59x6.77x2.90”
Dimensions, HxWxD,	**81-98-25-00**	143x162x47 mm
	81-98-25-20	169x162x47 mm
	81-98-25-50	264x162x47 mm
	81-98-25-60	294x162x47 mm
	81-98-25-100	294x172x74 mm
Weight, lb (Kg)	**81-98-25-00**	2.79 (1.27)
	81-98-25-20	3.15 (1.43)
	81-98-25-50	3.61 (1.64)
	81-98-25-60	4.25 (1.93)
	81-98-25-100	4.97 (2.26)

Loads
Technical Specifications
5-960 MHz

RF LOADS

Technical Specifications / Frequency Range	82-01-05 82-01-16 82-01-17 82-01-15 82-01-19	5-960 MHz
Load Type		Dry
Cooling		Natural air convection
Ambient Temperature, ºC		-30° to + 60°C
Duty Cycle		Continuous
Nominal Impedence, ohms		50
Maimum RF Input Power, Watts	82-01-05 82-01-16 82-01-17 82-01-15 82-01-19	5 25 60 100 250
Resistor Element Rating, Watts	82-01-05 82-01-16 82-01-17 82-01-15 82-01-19	60 60 250 250 250
Heatsink Area, in^2 (cm^2)	82-01-05 82-01-16 82-01-17 82-01-15 82-01-19	9.2 (59) 57 (368) 172.7 (1114) 334.7 (2159) 898.2 (5795)
Heatsink Power Density, Watts/in^2	82-01-05 82-01-16 82-01-17 82-01-15 82-01-19	0.54 0.44 0.35 0.4 0.28
Connector Type	82-01-05 82-01-16 82-01-17 82-01-15 82-01-19	N(M) N(M) N(M) N(M) N(F)
Typical Return Loss, dB (VSWR)		>30 (1.05:1)
Dimensions, HxWxD (or LxDiameter), in (mm)	82-01-05 82-01-16 82-01-17 82-01-15 82-01-19	1.6Hx0.8Ø, (41x20) 4.7Lx2.3Ø, (119x59) 6.3x3.9x1.6, (160x99x41) 6.3x3.9x2.9, (160x99x74) 7.4x8.00x4.3, (188x203x109)
Weight, lb (Kg)	82-01-05 82-01-16 82-01-17 82-01-15 82-01-19	0.12 (0.06) 0.63 (0.31) 1.28 (0.58) 2.00 (0.91) 7.52 (3.41)

The ferrite used to make circulators is a non-linear material that generates a significant amount of 2nd harmonic power which can contribute to the formation of 3rd order intermodulation products when mixed with other transmitter carriers. For this reason, either a bandpass cavity filter or a harmonic filter must always be installed between an isolator and the antenna. TX RX manufactures single and dual-section filters for applications where bandpass cavities are not used.



SECOND HARMONIC FILTERS

Installed between isolators and antenna when bandpass cavities are not used

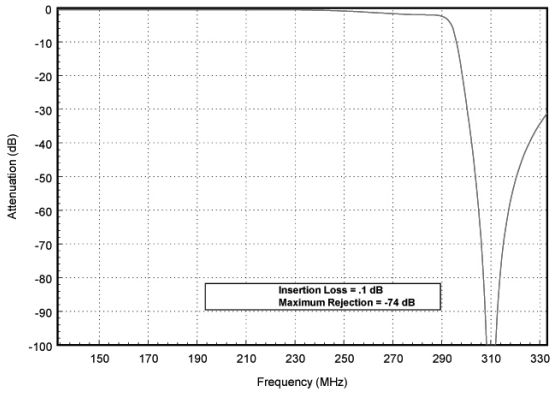
Single and dual-section models for 30 or 60 dB attenuation

INTERMODULATION SUPPRESSION PANELS

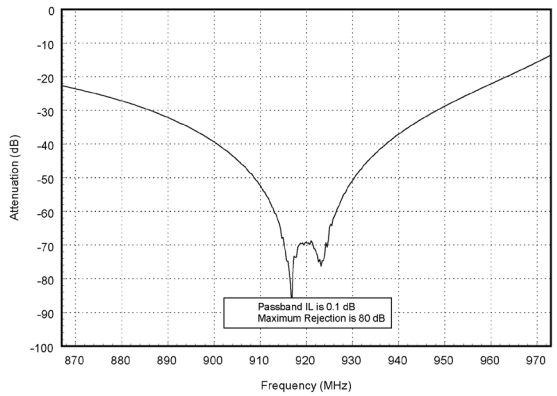
TX RX manufactures an Intermodulation Suppression Panel which incorporates an isolator with a high power load and a second harmonic filter on a 19” rack-mount shelf assembly. These are typically used to add an isolator to a transmitter or repeater connected to its own antenna. Although the unit itself is only 2 rack-units high (3.5”), care must be taken to budget enough space above the unit to provide adequate ventilation for the load’s heatsink.

Model Number / Frequency	**81-66-95149-2C**	**442-450** MHz
	81-70-95149-2C	**450-470** MHz
	81-70-95149-2D	**450-470** MHz
	81-87A-95149-1D	**851-869** MHz
	81-87A-95149-2D	**851-869** MHz
	81-37-95149-1D	**144-174** MHz
	81-37-95149-2D	**144-174** MHz
Number of Isolators	**81-66-95149-2C**	2
	81-70-95149-2C	2
	81-70-95149-2D	2
	81-87A-95149-1D	1
	81-87A-95149-2D	2
	81-37-95149-1D	1
	81-37-95149-2D	2
RF Loads Power Rating (W)	**81-66-95149-2C**	5/60
	81-70-95149-2C	5/60
	81-70-95149-2D	5/100
	81-87A-95149-1D	100
	81-87A-95149-2D	5/100
	81-37-95149-1D	100
	81-37-95149-2D	5/100

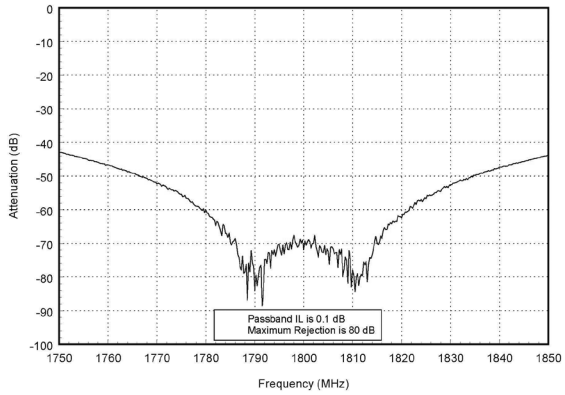
Model 22-38-01

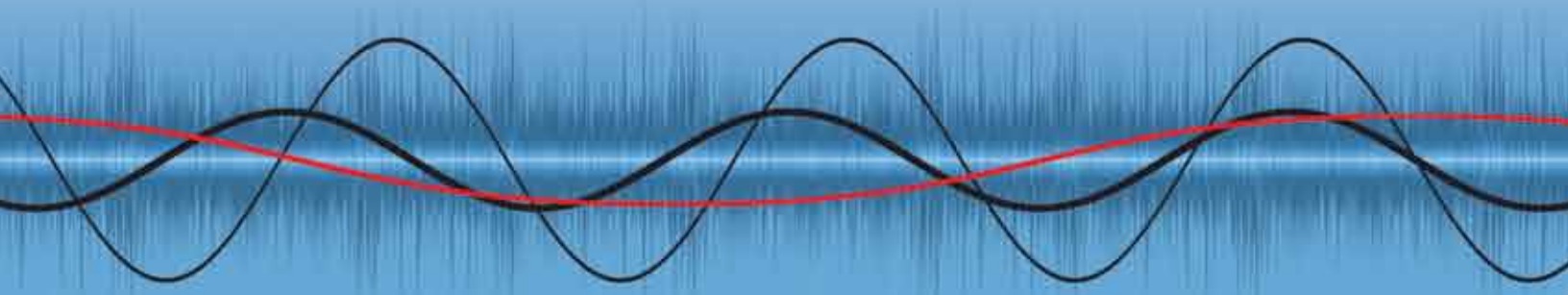


Model 22-67-01



Model 22-90-01





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