X2
Frequency Multiplier

50Ω Output 20 to 2000 MHz

FK-5

Generic photo used for illustration purposes only

CASE STYLE: H16

Connectors	Model
BNC	FK-5
N-TYPE	FK-5-N
SMA	FK-5-S
BRACKET (OPTION "B")	

Maximum Ratings

Operating Temperature	-55°C to +100°C
Storage Temperature	-55°C to +100°C
RF Input Power	200 mW

Permanent damage may occur if any of these limits are exceeded.

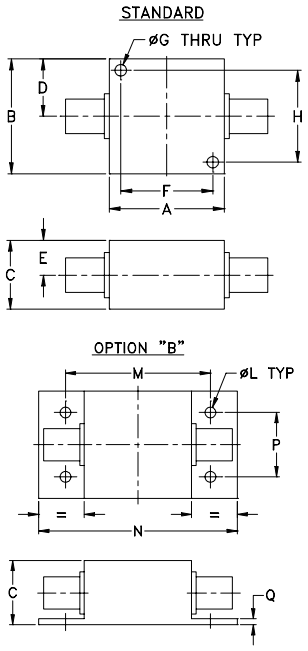
Features

- wideband, 20 to 2000 MHz
- low insertion loss, 13 dB typ.
- rugged shielded case

Applications

- synthesizers
- local oscillators

Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H
1.25	1.25	.75	.63	.38	1.000	.125	1.000
31.75	31.75	19.05	16.00	9.65	25.40	3.18	25.40

J	K	L	M	N	P	Q	wt
--	--	.125	1.688	2.18	.750	.06	grams
--	--	3.18	42.88	55.37	19.05	1.52	70.0

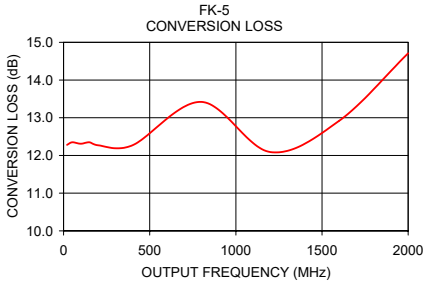
Electrical Specifications

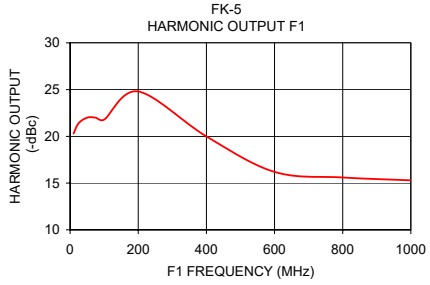
MULTIPLICATION FACTOR	FREQUENCY (MHz)		INPUT POWER (dBm)		CONVERSION LOSS (dB)		*HARMONIC OUTPUT (dBc)					
	F1	F2					F1		F3		F4	
	Input	Output	Min.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.
2	10-600	20-1200	10**	20	13.0	15.0	20	10	16	20	15	10
	600-1000	1200-2000	10**	20	14.0	17.0	20	10	25	20	25	15

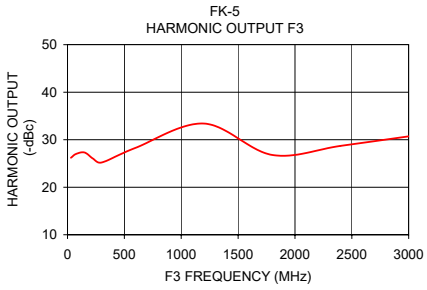
* Harmonics of input frequency below the power level of F2
** Minimum input power +13 dBm above 700 MHz.

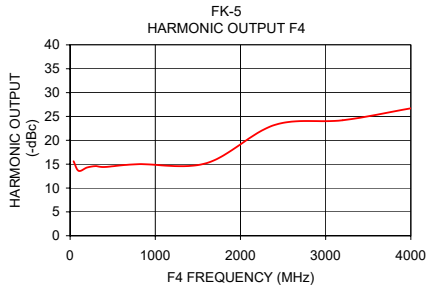
Typical Performance Data

Input Frequency (MHz)	Conversion Loss (dB) F2	Harmonic Output (-dBc) F1	F3	F4
10.00	12.28	20.30	26.20	15.60
25.00	12.35	21.40	27.00	13.60
50.00	12.31	22.00	27.30	14.30
75.00	12.35	22.00	26.00	14.60
100.00	12.27	21.80	25.20	14.40
200.00	12.27	24.80	28.30	15.00
400.00	13.42	20.00	33.40	15.20
600.00	12.09	16.20	26.80	23.20
800.00	12.92	15.60	28.70	24.20
1000.00	14.71	15.30	30.70	26.70









Notes

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

Frequency Multiplier (Doubler) FK-5

Typical Performance Data

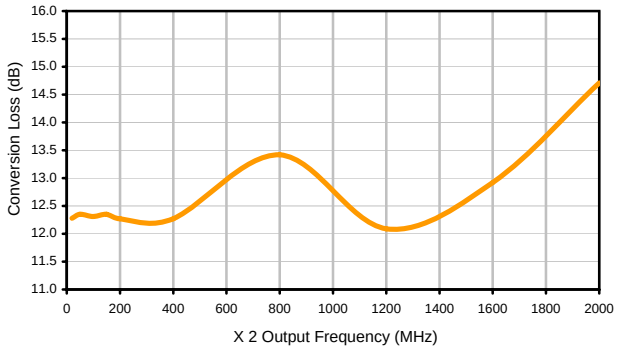
FREQUENCY (MHz)				CONVERSION LOSS (dB)	HARMONIC OUTPUT* (-dBc)		
X 1 OUTPUT	X 2 OUTPUT	X 3 OUTPUT	X 4 OUTPUT	X 2 OUTPUT	X 1 OUTPUT	X 3 OUTPUT	X 4 OUTPUT
10	20	30	40	12.28	20.30	26.20	15.60
25	50	75	100	12.35	21.40	27.00	13.60
50	100	150	200	12.31	22.00	27.30	14.30
75	150	225	300	12.35	22.00	26.00	14.60
100	200	300	400	12.27	21.80	25.20	14.40
200	400	600	800	12.27	24.80	28.30	15.00
400	800	1200	1600	13.42	20.00	33.40	15.20
600	1200	1800	2400	12.09	16.20	26.80	23.20
800	1600	2400	3200	12.92	15.60	28.70	24.20
1000	2000	3000	4000	14.71	15.30	30.70	26.70

*Harmonic Output below power level of X 2 Output .

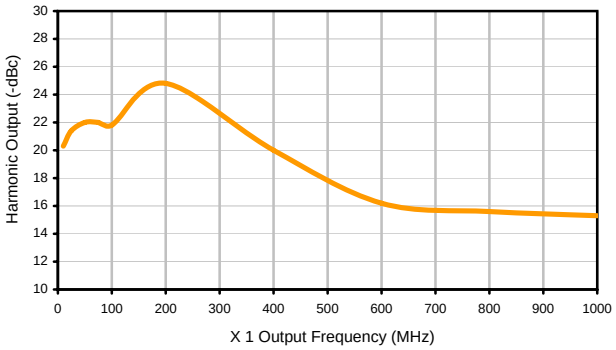
Frequency Multiplier (Doubler) FK-5

Typical Performance Curves

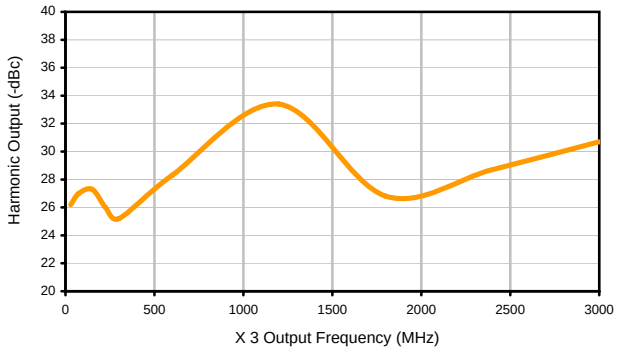
Conversion Loss X 2 Output



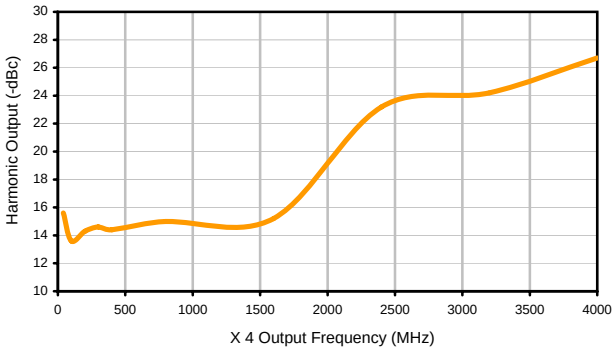
Harmonic X 1 Output



Harmonic X 3 Output



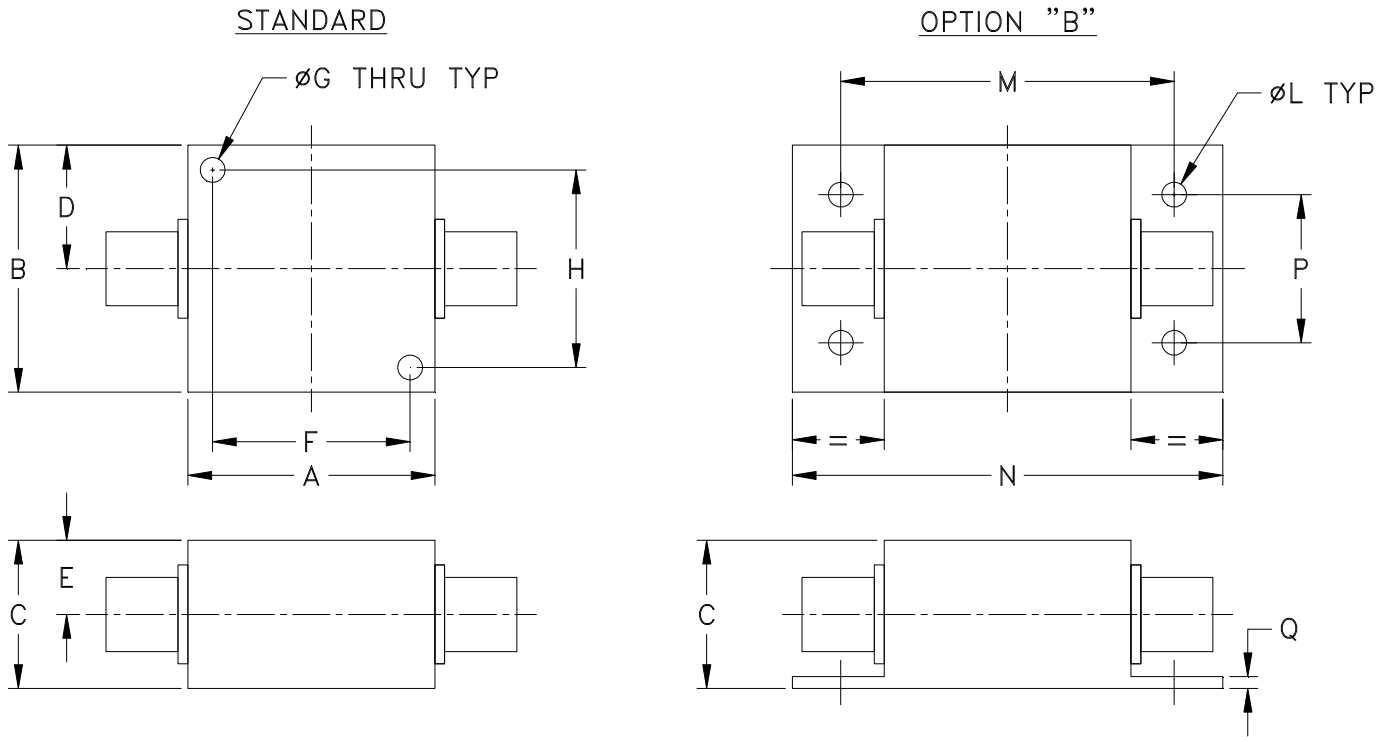
Harmonic X 4 Output



Case Style H

Outline Dimensions

H16



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
H16	1.25 (31.75)	1.25 (31.75)	.75 (19.05)	.63 (16.00)	.38 (9.65)	1.000 (25.40)	.125 (3.18)	1.000 (25.40)	--	--	.125 (3.18)	1.688 (42.88)	2.18 (55.37)

CASE#	P	Q	WT.GRAMS
H16	.750 (19.05)	.06 (1.52)	70

Dimensions are in inches (mm). Tolerances: 2PL. ± .03; 3PL. ± .015

Notes:

1. Case material: Aluminum alloy.
2. Case finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Mounting bracket available on request. Add suffix B to part number.
4. Bracket version, option B, dimension "C" changes from .75 to .94 inches when connectors are type N.
5. Refer to the individual model data sheet for the type of connectors available.

Mini-Circuits

Environmental Specifications ENV28

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I