X2 Frequency Multiplier

50Ω Output 0.1 to 300 MHz

MK-3

Generic photo used for illustration purposes only

CASE STYLE: L19

Connectors	Model
SMA	MK-3
BRACKET (OPTION "B")	
BRACKET (OPTION "BR")	

Maximum Ratings

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

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

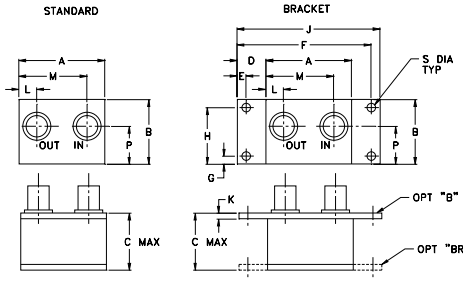
Features

- low insertion loss, 11 dB typ.
- rugged shielded case

Applications

- synthesizers
- local oscillators

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H
1.50	1.13	1.00	.50	.155	2.345	.138	.987
38.10	28.70	25.40	12.70	3.94	59.56	3.51	25.07

J	K	L	M	N	P	S	wt
2.50	.10	.31	1.19	--	.66	.150	grams
63.50	2.54	7.87	30.23	--	16.76	3.81	37.0

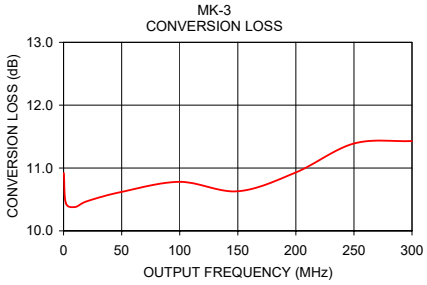
Electrical Specifications

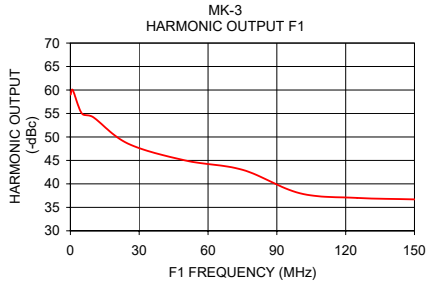
MULTIPLICATION FACTOR	FREQUENCY (MHz)		INPUT POWER (dBm)		CONVERSION LOSS (dB)		*HARMONIC OUTPUT (dBc)					
	F1	F2					F1		F3		F4	
	Input	Output	Min.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.
2	0.05-50	0.1-100	0	13	11.0	17.0	40	28	45	30	16	12
	50-150	100-300	0	13	11.5	15.0	35	20	40	20	16	12

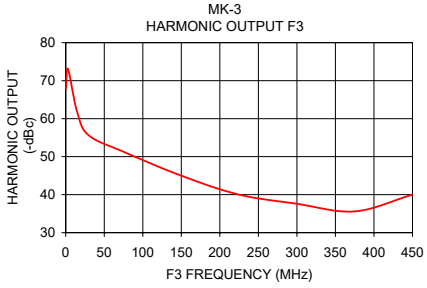
* Harmonics of input frequency below the power level of F2

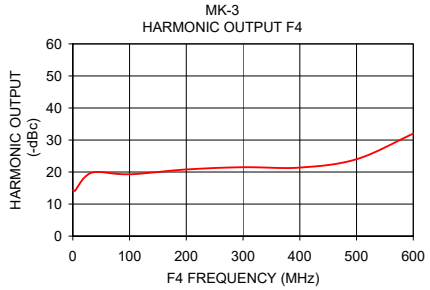
Typical Performance Data

Input Frequency (MHz)	Conversion Loss (dB) F2	Harmonic Output (-dBc) F1	F3	F4
0.10	10.92	59.00	68.00	14.40
1.00	10.44	60.00	73.00	14.20
5.00	10.38	55.00	61.60	18.20
10.00	10.47	54.20	55.60	20.00
25.00	10.62	48.60	51.30	19.30
50.00	10.78	45.00	45.00	20.80
75.00	10.63	43.00	40.00	21.50
100.00	10.93	38.00	37.60	21.40
125.00	11.39	37.00	35.60	24.00
150.00	11.43	36.70	40.00	32.00









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) MK-3

Typical Performance Data

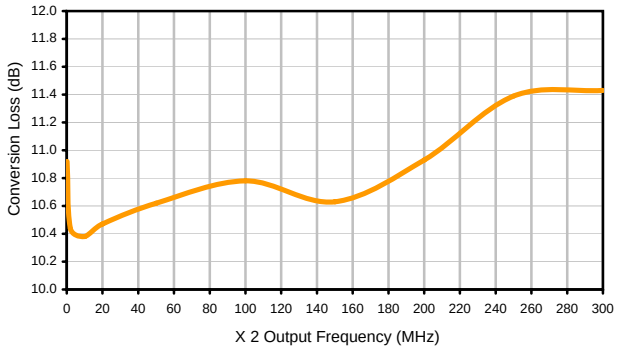
FREQUENCY (MHz)				CONVERSION LOSS (dB)	HARMONIC OUTPUT* (-dBc)		
X 1 OUTPUT	X 2 OUTPUT	X 3 OUTPUT	X 4 OUTPUT	X 2 OUTPUT	X 1 OUTPUT	X 3 OUTPUT	X 4 OUTPUT
0.2	0.4	0.6	0.8	10.92	59.00	68.00	14.40
1	2	3	4	10.44	60.00	73.00	14.20
5	10	15	20	10.38	55.00	61.60	18.20
10	20	30	40	10.47	54.20	55.60	20.00
25	50	75	100	10.62	48.60	51.30	19.30
50	100	150	200	10.78	45.00	45.00	20.80
75	150	225	300	10.63	43.00	40.00	21.50
100	200	300	400	10.93	38.00	37.60	21.40
125	250	375	500	11.39	37.00	35.60	24.00
150	300	450	600	11.43	36.70	40.00	32.00

*Harmonic Output below power level of X 2 Output .

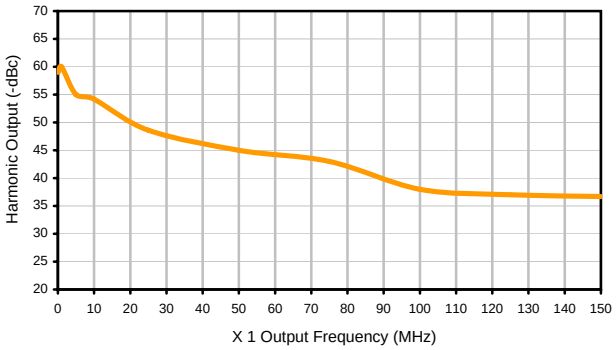
Frequency Multiplier (Doubler) MK-3

Typical Performance Curves

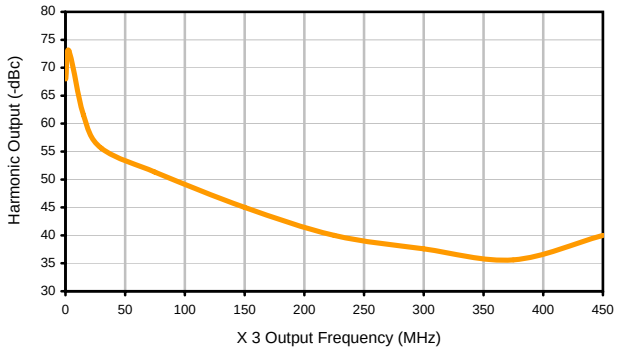
Conversion Loss X 2 Output



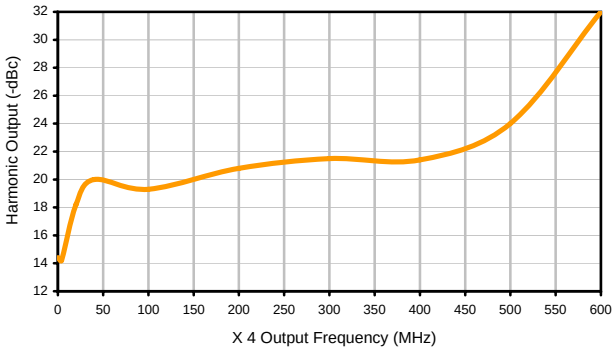
Harmonic X 1 Output



Harmonic X 3 Output



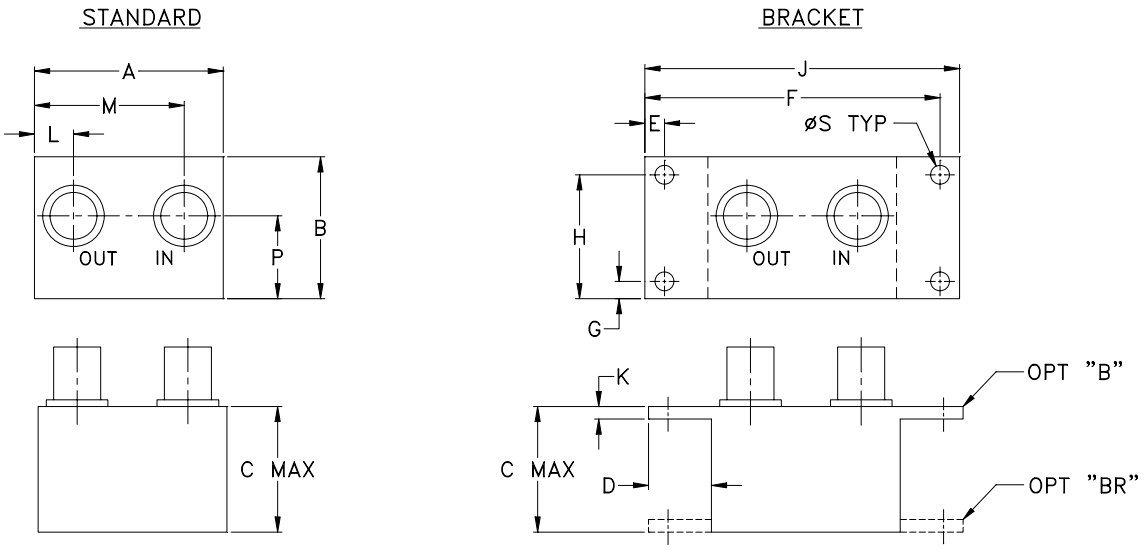
Harmonic X 4 Output



Case Style L

L19
L20

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
L19	1.50 (38.10)	1.13 (28.70)	1.00 (25.40)	.50 (12.70)	.155 (3.94)	2.345 (59.56)	.138 (3.51)	.987 (25.07)	2.50 (63.50)	.10 (2.54)	.31 (7.87)	1.19 (30.23)	-- --
L20	2.25 (57.15)	1.38 (35.05)	1.24 (31.50)		.150 (3.81)	3.100 (78.74)		1.238 (31.45)	3.25 (82.55)		.40 (10.16)	1.86 (47.24)	-- --

CASE#	P	Q	R	S	WT. GRAMS
L19	.66 (16.76)	-- --	-- --	.150 (3.81)	37.0
L20	.64 (16.26)	-- --	-- --		74.0

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

Notes:

1. Case material: Aluminum alloy.
2. Case finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.

   For Non-RoHS Case Styles: Yellow hexavalent chrome based conversion coating.
   Due to transition from non-RoHS to RoHS, models will be supplied with either case style finish until the non-RoHS case inventory is depleted.
3. Mounting bracket available on request. For bracket mounted on connector end add suffix B to part number and add $5.00 to unit cost. For bracket mounted on the rear, add suffix BR to part number and add $1.50 to unit cost.

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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