MMIC SURFACE MOUNT

X3 Frequency Multiplier

CY3-223+

50Ω Output 10 to 22 GHz

THE BIG DEAL

- Ultra-wideband, output from 10 to 22 GHz
- Wide input power range, +12 to +18 dBm
- Low Conversion Loss, 17 dB Typ.
- Good Fundamental and Harmonic Suppression: F1 > +34 dBc; F2 > +45 dBc; F4 > +50 dBc
- Tiny size, 4 x 4mm 24L

Generic photo used for illustration purposes only

CASE STYLE: DG1847

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- 5G MIMO and Back Haul Radio Systems
- Satellite Communications
- Test and Measurement Equipment
- Radar, EW, and ECM Defense Systems

PRODUCT OVERVIEW

Mini-Circuits' CY3-223+ is an ultra-wideband MMIC Frequency Tripler, converting input frequencies from 3.33 to 7.33 GHz into output frequencies from 10 to 22 GHz. Its wide output range makes this model suitable for broadband systems as well as a wide variety of narrow-band applications. Utilizing GaAs HBT technology, the multiplier comes housed in a tiny 4x4mm 24L MCLP package and offers excellent repeatability, low inductance, and good thermal efficiency.

KEY FEATURES

Feature	Advantages
Broadband, 10 to 22 GHz output	With an output frequency range spanning 10 to 22 GHz, this multiplier supports broadband applications such as defense and instrumentation as well as a wide range of narrowband system requirements including 5G.
Excellent fundamental and harmonic suppression: • F1 +34 dBc • F2 +45 dBc • F4 +50 dBc	Reduces spurious signals and the need for additional filtering.
Wide input power range, +12 to +18 dBm	Wide input power signal range accommodates different input signal levels while still maintaining a low Conversion Loss.

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ELECTRICAL SPECIFICATIONS[1] AT 25°C AND Zo = 50Ω, UNLESS NOTED OTHERWISE

Parameter		Input Frequency (GHz)	RF Input = +12 dBm Min.	Typ.	Max.	Unit
Multiplication Factor				3		
Frequency Range, Input (F1)			3.33	-	7.33	GHz
Frequency Range, Output (F3)			10	-	22	GHz
Input Power			+12	-	+18	dBm
Conversion Loss		3.33	-	22.0	26.2	dB
		4	-	18.0	22.1	
		5	-	16.4	20.4	
		6	-	18.2	23.0	
		7.33	-	22.1	27.5	
Harmonic Output[2]	F1	3.33	-	45.8	-	dBc
		4	-	49.8	-	
		5	-	46.6	-	
		6	-	44.9	-	
		7.33	-	22.1	-	
	F2	3.3	-	86.1	-	dBc
		4	-	71.9	-	
		5	-	55.1	-	
		6	-	45.0	-	
		7.33	-	39.9	-	
	F4	3.33	-	47.9	-	dBc
		4	-	48.9	-	
		5	-	56.2	-	
		6	-	51.7	-	
		7.33	-	40.9	-	

1. Measured on Mini-Circuits Characterization Test Board TB-CY3-223C+.
2. Harmonics of input frequency below the power level of F3.

MAXIMUM RATINGS[3]

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Input RF Power	+22 dBm (5 minute max) +19 dBm (Continuous)

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

X3 Frequency Multiplier

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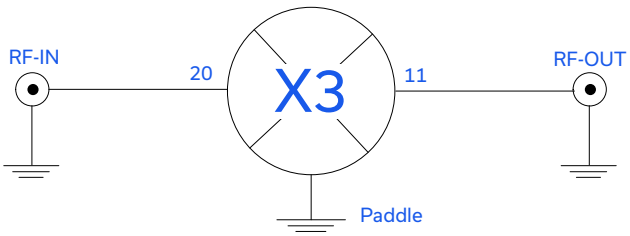
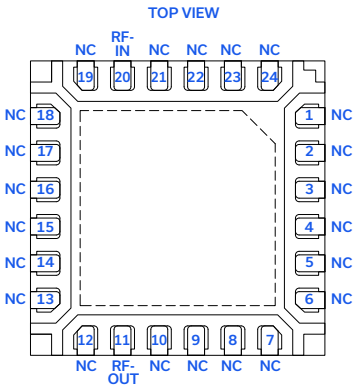
SIMPLIFIED SCHEMATIC AND PAD DESCRIPTION





Function	Pad Number	Description
RF-IN	20	RF-Input Pad.
RF-OUT	11	RF-Output Pad.
Ground	Paddle	Connects to ground
No Connections	1-10, 12-19, 21-24	Not used internally. Connected to ground on test board.

APPLICATION AND CHARACTERIZATION CIRCUIT

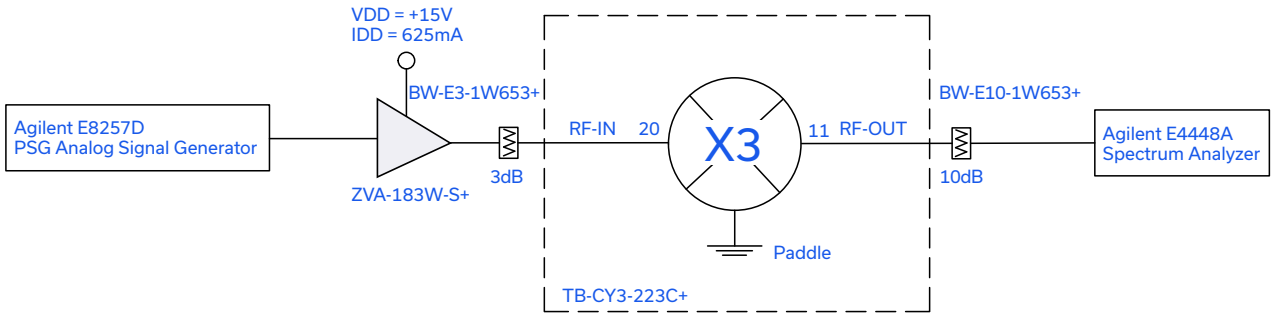
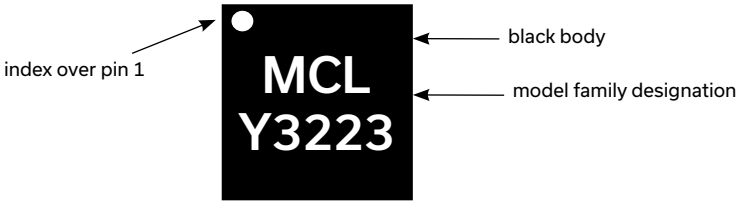


Fig 1. Application and Characterization Circuit
Note: This block diagram is used for characterization. (DUT is soldered and measured on Mini-Circuits Characterization Test Board TB-CY3-223C+) Conversion Loss and Harmonic Output are measured using Agilent E4448A PSA Spectrum Analyzer.

PRODUCT MARKING



Marking may contain other features or characters for internal lot control

X3 Frequency Multiplier CY3-223+

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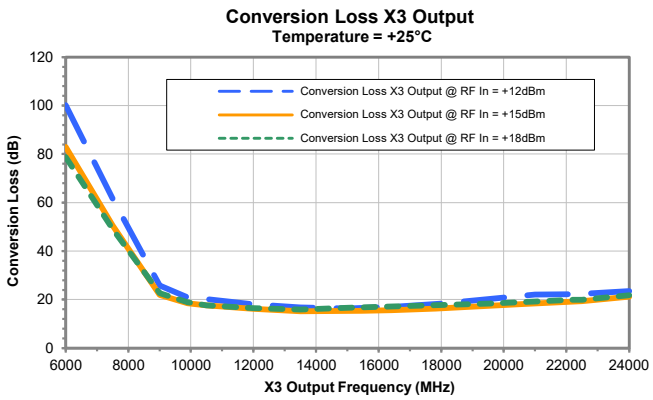
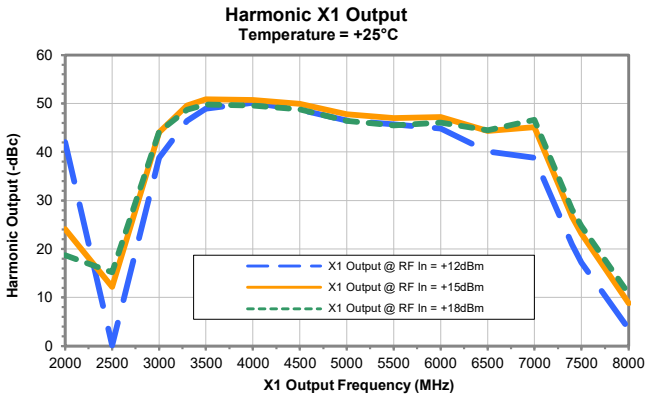
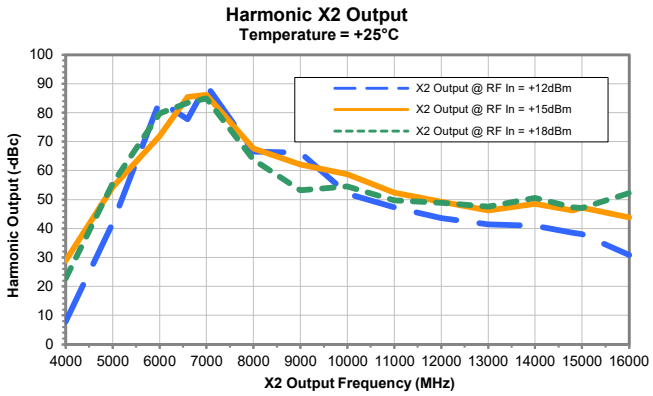
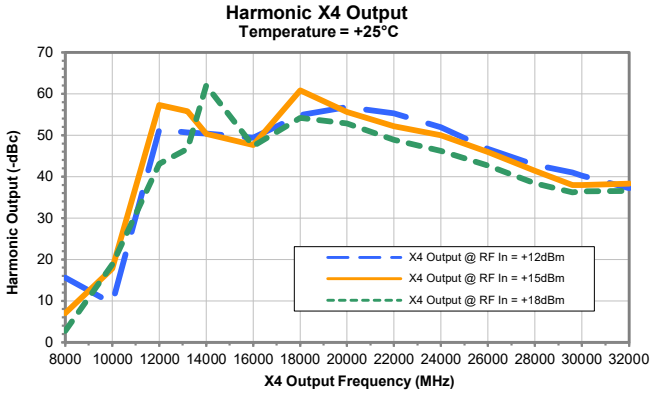
TYPICAL PERFORMANCE CURVES









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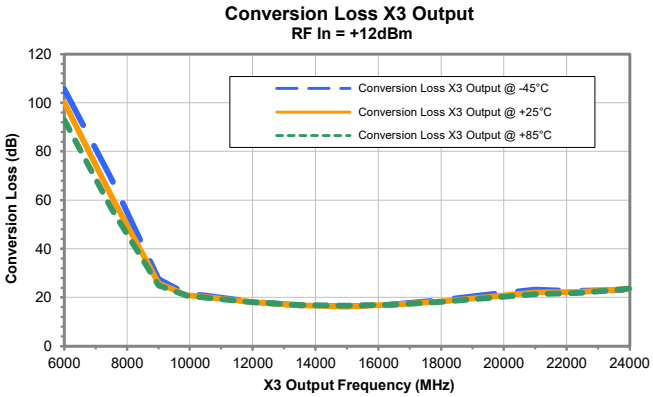
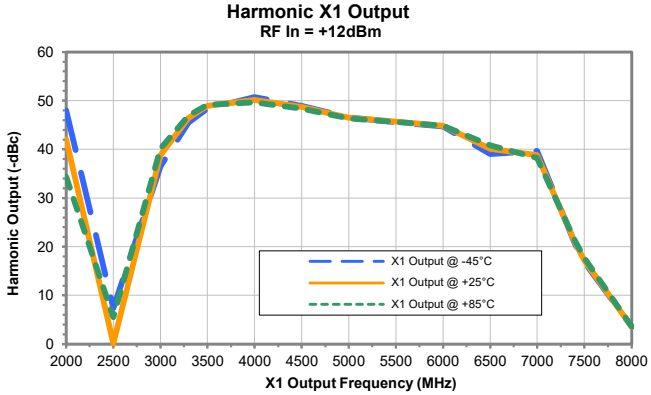
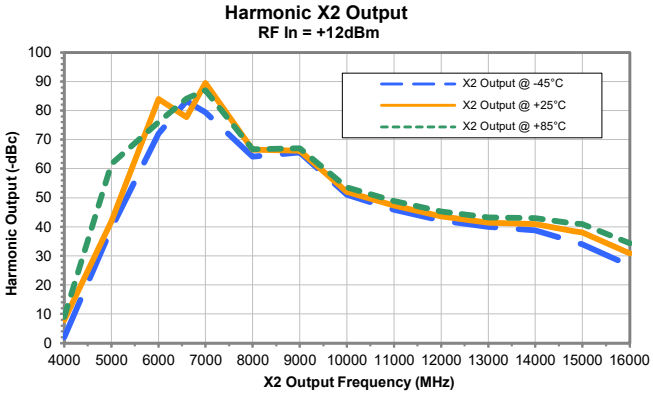
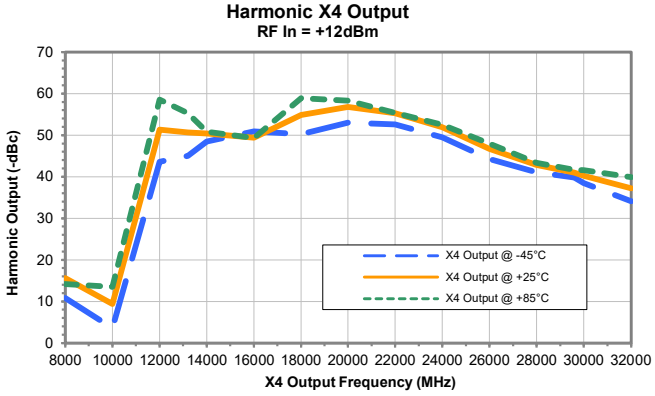
TYPICAL PERFORMANCE CURVES







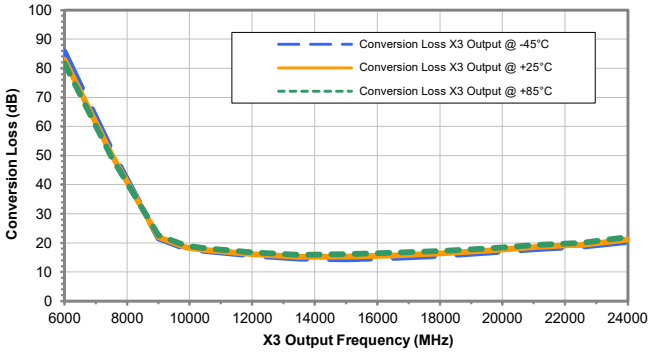


X3 Frequency Multiplier CY3-223+

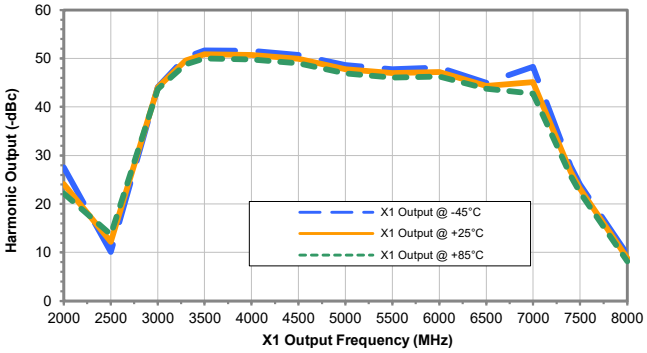
50Ω Output 10 to 22 GHz

TYPICAL PERFORMANCE CURVES

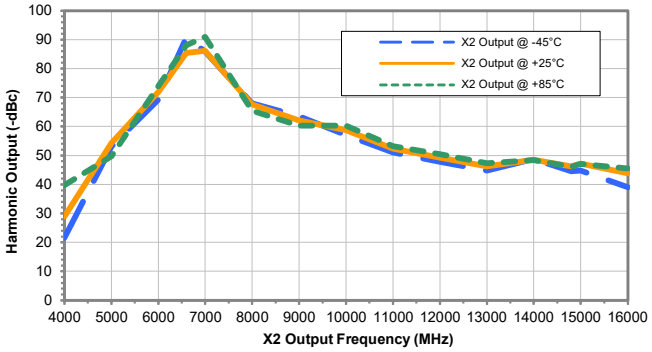
Conversion Loss X3 Output
RF In = +15dBm



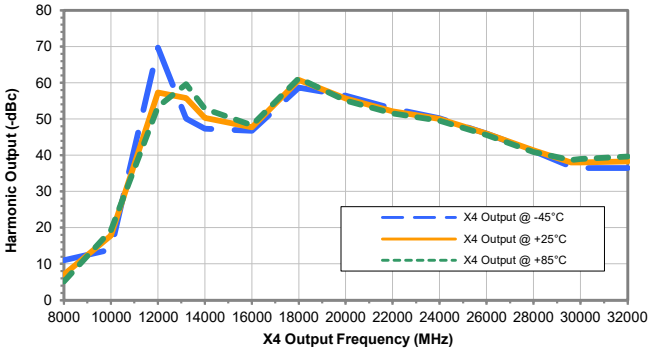
Harmonic X1 Output
RF In = +15dBm



Harmonic X2 Output
RF In = +15dBm



Harmonic X4 Output
RF In = +15dBm



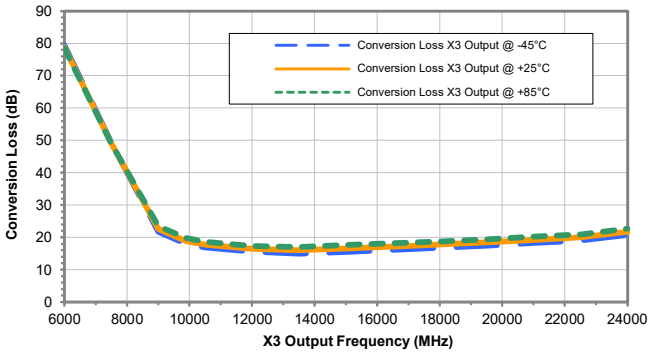
X3 Frequency Multiplier

CY3-223+

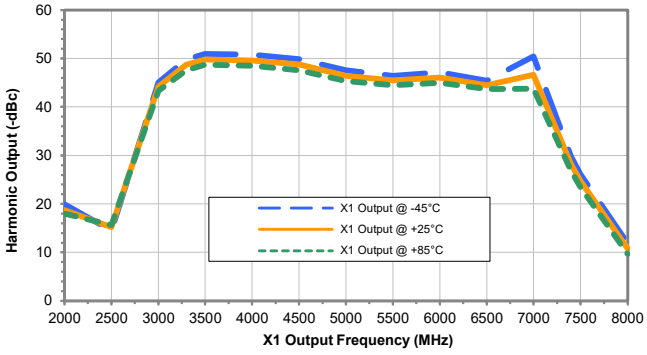
50Ω Output 10 to 22 GHz

TYPICAL PERFORMANCE CURVES

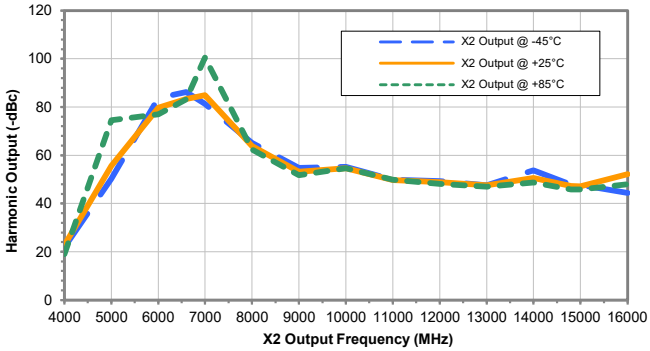
Conversion Loss X3 Output
RF In = +18dBm



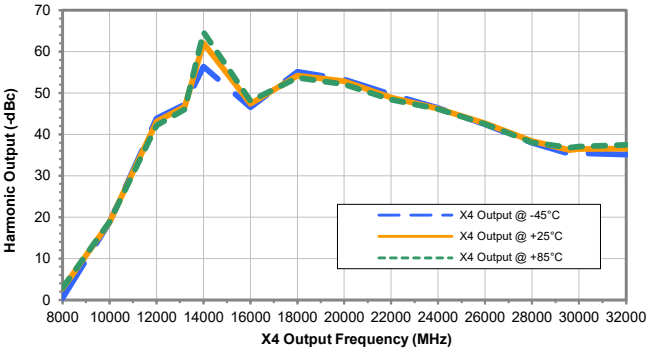
Harmonic X1 Output
RF In = +18dBm



Harmonic X2 Output
RF In = +18dBm



Harmonic X4 Output
RF In = +18dBm



X3 Frequency Multiplier

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ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASH BOARD. TO ACCESS CLICK HERE

Performance Data	Data Table Swept Graphs
Case Style	DG1847 Plastic package, exposed paddle, lead finish: Matte-Tin
Tape & Reel **Standard quantities available on reel**	F68 7" reels with 20, 50, 100, 200, 500 or 1K and 2k devices
Suggested Layout for PCB Design	PL-732
Evaluation Board	TB-CY3-223C+
Environmental Ratings	ENV08T1

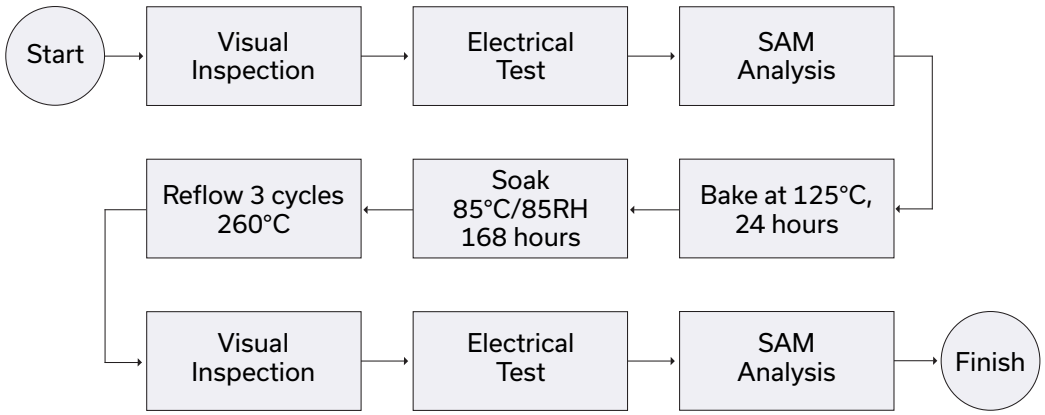
ESD RATING

Human body model (HBM): Class 1B (500V to < 1000V) in accordance with ANSI/ESD 5.1-2001
Charged Device Model (CDM): Class 1B (500V to < 1000V) in accordance with ANSI/ESD 5.2-2001

MSL RATING

Moisture Sensitivity: MSL1 in accordance with IPC/JEDEC J-STD-020D

MSL TEST FLOW CHART



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Frequency Multiplier CY3-223+

Typical Performance Data

TEST CONDITION: RF In = +12dBm

Frequency (MHz)				Temperature = -45°C			
				Conversion Loss (dB)	Harmonic Output* (-dBc)		
X1 Output	X2 Output	X3 Output	X4 Output	X3 Output	X1 Output	X2 Output	X4 Output
2000	4000	6000	8000	105.68	47.98	2.04	10.80
2500	5000	7500	10000	68.79	7.41	39.47	3.64
3000	6000	9000	12000	27.48	36.51	72.08	43.55
3300	6600	9900	13200	21.57	45.47	83.28	45.05
3500	7000	10500	14000	20.72	48.32	79.44	48.50
4000	8000	12000	16000	18.18	50.78	64.14	50.86
4500	9000	13500	18000	16.75	48.96	65.55	50.21
5000	10000	15000	20000	16.45	46.56	51.06	53.06
5500	11000	16500	22000	17.15	45.57	45.84	52.58
6000	12000	18000	24000	18.92	44.67	42.14	49.44
6500	13000	19500	26000	21.20	39.02	39.95	44.29
7000	14000	21000	28000	23.18	39.69	38.77	41.03
7400	14800	22200	29600	22.60	20.65	34.95	39.80
7500	15000	22500	30000	22.75	16.84	33.95	38.50
8000	16000	24000	32000	23.04	3.61	26.62	34.09

* Harmonic Output below power level of X3 Output

Frequency (MHz)				Temperature = +25°C			
				Conversion Loss (dB)	Harmonic Output* (-dBc)		
X1 Output	X2 Output	X3 Output	X4 Output	X3 Output	X1 Output	X2 Output	X4 Output
2000	4000	6000	8000	100.27	42.05	7.99	15.63
2500	5000	7500	10000	61.52	0.18	41.88	9.42
3000	6000	9000	12000	25.79	38.77	84.02	51.33
3300	6600	9900	13200	21.00	46.41	77.74	50.62
3500	7000	10500	14000	20.19	48.92	89.56	50.36
4000	8000	12000	16000	18.03	50.19	66.52	49.41
4500	9000	13500	18000	16.75	48.72	66.21	54.90
5000	10000	15000	20000	16.47	46.51	52.02	56.87
5500	11000	16500	22000	17.02	45.68	47.29	55.27
6000	12000	18000	24000	18.41	44.86	43.54	51.93
6500	13000	19500	26000	20.23	40.10	41.39	46.73
7000	14000	21000	28000	22.12	38.80	40.96	42.84
7400	14800	22200	29600	22.28	20.92	38.58	40.97
7500	15000	22500	30000	22.42	17.22	38.01	40.19
8000	16000	24000	32000	23.47	3.50	30.83	37.19

* Harmonic Output below power level of X3 Output

Frequency (MHz)				Temperature = +85°C			
				Conversion Loss (dB)	Harmonic Output* (-dBc)		
X1 Output	X2 Output	X3 Output	X4 Output	X3 Output	X1 Output	X2 Output	X4 Output
2000	4000	6000	8000	93.07	34.33	9.05	14.15
2500	5000	7500	10000	56.54	5.49	61.68	13.55
3000	6000	9000	12000	24.90	40.14	76.07	58.53
3300	6600	9900	13200	20.75	46.94	84.05	55.27
3500	7000	10500	14000	19.93	49.11	87.03	50.86
4000	8000	12000	16000	18.03	49.66	66.73	49.35
4500	9000	13500	18000	16.88	48.36	66.97	58.89
5000	10000	15000	20000	16.65	46.35	53.54	58.34
5500	11000	16500	22000	17.13	45.59	48.86	55.33
6000	12000	18000	24000	18.21	44.84	45.33	52.52
6500	13000	19500	26000	19.72	40.84	43.18	47.92
7000	14000	21000	28000	21.41	38.24	42.97	43.33
7400	14800	22200	29600	21.84	21.32	41.21	41.67
7500	15000	22500	30000	22.00	17.71	40.99	41.57
8000	16000	24000	32000	23.69	3.59	34.34	39.91

* Harmonic Output below power level of X3 Output

Typical Performance Data

TEST CONDITION: RF In = +15dBm

Frequency (MHz)				Temperature = -45°C			
				Conversion Loss (dB)	Harmonic Output* (-dBc)		
X1 Output	X2 Output	X3 Output	X4 Output	X3 Output	X1 Output	X2 Output	X4 Output
2000	4000	6000	8000	85.75	27.55	21.61	11.05
2500	5000	7500	10000	52.04	10.14	53.08	13.95
3000	6000	9000	12000	21.53	44.08	69.33	69.72
3300	6600	9900	13200	17.89	50.19	90.75	50.15
3500	7000	10500	14000	17.15	51.72	85.86	47.32
4000	8000	12000	16000	15.66	51.60	67.96	46.78
4500	9000	13500	18000	14.63	50.75	63.56	58.65
5000	10000	15000	20000	14.44	48.66	57.00	56.46
5500	11000	16500	22000	14.82	47.80	51.03	52.86
6000	12000	18000	24000	15.57	48.11	47.82	50.23
6500	13000	19500	26000	16.60	44.96	44.81	45.93
7000	14000	21000	28000	17.82	48.25	48.71	41.21
7400	14800	22200	29600	18.47	27.81	44.55	36.84
7500	15000	22500	30000	18.60	24.06	44.77	36.47
8000	16000	24000	32000	20.35	9.64	39.08	36.47

* Harmonic Output below power level of X3 Output

Frequency (MHz)				Temperature = +25°C			
				Conversion Loss (dB)	Harmonic Output* (-dBc)		
X1 Output	X2 Output	X3 Output	X4 Output	X3 Output	X1 Output	X2 Output	X4 Output
2000	4000	6000	8000	82.99	24.10	28.94	7.09
2500	5000	7500	10000	50.46	12.20	54.28	17.80
3000	6000	9000	12000	21.98	44.02	72.01	57.31
3300	6600	9900	13200	18.44	49.57	85.40	55.80
3500	7000	10500	14000	17.61	50.91	86.22	50.32
4000	8000	12000	16000	16.15	50.70	67.59	47.66
4500	9000	13500	18000	15.26	49.90	62.09	60.84
5000	10000	15000	20000	15.28	47.79	58.71	55.63
5500	11000	16500	22000	15.70	46.98	52.32	52.13
6000	12000	18000	24000	16.36	47.19	49.29	49.97
6500	13000	19500	26000	17.33	44.30	46.24	45.95
7000	14000	21000	28000	18.54	45.09	48.52	41.39
7400	14800	22200	29600	19.26	26.72	46.21	38.00
7500	15000	22500	30000	19.28	23.17	47.25	37.99
8000	16000	24000	32000	21.20	8.86	43.86	38.30

* Harmonic Output below power level of X3 Output

Frequency (MHz)				Temperature = +85°C			
				Conversion Loss (dB)	Harmonic Output* (-dBc)		
X1 Output	X2 Output	X3 Output	X4 Output	X3 Output	X1 Output	X2 Output	X4 Output
2000	4000	6000	8000	81.68	22.17	39.82	5.17
2500	5000	7500	10000	49.45	13.68	49.68	19.25
3000	6000	9000	12000	22.55	43.70	74.02	53.37
3300	6600	9900	13200	19.04	48.78	88.11	59.62
3500	7000	10500	14000	18.12	50.01	90.96	52.80
4000	8000	12000	16000	16.72	49.82	65.48	48.26
4500	9000	13500	18000	15.98	48.99	60.26	61.34
5000	10000	15000	20000	16.15	46.88	60.25	55.10
5500	11000	16500	22000	16.57	46.09	53.24	51.58
6000	12000	18000	24000	17.16	46.24	50.47	49.50
6500	13000	19500	26000	18.10	43.74	47.30	45.63
7000	14000	21000	28000	19.24	42.74	48.37	40.88
7400	14800	22200	29600	19.88	25.79	46.06	38.70
7500	15000	22500	30000	19.91	22.36	47.05	39.00
8000	16000	24000	32000	21.95	8.17	45.53	39.64

* Harmonic Output below power level of X3 Output

Typical Performance Data

TEST CONDITION: RF In = +18dBm

Frequency (MHz)				Temperature = -45°C			
				Conversion Loss (dB)	Harmonic Output* (-dBc)		
X1 Output	X2 Output	X3 Output	X4 Output	X3 Output	X1 Output	X2 Output	X4 Output
2000	4000	6000	8000	79.49	19.93	21.90	0.51
2500	5000	7500	10000	49.27	14.51	50.23	18.76
3000	6000	9000	12000	21.73	45.07	83.75	43.88
3300	6600	9900	13200	17.93	49.82	86.25	47.24
3500	7000	10500	14000	16.84	50.99	81.28	56.42
4000	8000	12000	16000	15.54	50.83	65.22	46.51
4500	9000	13500	18000	15.04	49.84	54.81	55.15
5000	10000	15000	20000	15.53	47.54	55.16	53.27
5500	11000	16500	22000	16.12	46.40	49.83	49.68
6000	12000	18000	24000	16.79	47.10	49.35	46.34
6500	13000	19500	26000	17.44	45.40	47.56	42.42
7000	14000	21000	28000	18.26	50.42	53.80	37.97
7400	14800	22200	29600	18.86	29.76	47.91	35.29
7500	15000	22500	30000	18.99	26.08	47.74	35.41
8000	16000	24000	32000	20.72	11.89	44.34	35.14

* Harmonic Output below power level of X3 Output

Frequency (MHz)				Temperature = +25°C			
				Conversion Loss (dB)	Harmonic Output* (-dBc)		
X1 Output	X2 Output	X3 Output	X4 Output	X3 Output	X1 Output	X2 Output	X4 Output
2000	4000	6000	8000	78.88	18.70	22.83	2.75
2500	5000	7500	10000	49.02	15.17	55.61	18.79
3000	6000	9000	12000	22.59	44.17	79.78	43.06
3300	6600	9900	13200	18.87	48.68	83.36	46.70
3500	7000	10500	14000	17.70	49.86	85.00	62.08
4000	8000	12000	16000	16.43	49.56	63.79	47.39
4500	9000	13500	18000	16.05	48.82	53.15	54.21
5000	10000	15000	20000	16.59	46.43	54.56	52.84
5500	11000	16500	22000	17.15	45.46	49.78	48.86
6000	12000	18000	24000	17.77	46.06	48.83	46.19
6500	13000	19500	26000	18.40	44.44	47.60	42.63
7000	14000	21000	28000	19.26	46.60	50.57	38.41
7400	14800	22200	29600	19.93	28.22	47.33	36.18
7500	15000	22500	30000	19.96	24.71	47.08	36.44
8000	16000	24000	32000	21.75	10.77	52.20	36.53

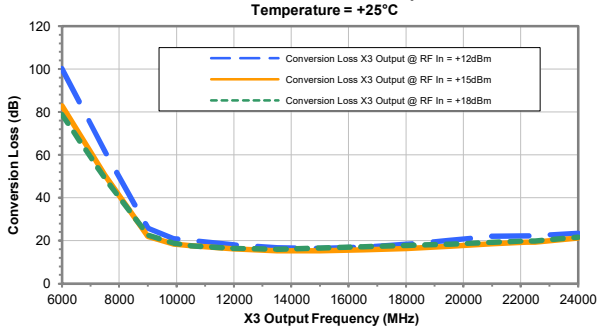
* Harmonic Output below power level of X3 Output

Frequency (MHz)				Temperature = +85°C			
				Conversion Loss (dB)	Harmonic Output* (-dBc)		
X1 Output	X2 Output	X3 Output	X4 Output	X3 Output	X1 Output	X2 Output	X4 Output
2000	4000	6000	8000	78.66	18.00	19.10	2.97
2500	5000	7500	10000	48.91	15.63	74.58	18.86
3000	6000	9000	12000	23.49	43.36	76.95	42.14
3300	6600	9900	13200	19.80	47.56	83.16	46.03
3500	7000	10500	14000	18.58	48.73	100.57	64.70
4000	8000	12000	16000	17.36	48.50	62.40	48.08
4500	9000	13500	18000	17.07	47.60	51.68	53.69
5000	10000	15000	20000	17.64	45.34	54.58	52.10
5500	11000	16500	22000	18.16	44.50	49.80	48.37
6000	12000	18000	24000	18.74	44.99	48.13	46.13
6500	13000	19500	26000	19.36	43.68	47.02	42.48
7000	14000	21000	28000	20.20	43.78	48.73	38.06
7400	14800	22200	29600	20.81	26.85	45.77	36.75
7500	15000	22500	30000	20.84	23.49	45.79	37.05
8000	16000	24000	32000	22.69	9.72	47.94	37.44

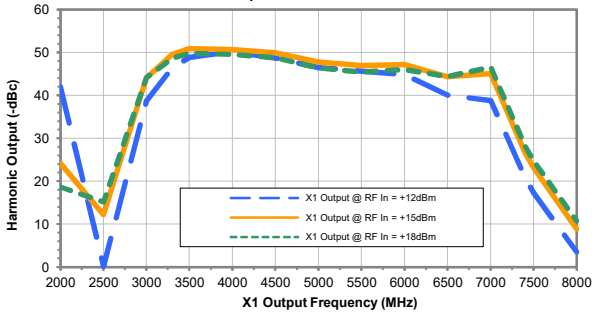
* Harmonic Output below power level of X3 Output

Typical Performance Curves

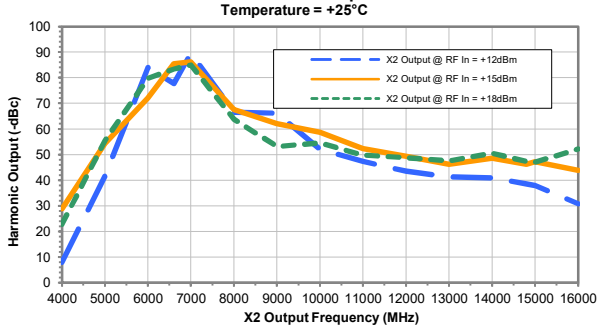
Conversion Loss X3 Output
Temperature = +25°C



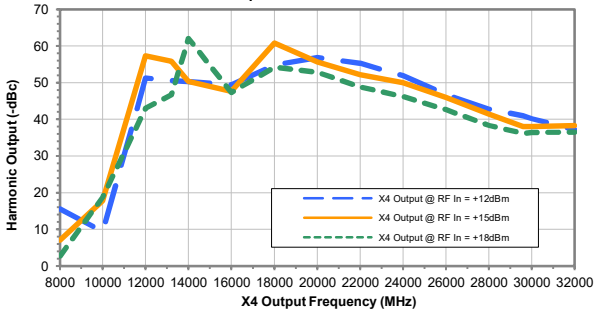
Harmonic X1 Output
Temperature = +25°C



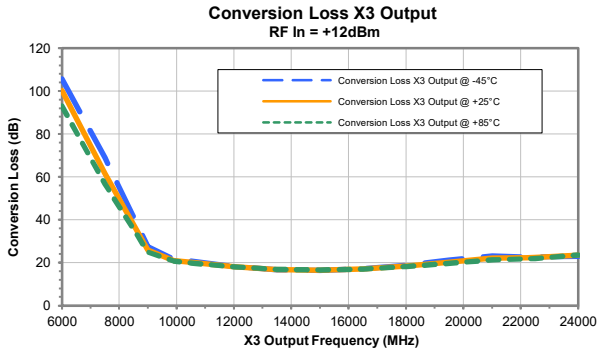
Harmonic X2 Output
Temperature = +25°C

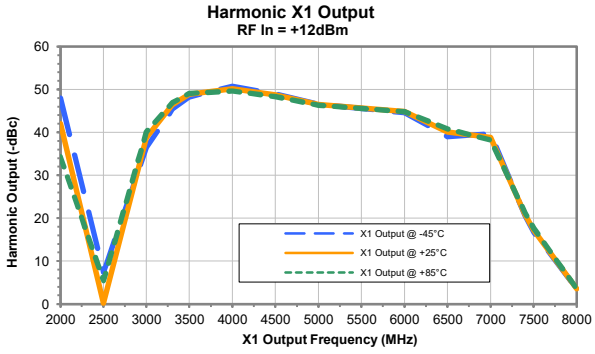


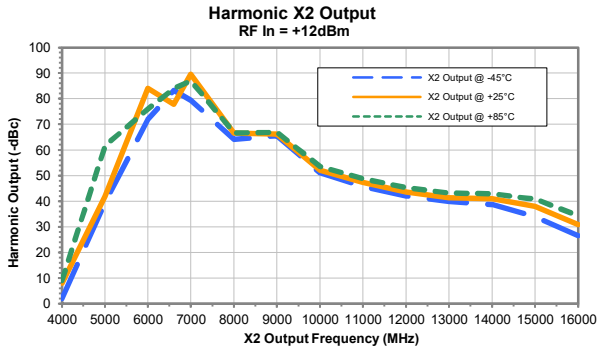
Harmonic X4 Output
Temperature = +25°C

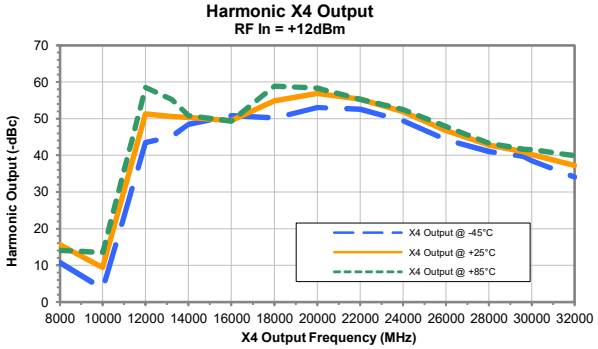


Typical Performance Curves



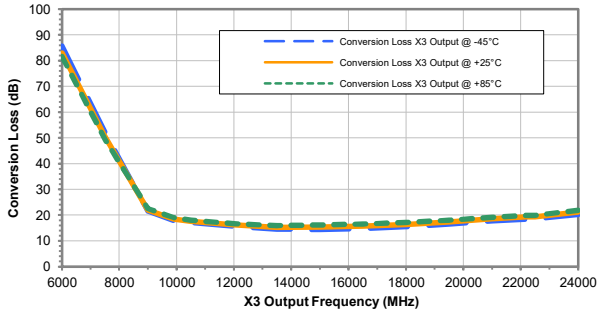




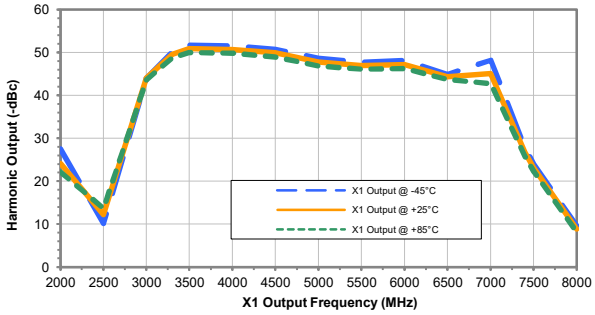


Typical Performance Curves

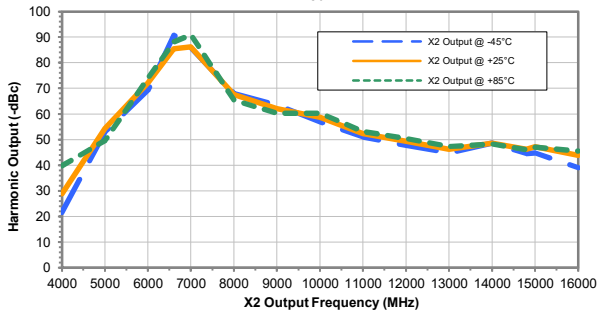
Conversion Loss X3 Output
RF In = +15dBm



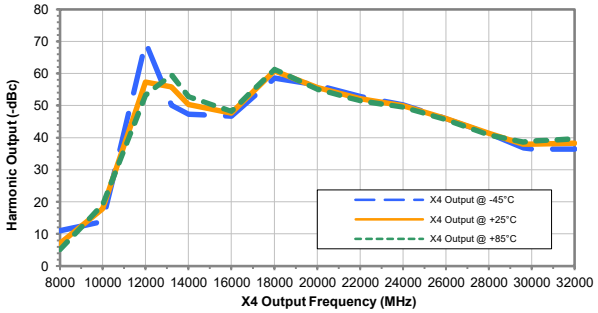
Harmonic X1 Output
RF In = +15dBm



Harmonic X2 Output
RF In = +15dBm

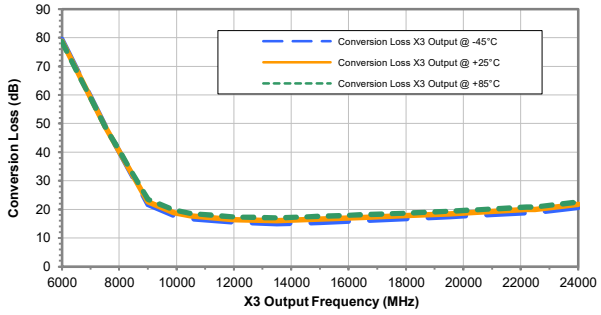


Harmonic X4 Output
RF In = +15dBm

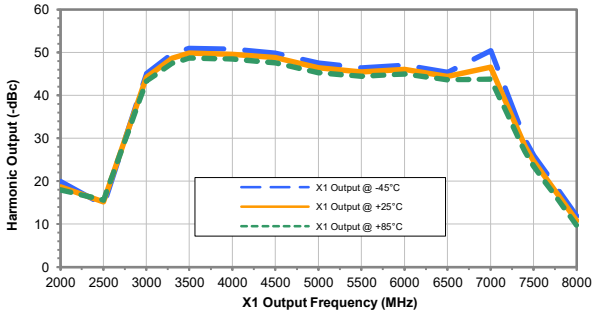


Typical Performance Curves

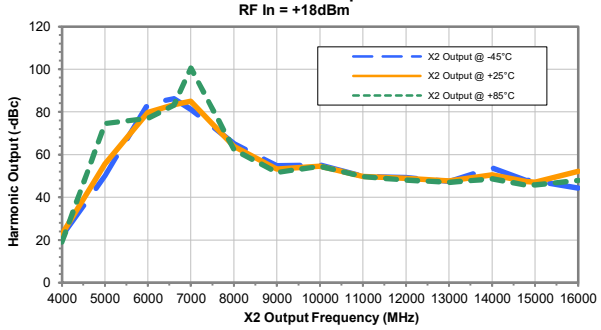
Conversion Loss X3 Output
RF In = +18dBm



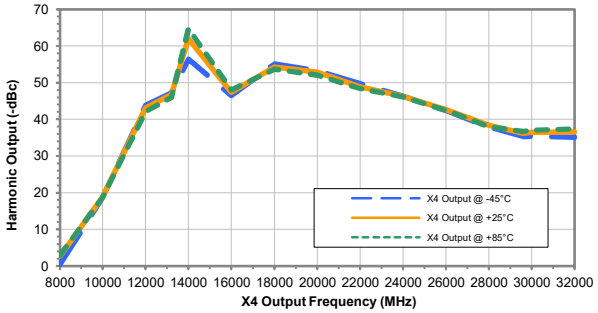
Harmonic X1 Output
RF In = +18dBm



Harmonic X2 Output
RF In = +18dBm



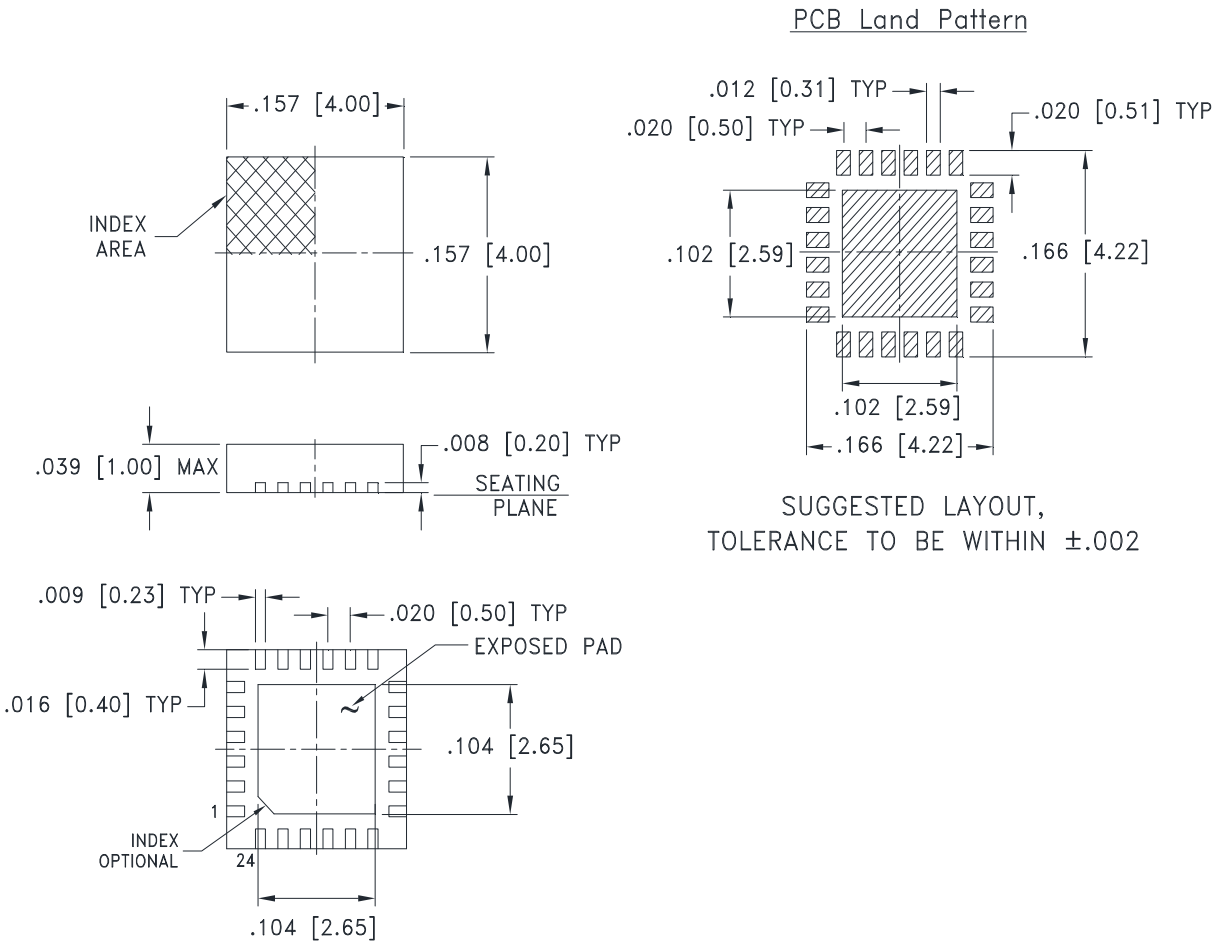
Harmonic X4 Output
RF In = +18dBm



Case Style DG

DG1847

Outline Dimensions



Weight: .04 Grams

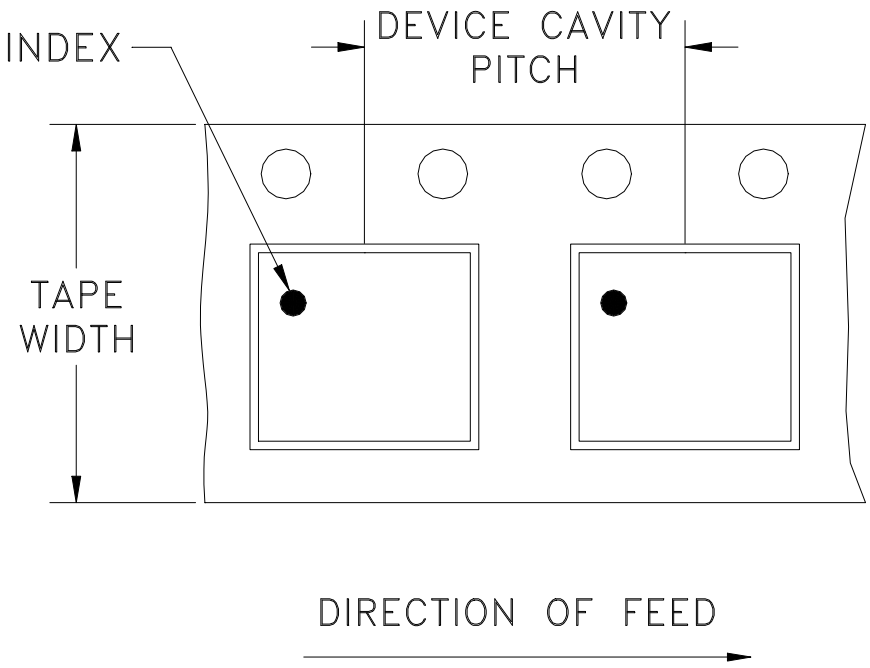
Dimensions are in inches (mm). Tolerances: 2 Pl. ± .01; 3 Pl. ± .005

Notes:

1. Case material: Plastic.
2. Termination finish:
   For RoHS Case Styles: Tin-Silver alloy plate over Nickel barrier or Matte-Tin. All models, (+) suffix. See model Data sheet.
   For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

Tape & Reel Packaging TR-F68

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel see note	
12	8	7	Small quantity standard	20
				50
				100
				200
				500
		7	Standard	1000
		13	Standard	2000
				3000
				4000

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf

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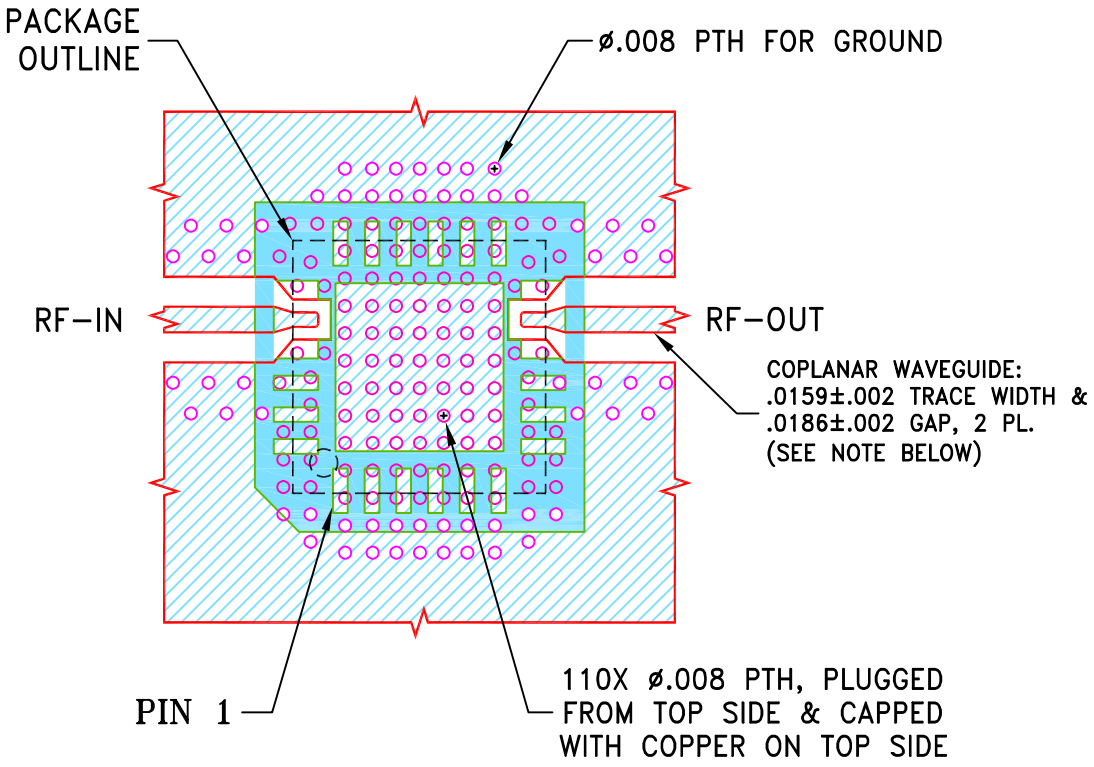
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-013714	NEW RELEASE	06/13/22	ITG	IL

SUGGESTED MOUNTING CONFIGURATION FOR DG1847 CASE STYLE



NOTES:

1. TRACE WIDTH AND GAP PARAMETERS ARE SHOWN FOR ROGERS RO4003 WITH DIELECTRIC THICKNESS .008±.0007"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. UNIT FOOT PRINT IS OPTIMIZED FOR PERFORMANCE AND IS DIFFERENT FROM CASE STYLE DG1847 RECOMMENDATIONS.
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	ITG	06/13/22
TOLERANCES ON:	CHECKED	GF	06/13/22
2 PL DECIMALS ±	APPROVED	IL	06/13/22
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

ASHEETA1.DWG REV:A DATE:01/12/95

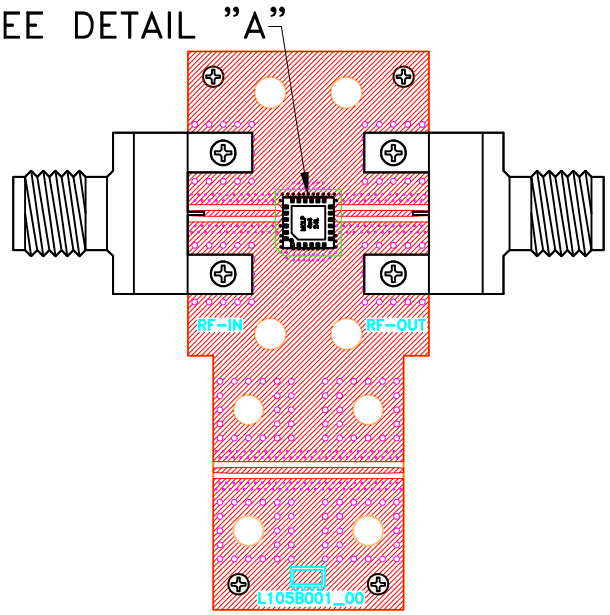
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

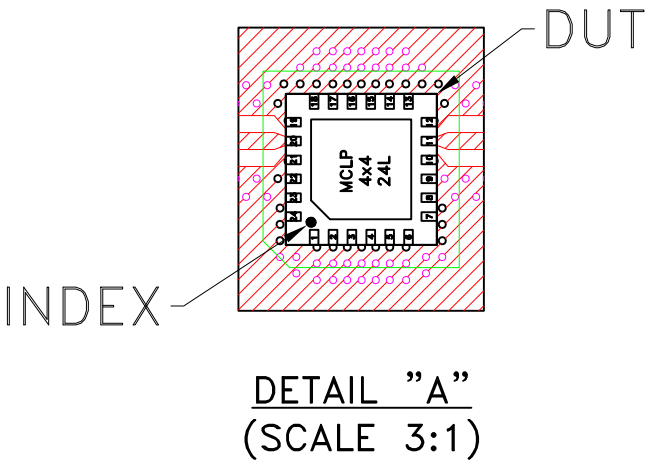
PL, DG1847, TB-CY3-223(C)+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-732	OR

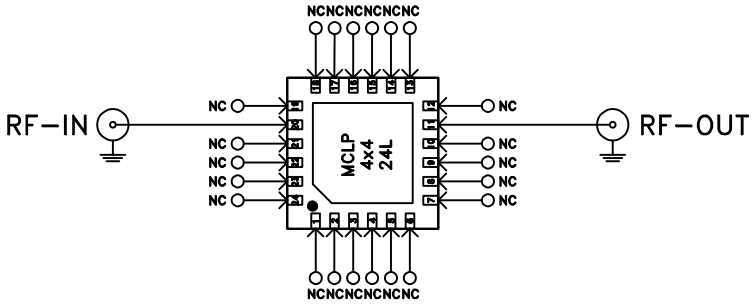
FILE:	SCALE:	SHEET:
98PL732	8:1	1 OF 1

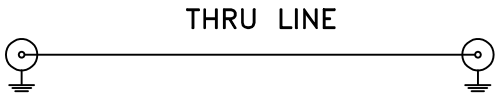
Evaluation Board and Circuit





DETAIL "A"
(SCALE 3:1)





SCHEMATIC DIAGRAM
(SCALE 3:1)

Function	Pad
RF-IN	20
RF-OUT	11
NC	1-10,12-19,21-24

NOTES:

1. 2.4mm Female Connectors.
1. PCB Material: Roger RO4350B or equivalent, Dielectric constant=3.5, Thickness=0.008 inch

Mini-Circuits®

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Environmental Specifications ENV08T1

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	-40° to 85° C or -45° to 85° C or -55° to 105° C or -40° to 105° C or -40° to 95° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C or -65° to 150° Ambient Environment	Individual Model Data Sheet
HTOL	1000 hours at 125°C	MIL-STD-883, Method 1005, Condition B
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Mechanical Shock	1.5Kg, 0.5 ms, 5 shock pulses, Y1 direction only	MIL-STD-883, Method 2002, Condition B, except Y1 direction only
Vibration (Variable Frequency)	50g peak	MIL-STD-883, Method 2007, Condition B
Autoclave	15 psig, 100% RH, 121°C, 96 hours	JESD22-A102, Condition C
HAST	130°C, 85% RH, 96 hours	JESD22-A110
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Solder Reflow Heat	Sn-Pb Eutetic Process: 240°C peak Pb-Free Process: 260°C peak	J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1
Moisture Sensitivity: Level 1	Bake at 125°C for 24 hours Soak at 85°C/85% RH for 168 hours, Reflow 3 cycles at 260°C peak	J-STD-020

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
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215