WINSOURCE ELECTRONICS

THE DATASHEET OF

CY2-283+

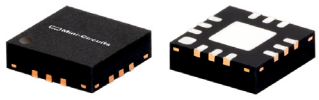
MMIC SURFACE MOUNT

X2 Frequency Multiplier CY2-283+

50Ω Output 7 to 28 GHz

THE BIG DEAL

- Wideband, Output 7 to 28 GHz
- Low Conversion Loss, 13 dB Typ.
- High Fundamental & Harmonic Suppression:
  F1, 34 dBc Typ.; F3, 40 dBc Typ.; F4, 23 dBc Typ.
- Miniature Size 3 x 3 x 0.89 mm
- Aqueous Washable



Generic photo used for illustration purposes only

CASE STYLE: DQ1225

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

APPLICATIONS

- Synthesizers
- Local Oscillators
- 5G

PRODUCT OVERVIEW

Mini-Circuits' CY2-283+ is an ultra-wideband MMIC frequency doubler, converting input frequencies from 3.5 to 14 GHz into output frequencies from 7 to 28 GHz. Its wide output range makes this model suitable for broadband systems as well as a wide variety of narrowband applications. Utilizing GaAs HBT technology, the multiplier comes housed in a tiny 3 x 3 x 0.89 mm MCLP package and offers excellent repeatability, low inductance, and good thermal efficiency.

KEY FEATURES

Features	Advantages
Broadband, 7 to 28 GHz Output	With an output frequency range spanning 7 to 28 GHz, this multiplier supports broadband applications such as defense and instrumentation as well as a wide range of narrowband system requirements including 5G.
Low Conversion Loss, 13 dB Typ.	With a low conversion loss, CY2-283+ produces higher output power, reducing the need for post amplification.
Excellent Fundamental and Harmonic Suppression: • F1, 34 dBc • F3, 40 dBc • F4, 23 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.
3 x 3 mm, 12 Lead MCLP Package	Low inductance, repeatable transitions, and excellent thermal contact to the PCB
Low Cost	Provides an easy, cost-effective solution for generating high-frequency signals from a lower frequency signal source.

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ELECTRICAL SPECIFICATIONS[1] AT +25°C

Parameter	Input Frequency (GHz)	Min.	Typ.	Max.	Unit
Multiplier Factor			2		
Frequency Range, Input (F1)		3.5		14	GHz
Frequency Range, Output (F2)		7		28	GHz
Input Power		+12		+18	dBm
Conversion Loss	3.5-12		13	17.5	dB
	12-14		17	22.5	
Harmonic Output[2] F1	3.5-12		34		dBc
	12-14		17		
Harmonic Output[2] F3	3.5-12		40		
	12-14		47		
Harmonic Output[2] F4	3.5-12		23		

1. At +15 dBm input power measured on Mini-Circuits test board TB-973-CY2283C+.
2. Harmonics of input frequency below the power of F2. Harmonics are measured to 50 GHz.

ABSOLUTE MAXIMUM RATINGS[3]

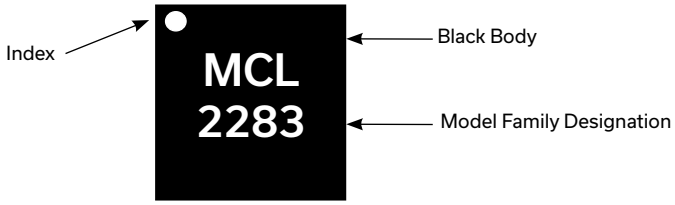
Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
RF Input Power	+21 dBm

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

PAD CONNECTIONS

INPUT	5
OUTPUT	11
GROUND	4,6,10,12 & Paddle
NO CONNECTIONS	All Others

PRODUCT MARKING



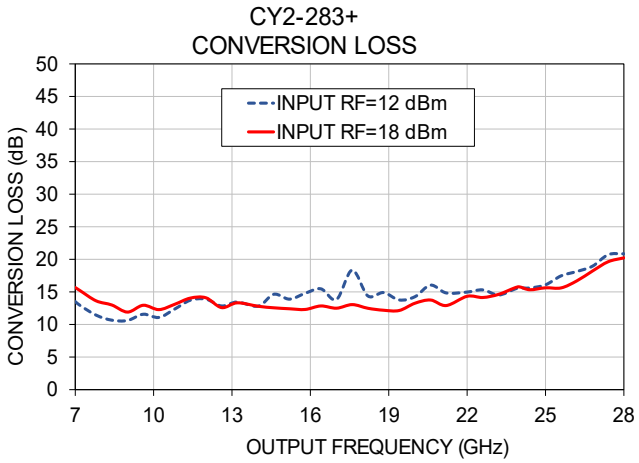
Marking may contain other features or characters for internal lot control.

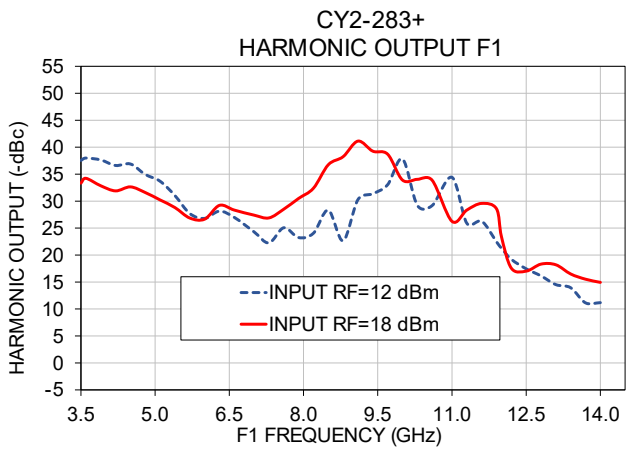
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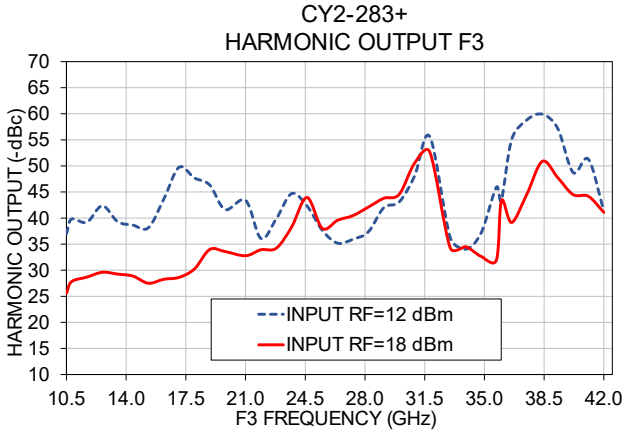
50Ω Output 7 to 28 GHz

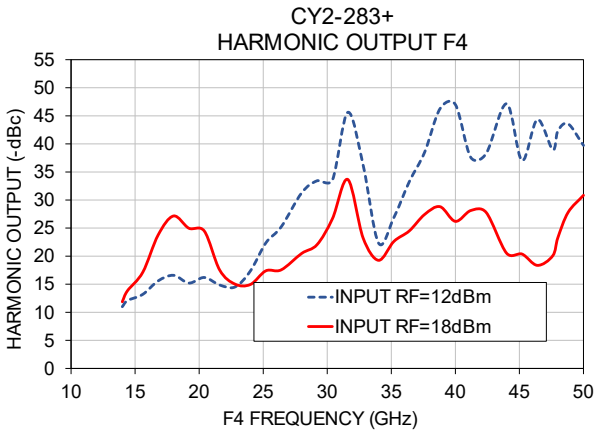
TYPICAL PERFORMANCE DATA

Input Frequency (GHz)	INPUT RF= +12 dBm				INPUT RF= +18 dBm			
	Conversion Loss (dB)	Harmonic Output Below F2 (-dBc)			Conversion Loss (dB)	Harmonic Output Below F2 (-dBc)		
	F2	F1	F3	F4	F2	F1	F3	F4
3.50	13.52	37.55	37.00	11.00	15.67	33.33	25.55	11.88
4.20	10.66	36.61	42.37	15.60	12.99	31.90	29.61	23.79
5.10	11.09	33.69	38.13	16.20	12.28	30.22	27.50	24.48
6.00	13.89	26.80	47.69	17.37	14.10	26.66	30.24	14.96
6.60	13.45	26.98	41.64	25.21	13.33	28.34	33.58	17.56
7.00	12.82	24.30	43.41	31.27	12.80	27.40	32.78	20.49
7.60	13.89	25.06	39.84	33.55	12.42	28.51	34.22	26.66
8.20	15.48	24.06	42.34	36.21	12.85	32.40	43.95	23.22
9.10	14.39	30.29	35.94	33.25	12.49	41.13	40.48	24.49
10.00	14.26	37.81	43.07	47.00	13.26	33.90	44.53	26.20
11.00	14.98	34.41	36.22	47.14	14.33	26.26	34.26	20.52
12.00	15.62	21.26	43.46	42.31	15.78	23.43	43.37	23.29
13.10	18.14	14.52	57.18	--	16.70	18.20	47.76	--
13.70	20.72	11.14	51.26	--	19.64	15.53	44.17	--
14.00	20.85	11.18	41.38	--	20.23	14.94	41.11	--









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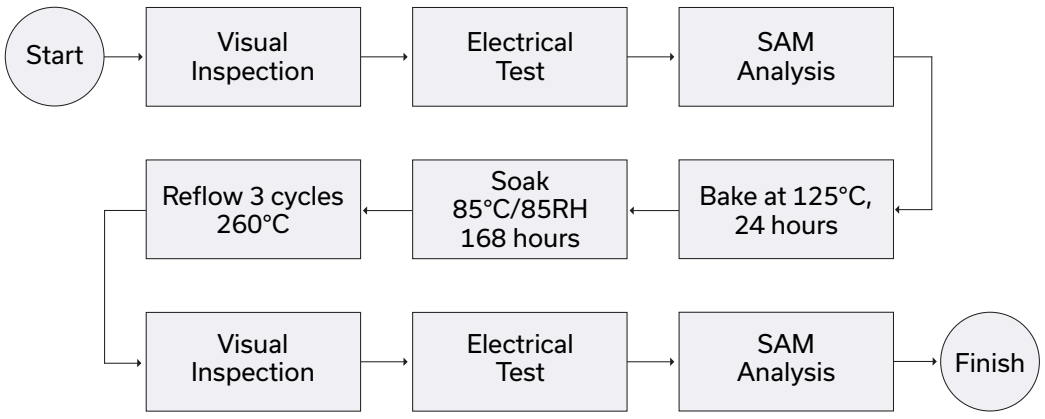
ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASHBOARD. TO ACCESS CLICK HERE

Performance Data	Data Table Swept Graphs S-Parameter (S3P Files) Data Set (.zip file)
Case Style	DQ1225 Plastic package, exposed paddle lead finish: matte-tin
Tape & Reel **Standard Quantities Available on Reel**	F66 7" Reels with 20, 50, 100, 200, 500 or 1K devices
Suggested Layout for PCB Design	PL-476
Evaluation Board	TB-973-CY2283C+
Environmental Ratings	ENV08T1

ESD RATING

Human body model (HBM): Class 1C (1000 to<2000 V) in accordance with ANSI/ESD 5.1-2007

MSL TEST FLOW CHART



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/terms/viewterm.html

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