COAXIAL, WIDEBAND

Frequency Mixer

ZMDB-653H-E+

Level 15 (LO Power +15 dBm) 20 to 65 GHz 1.85 mm Female

THE BIG DEAL

- Super Wideband RF & LO, 20 to 65 GHz
- Excellent Input IP3, +20 dBm Typ.
- Excellent IF Bandwidth, DC to 20 GHz
- High L-R Isolation, 45 dB Typ.
- Usable as Up & Down Converter

Generic photo used for illustration purposes only

Model No.	ZMBD-653H-E+
Case Style	UK2938
Connectors	1.85 mm female

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

APPLICATIONS

- Satellite Up and Down Converters V_{SAT}
- Defense Radar & Communication
- 5G
- ISM
- WiGig

PRODUCT OVERVIEW

Mini-Circuits' ZMDB-653H-E+ coaxial frequency mixer provides an RF and LO frequency range from 20 to 65 GHz and an IF frequency range from DC to 20 GHz. The mixer is ideal for use in wideband millimeter wave systems for communications, defense and test and measurement applications. This model handles input power up to +21 dBm and provides high Lo-RF isolation. The mixer comes housed in a rugged, 1.85 mm connectorized housing suitable for assembled systems and lab use.

KEY FEATURES

Feature	Advantages
Wide Bandwidth, 20 to 65 GHz	Useful in wideband systems and several narrowband systems, reducing inventory.
Wide IF Bandwidth, DC to 20 GHz	Usable in first and second down converter applications. IF down to DC enables use in phase detector applications.
High Isolation, • Lo-RF, 45 dB Typ. • Lo-IF, 30 dB Typ.	Preserves signal integrity from input to output and reduces undesired signal responses that can interfere with system performance.
High IP3, +20 dBm	Minimizes third order intermodulation distortion and enables high-dynamic range.
1.85 mm female Connectorized Housing	Ideal for assembled systems and lab use. High-frequency connector mates with 1.85 mm.

REV. OR
ECO-014331
ZMDB-653H-E+
MCL NY
260206

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ELECTRICAL SPECIFICATIONS AT +25 °C

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Frequency Range, RF		20		65	GHz
Frequency Range, LO		20		65	GHz
Frequency Range, IF		DC		20	GHz
Conversion Loss[1]	20-65		11	16	dB
LO to RF Isolation	20-65		45		dB
LO to IF Isolation	20-65		30		dB
IP3	20-65		+20		dBm
RF Input at 1 dB Compression	20-65		+10		dBm

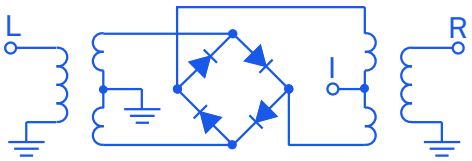
1. Conversion loss at 30 MHz IF. Increases with IF frequency.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-55 °C to +100 °C
RF Power	125 mW

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

ELECTRICAL SCHEMATIC



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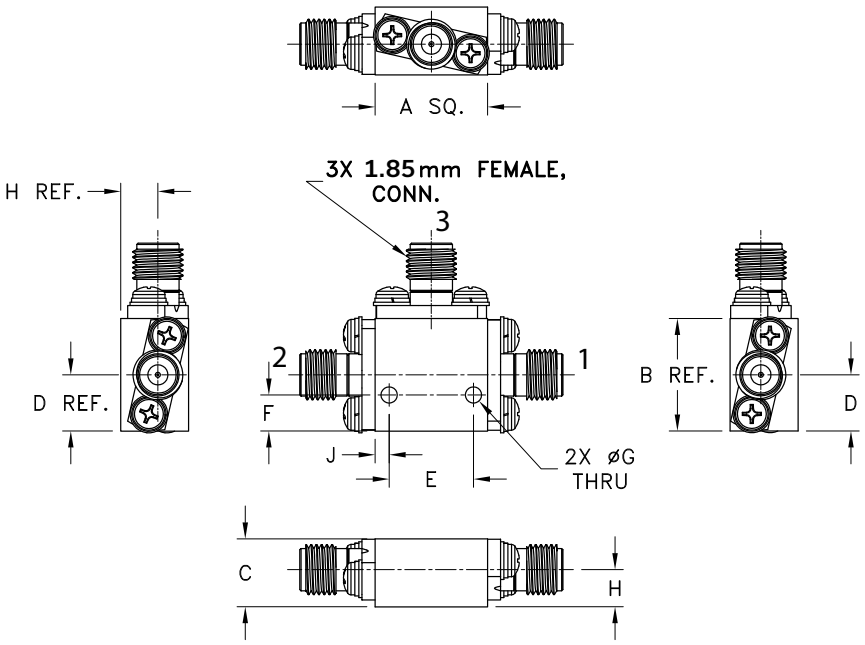
COAXIAL CONNECTIONS

LO	2
RF	1
IF	3

OUTLINE DRAWING



OUTLINE DIMENSIONS (Inches / mm)

A	B	C	D	E	F	G	H	J	weight
.56	.56	.34	.28	.420	.18	.081	.19	.07	grams
14.22	14.22	8.64	7.11	10.67	4.57	2.06	4.83	1.78	23

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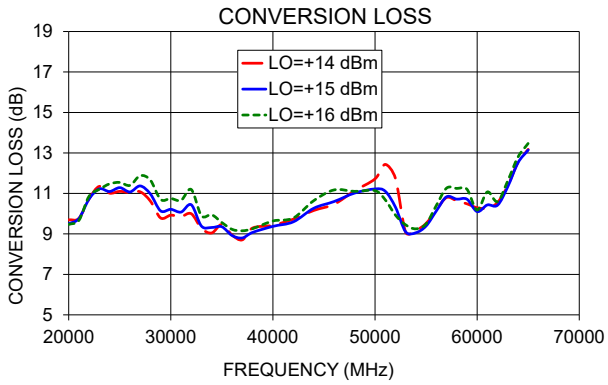
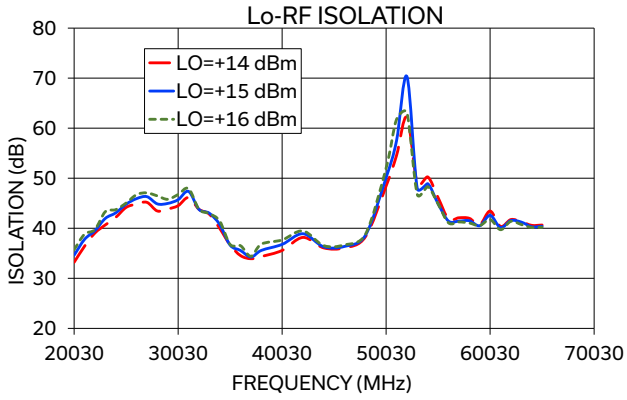
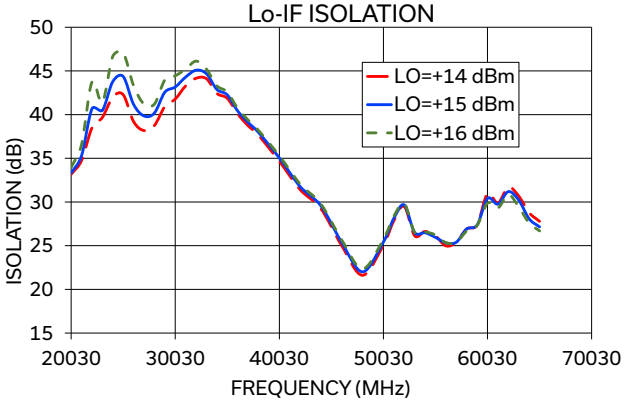
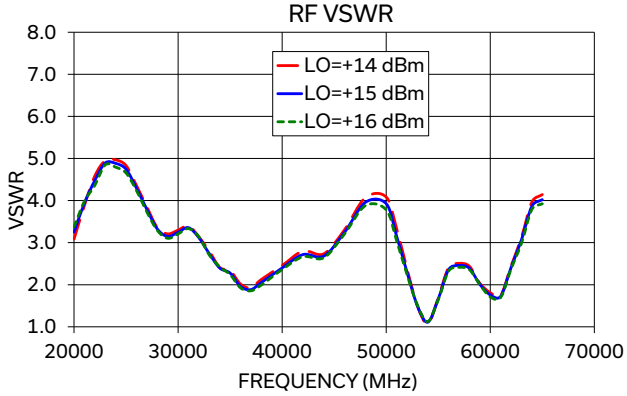
TYPICAL PERFORMANCE DATA/CURVES

Frequency (MHz)		Conversion Loss (dB)	Isolation Lo-RF (dB)	Isolation Lo-IF (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
RF	LO	LO +15 dBm	LO +15 dBm	LO +15 dBm	LO +15 dBm	LO +15 dBm
20000.1	20030.1	9.50	34.63	33.32	3.250	3.91
22000.1	22030.1	10.73	39.52	40.67	4.478	3.01
24000.1	24030.1	11.09	43.09	43.79	4.883	2.06
26000.1	26030.1	11.07	45.93	41.17	4.297	1.55
28000.1	28030.1	10.97	44.88	40.18	3.326	1.41
30000.1	30030.1	10.21	45.72	43.16	3.247	1.42
34000.1	34030.1	9.32	40.74	42.88	2.397	2.15
38000.1	38030.1	9.07	35.58	37.96	2.053	2.98
40000.1	40030.1	9.37	36.79	35.05	2.399	2.94
44000.1	44030.1	10.27	36.30	29.55	2.679	2.26
48000.1	48030.1	11.02	38.57	22.01	3.958	1.94
50000.1	50030.1	11.22	50.15	25.42	3.926	2.26
54000.1	54030.1	9.06	48.91	26.48	1.110	1.94
58000.1	58030.1	10.72	41.51	26.91	2.389	
60000.1	60030.1	10.10	42.59	30.41	1.758	
62000.1	62030.1	10.42	41.55	31.19	2.410	
65000.1	65030.1	13.14	40.41	27.15	4.021	









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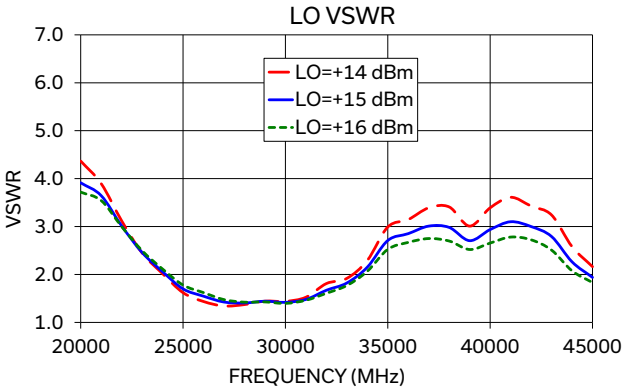

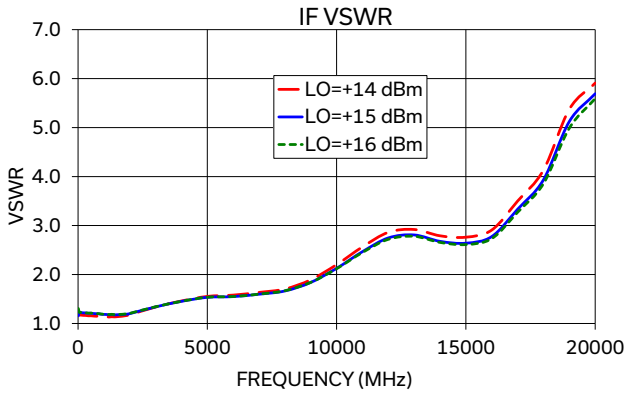

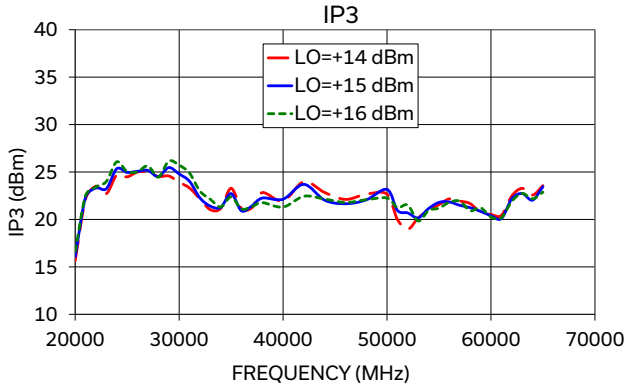

NOTES

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