2–18 GHz Downconverter with 2 GHz IF Bandwidth

LCMIXUD-2000-18000-2G documents downconversion from 2–18 GHz RF to 3.75±1 GHz IF. The LNA path has 60 dB typical gain and 4 dB typical noise figure; the through path states at least 25 dB gain and 10 dB typical noise figure. Output P1dB is ≥12 dBm and OIP3 is ≥25 dBm. The source introduction's upconversion claim is not supported by its actual ports or block.



LO1 covers 24–40 GHz in 10 MHz steps and LO2 uses 18.25 or 25.75 GHz, with the source's design-guaranteed qualification. Phase-noise values are explicitly design targets. The J30J-9ZKP pin table defines +12 V input, ground and SPI contacts but no SPI command protocol.

The preliminary drawing gives a 145 × 130 × 40 mm body and a 145 × 142 × 40 mm envelope including mounting lugs, both excluding connector protrusions; operating temperature and supply current are not specified.

Electrical specifications

Parameter	Value	Unit
RF input frequency	2–18	GHz
IF output frequency	3.75±1	GHz
IF output bandwidth	2	GHz
LNA-path gain	60 (Typical)	dB
Through-path gain	≥25	dB
LNA-path noise figure	4 (Typical)	dB
Through-path noise figure	10 (Typical)	dB
Output P1dB	≥12	dBm
Output OIP3	≥25	dBm
RF attenuation range [1]	31.5	dB
RF attenuation step	0.5	dB
RF attenuator bit count	6	-
IF attenuation span [1]	31.5	dB
IF attenuation step	0.5	dB
IF attenuator bit count	6	-
Calibration attenuation range [1]	15.5	dB
Calibration attenuation step	0.5	dB
Calibration attenuator bit count	5	-
RF-input-equivalent spurious level [2]	≤−87	dBm
Single-tone SFDR [3]	≥55	dB
Harmonic rejection [4]	≥45	dB

Electrical specifications

Parameter	Value	Unit
Image rejection	≥70	dB
Gain flatness [5]	≤5	dB
IF filter rejection [6]	≥50	dBc

[1] Attenuation span as stated; an unstated zero state is not inferred.
[2] Equivalent RF input, bandwidth: 2000 MHz.
[3] RF input power: −25 dBm. Low-gain path test.
[4] RF input power: −29 dBm. Low-gain path test.
[5] Specified operating range.
[6] IF frequency: 3.75 GHz; Offset: ±1500 MHz.

Interfaces and contacts

Interface	Specification	Unit
RF input ports	RF: SMA	-
IF output ports	IF: SMA	-
BITE calibration input	BITE: SMA	-
Reference output	REF: 100	MHz
Power and control connector	J30J-9ZKP	-
Supply contacts	1, 2 → +12 V	-
Ground contacts	3, 4 → GND	-
SPI clock contact	5 → SCK	-
SPI select contact	6 → CSB	-
SPI data contact	7 → MOSI	-
SPI data output contact	8 → MISO	-
SPI NC contact	9 → NC (Reserved contact.)	-

Oscillator specifications

Parameter	Value	Unit
LO1 frequency [1]	24–40	GHz
LO1 frequency step	10	MHz
LO1 switching response [1]	≤100	µs
LO2 frequency [1]	18.25 / 25.75	GHz

[1] Design specification.

Phase-noise design targets

Design target.

Parameter	Value	Unit
LO1 phase noise at 100 Hz	≤-65	dBc/Hz
LO1 phase noise at 1 kHz	≤-80	dBc/Hz
LO1 phase noise at 10 kHz	≤-88	dBc/Hz
LO1 phase noise at 100 kHz	≤-90	dBc/Hz
LO1 phase noise at 1 MHz	≤-100	dBc/Hz
LO2 phase noise at 100 Hz	≤-75	dBc/Hz
LO2 phase noise at 1 kHz	≤-85	dBc/Hz
LO2 phase noise at 10 kHz	≤-90	dBc/Hz
LO2 phase noise at 100 kHz	≤-93	dBc/Hz
LO2 phase noise at 1 MHz	≤-103	dBc/Hz

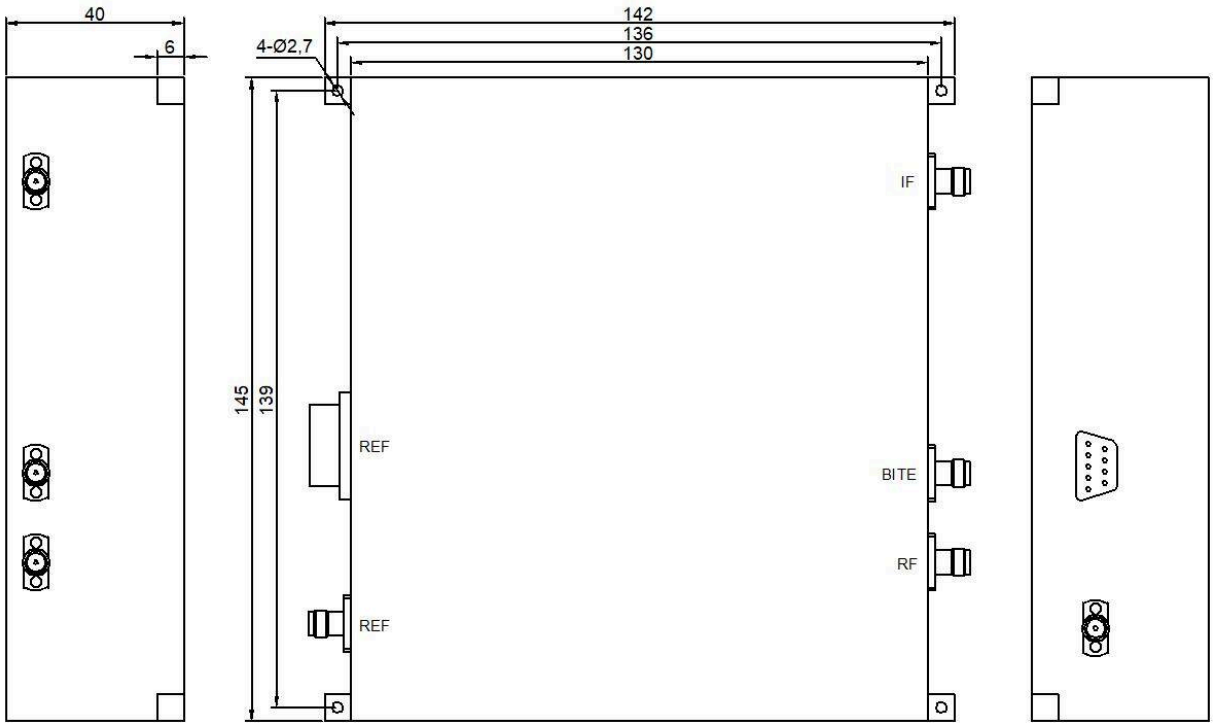
Mechanical specifications

Parameter	Value	Unit
Body dimensions [1]	145 × 130 × 40	mm
Mounting-hole center spacing [2]	136 × 139	mm
Mounting holes [2]	4 × Φ2.7	mm
Envelope including mounting lugs [3]	145 × 142 × 40	mm

[1] Reference dimensions for the body only, excluding mounting lugs and connector protrusions.

[2] Mounting reference dimensions. See the outline drawing.

[3] Reference envelope includes the mounting lugs and excludes connector protrusions.



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Document notice

Specifications are subject to revision. Before design release, confirm the current document revision and product-specific requirements with LCRF. The approved quotation and order documentation define the supplied configuration.