SURFACE-MOUNT FREQUENCY SYNTHESIZER

200 MHz to 15 GHz

Surface-mount package
SPI control
10 MHz frequency step
Switching time: ≤500 µs
20 × 16 × 4 mm package

The OTFS10-15 is a surface-mount frequency synthesizer with an output frequency range of 200 MHz to 15 GHz. Control interface: SPI. Reference frequency: 100 MHz. The frequency step is 10 MHz. Frequency switching time: ≤500 µs. Output power: 3 ±5 dBm (200 MHz-14 GHz); -5 ±5 dBm (14-15 GHz). Dimensions: 20 × 16 × 4 mm. Operating temperature: -40 to +70 °C.

TECHNICAL SPECIFICATIONS

OTFS10-15

Property	Value
Output frequency range	200 MHz-15 GHz
Frequency step	10 MHz
Frequency switching time	≤500 µs
Output power	3 ±5 dBm (200 MHz-14 GHz); -5 ±5 dBm (14-15 GHz)
Frequency stability	Tracks the external reference
Spurious level	≤-65 dBc (200 MHz-14 GHz); ≤-60 dBc (14-15 GHz)
Harmonic level	≤-3 dBc
Reference frequency	100 MHz
Reference input power	5 ±3 dBm
Reference phase noise	-125 dBc/Hz at 100 Hz offset; -153 dBc/Hz at 1 kHz offset; -160 dBc/Hz at 10 kHz offset; -160 dBc/Hz at 100 kHz offset; -165 dBc/Hz at 1 MHz offset
Supply voltage	Analog and digital: +3.3 V
Supply current	Analog: 340 mA; digital: 10 mA
Control interface	SPI
Operating temperature	-40 to +70 °C
Storage temperature	-55 to +85 °C
Dimensions	20 × 16 × 4 mm
Specification conditions	Phase noise applies at 10 MHz steps and degrades at smaller steps. Below 10 MHz steps, spurious level is -50 dBc. External harmonic filtering is recommended.
Switching-time definition	From command reception until frequency error is less than 1 MHz.

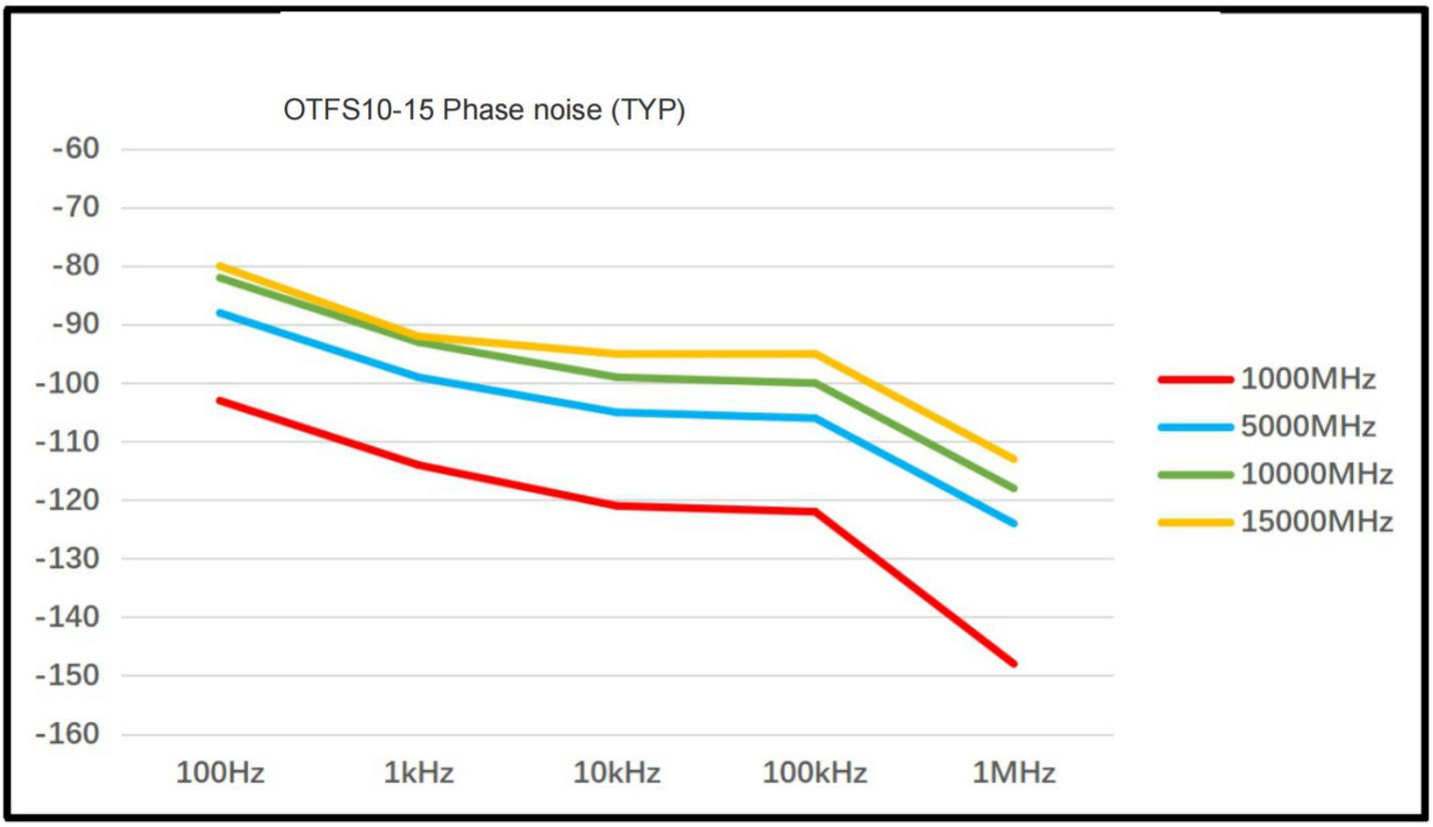
TECHNICAL INFORMATION

OTFS10-15 | Phase Noise (dBc/Hz)

Output Frequency	100 Hz	1 kHz	10 kHz	100 kHz	1 MHz
0.5 GHz	≤-108	≤-119	≤-126	≤-126	≤-144
1 GHz	≤-100	≤-113	≤-120	≤-120	≤-138
5 GHz	≤-88	≤-99	≤-105	≤-105	≤-124
10 GHz	≤-82	≤-93	≤-99	≤-100	≤-118
15 GHz	≤-79	≤-91	≤-96	≤-96	≤-114

Column headings specify frequency offset from the carrier. Output frequency is listed in the first column. Values and limit signs follow the source tables.

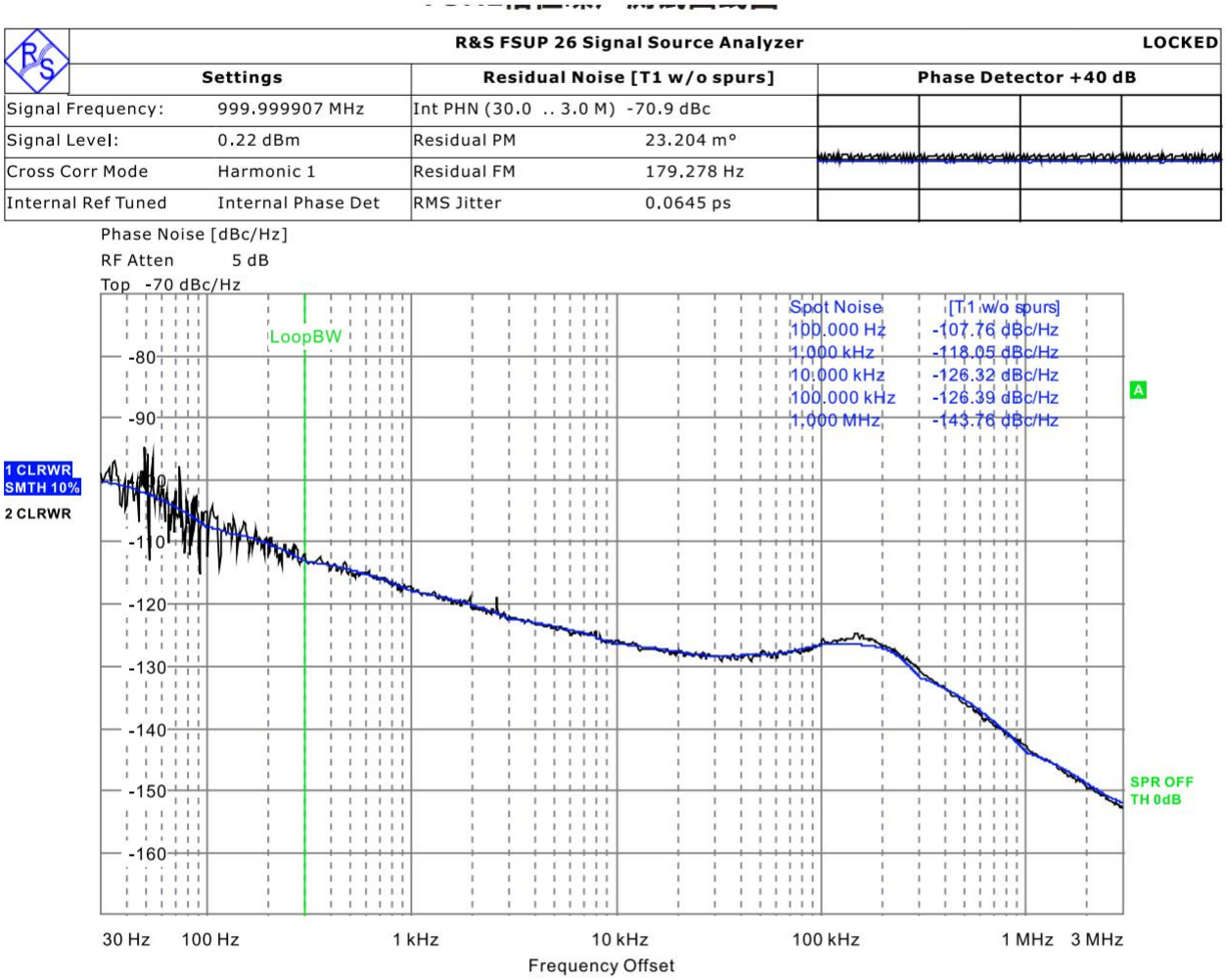
Phase Noise Curves



Source measurement example. Curves represent the illustrated test conditions.

TECHNICAL INFORMATION

1 GHz Phase Noise Measurement



Source measurement example. Curves represent the illustrated test conditions.

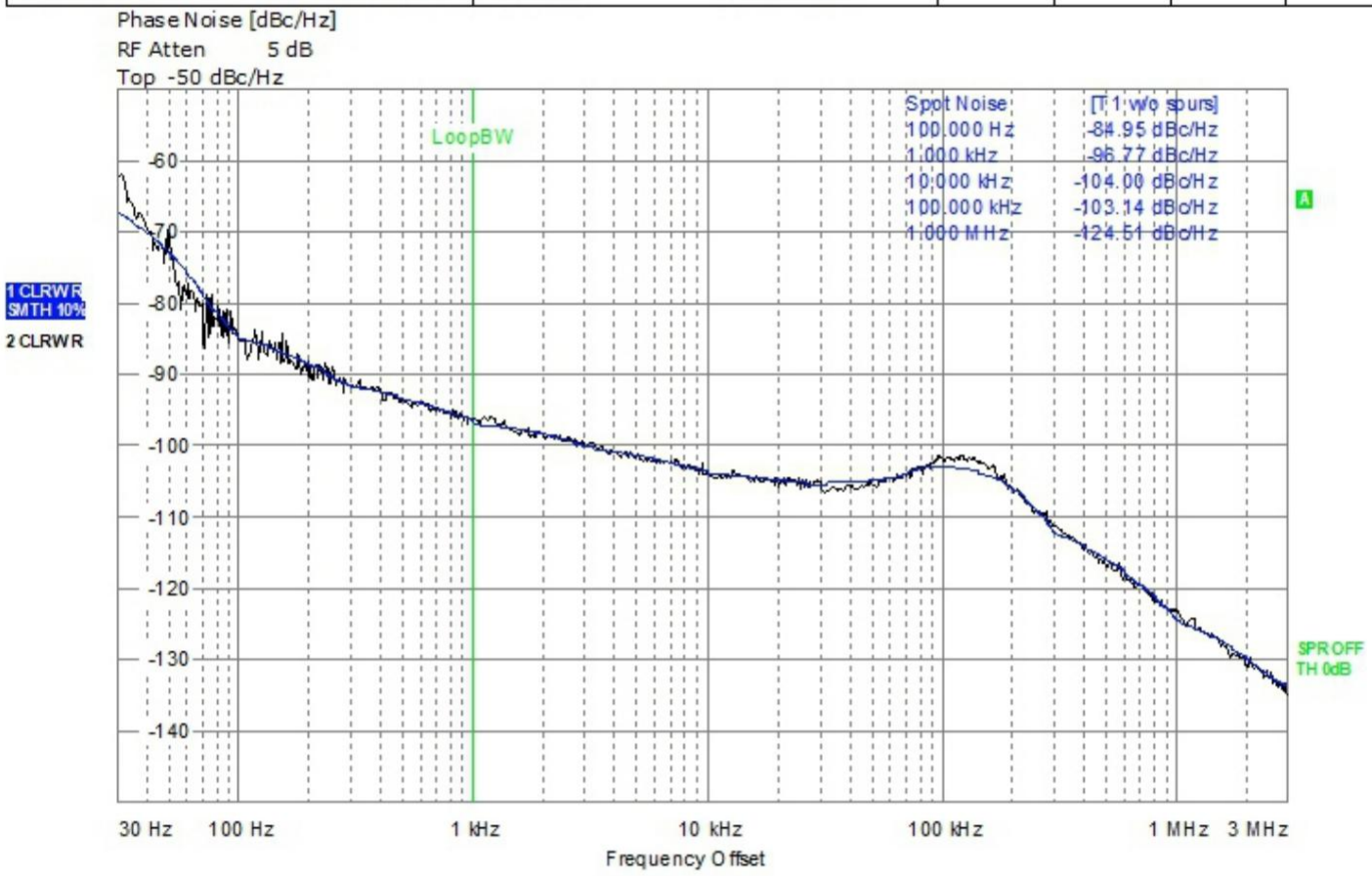
Ordering Information

Ordering Code / Field	Description
OTFS10-15P-XXXX	Fixed-frequency output; XXXX specifies output frequency in MHz.
OTFS10-15-XXXX	200-15000 MHz output range; XXXX specifies the default initial frequency.

MEASUREMENT CURVES

10 GHz Phase Noise Measurement

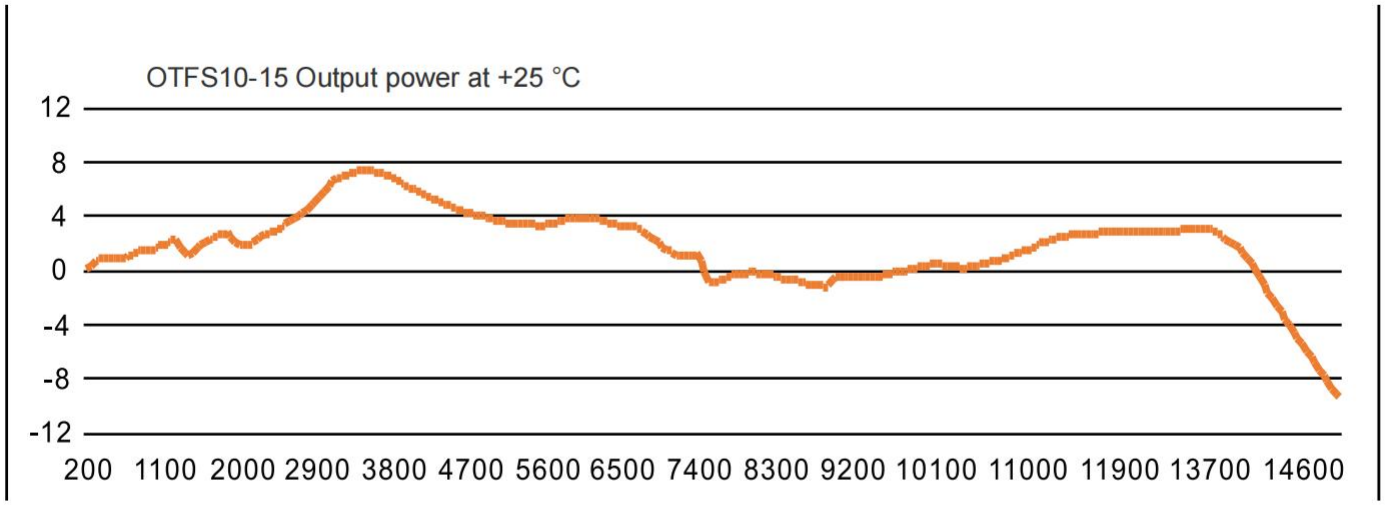
R&S FSUP 26 Signal Source Analyzer				LOCKED
Settings		**Residual Noise [T1 w/o spurs]**		**Phase Detector +0 dB**
Signal Frequency:	10.000000 GHz	Int PHN (30.0 .. 3.0 M)	-48.4 dBc	
Signal Level:	0.05 dBm	Residual PM	0.307 ?	
Cross Corr Mode	Harmonic 1	Residual FM	1.636 kHz	
Internal Ref Tuned	Internal Phase Det	RMS Jitter	0.0854 ps	



Source measurement example. Curves represent the illustrated test conditions.

TECHNICAL INFORMATION

Output Power at +25 °C



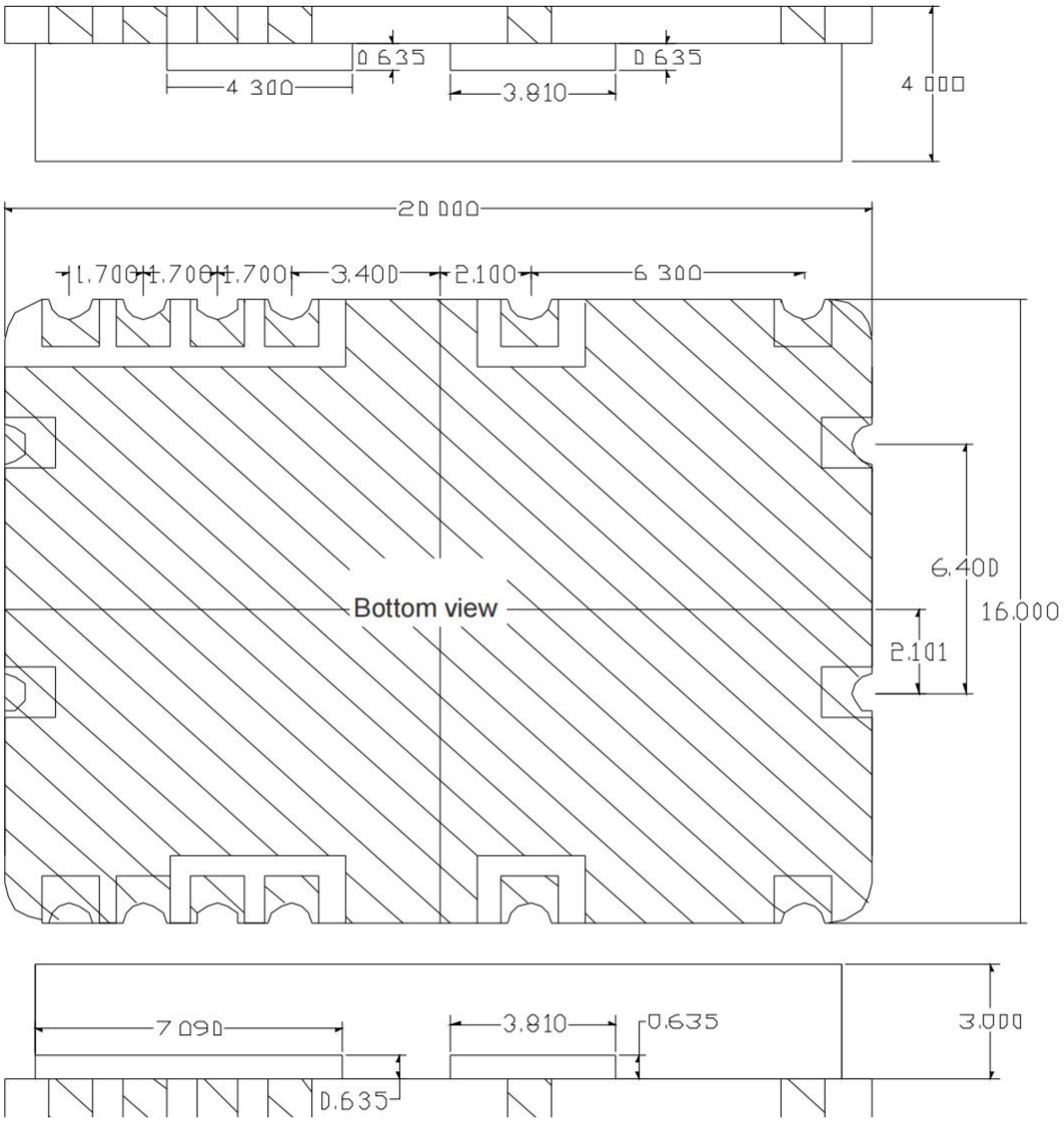
Source measurement example. Curves represent the illustrated test conditions.

Pin Assignments

Pin	Definition
6, 7, 8, 9, 13, 14, 15, 16	GND
5	RFOUT: RF output
11	REFIN: reference input
12	VCC1: digital supply, 3.3 V / 10 mA
10	VCC2: analog supply, 3.3 V / 340 mA
4	LE: SPI communication enable
3	DATA: SPI data input
2	SCK: SPI clock
1	LD: lock indication output, TTL high when locked

OUTLINE DIMENSIONS

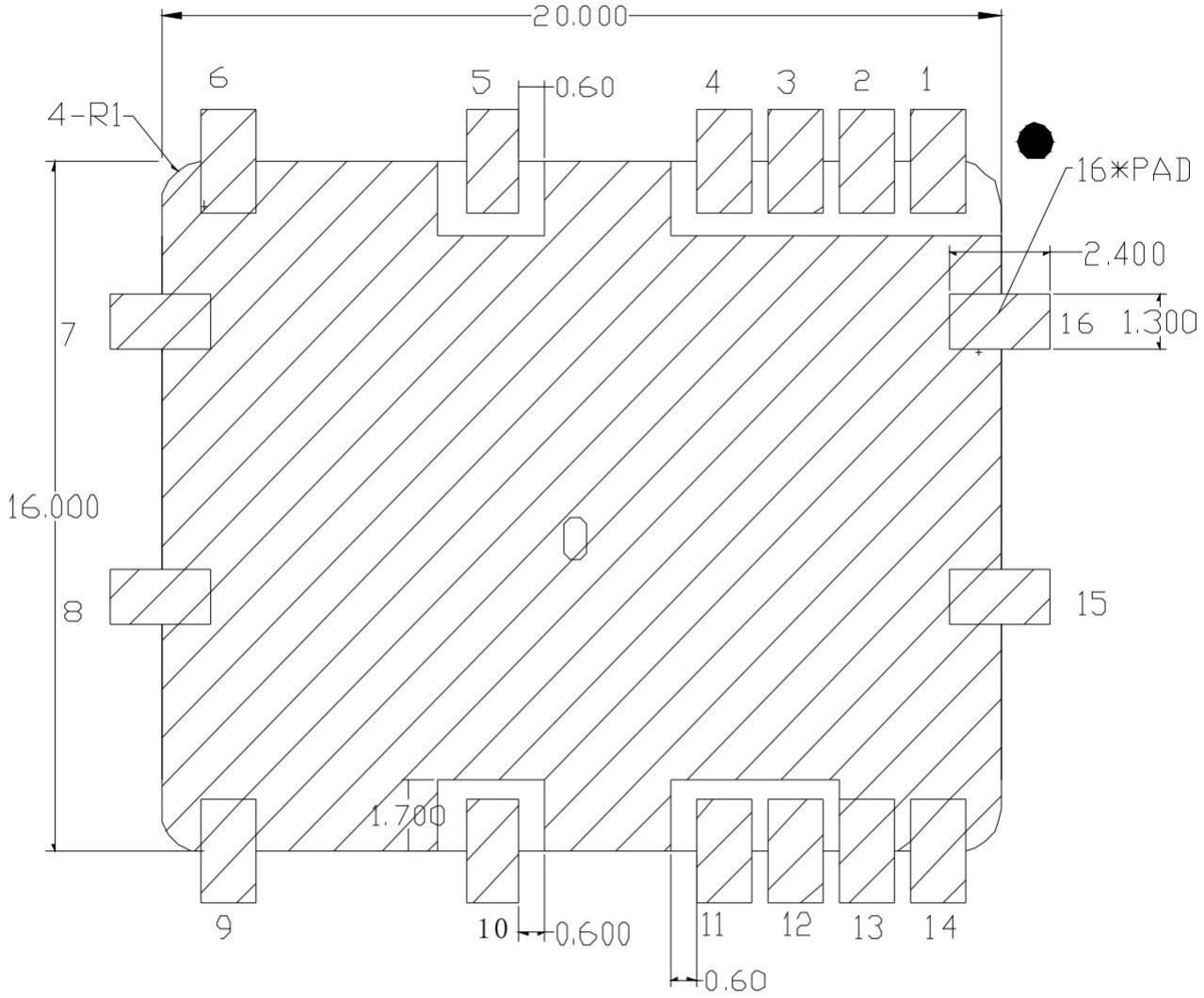
Package Outline and Mounting View



Dimensions in mm.

OUTLINE DIMENSIONS

Recommended PCB Land Pattern



Dimensions in mm.