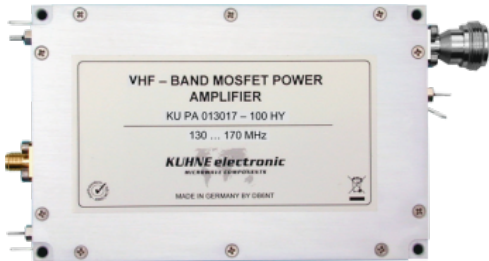


KU PA 013017-100 HY, RF Power Amplifier

130 ... 170 MHz • 100 W



Features

- Built-in low pass filter for good harmonic rejection
- Reverse polarity protection
- Monitor output for forward power detection

Applications

- Analog transmission systems

Important notes

Please notice the following:

- All technical data specified at a supply voltage of +14 V DC at room temperature.
- The power amplifier doesn't contain any coaxial relays.
- The recommended combination of heat sink and fan(s) is only specified for an ambient temperature of 25 °C.
- Further information about dimensioning of heat sinks is available on our FAQ site.

Technical specifications:

Frequency range	130..170 MHz
Input power for P3dB	typ. +15 dBm
Maximum input power	+20 dBm
Output power P1dB	typ. 47 dBm, min. 44.8 dBm (CW) typ. 50 W, min. 30 W (CW)
Output power P3dB	typ. 50 dBm (CW) typ. 100 W (CW)
Gain (small signal)	typ. 40 dB, min. 35 dB
Gain flatness (small signal)	typ. +/- 3 dB
Harmonic rejection	typ. 60 dB @ 50 dBm
IM3 (1)	typ. 27 dBc @ 46 dBm PEP
Efficiency	typ. 44 % @ 50 dBm (CW)
Input return loss (S11)	min. 20 dB
ON voltage	+12 V DC
Supply voltage	+12 ... 14 V DC
Quiescent current @ Vcc (max)	typ. 8 A
Current consumption @ P3dB	max. 20 A
Forward detection	yes (diode detector)
VSWR of load	max. 1.8 : 1
Operating case temp. range	-20 ... +55 °C
Input connector / impedance	SMA-female / 50 ohms
Output connector / impedance	N-female / 50 Ohms
Case	milled aluminium
Dimensions (mm)	124 x 80 x 22

Weight	400 g (typ.)
(1)	Measured 2-tone, frequency spacing: 1 MHz

KU PA 014018-50 HY, RF Power Amplifier

140 ... 180 MHz • 50 W



Features

- Built-in low pass filter for good harmonic rejection
- Reverse polarity protection
- Monitor outputs for forward and reverse power detection

Applications

- Analog transmission systems

Important notes

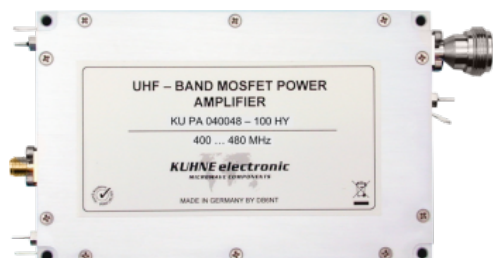
Please notice the following:

- All technical data specified at a supply voltage of 14
- The power amplifier doesn't contain any coaxial relays.
- The recommended combination of heat sink and fan(s) is only specified for an ambient temperature of 25 °C.
- Further information about dimensioning of heat sinks is available on our FAQ site. V DC at room temperature

Technical specifications:

Frequency range	140..180 MHz
Input power for P3dB	min. +12 dBm
Maximum input power	+17 dBm
Output power P3dB	typ. 47 dBm, min. 46.5 dBm typ. 50 W, min. 45 W
Gain (small signal)	typ. 36 dB, min. 34 dB
Gain flatness (small signal)	typ. +/- 3 dB
Harmonic rejection	typ. 50 dB @ 47 dBm
IM3 (1)	min. 20 dBc @ 43 dBm PEP
Efficiency	min. 30 % @ 47 dBm (CW)
Input return loss (S11)	typ. 10 dB
ON voltage	+12 V DC
Supply voltage	+12 ... 14 V DC
Quiescent current	typ. 4 A
Current consumption @ P3dB	max. 12 A
Forward detection	yes (diode detector)
Reflected power detection	yes (diode detector)
Operating case temp. range	-20 ... +55 °C
VSWR of load	max. 1.8 : 1
Input connector / impedance	SMA-female / 50 ohms
Output connector / impedance	N-female / 50 Ohms
Case	milled aluminium
Dimensions (mm)	130 x 60 x 20
Weight	270 g (typ.)
(1)	Measured 2-tone, frequency spacing: 1 MHz

KU PA 040048-100 HY, UHF power amplifier



Features

- Built-in low pass filter for good harmonic rejection
- Reverse polarity protection
- Monitor outputs for forward power detection

Applications

- Analog transmission systems

Important notes

Please notice the following:

- All technical data specified at a supply voltage of +14 V DC at room temperature.
- The power amplifier doesn't contain any coaxial relays.
- The recommended combination of heat sink and fan(s) is only specified for an ambient temperature of 25 °C.
- Further information about dimensioning of heat sinks is available on our FAQ site.

Technical specifications:

Frequency range	400..480 MHz
Input power for P3dB	min. +20 dBm
Maximum input power	+23 dBm
Output power P1dB	min. 44.7 dBm (CW) min. 30 W (CW)
Output power P3dB	typ. 50.4 dBm, min. 49.5 dBm (CW) typ. 110 W, min. 90 W (CW)
Gain (small signal)	min. 34 dB
Gain flatness (small signal)	typ. +/- 1 dB
Harmonic rejection	min. 60 dB @ 50 dBm
IM3 (1)	typ. 27 dBc @ 49 dBm PEP
Efficiency	typ. 40 % @ 50 dBm (CW)
Input return loss (S11)	typ. 20 dB, min. 15 dB
ON voltage	+12 V DC
Supply voltage	+12 ... 14 V DC
Quiescent current @ Vcc (max)	typ. 8 A
Current consumption	max. 28 A
Forward detection	yes (diode detector)
VSWR of load	max. 1.8 : 1
Operating case temp. range	-20 ... +55 °C
Input connector / impedance	SMA-female / 50 ohms
Output connector / impedance	N-female / 50 Ohms
Case	milled aluminium
Dimensions (mm)	124 x 80 x 22
Weight	400 g (typ.)
(1)	Measured 2-tone, frequency spacing: 1 MHz

KU PA 040048-60 HY, UHF MOSFET-Power Amplifier 400 ... 480 MHz • 60 W



Features

- Built-in low pass filter for good harmonic rejection
- Reverse polarity protection
- Monitor output for forward power detection

Applications

- Analog transmission systems

Important notes

Please notice the following:

- The technical specifications refer to room temperature.
- The power amplifier doesn't contain any coaxial relays.
- The recommended combination of heat sink and fan(s) is only specified for an ambient temperature of 25 °C.
- Further information about dimensioning of heat sinks is available on our FAQ site.

Technical specifications:

Frequency range	400..480 MHz
Input power for P3dB	typ. 17 dBm
Maximum input power	+20 dBm
Output power P1dB	min. 43 dBm (CW) min. 20 W (CW)
Output power P3dB	min. 47.7 dBm (CW) min. 60 W (CW)
Gain (small signal)	min. 34 dB
Gain flatness (small signal)	typ. +/- 1 dB
Harmonic rejection	min. 55 dB @ 47 dBm
IM3 (1)	typ. 27 dBc @ 43 dBm PEP
Efficiency	min. 30 % @ 47 dBm (CW)
Input return loss (S11)	typ. 10 dB
ON voltage	+12 V DC
Supply voltage	+12 ... 14 V DC
Quiescent current	typ. 4 A
Current consumption @ P1dB	typ. 8 A
Forward detection	yes (diode detector)
Operating case temp. range	-20 ... +55 °C
VSWR of load	max. 1.8 : 1
Input connector / impedance	SMA-female / 50 ohms
Output connector / impedance	N-female / 50 Ohms
Case	milled aluminium
Dimensions (mm)	130 x 60 x 20
Weight	270 g (typ.)
(1)	Measured 2-tone, frequency spacing: 1 MHz

KU PA 070080-20 A, RF Power Amplifier

770 ... 880 MHz • 20 W

The power amplifier is developed both for digital and analog transmission systems. Its frequency range is chosen to cover the new UHF frequencies for the cellular phone network completely. By the use of LD-MOSFET-technology high efficiency and low current consumption are reached at the same time.



Features

- LD-MOSFET-technology
- Reverse polarity protection
- Monitor output for forward power detection (DC voltage)
- Milled aluminium case

Applications

- Mobile communication
- COFDM – systems with modulation QPSK, QAM
- Analog transmission systems

Important notes

Please notice the following:

- The technical specifications refer to room temperature.
- The power amplifier doesn't contain any coaxial relays.
- The recommended combination of heat sink and fan(s) is only specified for an ambient temperature of 25 °C.
- Further information about dimensioning of heat sinks is available on our FAQ site.

Technical specifications:

Frequency range	770..880 MHz
Input power for P1dB	typ. 14 dBm
Maximum input power	+20 dBm
Output power P1dB	min. 43 dBm (CW) min. 20 W (CW)
Saturation power	min. 30 W
Output power COFDM (1)	min. 37 dBm min. 5 W
Gain (small signal)	min. 30 dB
Gain flatness (small signal)	max. 6 dB
Harmonic rejection	min. 30 dB @ 43 dBm
IM3 (2)	typ. 42 dBc, min. 39 dBc @ 40 dBm PEP
Efficiency	min. 40 % @ 44.7 dBm (CW)
Input return loss (S11)	min. 10 dB
ON voltage	+9 ... 14 V DC
Supply voltage	+28 V DC
Quiescent current	typ. 400 mA
Current consumption	max. 3.5 A
Forward detection	yes (diode detector)
VSWR of load	max. 1.8 : 1

Operating case temp. range	-20 ... +55 °C
Input connector / impedance	SMA-female / 50 ohms
Output connector / impedance	SMA-female / 50 ohms
Case	milled aluminium
Dimensions (mm)	130 x 60 x 20
Weight	235 g (typ.)
(1)	Measured with QAM 64, single carrier, EVM: 2%
(2)	Measured 2-tone, frequency spacing: 1 MHz

KU PA 080090-08 A, GaAs-FET Power Amplifier 800 ... 900 MHz



Features

- High linearity
- Reverse polarity protection
- Milled aluminium case
- Small mechanical dimensions

Applications

- Low power applications
- Driver amplifier
- Analog and digital transmission systems

Important notes

Please notice the following:

- The technical specifications refer to room temperature.
- The power amplifier doesn't contain any coaxial relays.
- The recommended combination of heat sink and fan(s) is only specified for an ambient temperature of 25 °C.
- Further information about dimensioning of heat sinks is available on our FAQ site.

Technical specifications:

Frequency range	800..900 MHz
Input power for P1dB	min. 14 dBm
Maximum input power	+17 dBm
Output power P1dB	typ. 29 dBm (CW) typ. 800 mW (CW)
Output power P3dB	typ. 30 dBm (CW) typ. 1 W (CW)
Output power COFDM (1)	min. 23 dBm min. 200 mW
Gain (small signal)	min. 15 dB
Gain flatness (small signal)	+/-0.5 dB (typ.)
Harmonic rejection	min. 28 dB @ 28.7 dBm
IM3 (2)	min. 46 dBc @ 24.7 dBm PEP
Efficiency	min. 20 % @ 29 dBm (CW)
Supply voltage	+12 ... 14 V DC
Quiescent current	typ. 0.35 A
Current consumption	typ. 0.35 A
Operating case temp. range	-20 ... +55 °C
VSWR of load	max. 1.8 : 1
Input connector / impedance	N-female / 50 ohms
Output connector / impedance	N-female / 50 Ohms
Case	milled aluminium
Dimensions (mm)	50 x 30 x 22
Weight	90 g (typ.)

(1)	Measured with QAM 64, single carrier, EVM: 2%
(2)	Measured 2-tone, frequency spacing: 1 MHz

KU UP 107 B, Up Converter

10000 ... 10700 MHz

This device converts the IF frequency range 960 ... 1660 MHz up to the frequency range 10000 ... 10700 MHz. Typical applications are MMDS transmitter as well as DVB-T or DVB-S systems. The up converter includes band pass filters for high spurious rejection and a high quality VCO with low phase noise and therefore it is suitable for all modulation types. Together with a power amplifier an output power of 50 watts CW can be achieved.



Features

- Low phase noise oscillator
- High frequency stability of the oscillator
- Additional input for 10 MHz reference frequency
- Automatic activation of PLL if external 10 MHz signal is supplied
- High linearity
- Reverse polarity protection

Applications

- Digital broadcast systems (DVB-T, DVB-S)
- Analog and digital transmission systems

Important notes

- Please notice the following:
- Additional cooling required

Technical specifications:

Frequency range (IF)	960 ... 1660 MHz
Frequency range (RF)	10000 ... 10700 MHz
LO frequency	9040 MHz
LO accuracy @ 18 °C	+/- 2 ppm
LO frequency stability	+/- 3 ppm
Phase noise @ 1kHz	typ. -79 dBc/Hz
Phase noise @ 10 kHz	typ. -83 dBc/Hz
Phase noise @ 100 kHz	typ. -109 dBc/Hz
Image rejection	typ. 80 dB
Gain	typ. 25 dB
Maximum input power	max. 5 mW (+7 dBm)
Output power (P1dB)	typ. 250 mW (+24 dBm)
Output power (COFDM)	30 ... 60 mW
Maximum case temperature	+55 °C
Supply voltage	+12 ... +14 V DC
Current consumption	typ. 850 mA
Reference frequency input	10 MHz / 2 ... 10 mW
Input connector / impedance	SMA-female, 50 ohms
Output connector / impedance	SMA-female, 50 ohms
Case	milled aluminium
Dimensions (mm)	126 x 64 x 22
Weight	310 g

KU UP 2123 A, Up Converter

2100 ... 2300 MHz

The converter KU UP 2123 A is designed for radio link systems in the range from 2100 MHz to 2300 MHz. It features a high frequency stability and high linearity. High spurious rejection is achieved by internal band pass filters. There is no need for additional external filters! Typical applications are radio link systems or digital video transmissions using DVB-T and DVB-S. Together with the power amplifier KU PA 210230-20 B an output power of more than 20 watts CW can be achieved.



Features

- Low phase noise oscillator
- High frequency stability of the oscillator
- High linearity
- Reverse polarity protection

Applications

- Digital broadcast systems (DVB-T, DVB-S)
- Analog and digital transmission systems
- Multichannel Multipoint Distribution Service (MMDS)

Technical specifications:

Frequency range (IF)	540 ... 740 MHz
Frequency range (RF)	2100 ... 2300 MHz
LO frequency	1560 MHz
LO accuracy @ 18 °C	+/- 2 ppm
LO frequency stability	+/- 3 ppm
Phase noise @ 1 kHz	typ. -98 dBc/Hz
Phase noise @ 10 kHz	typ. -107 dBc/Hz
Phase noise @ 100 kHz	typ. -116 dBc/Hz
Gain	typ. 17 dB, min 15 dB
Maximum input power	max. 5 mW (+7 dBm)
Output power (P1dB)	typ. 50 mW (+17 dBm)
Supply voltage	+12 ... +14 V DC
Current consumption	typ. 240 mA
Input connector / impedance	SMA-female, 50 ohms
Output connector / impedance	SMA-female, 50 ohms
Case	milled aluminium
Dimensions (mm)	126 x 64 x 22
Weight	310 g

KU UP 2325 A, Up Converter

2300 ... 2500 MHz

The converter KU UP 2325 A is designed for radio link systems in the range from 2300 MHz to 2500 MHz. It features a high frequency stability and high linearity. High spurious rejection is achieved by internal band pass filters. There is no need for additional external filters! Typical applications are radio link systems or digital video transmissions using DVB-T and DVB-S. Together with the power amplifier KU PA 230250-20 B an output power of more than 20 watts CW can be achieved.



Features

- Low phase noise oscillator
- High frequency stability of the oscillator
- High linearity
- Reverse polarity protection

Applications

- Digital broadcast systems (DVB-T, DVB-S)
- Analog and digital transmission systems
- Multichannel Multipoint Distribution Service (MMDS)

Technical specifications:

Frequency range (IF)	597 ... 797 MHz
Frequency range (RF)	2300 ... 2500 MHz
LO frequency	1703 MHz
LO accuracy @ 18 °C	+/- 2 ppm
LO frequency stability	+/- 3 ppm
Phase noise @ 1 kHz	typ. -95 dBc/Hz
Phase noise @ 10 kHz	typ. -98 dBc/Hz
Phase noise @ 100 kHz	typ. -110 dBc/Hz
Gain	typ. 17 dB, min 15 dB
Maximum input power	max. 5 mW (+7 dBm)
Output power (P1dB)	typ. 50 mW (+17 dBm)
Supply voltage	+12 ... +14 V DC
Current consumption	typ. 240 mA
Input connector / impedance	SMA-female, 50 ohms
Output connector / impedance	SMA-female, 50 ohms
Case	milled aluminium
Dimensions (mm)	126 x 64 x 22
Weight	310 g

KU UP 5457 A - Up Converter

5400 ... 5700 MHz

The converter KU UP 5457 A is designed for radio link systems in the range from 5400 MHz to 5700 MHz. It features a high frequency stability and high linearity. High spurious rejection is achieved by internal band pass filters. There is no need for additional external filters! Typical applications are radio link systems or digital video transmissions using DVB-T and DVB-S.



Features

- Low phase noise oscillator
- High frequency stability of the oscillator
- High linearity
- Reverse polarity protection

Applications

- Digital broadcast systems (DVB-T, DVB-S)
- Analog and digital transmission systems
- Multichannel Multipoint Distribution Service (MMDS)

Technical specifications:

Frequency range (IF)	400 ... 700 MHz
Frequency range (RF)	5400 ... 5700 MHz
LO frequency	5000 MHz
LO accuracy @ 18 °C	+/- 2 ppm
LO frequency stability	+/- 3 ppm
Phase noise @ 1kHz	typ. -85 dBc/Hz
Phase noise @ 10 kHz	typ. -92 dBc/Hz
Phase noise @ 100 kHz	typ. -100 dBc/Hz
Gain	typ. 17 dB, min 15 dB
Maximum input power	max. 5 mW (+7 dBm)
Output power (P1dB)	typ. 100 mW (+20 dBm)
Maximum case temperature	+55 °C
Supply voltage	+12 ... +14 V DC
Current consumption	typ. 430 mA
Input connector / impedance	SMA-female, 50 ohms
Output connector / impedance	SMA-female, 50 ohms
Case	milled aluminium
Dimensions (mm)	126 x 64 x 22
Weight	310 g

KU UP 5659 A, Up Converter

5600 ... 5900 MHz



Features

- Low phase noise oscillator
- High frequency stability of the oscillator
- High linearity
- Reverse polarity protection

Applications

- Digital broadcast systems (DVB-T, DVB-S)
- Analog and digital transmission systems

Technical specifications:

Frequency range (IF)	400 ... 700 MHz
Frequency range (RF)	5600 ... 5900 MHz
LO frequency	5200 MHz
LO accuracy @ 18 °C	+/- 2 ppm
LO frequency stability	+/- 3 ppm
Phase noise @ 1kHz	typ. -85 dBc/Hz
Phase noise @ 10 kHz	typ. -92 dBc/Hz
Phase noise @ 100 kHz	typ. -100 dBc/Hz
Gain	typ. 17 dB, min 15 dB
Maximum input power	max. 5 mW (+7 dBm)
Output power (P1dB)	typ. 100 mW (+20 dBm)
Maximum case temperature	+55 °C
Supply voltage	+12 ... +14 V DC
Current consumption	typ. 430 mA
Input connector / impedance	SMA-female, 50 ohms
Output connector / impedance	SMA-female, 50 ohms
Case	milled aluminium
Dimensions (mm)	126 x 64 x 22
Weight	310 g

KU UP 112 A, Up Converter

10700 ... 11400 MHz



Features

- Low phase noise oscillator
- High frequency stability of the oscillator
- High linearity
- Reverse polarity protection

Applications

- Digital broadcast systems (DVB-T, DVB-S)
- Analog and digital transmission systems

Important notes

Please notice the following:

- Additional cooling required

Technical specifications:

Frequency range (IF)	2420 ... 2470 MHz
Frequency range (RF)	10.7 ... 11.4 GHz (one 50 MHz segment selectable)
LO frequency	8280 ... 8930
LO accuracy @ 18 °C	+/- 2 ppm
LO frequency stability	+/- 3 ppm
Phase noise @ 1kHz	typ. -80 dBc/Hz
Phase noise @ 10 kHz	typ. -79 dBc/Hz
Phase noise @ 100 kHz	typ. -91 dBc/Hz
Image rejection	typ. 50 dB
Gain	typ. 30 dB
Input power	typ. 1 mW (0 dBm)
Maximum input power	max. 5 mW (+7 dBm)
Output power (Psat)	1 W (+30 dBm)
Output power (COFDM)	typ. 200 mW (+23 dBm)
Maximum case temperature	+55 °C
Supply voltage	+12 ... +14 V DC
Current consumption	typ. 1.5 A
Input connector / impedance	SMA-female, 50 ohms
Output connector / impedance	SMA-female, 50 ohms
Case	milled aluminium
Dimensions (mm)	126 x 64 x 22
Weight	340 g

KU UP 3436 A, Up Konverter

3400 ... 3600 MHz

The up converter KU UP 3436 A converts the UHF band from 400 to 600 MHz up to the frequency range from 3400 to 3600 MHz. Internal filters provide high spurious rejection and image rejection. Due to low phase noise and high frequency stability of the local oscillator at 3000 MHz, the up converter is suitable for analog and digital communication systems.

Typical applications are Multichannel Multipoint Distribution Systems (MMDS) using QPSK modulation and DVB-T or DVB-S systems. The output power of 20 mW can be increased to several watts by the use of an additional power amplifier.

See also section > Power Amplifiers > 3.4 GHz.



Technical specifications:

Frequency range (IF)	400 ... 600 MHz
Frequency range (RF)	3400 ... 3600 MHz
LO frequency	3000 MHz
LO accuracy @ 18 °C	+/- 20 kHz
LO frequency stability	+/- 2.5 ppm
Phase noise @ 100 kHz	typ. -112 dBc/Hz
Image rejection	typ. 50 dB
Gain	23 dB
Gain flatness	+/- 2 dB
Input power	typ. 0.1 mW (-10 dBm)
Maximum input power	max. 3 mW
Output power (P1dB)	min. 20 mW (+13 dBm)
Output power (Psat)	min. 17 dBm (50 mW)
Supply voltage	+9 ... +14 V DC
Current consumption	typ. 230 mA
Input connector / impedance	SMA-female, 50 ohms
Output connector / impedance	SMA-female, 50 ohms
Case	milled aluminium
Dimensions (mm)	82 x 64 x 22
Weight	200 g

KU PA 040050-7 HY, MOSFET Power Amplifier

400 ... 500 MHz • 7 W



Features

- Built-in low pass filter for good harmonic rejection
- High efficiency
- Reverse polarity protection
- Monitor output for forward power detection (DC voltage)

Applications

- Analog transmission systems
- Radio amateur applications SSB, CW

Important notes

Please notice the following:

- The technical specifications refer to room temperature.
- The power amplifier doesn't contain any coaxial relays.
- The recommended combination of heat sink and fan(s) is only specified for an ambient temperature of 25 °C.
- Further information about dimensioning of heat sinks is available on our FAQ site.

Technical specifications:

Frequency range	400..500 MHz
Input power for P3dB	typ. 18 dBm
Maximum input power	+21 dBm
Output power P3dB	min. 38.4 dBm (CW) min. 7 W (CW)
Gain (small signal)	min. 23 dB
Gain flatness (small signal)	max. 5 dB
Harmonic rejection	min. 60 dB @ 38.4 dBm
IM3 (1)	min. 30 dBc @ 34.7 dBm PEP
Efficiency	typ. 40 %, min. 30 % @ 38.4 dBm (CW)
Input return loss (S11)	min. 10 dB
ON voltage	+10 ... 13 V DC
Supply voltage	+12 ... 14 V DC
Quiescent current	typ. 1 A
Current consumption @ P3dB	typ. 1.4 A, max. 2 A
Forward detection	yes (diode detector)
Operating case temp. range	-20 ... +55 °C
VSWR of load	max. 1.8 : 1
Input connector / impedance	SMA-female / 50 ohms
Output connector / impedance	SMA-female / 50 ohms
Case	milled aluminium
Dimensions (mm)	130 x 60 x 20
Weight	240 g (typ.)
(1)	Measured 2-tone, frequency spacing: 1 MHz