#### **GaN Based Product**



# 2W Ext. Mini Ku-Band Block Up Converter

### **KEY FEATURES**

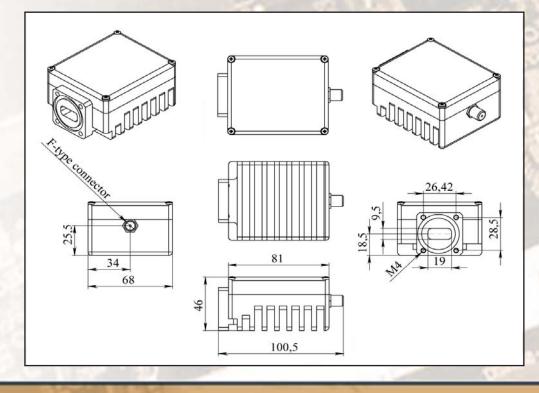
- Output frequency 13.75-14.50 GHz
- Based on GaN technology which enables high efficiency, low energy consumption and high reliability
- Smallest package size and weight
- Powered through IF cable
- Low power consumption (<14W)</li>
- High power efficiency (2W min @P1dB over temperature)
- RoHS compliant
- Three-year warranty

# ABA2KX / ABA2KXF



This smallest and lightest 2W L-To Ku-Band Block Up Converter is based on GaN technology and is designed to be mounted directly on the feed horn. High power efficiency resulting in low current (< 1 amps) consumption allows user to pass DC supply voltage via IF cable. The unit is ideal for network and point to point, data distribution, portable and emergency applications.

#### **Mechanical Drawing**



# 2W Ext. Mini Ku-Band Block Up Converter

RF frequency   13.75 to 14.5 GHz     Local oscillator   12.80 GHz     F frequency   950 to 1,700 MHz     Dutput power @ P1dB min over temperature   2W (+33 dBm min.)     F connector   N-type or F-type     Power supply   +15 VDC-+24 VDC via IF cable 14 W m     Dutput interface   WR-75 Grooved     Bain   60 dB nominal     MD3 (two tones)   -26 dBc max. 2 signal 5MHz apart at P     O. leakage   -45 dBm max     Spurious   -50 dBc wer 40MHz     YK Gain variation   ± 0.5 dB over 40MHz     t1.8 dB over full band   ± 1.8 dB over full band     t1.8 dB over full band   ± 1.8 dB over full band     t2.8 Gain stability over temperature range   via IF cable     Requirement for external reference   via IF cable     frequency   input power     -5 to +5 dBm @ input port     Phase noise -   -53 dBc/Hz max. @ 100 Hz     -63 dBc/Hz max. @ 100 Hz   -73 dBc/Hz max. @ 100 Hz     -73 dBc/Hz max. @ 1	
F frequency   950 to 1,700 MHz     Dutput power @ P1dB min over temperature   2W (+33 dBm min.)     F connector   N-type or F-type     Power supply   +15 VDC~+24 VDC via IF cable 14 W m     Dutput interface   WR-75 Grooved     Gain   60 dB nominal     MD3 (two tones)   -26 dBc max. 2 signal 5MHz apart at P    O. leakage   -45 dBm max     Spurious   -50 dBc max     pectral regrowth   -30dBc     QPSK at 1.5x and OQPSK at 1.0x symbol rate   -30dBc     fK Gain variation   ± 0.5 dB over 40MHz     t1.8 dB over full band   ± 1.8 dB over full band     t2.5 dBt typ., ± 1.8 dB max.   -30dBc     rK Gain stability over temperature range   via IF cable     frequency   input power     -5 to +5 dBm @ input port   -5 dBc/Hz max. @ 10 Hz     -53 dBc/Hz max. @ 100 Hz   -33 dBc/Hz max. @ 100 Hz     -73 dBc/Hz max. @ 100 KHz   -93 dBc/Hz max. @ 100 KHz     -93 dBc/Hz max. @ 100 KHz   -93 dBc/Hz max. @ 100 KHz     -93 dBc/Hz max. @ 100 KHz   -93 dBc/Hz max. @ 100 KHz     -93 dBc/Hz max.   2 1 max     Noise power density   Transmit Receive   -60	
Dutput power @ P1dB min over temperature   2W (+33 dBm min.)     F connector   N-type or F-type     Power supply   +15 VDC~+24 VDC via IF cable 14 W m     Dutput interface   WR-75 Grooved     Gain   60 dB nominal     MD3 (two tones)   -26 dBc max. 2 signal 5MHz apart at P    O. leakage   -45 dBm max     Spurious   -50 dBc max     opectral regrowth   QPSK at 1.0x symbol rate     offset with 2dB back-off from rated output power)   -30dBc     FX Gain stability over temperature range   ± 0.5 dB over 40MHz     X Gain stability over temperature range   ± 1.5 dB typ., ± 1.8 dB max.     Requirement for external reference   via IF cable     frequency   input power     input power   -55 dBc/Hz max. @ 10 Hz     -73 dBc/Hz max. @ 10 Hz     -83 dBc/Hz max. @ 10 Hz     -83 dBc/Hz max. @ 10 KHz     -93 dBc/Hz max. @ 10 KHz     -93 dBc/Hz max. @ 10 KHz     -93 dBc/Hz max. @ 10 KHz     -155 dBm/Hz (max.)     -155 dBm/Hz (max.)  <	
F connector   N-type or F-type     Power supply   +15 VDC~+24 VDC via IF cable 14 W m     Dutput interface   WR-75 Grooved     Gain   60 dB nominal     MD3 (two tones)   -26 dBc max. 2 signal 5MHz apart at P    O. leakage   -45 dBm max     Spurious   -50 dBc max     opectral regrowth   QPSK at 1.5x and OQPSK at 1.0x symbol rate     Offset with 2dB back-off from rated output power)   -30dBc     FX Gain variation   ± 0.5 dB over 40MHz     X Gain stability over temperature range   ± 1.6 dB typ., ± 1.8 dB max.     Requirement for external reference   via IF cable     frequency   10 MHz (sine-wave)     input power   -55 to +5 dBm @ input port     Phase noise –   -53 dBc/Hz max. @ 10 Hz     Exceeds and Intelsat's standard IESS308/309   -53 dBc/Hz max. @ 100 Hz     and NJRC's specification   -60 dBm/Hz (max.)     Voise power density   Transmit Receive   -60 dBm/Hz (max.)     Voise figure   20 dB max   100 KHz     nput V.S.W.R.   2 : 1 max.   2 : 1 max.     Output V.S.W.R.   2 : 1 max.   Shut off the BUC in case of L.O. unlocked     nput interface<	
F connector   N-type or F-type     Power supply   +15 VDC~+24 VDC via IF cable 14 W m     Dutput interface   WR-75 Grooved     Gain   60 dB nominal     MD3 (two tones)   -26 dBc max. 2 signal 5MHz apart at P    O. leakage   -45 dBm max     Spurious   -50 dBc max     opectral regrowth   QPSK at 1.5x and OQPSK at 1.0x symbol rate     Offset with 2dB back-off from rated output power)   -30dBc     FX Gain variation   ± 0.5 dB over 40MHz     X Gain stability over temperature range   ± 1.6 dB typ., ± 1.8 dB max.     Requirement for external reference   via IF cable     frequency   10 MHz (sine-wave)     input power   -55 to +5 dBm @ input port     Phase noise –   -53 dBc/Hz max. @ 10 Hz     Exceeds and Intelsat's standard IESS308/309   -53 dBc/Hz max. @ 100 Hz     and NJRC's specification   -60 dBm/Hz (max.)     Voise power density   Transmit Receive   -60 dBm/Hz (max.)     Voise figure   20 dB max   100 KHz     nput V.S.W.R.   2 : 1 max.   2 : 1 max.     Output V.S.W.R.   2 : 1 max.   Shut off the BUC in case of L.O. unlocked     nput interface<	
Dutput interface   WR-75 Grooved     Sain   60 dB nominal     MD3 (two tones)   -26 dBc max. 2 signal 5MHz apart at P    O. leakage   -45 dBm max     Spurious   -50 dBc max     pectral regrowth   -950 dBc max     QPSK at 1.5x and OQPSK at 1.0x symbol rate   -30dBc     FX Gain variation   ± 0.5 dB over 40MHz     FX Gain stability over temperature range   ± 1.8 dB over full band     XC Gain stability over temperature range   via IF cable     Requirement for external reference   via IF cable     frequency   10 MHz (sine-wave)     input power   -5 to +5 dBm @ input port     Phase noise -   -53 dBc/Hz max. @ 10 Hz     Exceeds and Intelsat's standard IESS308/309   -53 dBc/Hz max. @ 10 Hz     and NJRC's specification   -63 dBc/Hz max. @ 10 KHz     -93 dBc/Hz max. @ 10 KHz   -93 dBc/Hz max. @ 10 KHz     -93 dBc/Hz max. @ 10 KHz   -155 dBm/Hz (max.)     -155 dBm/Hz (max.)   -155 dBm/Hz (max.)     -155 dBm/Hz (max.) <td< td=""><td></td></td<>	
Bain   60 dB nominal     MD3 (two tones)   -26 dBc max. 2 signal 5MHz apart at P    O. leakage   -45 dBm max     Spurious   -50 dBc max     spectral regrowth   -30dBc     QPSK at 1.5x and OQPSK at 1.0x symbol rate   -30dBc     ffset with 2dB back-off from rated output power   -30dBc     TX Gain variation   ± 0.5 dB over 40MHz     tx Gain stability over temperature range   ± 1.8 dB over full band     Requirement for external reference   via IF cable     frequency   10 MHz (sine-wave)     input power   -5 to +5 dBm @ input port     Phase noise –   -53 dBc/Hz max. @ 10 Hz     Exceeds and Intelsat's standard IESS308/309   -53 dBc/Hz max. @ 10 Hz     and NJRC's specification   -63 dBc/Hz max. @ 10 Hz     -93 dBc/Hz max. @ 100 Hz   -73 dBc/Hz max. @ 100 KHz     -93 dBc/Hz max. @ 100 KHz   -93 dBc/Hz (max.)     -155 dBm/Hz (max.)   -155 dBm/Hz (max.)     -155 dBm/Hz (max.)	LINEAR
MD3 (two tones)   -26 dBc max. 2 signal 5MHz apart at P    O. leakage   -45 dBm max     Spurious   -50 dBc max     pectral regrowth   -30dBc     QPSK at 1.5x and OQPSK at 1.0x symbol rate   -30dBc     ffset with 2dB back-off from rated output power)   -30dBc     TX Gain stability over temperature range   ± 0.5 dB over 40MHz     Requirement for external reference   via IF cable     frequency   10 MHz (sine-wave)     input power   -5 to +5 dBm @ input port     Phase noise –   -53 dBc/Hz max. @ 10 Hz     Exceeds and Intelsat's standard IESS308/309   -53 dBc/Hz max. @ 10 Hz     and NJRC's specification   -63 dBc/Hz max. @ 10 Hz     Voise power density   Transmit     Receive   20 dB max     nput V.S.W.R.   2 : 1 max     Output V.S.W.R.   2 : 1 max.     Shut off the BUC   in case of L.O. unlocked	LINEAR
O. leakage   -45 dBm max     Spurious   -50 dBc max     pectral regrowth   -30dBc     QPSK at 1.5x and OQPSK at 1.0x symbol rate offset with 2dB back-off from rated output power)   -30dBc     TX Gain variation   ± 0.5 dB over 40MHz     ± 1.8 dB over full band   ± 1.8 dB max.     Y Gain stability over temperature range   ± 1.5 dB typ., ± 1.8 dB max.     Requirement for external reference frequency input power   -5 to +5 dBm @ input port     Phase noise -   -5 dBc/Hz max. @ 10 Hz     Exceeds and Intelsat's standard IESS308/309 and NJRC's specification   -53 dBc/Hz max. @ 100 Hz     -73 dBc/Hz max. @ 100 Hz   -93 dBc/Hz max. @ 100 KHz     -93 dBc/Hz max. @ 100 KHz   -93 dBc/Hz max. @ 100 KHz     Noise power density   Transmit Receive   -60 dBm/Hz (max.)     Noise figure   20 dB max   21 max     nput V.S.W.R.   2 : 1 max   21 max     Dutput V.S.W.R.   2 : 1 max   Shut off the BUC in case of L.O. unlocked	LINEAR
Spurious   -50 dBc max     pectral regrowth QPSK at 1.5x and OQPSK at 1.0x symbol rate offset with 2dB back-off from rated output power)   -30dBc     rX Gain variation   ± 0.5 dB over 40MHz ± 1.8 dB over full band ± 1.5 dB typ., ± 1.8 dB max.     rX Gain stability over temperature range   ± 1.5 dB typ., ± 1.8 dB max.     rX Gain stability over temperature range   10 MHz (sine-wave)     requirement for external reference input power   via IF cable     Phase noise –   -5 to +5 dBm @ input port     Exceeds and Intelsat's standard IESS308/309 and NJRC's specification   -53 dBc/Hz max. @ 10 Hz     -63 dBc/Hz max. @ 100 Hz   -73 dBc/Hz max. @ 100 KHz     -93 dBc/Hz max. @ 100 KHz   -93 dBc/Hz max. @ 100 KHz     Noise power density   Transmit Receive   -60 dBm/Hz (max.)     Noise figure   20 dB max     nput V.S.W.R.   2 : 1 max.     Dutput V.S.W.R.   2 : 1 max.     Shut off the BUC in case of L.O. unlocked	
pectral regrowth QPSK at 1.5x and OQPSK at 1.0x symbol rate offset with 2dB back-off from rated output power)   -30dBc     rX Gain variation   ± 0.5 dB over 40MHz     rX Gain stability over temperature range   ± 1.8 dB over full band     rX Gain stability over temperature range   ± 1.8 dB max.     Requirement for external reference frequency input power   via IF cable     Phase noise – Exceeds and Intelsat's standard IESS308/309 and NJRC's specification   -53 dBc/Hz max. @ 10 Hz     -73 dBc/Hz max. @ 100 Hz   -73 dBc/Hz max. @ 100 Hz     -73 dBc/Hz max. @ 100 KHz   -93 dBc/Hz max. @ 100 KHz     Noise power density   Transmit Receive     Noise figure   20 dB max     nput V.S.W.R.   2 : 1 max.     Dutput V.S.W.R.   2 : 1 max.     Shut off the BUC in case of L.O. unlocked   Shut off the BUC in case of L.O. unlocked	
QPSK at 1.5x and OQPSK at 1.0x symbol rate   -30dBc     Diffset with 2dB back-off from rated output power)   -30dBc     TX Gain variation   ± 0.5 dB over 40MHz     TX Gain stability over temperature range   ± 1.8 dB over full band     Requirement for external reference   via IF cable     frequency   input power     -5 to +5 dBm @ input port     Phase noise –     Exceeds and Intelsat's standard IESS308/309     and NJRC's specification     Via IF cable     -63 dBc/Hz max. @ 10 Hz     -73 dBc/Hz max. @ 10 Hz     -93 dBc/Hz max. @ 10 KHz     -93 dBc/Hz max. @ 100 KHz     -93 dBc/Hz max.     Noise figure   20 dB max     nput V.S.W.R.   2 : 1 max     Output V.S.W.R.   2 : 1 max.     Shut off the BUC   in case of L.O. unlocked	
FX Gain stability over temperature range   1.8 dB over full band     FX Gain stability over temperature range   1.8 dB over full band     Requirement for external reference   via IF cable     frequency   10 MHz (sine-wave)     input power   -5 to +5 dBm @ input port     Phase noise –   -53 dBc/Hz max. @ 10 Hz     Exceeds and Intelsat's standard IESS308/309   -53 dBc/Hz max. @ 100 Hz     and NJRC's specification   -63 dBc/Hz max. @ 100 Hz     -73 dBc/Hz max. @ 10 KHz   -93 dBc/Hz max. @ 100 KHz     -93 dBc/Hz max. @ 100 KHz   -93 dBc/Hz max.     Noise power density   Transmit Receive   -60 dBm/Hz (max.)     Noise figure   20 dB max     nput V.S.W.R.   2 : 1 max.     Dutput V.S.W.R.   2 : 1 max.     Shut off the BUC in case of L.O. unlocked	
TX Gain stability over temperature range   ± 1.5 dB typ., ± 1.8 dB max.     Requirement for external reference   via IF cable     frequency   10 MHz (sine-wave)     input power   -5 to +5 dBm @ input port     Phase noise –   -53 dBc/Hz max. @ 10 Hz     Exceeds and Intelsat's standard IESS308/309   -53 dBc/Hz max. @ 10 Hz     and NJRC's specification   -63 dBc/Hz max. @ 100 Hz     -73 dBc/Hz max. @ 10 KHz   -93 dBc/Hz max. @ 100 KHz     -93 dBc/Hz max. @ 100 KHz   -93 dBc/Hz max. @ 100 KHz     Noise power density   Transmit Receive   -60 dBm/Hz (max.)     Noise figure   20 dB max     nput V.S.W.R.   2 : 1 max.     Shut off the BUC in case of L.O. unlocked	
Requirement for external reference   via IF cable     frequency   10 MHz (sine-wave)     input power   -5 to +5 dBm @ input port     Phase noise –   -53 dBc/Hz max. @ 10 Hz     Exceeds and Intelsat's standard IESS308/309   -53 dBc/Hz max. @ 10 Hz     and NJRC's specification   -63 dBc/Hz max. @ 100 Hz     -73 dBc/Hz max. @ 10 KHz   -83 dBc/Hz max. @ 10 KHz     -93 dBc/Hz max. @ 100 KHz   -93 dBc/Hz max. @ 100 KHz     Noise power density   Transmit Receive   -60 dBm/Hz (max.)     Noise figure   20 dB max     nput V.S.W.R.   2 : 1 max     Dutput V.S.W.R.   2 : 1 max.     Shut off the BUC in case of L.O. unlocked   in case of L.O. unlocked	
input power-5 to +5 dBm @ input portPhase noise – Exceeds and Intelsat's standard IESS308/309 and NJRC's specification-53 dBc/Hz max. @ 10 Hz-63 dBc/Hz max. @ 100 Hz-63 dBc/Hz max. @ 100 Hz-73 dBc/Hz max. @ 1 KHz-83 dBc/Hz max. @ 10 KHz-93 dBc/Hz max. @ 100 KHz-93 dBc/Hz max. @ 100 KHzNoise power densityTransmit Receive-60 dBm/Hz (max.)Noise figure20 dB maxnput V.S.W.R.2 : 1 max.Dutput V.S.W.R.2 : 1 max.Shut off the BUC in case of L.O. unlockednput interface	
Phase noise –   -53 dBc/Hz max. @ 10 Hz     Exceeds and Intelsat's standard IESS308/309   -63 dBc/Hz max. @ 10 Hz     and NJRC's specification   -63 dBc/Hz max. @ 100 Hz     -73 dBc/Hz max. @ 1 KHz   -83 dBc/Hz max. @ 10 KHz     -93 dBc/Hz max. @ 10 KHz   -93 dBc/Hz max. @ 100 KHz     Noise power density   Transmit Receive   -60 dBm/Hz (max.) -155 dBm/Hz (max.)     Noise figure   20 dB max     nput V.S.W.R.   2 : 1 max     Dutput V.S.W.R.   2 : 1 max.     Shut off the BUC in case of L.O. unlocked	
Exceeds and Intelsat's standard IESS308/309   -53 dBc/Hz max. @ 10 Hz     and NJRC's specification   -63 dBc/Hz max. @ 100 Hz     -73 dBc/Hz max. @ 10 KHz   -73 dBc/Hz max. @ 10 KHz     -93 dBc/Hz max. @ 100 KHz   -93 dBc/Hz max. @ 100 KHz     Noise power density   Transmit Receive   -60 dBm/Hz (max.) -155 dBm/Hz (max.)     Noise figure   20 dB max     nput V.S.W.R.   2 : 1 max     Dutput V.S.W.R.   2 : 1 max.     Shut off the BUC in case of L.O. unlocked	
-73 dBc/Hz max. @ 1 KHz     -73 dBc/Hz max. @ 1 KHz     -83 dBc/Hz max. @ 10 KHz     -93 dBc/Hz max. @ 100 KHz     -93 dBc/Hz max.     -80 dBm/Hz (max.)     -155 dBm/Hz (max.)     -155 dBm/Hz (max.)     20 dB max     nput V.S.W.R.     2 : 1 max     Output V.S.W.R.     2 : 1 max.     Shut off the BUC in case of L.O. unlocked     nput interface	
-83 dBc/Hz max. @ 10 KHz     -93 dBc/Hz max. @ 100 KHz     -93 dBc/Hz max. @ 100 KHz     Noise power density   Transmit Receive     -60 dBm/Hz (max.)     -155 dBm/Hz (max.)     -155 dBm/Hz (max.)     20 dB max     nput V.S.W.R.   2 : 1 max     Output V.S.W.R.   2 : 1 max.     Shut off the BUC in case of L.O. unlocked     nput interface	
-93 dBc/Hz max. @ 100 KHz     Noise power density   Transmit Receive     -60 dBm/Hz (max.) -155 dBm/Hz (max.)     -155 dBm/Hz (max.)     -155 dBm/Hz (max.)     20 dB max     nput V.S.W.R.   2 : 1 max     Output V.S.W.R.   2 : 1 max.     Shut off the BUC in case of L.O. unlocked     nput interface	
Noise power density Transmit Receive -60 dBm/Hz (max.) -155 dBm/Hz (max.)   Noise figure 20 dB max   nput V.S.W.R. 2 : 1 max   Dutput V.S.W.R. 2 : 1 max.   Mute Shut off the BUC in case of L.O. unlocked	
Receive-155 dBm/Hz (max.)Noise figure20 dB maxnput V.S.W.R.2 : 1 maxDutput V.S.W.R.2 : 1 max.MuteShut off the BUC in case of L.O. unlockednput interfaceImage: State of L.O. unlocked	
Noise figure 20 dB max   nput V.S.W.R. 2 : 1 max   Dutput V.S.W.R. 2 : 1 max.   Mute Shut off the BUC in case of L.O. unlocked   nput interface Shut off the BUC	
nput V.S.W.R. 2 : 1 max   Dutput V.S.W.R. 2 : 1 max.   Mute Shut off the BUC in case of L.O. unlocked   nput interface Shut off the BUC	
Dutput V.S.W.R. 2 : 1 max.   Mute Shut off the BUC in case of L.O. unlocked   nput interface Shut off the BUC	
Aute     Shut off the BUC       in case of L.O. unlocked	
nput interface	
ABA2KX ABA2KXF50 Ohm (N-type IF in) 75 Ohm (F-type IF in)	
Cemperature range (ambient) operating -40 deg C to +55 deg C	
storage -55 deg C to +85 deg C	
/ibration & shock Complies with MIL-STD-810E	
Dimensions & housing     100.5 (L) x 68 (W) x 46 (H) mm       2.001 (L) x 68 (W) x 46 (H) mm     2.001 (L) x 68 (W) x 46 (H) mm	
3.96" (L) x 2.68" (W) x 1.81" (H)       0.45 kg (0.99 lbs) max	