

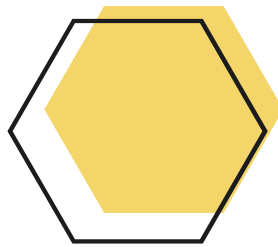
DATASHEET

ES-P-N2N2-5050



IEEE 802.11 a/n

High-Performance,
Dual independent
Radio



Tri Band

4.9 GHz to 5.9 GHz
supporting 4.9 GHz, UNII-
B1,B2A,B2C and B3 Bands



Industrial grade

-40 deg C to +85 deg C
operation temperature

dun & bradstreet



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HW REV# 03.00

TECHNICAL SPECIFICATION

RADIO MODULE – GENERAL INFO	
On-board Radio (11a/n) chipset	QCA 9550-AT4B (CPU) & AR 8033-AL1B (Ethernet PHY)
MiniPCie Radio (11a/n) chipset	AR 9592-AR1B
NOR Flash	SPI Flash, 16MB
NAND Flash	NAND Flash, 256 MB
RAM	DDR2, 200 MHz, 256 MB (64Mx16x2)
Operating frequency – on-board Radio	4920 MHz to 5825 MHz (Operating Channels)
Operating frequency – MiniPCie Radio	4920 MHz to 5825 MHz (Operating Channels)
Data rate-11n HT20/HT40-1S (SISO)	6Mbps, 9Mbps, 12Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps (11a)
Data rate-11n HT20/HT40-2S (MIMO)	MCS0, MCS1, MCS2, MCS3, MCS4, MCS5, MCS6, MCS7 (11n)
	MCS8, MCS9, MCS10, MCS11, MCS12, MCS13, MCS14, MCS15 (11n)
Channel BW - On-board Radio (11a/n)	5 MHz/10 MHz/20 MHz /40 MHz
Channel BW - MiniPCie Radio (11a/n)	5 MHz/10 MHz/20 MHz /40 MHz
RoHS Compliance	Compliant
INTERFACE SPECIFICATIONS	
Power in	DC in through 2 pin header
Operating Voltage	9V to 30V
RF Antenna connector	x4 MMCX Female (jack) connectors
ENVIRONMENTAL SPECIFICATIONS	
Operating Temperature Range	-40 deg C to +85 deg C
PHYSICAL SPECIFICATIONS	
Mechanical Dimension	(L) 111.5 mm x (W) 98.55 mm x (D) x 17.06 mm
Weight	130 g
REGULATORY INFORMATION	
Compliance	TBD
PACKAGING INFORMATION	
No of units	TBD

ORDERING INFORMATION

ES-P-N2N2-5050

OEM PCB Assembly Kit, ES-P-N2N2-5050, HW Rev 03.00
 SBC, 5 GHz, MIMO, HW Rev 2001.0300
 MiniPCIe, 5 GHz, MIMO, HW Rev 1805.0600

RADIO SPECIFICATION**TX/RX Specification – 4920MHz to 4990 MHz (on-board radio)**

Sensitivity tested in ART Mode, PSR >=95%, Chain0+Chain1

TX Power Setting = Calibrated Power level in dBm

Current consumption is measured at the input of the SBC, and it includes idle current drawn by the system

Data Rate	TX Power (dBm)	Current 24V (A)	RX Sensitivity (dBm)
54 Mbps	19	0.30	-77
48 Mbps	22	0.34	-80
36 Mbps	23	0.35	-83
24 Mbps	24	0.37	-85
18 Mbps	24	0.37	-87
12Mbps	24	0.37	-89
9 Mbps	24	0.37	-92
6 Mbps	24	0.37	-94
HT20-MCS7	18	0.29	-71
HT20-MCS6	19	0.30	-74
HT20-MCS5	20	0.31	-75
HT20-MCS4	23	0.35	-79
HT20-MCS3	24	0.37	-82
HT20-MCS2	24	0.37	-86
HT20-MCS1	24	0.37	-88
HT20-MCS0	26	0.40	-92
HT40-MCS7	18	0.29	-68
HT40-MCS6	19	0.30	-71
HT40-MCS5	20	0.31	-72
HT40-MCS4	23	0.35	-75
HT40-MCS3	24	0.37	-76
HT40-MCS2	24	0.37	-83
HT40-MCS1	24	0.37	-85
HT40-MCS0	26	0.40	-89

TX/RX Specification – 5180 MHz to 5320 MHz (on-board radio)

Sensitivity tested in ART Mode, PSR >=95%, Chain0+Chain1

TX Power Setting = Calibrated Power level in dBm

Current consumption is measured at the input of the SBC, and it includes idle current drawn by the system

Data Rate	TX Power (dBm)	Current 24V (A)	RX Sensitivity (dBm)
54 Mbps	21	0.32	-77
48 Mbps	22	0.34	-80
36 Mbps	23	0.35	-83
24 Mbps	25	0.38	-85
18 Mbps	25	0.38	-87
12Mbps	25	0.38	-89
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HT40-MCS0	26	0.40	-89

TX/RX Specification – 5500 MHz to 5720 MHz (on-board radio)

Sensitivity tested in ART Mode, PSR >=95%, Chain0+Chain1
 TX Power Setting = Calibrated Power level in dBm
 Current consumption is measured at the input of the SBC, and it includes idle current drawn by the system

Data Rate	TX Power (dBm)	Current 24V (A)	RX Sensitivity (dBm)
54 Mbps	20	0.31	-77
48 Mbps	22	0.34	-80
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HT40-MCS3	24	0.37	-76
HT40-MCS2	24	0.37	-83
HT40-MCS1	24	0.37	-85
HT40-MCS0	26	0.40	-89

TX/RX Specification – 5745 MHz to 5825 MHz (on-board radio)

Sensitivity tested in ART Mode, PSR >=95%, Chain0+Chain1

TX Power Setting = Calibrated Power level in dBm

Current consumption is measured at the input of the SBC, and it includes idle current drawn by the system

Data Rate	TX Power (dBm)	Current 24V (A)	RX Sensitivity (dBm)
54 Mbps	21	0.32	-77
48 Mbps	22	0.34	-80
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HT40-MCS3	24	0.37	-76
HT40-MCS2	24	0.37	-83
HT40-MCS1	24	0.37	-85
HT40-MCS0	26	0.40	-89

TX/RX Specification – 4920 MHz to 4990 MHz (miniPCIe)

Sensitivity tested in ART Mode, PSR >=95%, Chain0+Chain1

TX Power Setting = Calibrated Power level in dBm

Test Condition for Current consumption:

Current consumption is measured at the input of the SBC with the mini-PCIe radio module connected to it. The current consumption figures are then adjusted so that they only include extra current drawn by the mini-PCIe radio module.

Data Rate	TX Power (dBm)	Current 24V (A)	RX Sensitivity (dBm)
54 Mbps	19	0.19	-77
48 Mbps	20	0.20	-80
36 Mbps	22	0.22	-82
24 Mbps	23	0.23	-85
18 Mbps	23	0.23	-87
12Mbps	23	0.23	-89
9 Mbps	23	0.23	-92
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HT20-MCS2	23	0.23	-86
HT20-MCS1	23	0.23	-88
HT20-MCS0	26	0.27	-92
HT40-MCS7	18	0.19	-68
HT40-MCS6	19	0.19	-71
HT40-MCS5	20	0.20	-72
HT40-MCS4	22	0.22	-76
HT40-MCS3	23	0.23	-79
HT40-MCS2	23	0.23	-83
HT40-MCS1	23	0.23	-85
HT40-MCS0	26	0.27	-89

TX/RX Specification – 5180 MHz to 5320 MHz (miniPCIe)

Sensitivity tested in ART Mode, PSR >=95%, Chain0+Chain1

TX Power Setting = Calibrated Power level in dBm

Test Condition for Current consumption:

Current consumption is measured at the input of the SBC with the mini-PCIe radio module connected to it.

The current consumption figures are then adjusted so that they only include extra current drawn by the mini-PCIe radio module.

Data Rate	TX Power (dBm)	Current 24V (A)	RX Sensitivity (dBm)
54 Mbps	20	0.20	-77
48 Mbps	21	0.21	-80
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HT20-MCS0	26	0.27	-92
HT40-MCS7	19	0.19	-68
HT40-MCS6	20	0.20	-71
HT40-MCS5	21	0.21	-72
HT40-MCS4	23	0.23	-76
HT40-MCS3	24	0.24	-79
HT40-MCS2	24	0.24	-83
HT40-MCS1	24	0.24	-85
HT40-MCS0	26	0.27	-89

TX/RX Specification – 5500 MHz to 5720 MHz (miniPCIe)

Sensitivity tested in ART Mode, PSR >=95%, Chain0+Chain1
 TX Power Setting = Calibrated Power level in dBm
 Test Condition for Current consumption:
 Current consumption is measured at the input of the SBC with the mini-PCIe radio module connected to it.
 The current consumption figures are then adjusted so that they only include extra current drawn by the mini-PCIe radio module.

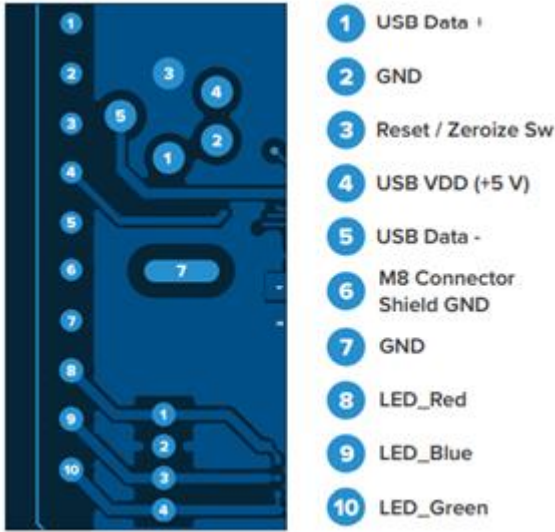
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6 Mbps	26	0.27	-94
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HT20-MCS6	20	0.20	-74
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TX/RX Specification – 5745 MHz to 5825 MHz (miniPCIe)

Sensitivity tested in ART Mode, PSR >=95%, Chain0+Chain1
 TX Power Setting = Calibrated Power level in dBm
 Test Condition for Current consumption:
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 The current consumption figures are then adjusted so that they only include extra current drawn by the mini-PCIe radio module.

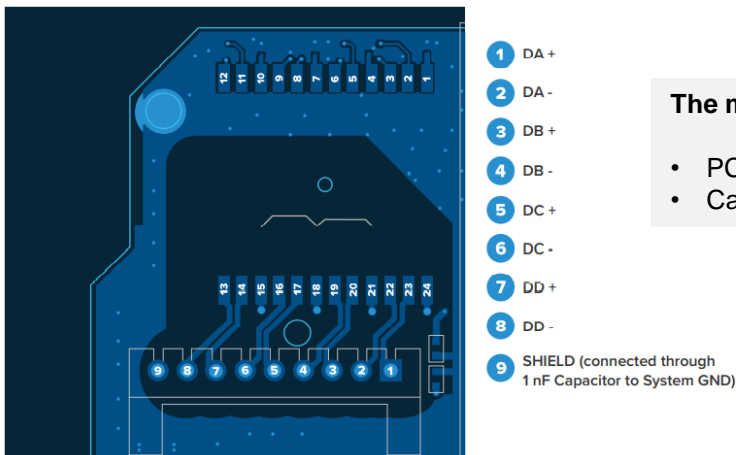
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48 Mbps	20	0.20	-76
36 Mbps	23	0.23	-77
24 Mbps	26	0.27	-78
18 Mbps	26	0.27	-84
12Mbps	26	0.27	-87
9 Mbps	26	0.27	-90
6 Mbps	26	0.27	-91
HT20-MCS7	18	0.19	-69
HT20-MCS6	19	0.19	-70
HT20-MCS5	20	0.20	-71
HT20-MCS4	23	0.23	-75
HT20-MCS3	24	0.24	-77
HT20-MCS2	24	0.24	-80
HT20-MCS1	24	0.24	-82
HT20-MCS0	26	0.27	-83
HT40-MCS7	18	0.19	-66
HT40-MCS6	19	0.19	-67
HT40-MCS5	20	0.20	-68
HT40-MCS4	23	0.23	-72
HT40-MCS3	24	0.24	-74
HT40-MCS2	24	0.24	-77
HT40-MCS1	24	0.24	-79
HT40-MCS0	26	0.27	-80

PIN OUT DETAILS



The mating connectors for DF3-10P-2DS(01) are

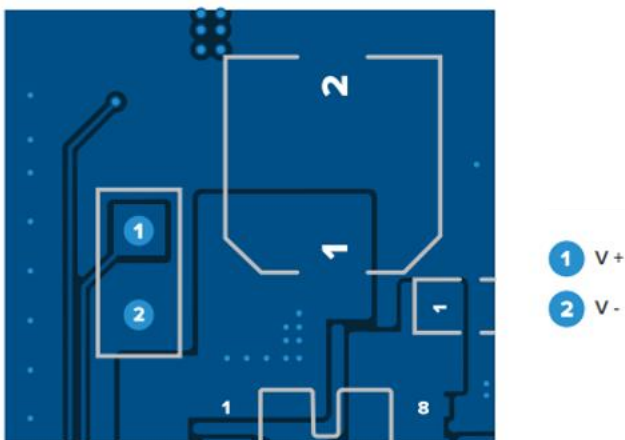
- PCB Mounted: DF3-10S-2DSA(25)
- Cable Housing: DF3-10S-2C



The mating connectors for DF3-9P-2DS(01) are

- PCB Mounted: DF3-9S-2DSA(25)
- Cable Housing: DF3-9S-2C

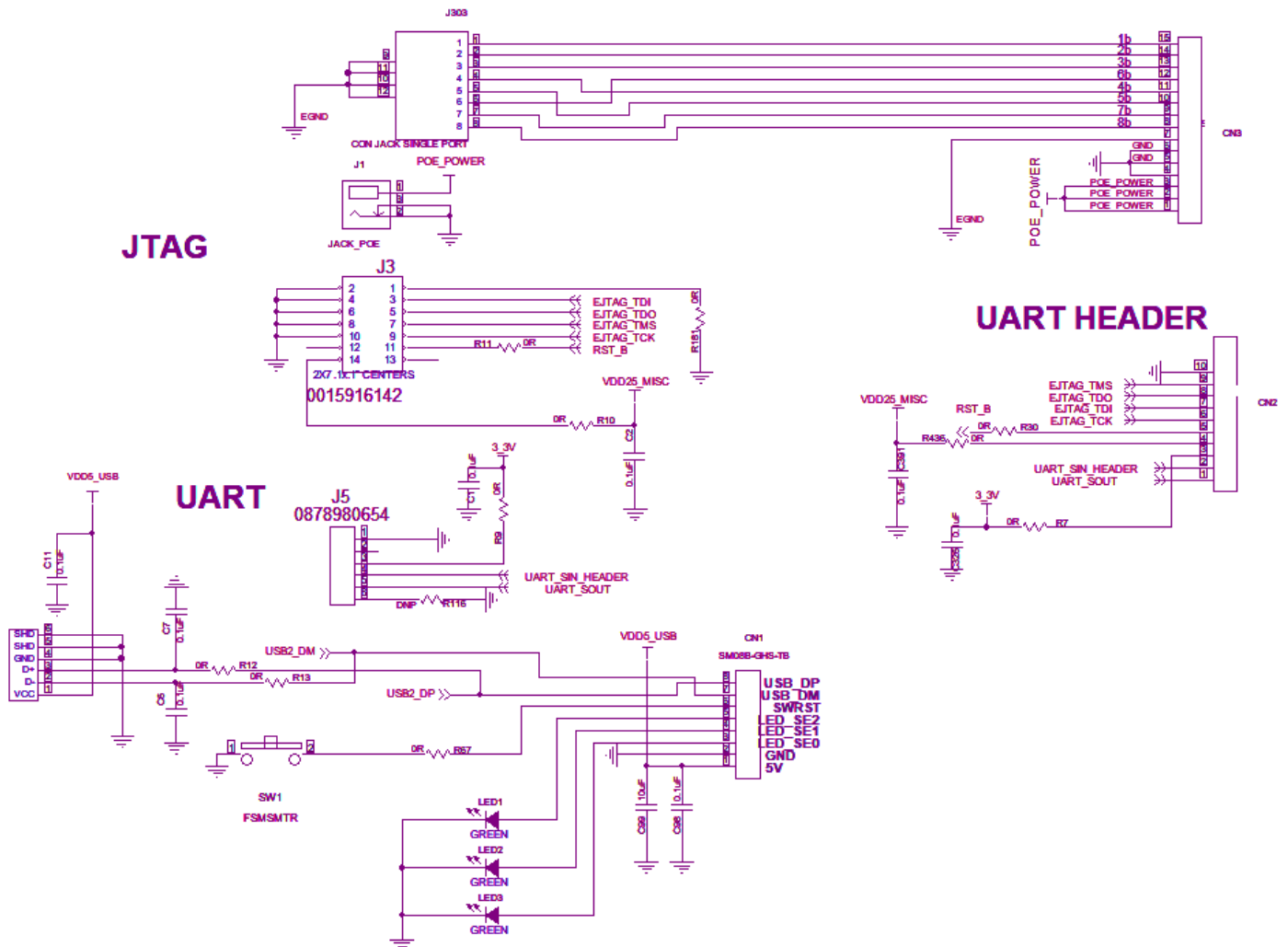
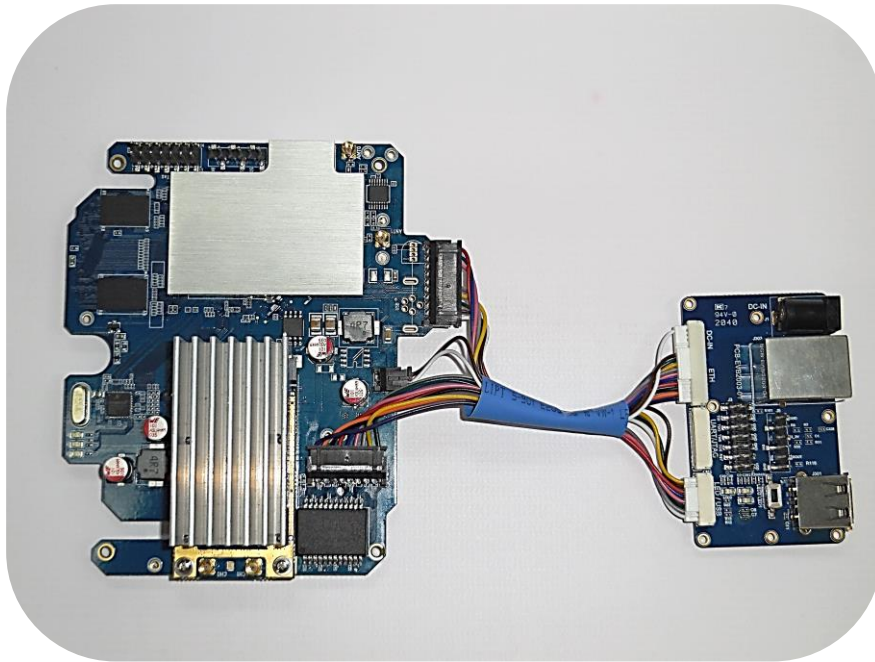
A DC power interface is provided through a 2-pin Hirose DF3-2P-2DS(01) connector with the following pinout:



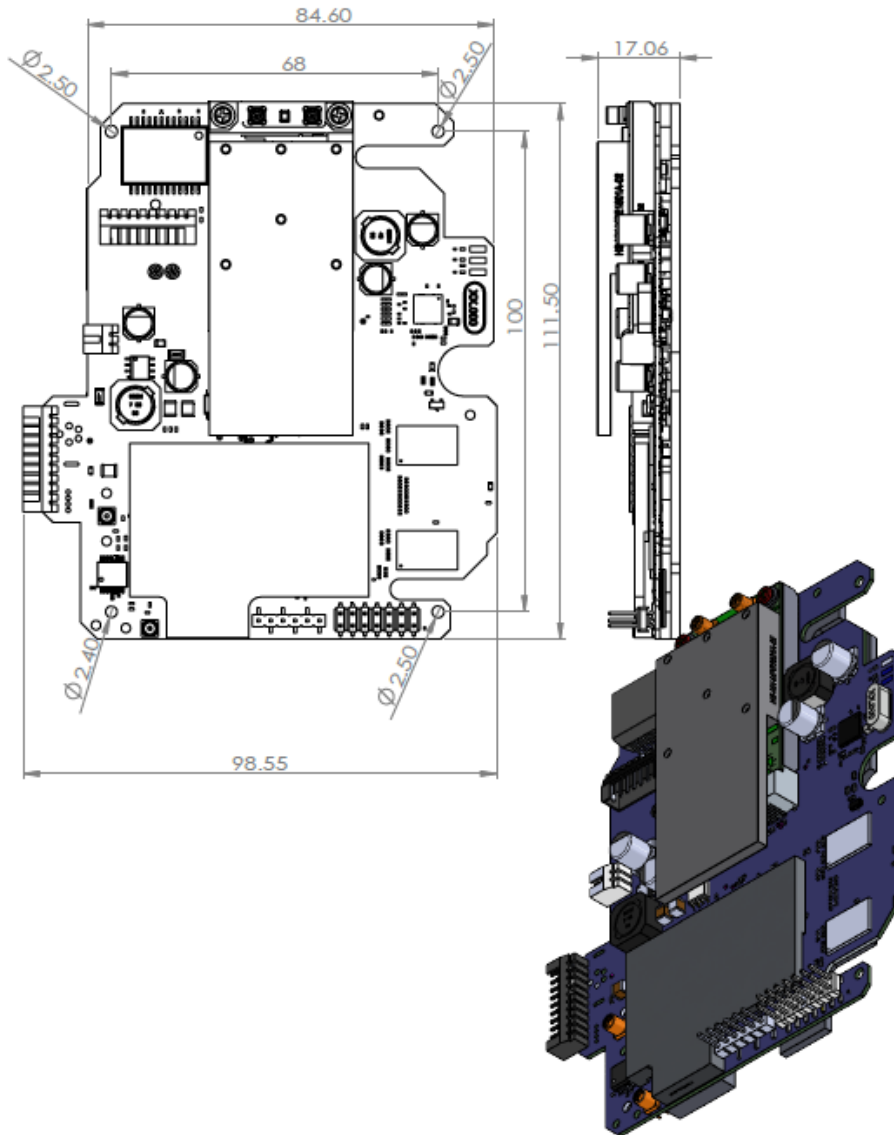
The mating connectors for DF3-2P-2DS(01) are

- PCB Mounted: DF3-2S-2DSA(25)
- Cable Housing: DF3-2S-2C

EVAL BOARD SCHEMATIC



MECHANICAL DIMENSIONS



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