



|                                                                   | MN52H-C33                               | MN52H-C40   | MN52H-P33   | MN52H-P40   | MN52H-U40      | MN52M-C32           | MN52M-P32   | MN52M-U32      | MN52M-P10      | MN52M-C10    | MN54L-C15                                                      | MN54L-P15   | MN54L-U15      |
|-------------------------------------------------------------------|-----------------------------------------|-------------|-------------|-------------|----------------|---------------------|-------------|----------------|----------------|--------------|----------------------------------------------------------------|-------------|----------------|
| Open area distance @ 1Mbps                                        | 550m                                    | 550m        | 650m        | 650m        | 700m           | 300m                | 330m        | 490m           | 330m           | 300m         | 500m                                                           | TBD         | TBD            |
| Core chip                                                         | nRF52833/v1                             | nRF52840/V2 | nRF52833/v1 | nRF52840/V2 | nRF52840/V2    | nRF52832/V2         | nRF52832/V2 | nRF52832/V2    | nRF52810/v2    | nRF52810/v2  | nRF54L15                                                       |             |                |
| Core                                                              | Cortex-M4 with FPU                      |             |             |             |                |                     |             |                | Cortex-M4      |              | Cortex-M33                                                     |             |                |
| Crystal                                                           | 32MHz/20ppm                             |             |             |             |                |                     |             |                |                |              |                                                                |             |                |
| Antenna type                                                      | Chip antenna                            |             | PCB         |             | U.FL connector | Chip antenna        | PCB Antenna | U.FL connector | PCB Antenna    | Chip antenna | Chip antenna                                                   | PCB Antenna | U.FL connector |
| Memory flash                                                      | 512KB                                   | 1MB         | 512KB       | 1MB         | 1MB            | 512kB               |             |                | 192kB          |              | 1.524MB                                                        |             |                |
| Memory RAM                                                        | 128KB                                   | 256kB       | 128KB       | 256kB       | 256kB          | 64kB                |             |                | 24kB           |              | 256KB                                                          |             |                |
| Operating voltage                                                 | 1.7-5.5VDC                              |             |             |             |                | 1.7-3.6VDC          |             |                |                |              |                                                                |             |                |
| Operating temperature (°C)                                        | -40 to 85                               |             |             |             |                |                     |             |                |                |              |                                                                |             |                |
| Current consumption @ OFF mode (3V, no RAM retention)             | 0.6uA                                   | 0.4uA       | 0.6uA       | 0.4uA       | 0.4uA          | 0.3uA               |             |                |                |              | 0.6                                                            |             |                |
| Current consumption @ ON mode (3V, no RAM retention, wake on RTC) | 1.5uA                                   | 1.5uA       | 1.5uA       | 1.5uA       | 1.5uA          | 1.9uA               |             |                | 1.4uA          |              | 0.7                                                            |             |                |
| Dimension                                                         | 15.5 x 10.1 x 2.1mm                     |             |             |             |                | 15.8 x 9.0 x 2.2 mm |             |                |                |              | 14.5x9.3x2.1mm                                                 |             |                |
| GPIOs                                                             | 42                                      | 48          | 42          | 48          | 48             | 32                  |             |                |                |              | 31                                                             |             |                |
| Tx power (dBm)                                                    | -20 to +8dBm                            |             |             |             |                | -20 to +4dBm        |             |                |                |              | +7dBm                                                          |             |                |
| Sensitivity @1Mbps BLE mode (dBm)                                 | -96                                     | -95         | -96         | -95         | -95            | -96                 | -96         | -96            | -96            | -96          | -96                                                            |             |                |
| Sensitivity @125k bps BLE mode (long range, dBm)                  | -103                                    |             |             |             |                | -                   |             |                |                |              | -104                                                           |             |                |
| USB2.0                                                            | ✓                                       |             |             |             |                | -                   |             |                |                |              |                                                                |             |                |
| High speed SPI (32MHz)                                            | ✓                                       |             |             |             |                | -                   |             |                |                |              | ✓                                                              |             |                |
| NFC-A                                                             | ✓                                       |             |             |             |                |                     |             |                | -              |              | ✓                                                              |             |                |
| ADC                                                               | 8 configurable channel, 12-bit, 200ksps |             |             |             |                |                     |             |                |                |              | Eight of 14-bit @31.25ksps, or 12-bit@250ksps, or 10-bit@2Msps |             |                |
| Comparator                                                        | 64 level                                |             |             |             |                |                     |             |                |                |              | ✓                                                              |             |                |
| Comparator with wake up                                           | 15 level                                |             |             |             |                |                     | -           |                |                | ✓            |                                                                |             |                |
| Temperature sensor                                                | ✓                                       |             |             |             |                |                     |             |                |                |              | ✓                                                              |             |                |
| PWM                                                               | 4x4-channel                             |             |             |             |                | 4-channel           |             |                |                |              | 3-channel                                                      |             |                |
| Digital mic interface (PDM)                                       | ✓                                       |             |             |             |                |                     |             |                | -              |              | 3                                                              |             |                |
| timer                                                             | 5x32bit                                 |             |             |             |                |                     |             |                | 3x32-bit       |              | 7x32bit                                                        |             |                |
| SPI                                                               | 4 master/ 3 slave                       |             |             |             |                | 3 master/slave      |             |                | 1 master/slave |              |                                                                |             |                |
| I2C                                                               | 2                                       |             |             |             |                |                     |             |                | 1              |              | ✓                                                              |             |                |
| I2S                                                               | ✓                                       |             |             |             |                |                     |             |                | -              |              | ✓                                                              |             |                |
| UART                                                              | 2                                       |             |             |             |                | 1                   |             |                | 1              |              | 4                                                              |             |                |
| Bluetooth 5.4 PAwR                                                | ✓                                       |             |             |             |                |                     |             |                | -              |              | To be updated (TPU)                                            |             |                |
| BT MESH                                                           | ✓                                       |             |             |             |                |                     |             |                | -              |              | ✓                                                              |             |                |
| Amazon Sidewalk                                                   | -                                       | ✓           | -           | ✓           | -              |                     |             |                |                |              |                                                                | ✓           |                |
| Apple Find My                                                     | ✓                                       |             |             |             |                |                     |             |                | -              |              | TPU                                                            |             |                |
| Google Find My                                                    | ✓                                       |             |             |             |                |                     |             |                | -              |              | TPU                                                            |             |                |
| Thread/802.15.4                                                   | ✓                                       |             |             |             |                | -                   |             |                | ✓              |              |                                                                |             |                |
| Zigbee/802.15.4                                                   | ✓                                       |             |             |             |                | -                   |             |                | ✓              |              |                                                                |             |                |
| Direction Finding AOA/AOD                                         | ✓                                       | -           | ✓           | -           |                |                     |             |                |                |              | TPU                                                            |             |                |
| ANT                                                               | ✓                                       |             |             |             |                |                     |             |                |                |              | TBD                                                            |             |                |
| 2.4GHz Proprietary                                                | ✓                                       |             |             |             |                |                     |             |                |                |              | ✓                                                              |             |                |