# 2018



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# Consumer Speech

## *PowerSpeech*® Series

- W584Axxx 4-bit µC Base, 1-ch Voice + Dual Tone Melody Synthesizer

| Part No. | ROM (Kbits) | Duration (Sec.) @ 5-bit MDM | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (N) | GPIO | High Sink |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | | |
| **W584A011** | 300 | 9 | 7 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584A016** | 460 | 15 | 11 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584A021** | 620 | 20 | 15 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584A031** | 1020 | 34 | 25 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584A041** | 1260 | 42 | 32 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584A052** | 1580 | 53 | 40 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584A062** | 1900 | 64 | 48 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584A017** | 460 | 15 | 11 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584A022** | 620 | 20 | 15 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584A032** | 1020 | 34 | 25 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584A042** | 1260 | 42 | 32 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584A051** | 1580 | 53 | 40 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584A061** | 1900 | 64 | 48 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584A071** | 2220 | 75 | 56 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584A081** | 2540 | 86 | 64 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584A025** | 620 | 20 | 15 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584A035** | 1020 | 35 | 26 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584A045** | 1260 | 42 | 32 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |

## • W584Axxx 4-bit µC Base, 1-ch Voice + Dual Tone Melody Synthesizer

| Part No. | ROM (Kbits) | Duration (Sec.) @ 5-bit MDM | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (N) | GPIO | High Sink |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | | |
| **W584A065** | 1900 | 64 | 48 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584A075** | 2220 | 75 | 56 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584A085** | 2540 | 86 | 64 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584A100** | 3180 | 108 | 81 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584A120** | 3820 | 129 | 97 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584A151** | 4460 | 151 | 113 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584A171** | 5100 | 173 | 130 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584A191** | 5740 | 195 | 146 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584A300** | 9100 | 310 | 232 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584A340** | 10220 | 348 | 261 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584AP017(OTP)** | 460 | 15 | 11 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | - |
| **W584AP045 (OTP)** | 1260 | 42 | 32 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | - |
| **W584AP065(OTP)** | 1900 | 64 | 48 | 2.2~5.5 | 1 + DTM | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | - |



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## • W584Bxxx 4-bit µC Base, 1-ch Voice Synthesizer

| Part No. | ROM (Kbits) | Duration (Sec.) @ 5-bit MDM | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (N) | GPIO | High Sink |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | | |
| **W584B010** | 300 | 9 | 7 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584B015** | 460 | 15 | 11 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584B020** | 620 | 20 | 15 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584B030** | 1020 | 34 | 25 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584B040** | 1260 | 42 | 32 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584B052** | 1580 | 53 | 40 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584B062** | 1900 | 64 | 48 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 8 I/O | 8-pin |
| **W584B016** | 460 | 15 | 11 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584B021** | 620 | 20 | 15 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584B031** | 1020 | 34 | 25 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584B041** | 1260 | 42 | 32 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584B070** | 2220 | 75 | 56 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584B080** | 2540 | 86 | 64 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 12 I/O | 8-pin |
| **W584B100** | 3180 | 108 | 81 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584B120** | 3820 | 129 | 97 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584B150** | 4460 | 151 | 113 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584B170** | 5100 | 173 | 130 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |
| **W584B190** | 5740 | 195 | 146 | 2.2~5.5 | 1 | 4,8 | Ring | 9-bit | 10-bit | 128 | 16 I/O | 8-pin |

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## • W588Lxxx 8-bit µC Base, 2 Batteries, 2-ch Voice + Melody Synthesizer

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 5-bit MDM | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (Bytes) | GPIO |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | |
| **W588L020** | 94 | 23 | 18 | 1.8~3.6 | 1 | 4, 6 | Ring | 12-bit | - | 96 | 8 I/O |
| **W588L030** | 126 | 32 | 24 | 1.8~3.6 | 1 | 4, 6 | Ring | 12-bit | - | 96 | 8 I/O |
| **W588L035** | 170 | 44 | 33 | 1.8~3.6 | 2 | 4, 6 | Ring | 12-bit | - | 128 | 16 I/O |
| **W588L040** | 192 | 50 | 37 | 1.8~3.6 | 2 | 4, 6 | Ring | 12-bit | - | 128 | 16 I/O |
| **W588L050** | 224 | 58 | 43 | 1.8~3.6 | 2 | 4, 6 | Ring | 12-bit | - | 128 | 16 I/O |
| **W588L060** | 254 | 66 | 49 | 1.8~3.6 | 2 | 4, 6 | Ring | 12-bit | - | 128 | 16 I/O |
| **W588L070** | 330 | 86 | 65 | 1.8~3.6 | 2 | 4, 6 | Ring | 12-bit | - | 128 | 16 I/O |
| **W588L080** | 382 | 100 | 75 | 1.8~3.6 | 2 | 4, 6 | Ring | 12-bit | - | 128 | 16 I/O |
| **W588L100** | 448 | 118 | 88 | 1.8~3.6 | 2 | 4, 6 | Ring | 12-bit | - | 128 | 16 I/O |

## • W588Cxxx 8-bit µC Base, 2-ch Voice + Melody Synthesizer

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (Bytes) | GPIO |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | |
| **W588C003** | 20 | 5 | 4 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | - | 96 | 8 I/O |
| **W588C006** | 30 | 8 | 6 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | - | 96 | 8 I/O |
| **W588C009** | 50 | 14 | 11 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | - | 96 | 8 I/O |
| **W588C012** | 62 | 18 | 14 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | - | 96 | 8 I/O |
| **W588C015** | 78 | 23 | 17 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | - | 96 | 8 I/O |
| **W588C020** | 98 | 29 | 22 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 128 | 12 I/O |
| **W588C025** | 114 | 35 | 26 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 128 | 12 I/O |
| **W588C030** | 126 | 38 | 29 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 128 | 12 I/O |

## • W588Cxxx 8-bit µC Base, 2-ch Voice + Melody Synthesizer

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (Bytes) | GPIO |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | |
| ***W588C036** | 170 | 52 | 39 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 128 | 16 I/O |
| ***W588C041** | 192 | 59 | 44 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 128 | 16 I/O |
| ***W588C046** | 205 | 63 | 48 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 128 | 16 I/O |
| ***W588C051** | 224 | 69 | 52 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 128 | 16 I/O |
| ***W588C056** | 240 | 74 | 56 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 128 | 16 I/O |
| ***W588C061** | 254 | 79 | 59 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 128 | 16 I/O |
| ***W588C071** | 330 | 103 | 77 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 128 | 16 I/O |
| ***W588C081** | 382 | 119 | 90 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 128 | 16 I/O |
| ***W588C101** | 448 | 140 | 105 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 128 | 16 I/O |
| ***W588C121** | 510 | 160 | 120 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 128 | 16 I/O |
| **W588C150** | 640 | 201 | 151 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 192 | 16 I/O |
| **W588C170** | 768 | 242 | 181 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 192 | 16 I/O |
| **W588C210** | 896 | 282 | 212 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 192 | 16 I/O |
| **W588C260** | 1022 | 322 | 242 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 192 | 16 I/O |
| **W588C300** | 1180 | 372 | 279 | 2.2~5.5 | 2 | 4~8 | Ring | 12-bit | 13-bit | 192 | 16 I/O |

*DAC w/o Noise Shaping

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## • W588Dxxx 8-bit µC Base, 3-ch Voice + Melody Synthesizer

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | VDD (V) | CH | Fsys (MHz) | OSC | Sub-Clock 32KHz | Audio | | RAM (Bytes) | GPIO | SIM SPI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | | PWM | DAC | | | |
| **W588D003** | 20 | 5 | 4 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 192 | 16 I/O | √ |
| **W588D006** | 30 | 8 | 6 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 192 | 16 I/O | √ |
| **W588D009** | 50 | 14 | 11 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 16 I/O | √ |
| **W588D012** | 62 | 18 | 14 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 16 I/O | √ |
| **W588D015** | 78 | 23 | 17 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 16 I/O | √ |
| **W588D020** | 98 | 29 | 22 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 16 I/O | √ |
| **W588D025** | 114 | 35 | 26 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 16 I/O | √ |
| **W588D030** | 126 | 38 | 29 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 16 I/O | √ |
| **W588D035** | 170 | 52 | 39 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 16 I/O | √ |
| **W588D040** | 192 | 59 | 44 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 16 I/O | √ |
| **W588D045** | 205 | 63 | 48 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 16 I/O | √ |
| **W588D050** | 224 | 69 | 52 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 16 I/O | √ |
| **W588D055** | 240 | 74 | 56 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 16 I/O | √ |
| **W588D060** | 254 | 79 | 59 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 16 I/O | √ |
| **W588DF060 (MTP)** | 254 | 79 | 59 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 16 I/O | √ |
| **W588D070** | 330 | 103 | 77 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 24 I/O | √ |
| **W588D080** | 382 | 119 | 90 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 24 I/O | √ |
| **W588D100** | 448 | 140 | 105 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 24 I/O | √ |
| **W588D120** | 510 | 160 | 120 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 256 | 24 I/O | √ |
| **W588D150** | 640 | 201 | 151 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 384 | 24 I/O | √ |
| **W588D170** | 768 | 242 | 181 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 384 | 24 I/O | √ |
| **W588D210** | 896 | 282 | 212 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 384 | 24 I/O | √ |
| **W588D260** | 1022 | 322 | 242 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 384 | 24 I/O | √ |
| **W588D300** | 1180 | 372 | 279 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 8I, 24 I/O | √ |
| **W588D350** | 1348 | 425 | 319 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 8I, 24 I/O | √ |
| **W588D400** | 1534 | 484 | 363 | 2.2~5.5 | 3 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 8I, 24 I/O | √ |

## • N584Lxxx 4-bit µC Base, 1~2 Battery, 1-ch Voice + Dual Tone Melody Synthesizer

| Part No. | ROM (Kbits) | Duration (Sec.) @ 5-bit MDM | | VDD (V) | Booster Output (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (N) | GPIO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | | PWM | DAC | | |
| **N584L020** | 620 | 20 | 15 | 1.0~1.8 | 3 | 1 + DTM | 4~8 | Ring | 9-bit | - | 128 | 8 I/O |
| **N584L030** | 1020 | 34 | 25 | 1.0~1.8 | 3 | 1 + DTM | 4~8 | Ring | 9-bit | - | 128 | 8 I/O |
| **N584L040** | 1260 | 42 | 32 | 1.0~1.8 | 3 | 1 + DTM | 4~8 | Ring | 9-bit | - | 128 | 8 I/O |
| **N584L080** | 2540 | 86 | 64 | 1.0~1.8 | 3 | 1 + DTM | 4~8 | Ring | 9-bit | - | 128 | 12 I/O |
| **N584L120** | 3820 | 129 | 97 | 1.0~1.8 | 3 | 1 + DTM | 4~8 | Ring | 9-bit | - | 128 | 12 I/O |
| **N584L031** | 1020 | 34 | 25 | 1.0~3.6 | 4 | 1 + DTM | 4~8 | Ring | 9-bit | - | 128 | 12 I/O |
| **N584L041** | 1260 | 42 | 32 | 1.0~3.6 | 4 | 1 + DTM | 4~8 | Ring | 9-bit | - | 128 | 12 I/O |
| **N584L061** | 1900 | 64 | 48 | 1.0~3.6 | 4 | 1 + DTM | 4~8 | Ring | 9-bit | - | 128 | 12 I/O |
| **N584L081** | 2540 | 86 | 64 | 1.0~3.6 | 4 | 1 + DTM | 4~8 | Ring | 9-bit | - | 128 | 12 I/O |
| **N584L121** | 3820 | 129 | 97 | 1.0~3.6 | 4 | 1 + DTM | 4~8 | Ring | 9-bit | - | 128 | 12 I/O |

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## • N588Lxxx 1.0~3.6V, 8-bit µC base, 2-ch Voice Synthesizer

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | VDD (6 MHz) | CH | Fsys (MHz) | OSC | Audio | | Vp (V) | RAM (Bytes) | LVD | GPIO | H/W PWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | | | | |
| **N588L040** | 126 | 40 | 30 | 1.0~3.6V | 2 | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N588L080** | 254 | 80 | 60 | 1.0~3.6V | 2 | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N588L120** | 416 | 132 | 99 | 1.0~3.6V | 2 | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N588L160** | 528 | 167 | 125 | 1.0~3.6V | 2 | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N588L200** | 638 | 202 | 152 | 1.0~3.6V | 2 | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N588L240** | 768 | 243 | 182 | 1.0~3.6V | 2 | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N588L280** | 896 | 284 | 213 | 1.0~3.6V | 2 | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N588L330** | 1022 | 324 | 243 | 1.0~3.6V | 2 | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N588LP080 (OTP)** | 254 | 80 | 60 | 1.0~3.6V | 2 | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N588LP200 (OTP)** | 638 | 202 | 152 | 1.0~3.6V | 2 | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N588LP330 (OTP)** | 1022 | 324 | 243 | 1.0~3.6V | 2 | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |



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## • N584Hxxx High Sound Quality 1-ch Voice

| Part No. | ROM (Kbits) | Duration (Sec.) @ 4-bit NM4 | | VDD (4 MHz) | CH | Fsys (MHz) | OSC | Audio | | Cap Sensor | RAM (N) | LVD | GPIO | High Sink |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | | | | |
| **N584H009** | 300 | 12 | 9 | 1.8~5.5V | 1 | 4, 8 | TRIM | 9-bit | - | - | 96 | V | 4 I/O | 4-pin |
| **N584H019** | 620 | 24 | 18 | 1.8~5.5V | 1 | 4, 8 | TRIM | 9-bit | - | - | 96 | V | 4 I/O | 4-pin |
| **N584H029** | 940 | 37 | 28 | 1.8~5.5V | 1 | 4, 8 | TRIM | 9-bit | - | - | 96 | V | 4 I/O | 4-pin |
| **N584H039** | 1260 | 49 | 37 | 1.8~5.5V | 1 | 4, 8 | TRIM | 9-bit | - | - | 96 | V | 4 I/O | 4-pin |
| **N584H010** | 300 | 12 | 9 | 1.8~5.5V | 1 | 4, 8 | TRIM | 9-bit | - | - | 96 | V | 8 I/O | 8-pin |
| **N584H020** | 620 | 24 | 18 | 1.8~5.5V | 1 | 4, 8 | TRIM | 9-bit | - | - | 96 | V | 8 I/O | 8-pin |
| **N584H030** | 940 | 37 | 28 | 1.8~5.5V | 1 | 4, 8 | TRIM | 9-bit | - | - | 96 | V | 8 I/O | 8-pin |
| **N584H040** | 1260 | 49 | 37 | 1.8~5.5V | 1 | 4, 8 | TRIM | 9-bit | - | - | 96 | V | 8 I/O | 8-pin |
| **N584H060** | 1740 | 68 | 51 | 1.8~5.5V | 1 | 4, 8 | TRIM | 9-bit | - | - | 96 | V | 8 I/O | 8-pin |
| **N584H070** | 1900 | 74 | 56 | 1.8~5.5V | 1 | 4, 8 | TRIM | 9-bit | - | - | 96 | V | 8 I/O | 8-pin |
| **N584H120** | 3340 | 131 | 98 | 1.8~5.5V | 1 + DTM | 4, 8 | TRIM | 9-bit | - | 8-pin | 224 | V | 16 I/O | 8-pin |
| **N584H160** | 4070 | 159 | 119 | 1.8~5.5V | 1 + DTM | 4, 8 | TRIM | 9-bit | | 8-pin | 224 | V | 16 I/O | 8-pin |
| **N584H170** | 4460 | 175 | 131 | 1.8~5.5V | 1 + DTM | 4, 8 | TRIM | 9-bit | - | 8-pin | 224 | V | 16 I/O | 8-pin |
| **N584H210** | 5740 | 225 | 169 | 1.8~5.5V | 1 + DTM | 4, 8 | TRIM | 9-bit | - | 8-pin | 224 | V | 16 I/O | 8-pin |
| **N584H260** | 7020 | 275 | 206 | 1.8~5.5V | 1 + DTM | 4, 8 | TRIM | 9-bit | - | 8-pin | 224 | V | 16 I/O | 8-pin |
| **N584H300** | 7980 | 312 | 234 | 1.8~5.5V | 1 + DTM | 4, 8 | TRIM | 9-bit | - | 8-pin | 224 | V | 16 I/O | 8-pin |
| ***N584HP030 (OTP)** | 940 | 37 | 28 | 1.8~5.5V | 1 | 4, 8 | TRIM | 9-bit | - | - | 96 | V | 8 I/O | 8-pin |
| **N584HP070 (OTP)** | 1900 | 74 | 56 | 1.8~5.5V | 1 | 4, 8 | TRIM | 9-bit | - | - | 96 | V | 8 I/O | 8-pin |
| **N584HP160 (OTP)** | 4070 | 159 | 119 | 1.8~5.5V | 1 + DTM | 4, 8 | TRIM | 9-bit | - | 8-pin | 224 | V | 16 I/O | 8-pin |
| **N584HP300 (OTP)** | 7980 | 312 | 234 | 1.8~5.5V | 1 + DTM | 4, 8 | TRIM | 9-bit | - | 8-pin | 224 | V | 16 I/O | 8-pin |

*under development

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## • N588Jxxx 8-bit µC Base, 1-ch Voice Synthesizer w/ PWM Direct Driver

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | VDD (6MHz) | CH | Fsys (MHz) | Audio | | RAM (Bytes) | LVD | GPIO | H/W PWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | PWM | DAC | | | | |
| **N588J010** | 30 | 10 | 7 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588J040** | 126 | 40 | 30 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588J060** | 206 | 65 | 49 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588J080** | 254 | 80 | 60 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588J120** | 414 | 131 | 98 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588J170** | 510 | 162 | 121 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588J200** | 704 | 223 | 167 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588J250** | 830 | 263 | 197 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588J340** | 1020 | 324 | 243 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588J480** | 1534 | 486 | 364 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588J650** | 2044 | 648 | 486 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588JP080 (OTP)** | 254 | 80 | 60 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588JP170 (OTP)** | 510 | 162 | 121 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588JP340 (OTP)** | 1020 | 324 | 243 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588JP480 (OTP)** | 1534 | 486 | 364 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588JP650 (OTP)** | 2044 | 648 | 486 | 2.2~5.5V | 1 | 4,6,8 | 12-bit | - | 192 | √ | 24 I/O | 3-pair |

## • N588Hxxx 8-bit µC Base, 3-ch Voice + Melody Synthesizer

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (Bytes) | LVD | GPIO | H/W PWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | | | |
| **N588H061** | 206 | 65 | 49 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588H081** | 254 | 80 | 60 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588H120** | 414 | 131 | 98 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588H170** | 510 | 162 | 121 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588H200** | 704 | 223 | 167 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588H250** | 830 | 263 | 197 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588H340** | 1022 | 324 | 243 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588H480** | 1534 | 486 | 364 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588H650** | 2044 | 648 | 486 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588HP080 (OTP)** | 254 | 80 | 60 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588HP170 (OTP)** | 510 | 162 | 121 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 128 | √ | 16 I/O | 3-pair |
| **N588HP340 (OTP)** | 1022 | 324 | 243 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588HP480 (OTP)** | 1534 | 486 | 364 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 192 | √ | 24 I/O | 3-pair |
| **N588HP650 (OTP)** | 2044 | 648 | 486 | 2.2~5.5 | 3 | 4,6,8 | TRIM | 12-bit | - | 192 | √ | 24 I/O | 3-pair |



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## • N589A 8-bit µC Base, 2-ch Voice + Melody Synthesizer, w/ ADC

| Part No. | Duration (Sec) (8 KHz) | VDD (V) | Voice CH | Fsys (MHz) | OSC | ADC | Audio | | RAM (Bytes) | GPIO | I/O Interface | PWM I/O | LVD | IR wake up |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | PWM | DAC | | | | | | |
| **N589A080** | 98 | 1.8~5.5 | 2 | 20 | TRIM | 4ch, 8bit | 13-bit | - | 512 | 24 I/O | - | 9 pin | √ | √ |
| **N589A120** | 130 | 1.8~5.5 | 2 | 20 | TRIM | 4ch, 8bit | 13-bit | - | 512 | 24 I/O | - | 9 pin | √ | √ |
| **N589A170** | 162 | 1.8~5.5 | 2 | 20 | TRIM | 4ch, 8bit | 13-bit | - | 512 | 24 I/O | - | 9 pin | √ | √ |
| **N589A200** | 226 | 1.8~5.5 | 2 | 20 | TRIM | 4ch, 8bit | 13-bit | - | 512 | 32 I/O | SPI | 9 pin | √ | √ |
| **N589A250** | 290 | 1.8~5.5 | 2 | 20 | TRIM | 4ch, 8bit | 13-bit | - | 512 | 32 I/O | SPI | 9 pin | √ | √ |
| **N589A340** | 354 | 1.8~5.5 | 2 | 20 | TRIM | 4ch, 8bit | 13-bit | - | 512 | 32 I/O | SPI | 9 pin | √ | √ |
| **N589A480** | 482 | 1.8~5.5 | 2 | 20 | TRIM | 4ch, 8bit | 13-bit | - | 512 | 32 I/O | SPI | 9 pin | √ | √ |
| **N589A680** | 738 | 1.8~5.5 | 2 | 20 | TRIM | 4ch, 8bit | 13-bit | - | 512 | 32 I/O | SPI | 9 pin | √ | √ |

## • N5132,N5162 1-ch Voice Synthesizer w/ CPU I/F

| Part No. | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | LVR | GPIO | CPU I/F |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | PWM | DAC | | | |
| **N5132 (OTP)** | 2.2~5.5 | 1 | 8 | Ring | 9-bit | - | √ | 6 I/O | √ |
| **N5162S16(Flash)** | 2.7~5.5 | 1 | 6,8 | Ring | 12-bit | 13-bit | √ | 12 I/O | √ |

## • N5160Sxx 8-bit µC Base, 1-ch Long Duration Voice Synthesizer

| Part No. | Flash (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | LVR | GPIO | SIM SPI | Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | | | |
| **N5160S16 (Flash)** | 2048 | 635 | 476 | 2.7~5.5 | 1 | 6,8 | Ring | 12-bit | 13-bit | √ | 12 I/O | √ | LQFP48 |
| **N5160S32 (Flash)** | 4096 | 1270 | 953 | 2.7~5.5 | 1 | 6,8 | Ring | 12-bit | 13-bit | √ | 12 I/O | √ | LQFP48 |



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## BandDirector® Series

### • W567Cxxx 8-bit µC Base, 16-ch Voice + Wavetable Melody Synthesizer

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | Channel | | Fsys (MHz) | OSC | Sub-Clock 32 KHz | Audio | | RAM (Bytes) | GPIO | H/W PWM | SIM SPI | PAN Stereo |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | Voice | WTM | | | | PWM | DAC | | | | | |
| **W567C070** | 336 | 99 | 74 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | - |
| **W567C080** | 416 | 124 | 93 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | - |
| **W567C100** | 464 | 139 | 104 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | - |
| **W567C120** | 508 | 152 | 114 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | - |
| **W567C151** | 640 | 193 | 145 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | - |
| **W567C171** | 768 | 233 | 174 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | - |
| **W567C210** | 896 | 272 | 204 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | - |
| **W567C260** | 1020 | 311 | 233 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | - |
| **W567C300** | 1232 | 376 | 282 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | - |
| **W567C340** | 1376 | 421 | 316 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | - |
| **W567C380** | 1532 | 469 | 352 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | - |
| **W567C126** | 508 | 152 | 114 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | √ |
| **W567C266** | 1020 | 311 | 233 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | √ |
| **W567C306** | 1232 | 376 | 282 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | √ |
| **W567C346** | 1376 | 421 | 316 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | √ |
| **W567C386** | 1532 | 469 | 352 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | √ |
| **W567CP260 (OTP)** | 1020 | 311 | 233 | 2 | 16 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ | - |

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## • N567Gxxx 8-bit µC Base, 4-ch Voice + Wavetable Melody Synthesizer

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (Bytes) | GPIO | H/W PWM | SIM SPI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | | | |
| **N567G030** | 126 | 34 | 26 | 2.2~5.5 | 4 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | 24 I/O | - | √ |
| **N567G041** | 158 | 44 | 33 | 2.2~5.5 | 4 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | 24 I/O | - | √ |
| **N567G080** | 286 | 84 | 63 | 2.2~5.5 | 4 | 4,6,8 | TRIM | 12-bit | 13-bit | 384 | 24 I/O | - | √ |
| **N567G121** | 416 | 124 | 93 | 2.2~5.5 | 4 | 4,6,8 | TRIM | 12-bit | 13-bit | 384 | 24 I/O | - | - |
| **N567G161** | 528 | 158 | 119 | 2.2~5.5 | 4 | 4,6,8 | TRIM | 12-bit | 13-bit | 384 | 24 I/O | - | - |
| **N567G201** | 638 | 192 | 144 | 2.2~5.5 | 4 | 4,6,8 | TRIM | 12-bit | 13-bit | 384 | 24 I/O | - | - |
| **N567G240** | 768 | 233 | 174 | 2.2~5.5 | 4 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | 8I, 24 I/O | 3-pair | √ |
| **N567G280** | 896 | 272 | 204 | 2.2~5.5 | 4 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | 8I, 24 I/O | 3-pair | √ |
| **N567G330** | 1022 | 311 | 233 | 2.2~5.5 | 4 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | 8I, 24 I/O | 3-pair | √ |

## • N567Kxxx 8-bit µC Base, 6-ch Voice + Wavetable Melody Synthesizer

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (Bytes) | LVD | GPIO | H/W PWM | SIM SPI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | | | | |
| **N567K030** | 126 | 34 | 26 | 2.2~5.5 | 6 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | - | 24 I/O | - | √ |
| **N567K041** | 158 | 44 | 33 | 2.2~5.5 | 6 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | - | 24 I/O | - | √ |
| **N567K080** | 286 | 84 | 63 | 2.2~5.5 | 6 | 4,6,8 | TRIM | 12-bit | 13-bit | 384 | - | 24 I/O | - | √ |
| **N567K081** | 254 | 80 | 60 | 2.2~5.5 | 6 | 4,6,8 | TRIM | 12-bit | 13-bit | 384 | √ | 24 I/O | - | √ |
| **N567K121** | 416 | 124 | 93 | 2.2~5.5 | 6 | 4,6,8 | TRIM | 12-bit | 13-bit | 384 | - | 24 I/O | - | - |
| **N567K161** | 528 | 158 | 119 | 2.2~5.5 | 6 | 4,6,8 | TRIM | 12-bit | 13-bit | 384 | - | 24 I/O | - | - |
| **N567K201** | 638 | 192 | 144 | 2.2~5.5 | 6 | 4,6,8 | TRIM | 12-bit | 13-bit | 384 | - | 24 I/O | - | - |
| **N567K240** | 768 | 233 | 174 | 2.2~5.5 | 6 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | - | 8I, 24 I/O | 3-pair | √ |
| **N567K280** | 896 | 272 | 204 | 2.2~5.5 | 6 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | - | 8I, 24 I/O | 3-pair | √ |
| **N567K330** | 1022 | 311 | 233 | 2.2~5.5 | 6 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | - | 8I, 24 I/O | 3-pair | √ |



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## • N567Hxxx 8-bit µC Base, 8-ch Voice + Wavetable Melody Synthesizer

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (Bytes) | GPIO | H/W PWM | SIM SPI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | | | |
| **N567H030** | 126 | 34 | 26 | 2.2~5.5 | 8 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | 24 I/O | - | √ |
| **N567H041** | 158 | 44 | 33 | 2.2~5.5 | 8 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | 24 I/O | - | √ |
| **N567H080** | 286 | 84 | 63 | 2.2~5.5 | 8 | 4,6,8 | TRIM | 12-bit | 13-bit | 384 | 24 I/O | - | √ |
| **N567H121** | 416 | 124 | 93 | 2.2~5.5 | 8 | 4,6,8 | TRIM | 12-bit | 13-bit | 384 | 24 I/O | - | - |
| **N567H161** | 528 | 158 | 119 | 2.2~5.5 | 8 | 4,6,8 | TRIM | 12-bit | 13-bit | 384 | 24 I/O | - | - |
| **N567H201** | 638 | 192 | 144 | 2.2~5.5 | 8 | 4,6,8 | TRIM | 12-bit | 13-bit | 384 | 24 I/O | - | - |
| **N567H240** | 768 | 233 | 174 | 2.2~5.5 | 8 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | 8I, 24 I/O | 3-pair | √ |
| **N567H280** | 896 | 272 | 204 | 2.2~5.5 | 8 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | 8I, 24 I/O | 3-pair | √ |
| **N567H330** | 1022 | 311 | 233 | 2.2~5.5 | 8 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | 8I, 24 I/O | 3-pair | √ |
| **N567HP330 (OTP)** | 1022 | 311 | 233 | 2.2~5.5 | 8 | 4,6,8 | TRIM/X'tal | 12-bit | 13-bit | 384 | 8I, 24 I/O | 3-pair | √ |

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## • N567Dxxx 8-bit µC Base, 14-ch Voice + Wavetable Melody Synthesizer

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | Channel | | Fsys (MHz) | OSC | Sub-Clock 32 KHz | Audio | | RAM (Bytes) | GPIO | H/W PWM | SIM SPI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | Voice | WTM | | | | PWM | DAC | | | | |
| **N567D070** | 224 | 71 | 53 | 2 | 14 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ |
| **N567D100** | 336 | 106 | 80 | 2 | 14 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ |
| **N567D120** | 416 | 132 | 99 | 2 | 14 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ |
| **N567D140** | 464 | 147 | 110 | 2 | 14 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ |
| **N567D160** | 508 | 161 | 121 | 2 | 14 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ |
| **N567D200** | 640 | 203 | 152 | 2 | 14 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ |
| **N567D240** | 768 | 243 | 183 | 2 | 14 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ |
| **N567D280** | 896 | 284 | 213 | 2 | 14 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ |
| **N567D320** | 1020 | 323 | 242 | 2 | 14 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ |
| **N567D380** | 1232 | 390 | 293 | 2 | 14 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ |
| **N567D420** | 1376 | 436 | 327 | 2 | 14 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ |
| **N567D470** | 1532 | 485 | 364 | 2 | 14 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ |
| **N567DP320 (OTP)** | 1020 | 323 | 242 | 2 | 14 | 4~8 | Ring/X'tal | X'tal | 12-bit | 13-bit | 512 | 24 I/O | 3-pin | √ |

## • N567Lxxx 1.0~3.6V, 8-bit µC base, 8-ch Voice + Wavetable Melody Synthesizer

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | Channel | | VDD (6 MHz) | Fsys (MHz) | OSC | Audio | | Vp (V) | RAM (Bytes) | LVD | GPIO | H/W PWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | Voice | WTM | | | | PWM | DAC | | | | | |
| **N567L080** | 254 | 80 | 60 | 2 | 8 | 1.0~3.6V | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N567L120** | 416 | 132 | 99 | 2 | 8 | 1.0~3.6V | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N567L160** | 528 | 167 | 125 | 2 | 8 | 1.0~3.6V | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N567L200** | 638 | 202 | 152 | 2 | 8 | 1.0~3.6V | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N567L240** | 768 | 243 | 182 | 2 | 8 | 1.0~3.6V | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N567L280** | 896 | 284 | 213 | 2 | 8 | 1.0~3.6V | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N567L330** | 1022 | 324 | 243 | 2 | 8 | 1.0~3.6V | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |
| **N567LP330 (OTP)** | 1022 | 324 | 243 | 2 | 8 | 1.0~3.6V | 4,6,8 | TRIM/X'tal | 12-bit | - | 3.3, 4.2 | 384 | √ | 16 I/O | 3-pair |

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## • N566Gxxx 8-bit µC Base, 4-ch Voice + Wavetable Melody Synthesizer, w/ LVD

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (Bytes) | LVD | GPIO | H/W PWM | Constant Current |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | | | | |
| **N566G120** | 416 | 124 | 93 | 2.2~5.5 | 4 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566G160** | 528 | 158 | 119 | 2.2~5.5 | 4 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566G200** | 638 | 192 | 144 | 2.2~5.5 | 4 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566G240** | 768 | 233 | 174 | 2.2~5.5 | 4 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566G280** | 896 | 272 | 204 | 2.2~5.5 | 4 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566G320** | 1022 | 311 | 233 | 2.2~5.5 | 4 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |

## • N566Kxxx 8-bit µC Base, 6-ch Voice + Wavetable Melody Synthesizer, w/ LVD

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (Bytes) | LVD | GPIO | H/W PWM | Constant Current |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | | | | |
| ***N566K080** | 286 | 84 | 63 | 2.2~5.5 | 6 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566K120** | 416 | 124 | 93 | 2.2~5.5 | 6 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566K160** | 528 | 158 | 119 | 2.2~5.5 | 6 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566K200** | 638 | 192 | 144 | 2.2~5.5 | 6 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566K240** | 768 | 233 | 174 | 2.2~5.5 | 6 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566K280** | 896 | 272 | 204 | 2.2~5.5 | 6 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566K320** | 1022 | 311 | 233 | 2.2~5.5 | 6 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |

## • N566Hxxx 8-bit µC Base, 8-ch Voice + Wavetable Melody Synthesizer, w/ LVD

| Part No. | ROM (Kbytes) | Duration (Sec.) @ 4-bit NM4 | | VDD (V) | CH | Fsys (MHz) | OSC | Audio | | RAM (Bytes) | LVD | GPIO | H/W PWM | Constant Current |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (6 KHz) | (8 KHz) | | | | | PWM | DAC | | | | | |
| ***N566H080** | 286 | 84 | 63 | 2.2~5.5 | 8 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566H120** | 416 | 124 | 93 | 2.2~5.5 | 8 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566H160** | 528 | 158 | 119 | 2.2~5.5 | 8 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566H200** | 638 | 192 | 144 | 2.2~5.5 | 8 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566H240** | 768 | 233 | 174 | 2.2~5.5 | 8 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566H280** | 896 | 272 | 204 | 2.2~5.5 | 8 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566H320** | 1022 | 311 | 233 | 2.2~5.5 | 8 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |
| **N566HP320 (OTP)** | 1022 | 311 | 233 | 2.2~5.5 | 8 | 4,6,8 | TRIM | 12-bit | - | 384 | √ | 24 I/O | 2-pin | √ |

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## *ViewTalk*® Series

### • N537A090 8-bit µC Base, 2-ch Voice + Dual Tone Melody Synthesizer w/ B/W 1K-dot LCD Driver

| Part No. | ROM (Kbytes) | Working RAM (Bytes) | Duration (Sec.) | LCD RAM (Bytes) | GPIO | Audio | | LCD Resolution (SEGxCOM) | Bias | Duty |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | PWM | DAC | | | |
| **N537A090** | 283 | 1K | 90 | 128 | 12 I/O | 9-bit | - | 64x16 | 1/4, 1/5 | 1/8, 1/16 |

### • N531A170 8-bit µC Base, 2-ch Voice + Dual Tone Melody Synthesizer w/ B/W 1K-dot LCD Driver

| Part No. | ROM (Kbytes) | Working RAM (Bytes) | Duration (Sec.) | Dual Page LCD RAM (Bytes) | GPIO | Audio | | LCD Resolution (SEGxCOM) | Bias | Duty |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | PWM | DAC | | | |
| **N531A170** | 509 | 1K | 170 | 128x2 | 16 I/O | 12-bit | - | 64x16 | 1/4, 1/5 | 1/8, 1/16 |

### • N538Txxx 8-bit µC Base, 8-ch Voice + Wavetable Melody Synthesizer w/ B/W 2K-dot LCD Driver

| Part No. | ROM (Kbytes) | Working RAM (Bytes) | Duration (Sec.) | Dual Page LCD RAM (Bytes) | GPIO | Audio | | LCD Resolution (SEGxCOM) | Bias | Duty |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | PWM | DAC | | | |
| **N538T080** | 249 | 1K | 60 | 256x2 | 24 I/O | 9-bit | 10-bit | 64x32 | 1/4, 1/5 | 1/16, 1/32 |
| **N538T170** | 505 | 1K | 120 | 256x2 | 24 I/O | 9-bit | 10-bit | 64x32 | 1/4, 1/5 | 1/16, 1/32 |
| **N538T260** | 761 | 1K | 180 | 256x2 | 24 I/O | 9-bit | 10-bit | 64x32 | 1/4, 1/5 | 1/16, 1/32 |
| **N538T340** | 1017 | 1K | 250 | 256x2 | 24 I/O | 9-bit | 10-bit | 64x32 | 1/4, 1/5 | 1/16, 1/32 |

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## • N538Axxx 8-bit µC Base, 8-ch Voice + Wavetable Melody Synthesizer w/ B/W 1K-dot LCD Driver

| Part No. | ROM (Kbytes) | Working RAM (Bytes) | Duration (Sec.) | Dual Page LCD RAM (Bytes) | GPIO | Audio | | LCD Resolution (SEGxCOM) | Bias | Duty |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | PWM | DAC | | | |
| **N538A170** | 505 | 1K | 120 | 128x2 | 24 I/O | 9-bit | 10-bit | 64x16 | 1/4, 1/5 | 1/6 |
| **N538A260** | 761 | 1K | 180 | 128x2 | 24 I/O | 9-bit | 10-bit | 64x16 | 1/4, 1/5 | 1/6 |
| **N538A340** | 1017 | 1K | 250 | 128x2 | 24 I/O | 9-bit | 10-bit | 64x16 | 1/4, 1/5 | 1/6 |

## • W539Axxx 8-bit µC Base, 8-ch Voice + Wavetable Melody Synthesizer w/ B/W 1K-dot LCD Driver

| Part No. | ROM (Kbytes) | Working RAM (Bytes) | Duration (Sec.) | Dual Page LCD RAM (Bytes) | GPIO | Audio | | LCD Resolution (SEGxCOM) | Bias | Duty |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | PWM | DAC | | | |
| **W539A804** | 505 | 1K | 120 | 128x2 | 24 I/O | 12-bit | 13-bit | 64x16 | 1/4, 1/5 | 1/8, 1/16 |
| **W539A806** | 761 | 1K | 180 | 128x2 | 24 I/O | 12-bit | 13-bit | 64x16 | 1/4, 1/5 | 1/8, 1/16 |
| **W539A808** | 1017 | 1K | 250 | 128x2 | 24 I/O | 12-bit | 13-bit | 64x16 | 1/4, 1/5 | 1/8, 1/16 |

## • N539Txxx 8-bit µC Base, 8-ch Voice + Wavetable Melody Synthesizer w/ 4-Gray Level,2K-dot LCD Driver

| Part No. | ROM (Kbytes) | Working RAM (Bytes) | Duration (Sec.) | Dual Page LCD RAM (Bytes) | GPIO | Audio | | LCD Resolution (SEGxCOM) | H/W PWM | SIM | Bias | Duty |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | PWM | DAC | | | | | |
| **N539T171** | 509 | 1K | 120 | 256x2x2 | 24 I/O | 12-bit | 13-bit | 64x32 or 72x24 | 6-pin | √ | 1/4, 1/5, 1/6, 1/7 | 1/16, 1/24, 1/32 |
| **N539T261** | 765 | 1K | 180 | 256x2x2 | 24 I/O | 12-bit | 13-bit | 64x32 or 72x24 | 6-pin | √ | 1/4, 1/5, 1/6, 1/7 | 1/16, 1/24, 1/32 |
| **N539T341** | 1021 | 1K | 250 | 256x2x2 | 24 I/O | 12-bit | 13-bit | 64x32 or 72x24 | 6-pin | √ | 1/4, 1/5, 1/6, 1/7 | 1/16, 1/24, 1/32 |
| **N539TP340 (OTP)** | 1021 | 1K | 250 | 256x2x2 | 24 I/O | 12-bit | 13-bit | 64x32 or 72x24 | - | √ | 1/4, 1/5, 1/6, 1/7 | 1/16, 1/24, 1/32 |

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## NuVoice™ Series

### • N569Sxxx, 32-bit Cortex-M0 with embedded Flash, long duration solution

| Part No. | CPU | APROM | Flash Memory | $V_{DD}$ (V) | Duration(Sec) 8KHz | SRAM | GPIO | I/O Interface | PWM I/O | Audio Mic. | Audio Speaker | LDO | ADC | Other | Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **N569S502** | Cortex®-M0 49 MHz | 64KB Flash | 4Mbit | 2.4~5.5 | 500 | 6 KB | 18 | SPI, UART | 8 | - | DPWM DAC | √ | - | 3-ch Voice 8-ch MIDI | LQFP48 |
| **N569S1K0** | Cortex®-M0 49 MHz | 64KB Flash | 8Mbit | 2.4~5.5 | 1,000 | 6 KB | 18 | SPI,UART | 8 | - | DPWM DAC | √ | - | 3-ch Voice 8-ch MIDI | LQFP48 |
| **N569S1K1** | Cortex®-M0 49 MHz | 64KB Flash | 8Mbit | 2.4~5.5 | 1,000 | 6 KB | 18 | SPI, UART | 8 | - | DPWM DAC | √ | - | 3-ch Voice 8-ch MIDI | LQFP48 |
| **N569S2K0** | Cortex®-M0 49 MHz | 64KB Flash | 16Mbit | 2.4~5.5 | 2,000 | 6 KB | 18 | SPI, UART | 8 | - | DPWM DAC | √ | - | 3-ch Voice 8-ch MIDI | LQFP48 |
| **N569S4K0** | Cortex®-M0 49 MHz | 64KB Flash | 32Mbit | 2.4~5.5 | 4,000 | 6 KB | 18 | SPI, UART | 8 | - | DPWM DAC | √ | - | 3-ch Voice 8-ch MIDI | LQFP48 |
| **N569S8K0** | Cortex®-M0 49 MHz | 64KB Flash | 64Mbit | 2.4~5.5 | 8,000 | 6 KB | 18 | SPI, UART | 8 | - | DPWM DAC | √ | - | 3-ch Voice 8-ch MIDI | LQFP48 |
| **N569SAK2** | Cortex®-M0 49 MHz | 64KB Flash | 128Mbit | 2.4~5.5 | 16,000 | 6 KB | 18 | SPI, UART | 8 | - | DPWM DAC | √ | - | 3-ch Voice 8-ch MIDI | LQFP48 |

### • N570XXXX, 32-bit Cortex M0 with embedded Flash and 10 bit ADC Solution

| Part No. | CPU | APROM | Flash Memory | $V_{DD}$ (V) | Duration(Sec) 8KHz | SRAM | GPIO | I/O Interface | PWM I/O | Audio Mic. | Audio Speaker | LDO | ADC | Other | Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **N570F064** | Cortex®-M0 49 MHz | 64KB Flash | - | 1.8~5.5 | - | 6 KB | 22 | SPI x 2, UART | 8 | √ | DPWM DAC | √ | 10-bit 4-ch | - | LQFP48 |
| **N570C064** | Cortex®-M0 49 MHz | 64KB Flash | - | 1.8~5.5 | - | 6 KB | 22 | SPI x 2, UART | 8 | √ | DPWM DAC | √ | 10-bit 4-ch | Voice Recognition | LQFP48 |
| **N570S08A** | Cortex®-M0 49 MHz | 64KB Flash | 8Mbit | 2.4~5.5 | 1,000 | 6 KB | 18 | SPI, UART | 8 | √ | DPWM DAC | √ | 10-bit 4-ch | - | LQFP48 |
| **N570S08B** | Cortex®-M0 49 MHz | 64KB Flash | 8Mbit | 2.4~5.5 | 1,000 | 6 KB | 18 | SPI, UART | 8 | √ | DPWM DAC | √ | 10-bit 4-ch | - | LQFP48 |
| **N570S16A** | Cortex®-M0 49 MHz | 64KB Flash | 16Mbit | 2.4~5.5 | 2,000 | 6 KB | 18 | SPI, UART | 8 | √ | DPWM DAC | √ | 10-bit 4-ch | - | LQFP48 |
| **N570S32A** | Cortex®-M0 49 MHz | 64KB Flash | 32Mbit | 2.4~5.5 | 4,000 | 6 KB | 18 | SPI, UART | 8 | √ | DPWM DAC | √ | 10-bit 4-ch | - | LQFP48 |
| **N570S64A** | Cortex®-M0 49 MHz | 64KB Flash | 64Mbit | 2.4~5.5 | 8,000 | 6 KB | 18 | SPI, UART | 8 | √ | DPWM DAC | √ | 10-bit 4-ch | - | LQFP48 |
| **N570S130** | Cortex®-M0 49 MHz | 64 KB Flash | 128Mbit | 2.4~5.5 | 16,000 | 6 KB | 18 | SPI, UART | 8 | √ | DPWM DAC | √ | 10-bit 4-ch | - | LQFP48 |

| Part No. | CPU | APROM | Flash Memory | $V_{DD}$ (V) | Duration(Sec) 8KHz | SRAM | I/O | I/O Interface | PWM I/O | Audio Mic. | Audio Speaker | LDO | ADC | Other | Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **N570SC08** | Cortex®-M0 49 MHz | 64 KB Flash | 8Mbit | 2.4~5.5 | 1,000 | 6 KB | 18 | SPI, UART | 8 | √ | DPWM DAC | √ | 10-bit 4-ch | Voice Recognition | LQFP48 |
| **N570SC16** | Cortex®-M0 49 MHz | 64 KB Flash | 16Mbit | 2.4~5.5 | 2,000 | 6 KB | 18 | SPI, UART | 8 | √ | DPWM DAC | √ | 10-bit 4-ch | Voice Recognition | LQFP48 |
| **N570SC32** | Cortex®-M0 49 MHz | 64 KB Flash | 32Mbit | 2.4~5.5 | 4,000 | 6 KB | 18 | SPI, UART | 8 | √ | DPWM DAC | √ | 10-bit 4-ch | Voice Recognition | LQFP48 |
| **N570SC64** | Cortex®-M0 49 MHz | 64 KB Flash | 64Mbit | 2.4~5.5 | 8,000 | 6 KB | 18 | SPI, UART | 8 | √ | DPWM DAC | √ | 10-bit 4-ch | Voice Recognition | LQFP48 |

- N571PXXX, 32-bit Cortex M0 with embedded OTP and 10 bit ADC Solution

| Part No. | CPU | APROM | Flash Memory | $V_{DD}$ (V) | Duration(Sec) 8KHz | SRAM | I/O | I/O Interface | PWM I/O | Audio Mic. | Audio Speaker | LDO | ADC | Other | Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **N571P032** | Cortex®-M0 23 MHz | 32 KB OTP | - | 2.4~5.5 | - | 4 KB | 24 | SPI | 4 | √ | Class-AB (400mW) | √ | 10-bit 3-ch | - | LQFP48 |

- N572XXXX, 32-bit Cortex M0 with embedded OTP/Flash and 12 bit ADC Solution

| Part No. | CPU | APROM | Flash Memory | $V_{DD}$ (V) | Duration(Sec) 8KHz | SRAM | I/O | I/O Interface | PWM I/O | Audio Mic. | Audio Speaker | LDO | ADC | Other | Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **N572P072** | Cortex®-M0 48 MHz | 64 KB OTP 8 KB Flash | - | 2.4~5.5 | - | 8 KB | 32 | SPI x 2 | 4 | √ | Class-AB (400mW) | √ | 12-bit 8-ch | - | LQFP64 |
| **N572F072** | Cortex®-M0 48 MHz | 72 KB Flash | - | 2.4~5.5 | - | 8 KB | 32 | SPI x 2 | 4 | √ | Class-AB (400mW) | √ | 12-bit 8-ch | - | LQFP64 |
| **N572C072** | Cortex®-M0 48 MHz | 72 KB Flash | - | 2.4~5.5 | - | 8 KB | 32 | SPI x 2 | 4 | √ | Class-AB (400mW) | √ | 12-bit 8-ch | Voice Recognition | LQFP64 |
| **N572F065** | Cortex®-M0 48 MHz | 64 KB Flash | - | 2.4~5.5 | - | 8 KB | 32 | SPI x 2 | 4 | √ | Class-AB (250mW) | √ | 12-bit 8-ch | USB 2.0 FS Device | LQFP64 |
| **N572S08A** | Cortex®-M0 48 MHz | 64 KB Flash | 8Mbit | 2.4~5.5 | 1,000 | 8 KB | 26 | SPI | 4 | √ | Class-AB (400mW) | √ | 12-bit 8-ch | - | LQFP64 |
| **N572S16A** | Cortex®-M0 48 MHz | 64 KB Flash | 16Mbit | 2.4~5.5 | 2,000 | 8 KB | 26 | SPI | 4 | √ | Class-AB (400mW) | √ | 12-bit 8-ch | - | LQFP64 |
| **N572S32A** | Cortex®-M0 48 MHz | 64 KB Flash | 32Mbit | 2.4~5.5 | 4,000 | 8 KB | 26 | SPI | 4 | √ | Class-AB (400mW) | √ | 12-bit 8-ch | - | LQFP64 |
| **N572S64A** | Cortex®-M0 48 MHz | 64 KB Flash | 64Mbit | 2.4~5.5 | 8,000 | 8 KB | 26 | SPI | 4 | √ | Class-AB (400mW) | √ | 12-bit 8-ch | - | LQFP64 |
| **N572U130** | Cortex®-M0 48 MHz | 64 KB Flash | 128Mbit | 2.4~5.5 | 16,000 | 8 KB | 22 | SPI | 4 | √ | Class-AB (250mW) | √ | 12-bit 8-ch | USB 2.0 FS Device | LQFP64 |

## • N573XXXX, 32-bit Cortex-M0 with embedded Flash and 16 bit ADC Solution

| Part No. | CPU | APROM | Flash Memory | $V_{DD}$ (V) | Duration(Sec) | SRAM | I/O | I/O Interface | PWM I/O | Audio | | LDO | ADC | Other | Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 8KHz | | | | | Mic. | Speaker | | | | |
| **N573F128** | Cortex®-M0 48 MHz | 128 KB Flash | - | 1.8~5.5 | - | 12 KB | 32 | UART, I²C, I²S, SPI | 4 | √ | DPWM (1W) | √ | 16-bit sigma delta, 12-bit 10-ch SAR ADC | 16-ch Touch Key, PDMA, CRC | LQFP64 |

## • N575XXXX, 32-bit Cortex-M0 with embedded Flash and 16 bit ADC Solution

| Part No. | CPU | APROM | Flash Memory | $V_{DD}$ (V) | Duration(Sec) | SRAM | I/O | I/O Interface | PWM I/O | Audio | | LDO | ADC | Other | Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 8KHz | | | | | Mic. | Speaker | | | | |
| **N575F145** | Cortex®-M0 48 MHz | 145 KB Flash | - | 2.4~5.5 | - | 12 KB | 24 | UART, I²C, I²S, SPI | 2 | √ | DPWM (1W) | √ | 16-bit, sigma delta | 8-ch Touch Key, Temperature Alarm, PDMA, CRC | LQFP48 |
| **N575C145** | Cortex®-M0 48 MHz | 145 KB Flash | - | 2.4~5.5 | - | 12 KB | 24 | UART, I²C, I²S, SPI | 2 | √ | DPWM (1W) | √ | 16-bit, sigma delta | 8-ch Touch Key, Temperature Alarm, PDMA, CRC, Voice Recognition | LQFP48 |
| **N575S64A** | Cortex®-M0 48 MHz | 145 KB Flash | 64 Mbit | 2.4~5.5 | 8,000 | 12 KB | 20 | UART, I²C, I²S, SPI | 2 | √ | DPWM (1W) | √ | 16-bit, sigma delta | 8-ch Touch Key, Temperature Alarm, PDMA, CRC | LQFP64 |

## Peripheral Series

### Nu-Touch

- N55T10 10 Key Capacitor Sensor Controller

| Part No. | Input | Wake Up | VDD (V) | Interface |
|---|---|---|---|---|
| **N55T10** | 10 | √ | 2.4~5.5 | I²C |

### ADC

- N55AD SAR ADC

| Part No. | Channel | Resolution | VDD (V) | Conversion Rate |
|---|---|---|---|---|
| **N55AD808** | 8 | 8-bit | 2.7~5.5 | 50 KHz |

### I/O Expander

- W55P241 I/O Expander w/ 24 I/O Pins and SPI Interface

| Part No. | Interface | GPIO | Wake Up | H/W PWM | Internal OSC |
|---|---|---|---|---|---|
| **W55P241** | SPI | 24 I/O | √ | 8-pin | 8 MHz |

- N55P242 I/O Expander w/ 24 I/O Pins and SPI Interface

| Part No. | Interface | GPIO | Wake Up | H/W PWM | Constant Current | Internal OSC |
|---|---|---|---|---|---|---|
| **N55P242** | SPI | 24 I/O | √ | 24-pin | 24-pin | 8 MHz |

### MFID and RF Family

- W55MIDxx 13.56MHz MFID w/ Single-tag/Multi-tag and Reader

| Part No. | Category | Frequency (MHz) | ID type | ID No. | Anti-collision | TX power | µC Interface |
|---|---|---|---|---|---|---|---|
| **W55MID15** | Single-tag | 13.56 | Bonding-ID | 243 | - | - | - |
| **W55MID35** | Multi-tag | 13.56 | Bonding-ID | 243 | 6~8 tags | - | - |
| **W55MID20** | Single-tag | 13.56 | Programmable | > 1K | - | - | - |
| **W55MID50** | Reader | 13.56 | - | - | - | 4-level | Serial/Parallel |

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## Serial ROM Family

### N551Cxxx Serial Mask ROM

| Part No. | ROM (bits) | Access Time | VDD (V) | Interface |
|---|---|---|---|---|
| **N551C161** | 16M | 1us | 2.4~5.5 | SPI |
| **N551C321** | 32M | 1us | 2.4~5.5 | SPI |

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## Consumer Series

### W541xxxx Low Power 4-bit µC

| Part No. | VDD (V) | ROM (bits) | RAM (bits) | GPIO | LCD | System Clock | Fast Working Frequency | Slow Working Frequency | Package |
|---|---|---|---|---|---|---|---|---|---|
| **W541L20x** | 1.2~1.8 | 2Kx16 | 128x4 | 20 I/O | - | Single Crystal/RC | 400K~1 MHz | 32768 Hz | DIP:18/20/28<br>SOP:20/28 |
| **W541C20x** | 2.4~5.5 | 2Kx16 | 128x4 | 20 I/O | - | Single Crystal/RC | 400K~1 MHz | 32768 Hz | DIP:18/20/28<br>SOP:20/28 |
| **W541E20x (MTP)** | 2.4~5.5 | 2Kx16 | 128x4 | 20 I/O | - | Single Crystal/RC | 400K~1 MHz | 32768 Hz | DIP:18/20/28<br>SOP:20/28 |
| **W541L23x** | 1.2~3.6 | 1Kx16<br>1.5Kx16<br>2Kx16 | 64x4<br>96x4<br>128x4 | 12 I/O | 4x16 | Single/Dual Crystal/Internal RC | 100K~800 KHz | 32768 Hz | PLCC-44 |
| **W541L240** | 1.2~1.8 | 2Kx16 | 64x4 | 12 I/O | 4x24 | Single Crystal/RC | 400K~1 MHz | 32768 Hz | QFP64 |
| **W541C240** | 2.4~5.5 | 2Kx16 | 64x4 | 12 I/O | 4x24 | Single Crystal/RC | 400K~1 MHz | 32768 Hz | QFP64 |
| **W541L250** | 1.2~1.8 | 2Kx16 | 128x4 | 20 I/O | 4x24 | Single Crystal/RC | 400K~1 MHz | 32768 Hz | QFP64 |
| **W541L261** | 1.2~3.6 | 2Kx16 | 128x4 | 20 I/O | 4x32 | Single/Dual Crystal/RC | 400K~4 MHz | 32768 Hz | QFP80 |
| **W541C261** | 2.4~5.5 | 2Kx16 | 128x4 | 20 I/O | 4x32 | Single/Dual Crystal/RC | 400K~4 MHz | 32768 Hz | QFP80 |
| **W541E261 (MTP)** | 2.4~5.5 | 2Kx16 | 128x4 | 20 I/O | 4x32 | Single/Dual Crystal/RC | 400K~4 MHz | 32768 Hz | QFP80 |
| **W541L480** | 1.2~3.6 | 4Kx16 | 256x4 | 20 I/O | 4x32 | Single/Dual Crystal/RC | 400K~4 MHz | 32768 Hz | QFP80 |
| **W541C480** | 2.4~5.5 | 4Kx16 | 256x4 | 20 I/O | 4x32 | Single/Dual Crystal/RC | 400K~4 MHz | 32768 Hz | QFP80 |
| **W541E480 (MTP)** | 2.4~5.5 | 4Kx16 | 256x4 | 20 I/O | 4x32 | Single/Dual Crystal/RC | 400K~4 MHz | 32768 Hz | QFP80 |

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# ARM® Cortex®-M Audio SoCs

## AUI Enabler Series

| Part No. | CPU | APROM | SRAM | I/O | Timer | SPI | PWM | ADC | RTC | Audio | | Developemnt Tools | Other | Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Mic. | Speaker | | | |
| **ISD91032** | Cortex®-M0 49 MHz | 64 KB Flash | 6 KB | 22 | 3 | 1 | 8 | 10-bit SAR ADC | √ | 1 | Class-D (0.45W) | - | 13-bit DAC, UART | LQFP48 |
| **ISD9130** | Cortex®-M0 49 MHz | 68 KB Flash | 12 KB | 24 | 2 | 1 | 2 | Sigma-Delta >92 dB | √ | 1 | Class-D (1W) | ISD-DMK_9160 | 8-ch Touch Key,Temperature Alarm,UART, I²C, I²S, PDMA, CRC | LQFP48 QFN32 |
| **ISD9160** | Cortex®-M0 49 MHz | 145 KB Flash | 12 KB | 24 | 2 | 1 | 2 | Sigma-Delta >92 dB | √ | 1 | Class-D (1W) | ISD-DMK_9160 | 8-ch Touch Key,Temperature Alarm,UART, I²C, I²S, PDMA, CRC | LQFP48 QFN32 |
| **ISD91230** | Cortex®-M0 49 MHz | 64 KB Flash | 12 KB | 32 | 2 | 2 (Quad /Dual) | 4 | Sigma-Delta >92 dB | √ | 1 | Class-D (0.45W) | - | 8-ch Touch Key,Temperature Alarm,2*UART, I²C, I²S, PDMA, CRC | LQFP64 |
| **ISD91260** | Cortex®-M0 49 MHz | 128 KB Flash | 12 KB | 32 | 2 | 2 (Quad /Dual) | 4 | Sigma-Delta >92 dB | √ | 1 | Class-D (0.45W) | - | 8-ch Touch Key,Temperature Alarm, 2*UART, I²C, I²S, PDMA, CRC | LQFP64 |
| **ISD91331** | Cortex®-M0 98 MHz | 68 KB Flash | 16 KB | 32 | 2 | 1 (Quad) | 6 | Sigma-Delta >90 dB | √ | 1 | Class-D (1W) | ISD-DMK_9361 | 16-ch Touch Key,Temperature Alarm, UART, I²C, I²S, PDMA, CRC | LQFP64 |
| **ISD91361** | Cortex®-M0 98 MHz | 145 KB Flash | 16 KB | 32 | 2 | 1 (Quad) | 6 | Sigma-Delta >90 dB | √ | 1 | Class-D (1W) | ISD-DMK_9361 | 16-ch Touch Key,Temperature Alarm, UART, I²C, I²S, PDMA, CRC | LQFP64 |
| **ISD94124** | Cortex®-M4 180 MHz | 512 KB Flash | 192 KB | 61 | 4 | 2 (Quad /Dual) | 6 | 12-bit SAR ADC | √ | 4x DMIC | DPWM to exteral amp | ISD-DMK_94100 | USB 2.0 FS VAO | LQFP64 LQFP100 (TBD) |

# Audio CODECs

## • Mono Codec Series

| Part No. | Description | # of | | SNR (dB) | | THD (dB) | | Sample Rate (KHz) | Audio Format | Development Tools | CTRL IF | SPKVDD/ Analog/Digital/ Digital I/O (V) | Package (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ADC | DAC | ADC | DAC | ADC | DAC | | | | | | |
| **NAU8810** | Mono Codec with 2-wire interface | 1 | 1 | 91 | 93 | -79 | -84 | 8~48 | I²S<br>PCM<br>(Timeslot) | NAU8810-EVB | 2-Wire | 2.50~5.50<br>2.50~3.60<br>1.71~3.60<br>1.71~3.60 | QFN20 (4x4) |
| **NAU88C10** | Mono Codec with 2-wire interface | 1 | 1 | 91 | 93 | -79 | -84 | 8~48 | I²S<br>PCM<br>(Timeslot) | NAU88C10-EVB | 2-Wire | 2.50~5.50<br>2.50~3.60<br>1.71~3.60<br>1.71 ~ 3.60 | QFN20 (4x4) |
| **NAU8811** | Mono Codec with SPI interface | 1 | 1 | 91 | 93 | -79 | -84 | 8~48 | I²S<br>PCM<br>(Timeslot) | NAU8811-EVB | 3-Wire | 2.50 ~ 5.50<br>2.50 ~ 3.60<br>1.71 ~ 3.60<br>1.71 ~ 3.60 | QFN20 (4x4) |
| **NAU8812** | Mono Codec with speaker driver | 1 | 1 | 91 | 93 | -79 | -84 | 8~48 | I²S<br>PCM<br>(Timeslot) | NAU8812-EVB | 2-Wire<br>3-Wire<br>4-Wire | 2.50 ~ 5.50<br>2.50 ~ 3.60<br>1.71 ~ 3.60<br>1.71 ~ 3.60 | QFN32 (5x5)<br>SSOP-28 |
| **NAU8814** | Mono Audio Codec with Equalizer, speaker driver | 1 | 1 | 91 | 93 | -79 | -84 | 8~48 | I²S<br>PCM<br>(Timeslot) | NAU8814-EVB | 2-Wire<br>3-Wire | 2.50 ~ 5.50<br>2.50 ~ 3.60<br>1.71 ~ 3.60<br>1.71 ~ 3.60 | QFN24 (4x4) |

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## • Stereo Codec Series

| Part No. | Description | # of | | SNR (dB) | | THD (dB) | | Sample Rate (KHz) | Audio Format | Development Tools | CTRL IF | SPKVDD/ Analog/Digital/ Digital I/O (V) | Package (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ADC | DAC | ADC | DAC | ADC | DAC | | | | | | |
| **NAU8822A** | Stereo Codec with Speaker Drive | 2 | 2 | 90 | 94 | -80 | -84 | 8~48 | I²S<br>PCM (Timeslot) | NAU8822-EVB | 2-Wire<br>3-Wire<br>4-Wire | 2.50 to 5.50<br>2.50 to 3.60<br>1.65 to 3.60<br>1.65 to 3.60 | QFN32 (5x5) |
| **NAU8822L** | Stereo Codec with Speaker Drive | 2 | 2 | 90 | 94 | -80 | -84 | 8~192 | I²S<br>PCM (Timeslot) | NAU8822L-EVB | 2-Wire<br>3-Wire<br>4-Wire | 2.50 to 5.50<br>2.50 to 3.60<br>1.65 to 3.60<br>1.65 to 3.60 | QFN32 (5x5) |
| **NAU88C22** | Stereo Codec with Speaker Drive | 2 | 2 | 89 | 89 | -78 | -84 | 8~192 | I²S<br>PCM (Timeslot) | NAU88C22-EVB | 2-Wire<br>3-Wire<br>4-Wire | 2.50 to 5.50<br>2.50 to 3.60<br>1.65 to 3.60<br>1.65 to 3.60 | QFN32 (5x5)<br>QFN32 (4x4) |
| **NAU8820** | Stereo Codec | 2 | 2 | 90 | 94 | -80 | -84 | 8~48 | I²S<br>PCM (Timeslot) | NAU8820-EVB | 2-Wire<br>3-Wire<br>4-Wire | 2.50 to 5.50<br>2.50 to 3.60<br>1.65 to 3.60<br>1.65 to 3.60 | QFN32 (5x5) |

## • Ultra Low Power (ULP) Codec Series

| Part No. | Description | # of | | SNR (dB) | | THD (dB) | | Sample Rate (KHz) | Audio Format | Development Tools | CTRL IF | SPKVDD/ MICBIAS/Analog/ Digital/Digital I/O (V) | Package (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ADC | DAC | ADC | DAC | ADC | DAC | | | | | | |
| **NAU88L24** | ULP Stereo CODEC With Advanced Headset Detection and Stereo Class D Amp | 2 | 2 | 100 | 103 | -85 | -77 | 8~96 | I²S (TDM)<br>PCM (Timeslot) | NAU88L24-EVB | I²C | 2.6 ~ 5.0<br>2.6 ~ 5.0<br>1.6 ~ 2.0<br>1.1 ~ 1.98<br>1.6 ~ 3.6 | QFN48 (6x6) |
| **NAU88L25** | Ultra-Low Power Audio CODEC With Advanced Headset Features and 124dB Class G Headphone Drive | 1 | 2 | 101 | 124 | -91 | -89 | 8~192 | I²S / PCM | NAU88L25-EVB | I²C | NA<br>2.6 ~ 5.0<br>1.6 ~ 2.0<br>1.1 ~ 1.98<br>1.6 ~ 3.6 | QFN32 (5x5) |

## • Stereo ADC Series

| Part No. | Description | # of | | SNR (dB) | | THD (dB) | | Sample Rate (KHz) | Audio Format | Development Tools | CTRL IF | Analog/ Digital/Digital I/O (V) | Package (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ADC | DAC | ADC | DAC | ADC | DAC | | | | | | |
| **NAU8501** | Stereo ADC with Input Mixer and Line Output | 2 | - | 90 | - | -80 | - | 8~48 | I²S (TDM)<br>PCM (Timeslot) | NAU8501-EVB | 2-Wire<br>3-Wire<br>4-Wire | 2.50 ~ 3.60<br>1.65 ~ 3.60<br>1.65 ~ 3.60 | QFN28 (4x4) |
| **NAU8502** | Stereo ADC with Integrated LDO | 2 | - | 90 | - | -80 | - | 8~48 | I²S (TDM)<br>PCM (Timeslot) | NAU8502-EVB | 2-Wire<br>3-Wire<br>4-Wire | 2.70 ~ 3.60<br>1.71 ~ 3.60<br>1.71 ~ 3.60 | QFN28 (4x4) |

## • Ultra Low Power (ULP) ADC Series

| Part No. | Description | # of | | SNR (dB) | | THD (dB) | | Sample Rate (KHz) | Audio Format | Development Tools | CTRL IF | MICBIAS/ Analog/Digital/ Digital I/O (V) | Package (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ADC | DAC | ADC | DAC | ADC | DAC | | | | | | |
| **NAU85L40** | ULP Quad Audio ADC with integrated FLL and Microphone Preamplifier | 4 | - | 101 | - | -91 | - | 8 to 96 | I²S (TDM) | NAU85L40-EVB | I²S | 2.50 ~ 5.50<br>1.62 ~ 1.98<br>1.20 ~ 1.98<br>1.62 ~ 3.60 | QFN28 (4x4) |
| **NAU85L20** | ULP Stereo Audio ADC with integrated FLL and Microphone Preamplifier | 2 | - | 101 | - | -91 | - | 8 to 96 | I²S (TDM) | NAU85L20-EVB | I²S | 1.80 ~ 5.50<br>1.62 ~ 1.98<br>1.20 ~ 1.98<br>1.62 ~ 3.60 | QFN28 (4x4) |

## • Stereo DAC Series

| Part No. | Description | # of | | SNR (dB) | | THD (dB) | | Sample Rate (KHz) | Audio Format | Development Tools | CTRL IF | SPKVDD/ Analog/ Digital/Digital I/O (V) | Package (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ADC | DAC | ADC | DAC | ADC | DAC | | | | | | |
| **NAU8401** | Stereo DAC with Speaker Drive and Line Input | - | 2 | - | 94 | - | -84 | 8~48 | I²S<br>PCM (Timeslot) | NAU8401-EVB<br>Check For availability | 2-Wire<br>3-Wire<br>4-Wire | 2.50 ~ 5.50<br>2.50 ~ 3.60<br>1.65 ~ 3.60<br>1.65 ~ 3.60 | QFN32 (5x5) |
| **NAU8402** | Stereo DAC with 2Vrms Output | - | 2 | - | 98 | - | -82 | 8~96 | I²S | NAU8402-EVB | - | NA<br>3.0 ~ 3.6<br>1.7 ~ 3.6<br>1.7 ~ 3.6 | TSSOP 16 |

# Audio Amplifiers

## 2Vrms Line Driver and Class-AB Series

| Part No. | Description | SNR (dB) | Output Power | | Gain (dB) | Standby Current (uA) | Operating Voltage (V) | Temp (°C) | Development Tools | Package |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Power (W) | THD+N (%) | | | | | | |
| **NAU8220** | 2Vrms Line Driver | 108 | - | 0.003 | - | - | 3.0~3.6 | -40~85 | NAU8220WG-EVB | SOP14<br>TSSOP14 |
| **ISD8101** | 1.5W Class-AB Audio Amplifier with Chip Enable, Differential/Single ended inputs, Low pop and Click | 100 | 0.825 (5.0V) | <1 | 20 | <1 | 2.4~6.8 | -40~85 | ISD-DEMO8101 | 8-pin SOP<br>8-pin PDIP |
| | | | 1.1 (5.0V) | <10 | | | | | | |
| | | | 1.5 (6.8V) | <10 | | | | | | |
| **ISD8102** | 2W Class-AB Audio Amplifier with Head Phone Sense Input | 100 | 2W into 4Ω at 5V | <10 | 20 | <1 | 2.0~6.8 | -40~85 | ISD-DEMO8102 | 8-pin SOP (Thermal ex-pad) |
| **ISD8104** | 2W Class-AB Audio Amplifier, Differential/Single ended inputs | 100 | 2W into 4Ω at 5V | <10 | 20 | <1 | 2.0~6.8 | -40~85 | ISD-DEMO8104 | 8-pin SOP (Thermal ex-pad)P |

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## Class D Series

| Part No. | Description | SNR (dB) | Output Power | | Gain (dB) | Standby Current (uA) | Operating Voltage (V) | Temp (°C) | Development Tools | Package |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Power (W) | THD+N (%) | | | | | | |
| **NAU82011VG** | 3.1W Mono Class-D Audio Amplifier, variable gain with Differential / Single ended inputs | 103 | 3.1W into 4Ω at 5V | <10 | Variable | <1 | 2.5~5.5 | -40~85 | NAU82011VG-EVB | 9-bump WCSP |
| **NAU82039VG** | 3.2W Mono Class-D Audio Amplifier 12dB fixed gain with Differential / Single ended inputs | 103 | 3.2W into 4Ω at 5V | <10 | 12 | <1 | 2.5~5.5 | -40~85 | NAU82039VG-EVB | 9-bump WCSP |
| **NAU8214** | 2.9W Mono Filer-Free Class-D Audio Amplifier, 5 gain steps with Differential / Single ended inputs and with Speaker Protection / Max Power Limiting feature | 103 | 2.9W into 4Ω at 5V | <10 | 0, 6, 12, 18, 24 | <1 | 2.5~5.5 | -40~85 | NAU8214-EVB | QFN20/ SOP8 |
| **NAU8223** | 3.1W Stereo Filer-Free Class-D Audio Amplifier, 5 gain steps with Differential / Single ended inputs | 103 | 3.1W into 4Ω at 5V | <10 | 0, 6, 12, 18, 24 | <1 | 2.5~5.5 | -40~85 | NAU8223-EVB | QFN20 |
| **NAU8224** | 3.1W Stereo Filer-Free Class-D Audio Amplifier, 2 wire interface gain control with Differential / Single ended inputs | 101 | 3.1W into 4Ω at 5V | <10 | 24 to -62 | <1 | 2.5~5.5 | -40~85 | NAU8224-EVB | QFN20 |
| ***NAU83P20** | Class D power stage 2x20W into 8Ohms (1% THD) | 102 | 10Wx4 20Wx2 | <0.18 | 3BTL / 3SE | <1 | 7.0~24.0 | -40~85 | NAU83P20-EVB | QFN48 |

* Under Development

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# Audio Enhancement

## MaxxAudio® Series

| Part No. | HW Configuration | | | | | MaxxAudio® Algorithms | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I²S Stereo Inputs | ADC Stereo Inputs | I²S Output 2 x Stereo | DAC Single Output | Power Output | Bass | Pro. Eq. | 3D | Treble | Volume | Level | Dialog | Package |
| **NPCP215F** | 4 | 0 | 3 | 0 | 20W (8R) | Y | Y | Y | Y | Y | Y | Y | QFN48 |
| **NPCA110P** | 2 | 3 | 3 | 4 | - | Y | Y | Y | Y | Y | Y | Y | QFN40 |
| **NPCA110T** | 3 | 0 | 3 | 3 | - | Y | Y | Y | Y | Y | Y | Y | QFN32 |
| **NPCA110D** | 3 | 0 | 3 | 0 | - | Y | Y | Y | Y | Y | Y | Y | QFN32 |
| **NPCA110B** | 1 | 2 | 1 | 2 | - | Y | Y | - | - | Y | - | - | QFN32 |

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# Audio Converters

## Precision ADC Series

| Part No. | Description | Resolution Bits | Sample Rates (max) | Architecture | Gain | # of Input Channels | Development Tools | ENOB (Gain=1, 10SPS) | Package |
|---|---|---|---|---|---|---|---|---|---|
| **NAU7802** | Dual Channel 24-bit ADC | 24 | 10, 20, 40, 80 & 320 Hz | Sigma-Delta | 1x, 2x, 4x, 8x, 16x, 32x, 64x, 128x | 2 | NAU-DEMO7802 | 23 | SOP-16, PDIP-16 |

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# ChipCorder® Family

## Digital ChipCorder® Series

| Part No. | Description | Duration | Sample Rate (KHz) | Operating Voltage (V) | Package | Development Tools | Temp (°C) |
|---|---|---|---|---|---|---|---|
| **ISD15102** | Multi-message record/playback, Flash memory, I²S digital audio and SPI interfaces | 2 min | Up to 48 | 2.7~3.6 | LQFP48 | ISD-DMK_15100 | Industrial -40~85°C |
| **ISD15104** | | 4 min | | | | | |
| **ISD15108** | | 8 min | | | | | |
| **ISD15C00** | Multi-message record/playback with I²S digital audio and SPI interfaces | Ext. Flash up to 64 min | Up to 48 | 2.7~3.6 | LQFP48 | ISD-DMK_15C00 | AEC-Q100 |
| **ISD15D00** | Multi-message playback-only with I²S digital audio and SPI interfaces | Ext. Flash up to 64 min | Up to 48 | 2.7~5.5 | QFN32 | ISD-DMK_15D00 | AEC-Q100 |
| **ISD3900** | Multi-message record/playback with I²S digital audio and SPI interfaces | Ext. Flash up to 64 min | Up to 48 | 2.7~3.6 | LQFP48 | ISD-DMK_15100 | Industrial -40~85°C |
| **ISD3800** | Multi-message playback-only with I²S digital audio and SPI interfaces | Ext. Flash up to 64 min | Up to 48 | 2.7~5.5 | LQFP48 | ISD-DMK_15D00 | Industrial -40~85°C |
| **ISD2130** | Multi-message playback-only with embedded Flash memory | 30 sec | Up to 32 | 2.7~3.6 | QFN20 | ISD-DMK_2100 | Industrial -40~85°C |
| **ISD2115A** | | 15 sec | | | | ISD-DMK_2100 | |
| **ISD2360** | Multi-message, 3-channel audio, playback-only with embedded Flash memory | 64 sec | Up to 32 | 2.4~5.5 | QFN32 SOP16 | ISD-DMK_2360 | Industrial -40~85°C |

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## • MLS ChipCorder® Series

| Part No. | Description | Duration | Sample Rate (KHz) | Operating Voltage (V) | Package | Development Tools | Temp (˚C) |
|---|---|---|---|---|---|---|---|
| **ISD14B20** | Multi-message record/playback with internal Flash memory | 10~128 sec | 4~12 | 2.4~5.5 | DIE | ISD-COB18B20 | 0~50°C |
| **ISD14B40** | | | | | | ISD-COB18B24 | |
| **ISD14B80** | | | | | | ISD-COB18B80 | |
| **ISD1916** | Multi-message record/playback with internal Flash memory | 10~128 sec | 4~12 | 2.4~5.5 | SOIC 28 | ISD-DEMO1916 | Industrial |
| **ISD1932** | | | | | | ISD-DEMO1932 | |
| **ISD1964** | | | | | | ISD-DEMO1964 | |
| **ISD1610B** | Single-message record/playback with internal Flash memory | 6~40 sec | 4~12 | 2.4~5.5 | SOIC 16 DIE | I16-COB20 | Commercial Industrial |
| **ISD1616B** | | | | | | | |
| **ISD1620B** | | | | | | | |
| **ISD1730** | Multi-message record/playback, internal Flash memory and SPI interface | 20~480 sec | 4~12 | 2.4~5.5 | SOIC 28 DIE | ISD-COB1730 | Commercial Industrial |
| **ISD1760** | | | | | | ISD-COB17160 | |
| **ISD17120** | | | | | | ISD-COB17120 | |
| **ISD17240** | | | | | | ISD-COB17240 | |
| **ISD1806** | Single-message record/playback with internal Flash | 6~16 sec | 4~8 | 2.7~4.5 | DIE | ISD-COB1810 | 0~50ºC |
| **ISD1810** | | | | | | | |

Contact us: ChipCorder@nuvoton.com

## • MLS ChipCorder® Series

| Part No. | Description | Duration | Sample Rate (KHz) | Operating Voltage (V) | Package | Development Tools | Temp (˚C) |
|---|---|---|---|---|---|---|---|
| **ISD18A04** | Single-message record/playback with internal Flash memory | 4~8 sec | 4~8 | 2.4~5.5 | DIE | ISD-COB18A04 | 0~50ºC |
| **ISD18B12** | Single-message record/playback with internal Flash memory | 6~24 sec | 4~8 | 2.4~5.5 | DIE | ISD-COB18B24 | 0~50ºC |
| **ISD18B24** | | | | | | | |
| **ISD18C10** | Single-message record/playback with internal Flash memory | 16 sec | 4~8 | 2.7~4.5 | DIE | ISD-COB18C10 | 0~50ºC |
| **ISD4002** | Multi-message record/playback, internal Flash memory and SPI interface | 2~16 min | 4,5.3,6.4,8 | 2.7~3.3 | DIP 28<br>SOIC 28<br>TSOP 28<br>DIE | IPROG-1 | Commercial<br>Industrial |
| **ISD4003** | | | | | | | |
| **ISD4004** | | | | | | | |
| **ISD5102** | Multi-message record/playback, internal Flash memory and I²C interface | 2~16 min | 4,5.3,6.4,8 | 2.7~3.3 | SOIC 28<br>TSOP 28<br>DIE | IPROG-1 | Industrial |
| **ISD5104** | | | | | | | |
| **ISD5108** | | | | | | | |
| **ISD5116** | | | | | | | |

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# Development Tools for *PowerSpeech*® Family

| Ordering No. | Board Name | Content | Description | Picture |
|---|---|---|---|---|
| **Development Kit** | | | | |
| **ICE-W588D-FS** | WHS-588D-ICE | • WHS-MINI-USB-ICE System V1.1<br>• WHS-588D-ICE System V3.3<br>• WHS-KEY + Cable • USB Cable | • W588C/D In-Circuit Emulation (ICE) Dev. Kit. Provide in-circuit emulation with program, execute, step through features for design development, verification & debugging |  |
| **ICE-N588H-FS** | NHS-588H-ICE | • WHS-MINI-USB-ICE System V1.1<br>• NHS-588H-ICE System V1.1 2 layer boards<br>• WHS-KEY + Cable • USB Cable | • N588H/J In-Circuit Emulation (ICE) Dev. Kit. Provide in-circuit emulation with program, execute, step through features for design development, verification & debugging |  |
| **ICE-W584A** | WHS-584A-ICE | • WHS-584A-ICE-IL System V1.1<br>• WHS-584A-ICE System V1.2<br>• WHS-KEY + Cable<br>• Power Adaptor • USB Cable | • W584A In-Circuit Emulation (ICE) Dev. Kit. Provide in-circuit emulation with program, execute, step through features for design development, verification & debugging |  |
| **ICE-N584H** | NHS-584H-ICE | • N584H ICE System | • N584H In-Circuit Emulation (ICE) Dev. Kit. Provide in-circuit emulation with program, execute, step through features for design development, verification & debugging |  |
| **Evaluation Board** | | | | |
| **NV-W588D** | WHS-588C/D-16M | • W588C/D series EVB | • W588C/D Series Evaluation Board (EVB) with 16Mbit Flash |  |
| **NV-W588DF20B** | WHS-W588DF20-H1 | • W588DF060(W588DF20) EVB | • W588DF060(W588DF20) Evaluation Board (EVB) with 2Mbit Embedded Flash |  |
| **NV-N588H** | NHS-588H-16M | • N588H/J Series EVB | • N588H/J Series Evaluation Board (EVB) with 16Mbit Flash |  |
| **NV-N588H-L** | NHS-588H-08ML | • N588H/J Series EVB for Low Voltage | • N588H/J EVB Series Evaluation Board (EVB) with 8Mbit Low Voltage Flash |  |
| **NV-N5160** | NHS-W588X006 (NV-N5160) | • N5160 EVB | • N5160 Evaluation Board (EVB) with 32M-bit SPI Flash |  |

# Development Tools for *PowerSpeech*® Family

| Ordering No. | Board Name | Content | Description | Picture |
|---|---|---|---|---|
| | | Evaluation Board | | |
| **NV-N5160S16** | NHS-N5160S16 | • N5160S16 EVB | • N5160S16 Evaluation Board (EVB) |  |
| **NV-N5160S32** | NHS-N5160S32 | • N5160S32 EVB | • N5160S32 Evaluation Board (EVB) |  |
| **NV-N5162S16** | NHS-N5162S16 | • N5162S16 EVB | • N5162S16 Evaluation Board (EVB) |  |
| **NV-N584H** | NHS-584H-16M | • N584H Series EVB | • N584H Series Evaluation Board (EVB) with 16Mbit Flash |  |
| **NV-W584A-H** | WHS-584AH-16M | • W584A/B/C Series EVB | •W584A/B/C Series Evaluation Board (EVB) with 16Mbit Flash |  |
| **NV-N584L-3V** | NHS-584L-16M-3V | • N584L Series EVB with Vp=3V | • N584L Series Evaluation Board (EVB) with 16Mbit Flash for Vp=3V |  |
| **NV-N584L-4V** | NHS-584L-16M-4V | • N584L Series EVB with Vp=4V | • N584L Series Evaluation Board (EVB) with 16Mbit Flash for Vp=4V |  |
| **NV-N588L** | NHS-N588L-16M | • N588L Series EVB | • N588L Series Evaluation Board (EVB) with 16Mbit Flash |  |

# Development Tools for *BandDirector*® Family

| Ordering No. | Board Name | Content | Description | Picture |
|---|---|---|---|---|
| | | Development Kit | | |
| **ICE-N566H-FS** | NHS-566H-ICE | • WHS-MINI-USB-ICE System V1.1<br>• WHS-566H-ICE System V1.1<br>• WHS-KEY + Cable • USB Cable | • N566H In-Circuit Emulation (ICE) Dev. Kit. Provide in-circuit emulation with program, execute, step through features for design development, verification & debugging |  |
| **ICE-W567C-FS** | WHS-BD567C | • WHS-MINI-USB-ICE System V1.1<br>• WHS-567C-IC System V1.3<br>• USB Cable • Power Adaptor | • W567C/J In-Circuit Emulation (ICE) Dev. Kit. Provide in-circuit emulation with program, execute, step through features for design development, verification & debugging |  |
| **ICE-N567H-FS** | WHS-N567H-ICE | • WHS-MINI-USB-ICE System V1.1<br>• WHS-N567H-ICE System V3.0<br>• USB Cable • Power Adaptor | • N567G/H/K In-Circuit Emulation (ICE) Dev. Kit. Provide in-circuit emulation with program, execute, step through features for design development, verification & debugging |  |

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## Development Tools for *BandDirector*® Family

| Ordering No. | Board Name | Content | Description | Picture |
|---|---|---|---|---|
| Evaluation Board | | | | |
| **NV-N566H** | NHS-566H-16M | • N566H EVB | • N566H Evaluation Board (EVB) with 16M-bit Parallel Flash |  |
| **NV-W567C** | WHS-567C-16M | • W567C/J series EVB | • W567C/J Series Evaluation Board (EVB) with 16Mbit Flash |  |
| **NV-N567H** | WHS-N567-H1 | • N567G/H/K series EVB | • N567G/H/K Series Evaluation Board (EVB) with 16Mbit Flash |  |
| **NV-N567L** | NHS-N567L-16M | • N567L Series EVB | • N567L Series Evaluation Board (EVB) with 16Mbit Flash |  |

## Development Tools for *ViewTalk*® Family

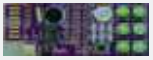
| Ordering No. | Board Name | Content | Description | Picture |
|---|---|---|---|---|
| Development Kit | | | | |
| **ICE-N539T** | NHS-539-ICE | • WHS-MINI-USB-ICE System V1.1<br>• NHS-539-ICE System V1.2<br>• USB Cable | • N539 In-Circuit Emulation (ICE) Dev. Kit. Provide in-circuit emulation with program, execute, step through features for design development, verification & debugging |  |
| Evaluation Board | | | | |
| **NV-N531-16M** | NHS-531-16M | • N531 Series EVB | • N531 Series Evaluation Board (EVB) with 16Mbit Flash |  |
| **NV-N539T001** | NHS-539001-16M | • N539T001 Series EVB | • N539T001 Series Evaluation Board (EVB) with 16Mbit Flash |  |
| **NV-N539T000** | NHS-539-16M | • N539T000 Series EVB | • N539T000 Series Evaluation Board (EVB) with 16Mbit Flash |  |

# Development Tools for OTP Family

| Ordering No. | Board Name | Content | Description | Picture |
|---|---|---|---|---|
| **Evaluation Board** | | | | |
| **NV-W584AP20** | NHS-584AP20 | • W584AP065(W584AP20) OTP EVB | • W584AP065(W584AP20) One-Time Programmable (OTP) Evaluation Board (EVB) |  |
| **NV-W584AP05** | NHS-584AP05 | • W584AP017(W584AP05) OTP EVB | • W584AP017(W584AP05) One-Time Programmable (OTP) Evaluation Board (EVB) |  |
| **NV-N584HP300** | NHS-584HP300 | • N584HP300 OTP EVB | • N584HP300 EVB One-Time Programmable (OTP) Evaluation Board (EVB) |  |
| **NV-W567CP80** | NHS-W567CP80 | • W567CP260(W567CP80) OTP EVB | • W567CP260(W567CP80) One-Time Programmable (OTP) Evaluation Board (EVB) |  |
| **NV-N567HP80** | NHS-567HP80 | • N567HP330(N567HP80) OTP EVB | • N567HP330(N567HP80) One-Time Programmable (OTP) Evaluation Board (EVB) |  |
| **NV-N567LP330** | NHS-567LP330 | • N567LP330 OTP EVB | • N567LP330 EVB One-Time Programmable (OTP) Evaluation Board (EVB) |  |
| **NV-N588LP330** | NHS-588LP330 | • N588LP330 OTP EVB | • N588LP330 EVB One-Time Programmable (OTP) Evaluation Board (EVB) |  |
| **NV-N588HP340** | NHS-588HP340 | • N588HP340 OTP EVB | • N588HP340 One-Time Programmable (OTP) Evaluation Board (EVB) |  |
| **NV-N588HP170** | NHS-588HP170 | • N588HP170 OTP EVB | • N588HP170 One-Time Programmable (OTP) Evaluation Board (EVB) |  |
| **NV-N588HP080** | NHS-588HP080 | • N588HP080 OTP EVB | • N588HP080 One-Time Programmable (OTP) Evaluation Board (EVB) |  |
| **Writer** | | | | |
| **NW-OTP** | Nuvoton OTP Writer | • Nu-Speech / Nu-Voice OTP chip Writer | • Nu-Speech / Nu-Voice OTP chip Writer |  |
| **NW-OTP-Gang** | Nuvoton OTP Gang Writer | • Nu-Speech / Nu-Voice OTP chip Gang Writer | • Nu-Speech / Nu-Voice OTP chip Gang Writer - support to write 4 chips one time |  |
| **NW-Flash-Gang** | MCP SPI Gang Writer | • Nu-Voice N569S, N57xS chip Gang Writer | •Nu-Voice N569S, N57xS chip Gang Writer - support to write 8 chips one time |  |

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# Development Tools for NuVoice™

| Ordering No. | Board name | Content | Description | Picture |
|---|---|---|---|---|
| Evaluation Board | | | | |
| **NU-NUVOICE** | NU-LINK | • Nu-Link Debug Adapter<br>• USB Cable | Nu-Link Debug Adapter for Nu-Voice Series, supports online/offline In-Circuit Programming (ICP), development, and debug. |  |
| **NV-N569S2K0** | NHS-N569S2K0 | • NHS-N569S2K0 EVB | N569S (w/ 16Mbit Flash) Evaluation Board (EVB) with I/O Interface |  |
| **NV-N569S8K0** | NHS-N569S8K0 | • NHS-N569S8K0 EVB | N569S (w/ 64Mbit Flash) Evaluation Board (EVB) with I/O Interface |  |
| **NV-N570C064** | NHS-570C064-EVB | • NHS-570C064 EVB | N570C064 Evaluation Board (EVB) with I/O Interface & Microphone for Voice Recognition Application |  |
| **NV-N570S16A** | NHS-N570S16A | • NHS-N570S16A EVB | N570S16A (w/ 16Mbit Flash) Evaluation Board (EVB) with I/O Interface & Microphone for Voice Recognition Application |  |
| **NV-N570S64A** | NHS-N570S64A | • NHS-N570S64A EVB | N570S64A (w/ 64Mbit Flash) Evaluation Board (EVB) with I/O Interface & Microphone for Voice Recognition Application |  |
| **NV-N572F065** | NHS-572F065-EVB | • NHS-572F065 EVB | N572F065 Evaluation Board (EVB) with I/O Interface |  |
| **NV-N572F072** | NHS-572F072-EVB | • NHS-572F072 EVB | N572F072 Evaluation Board (EVB) with I/O Interface & Microphonefor Voice Recognition Application |  |
| **NV-N572C072** | NHS-572C072-EVB | • NHS-572C072 EVB | N572C072 Evaluation Board (EVB) with I/O Interface & Microphone for Voice Recognition Application |  |
| **NV-N571P032** | NHS-571P032-EVB | • NHS-571P032 EVB | N571P032 One-Time Programmable (OTP) Evaluation Board (EVB) with I/O Interface & Microphone for program verifcation |  |
| **ICE-N571P032** | NHS-571E000-EVB | • N571P032 ICE Chip EVB | N571P032 In-Circuit Emulation (ICE) Chip with I/O interface & Microphone, Provide in-circuit emulation with program, execute, step through features for design development, verification & debugging |  |

# Development Tools for NuVoice™

| Ordering No. | Board name | Content | Description | Picture |
|---|---|---|---|---|
| Evaluation Board | | | | |
| **NV-N575C145** | NHS-575C145 | •NHS-575C145 EVB | NHS-575C145 Evaluation Board (EVB) with I/O Interface & Microphone for Voice Recognition Application |  |
| **NV-N575F145** | NHS-575F145 | •NHS-575F145 EVB | NHS-575F145 Evaluation Board (EVB) with I/O Interface & Microphone |  |
| **NK-N575CF145** | AU9110-DemoKit | •I/O Expansion Daughter Board for N575 EVB | NHS-575C/F145-Daughter Board expands N575 EVB with additional Push Button & Reserved SD Card Socket. |  |
| **NT-N575C145** | NHS-575C145 | •NHS-575C145-EVB + Daughter Board | NHS-575C145 Evaluation Board (EVB) with I/O Interface & Microphone for Voice Recognition Application with Daughter Board |  |
| **NT-N575F145** | NHS-575F145 | •NHS-575F145-EVB + Daughter Board | NHS-575F145 Evaluation Board (EVB) with I/O Interface & Microphone with Daughter Board |  |

# Development Tools for Nu-Touch

| Ordering No. | Board Name | Content | Description | Picture |
|---|---|---|---|---|
| Evaluation Board | | | | |
| **ICE-N55T10** | NHS-55T10 (TOUCH SYSTEM) | • N55T10 Evaluation Kit | • N55T10 Evaluation kits, it include NHS-55T-1, NHS-55T-2, NHS-55T10-COB, WHS-588L-8M |  |
| **NV-N55T10** | NHS-55T10-COB EVB | • N55T10 EVB | • N55T10 Evaluation Board (EVB) |  |



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## IO expander Family

| Ordering No. | Board Name | Content | Description | Picture |
|---|---|---|---|---|
| Evaluation Board | | | | |
| **NV-N55P242** | NHS-55P242 | • N55P242 EVB | • N55P242 Evaluation Board (EVB) |  |
| Demo Board | | | | |
| **NV-N55P242-R** | N55P242_RING_TYPE_ DEMO_BOARD_V1.0 | • N55P242 Demo Board (Circle) | • N55P242 Circle Demo Board |  |
| **NV-N55P242-S** | N55P242_SINGLE_STRIP_ DEMO_BOARD_V1.0 | • N55P242 Demo Board (Rectangle) | • N55P242 Rectangle Demo Board |  |

## Development Tools for MFID Family

| Ordering No. | Board Name | Content | Description | Picture |
|---|---|---|---|---|
| Evaluation Board | | | | |
| **NV-MFID50** | WHS-55MID50-002 | • W55MID50 EVB | • W55MID50 MFID Evaluation Board (EVB) with PCB Antenna (42mm*34.5mm) |  |
| **NV-W55MID15** | WHS-55MID15 | • W55MID15 MFID Tag EVB | • W55MID15 w/ ANT (20mm*20mm) |  |
| **NV-W55MID35** | WHS-55MID35 | • W55MID35 MFID Tag EVB | • W55MID35 w/ ANT (15mm*15mm) |  |

## Development Tools for Other

| Ordering No. | Board Name | Content | Description | Picture |
|---|---|---|---|---|
| Accessary | | | | |
| **NK-Keymatrix** | WHS-KEY MATRIX | • External Key-Matrick Board | • External Key-Matrick Board |  |
| **NW-USB** | WHS-USB-Writer | • USB Writer | • PowerSpeech/ViewTalk/BandDirector/Others USB writer |  |

# Development Tools for AUI Enabler Series

| Ordering No. | Part No. | Supported Devices | Content | Description | Picture |
|---|---|---|---|---|---|
| Development Kit | | | | | |
| **NM-ISD91032C** | **ISD-DMK_91032C** | ISD91032 | • ISD-DEMO91032C<br>• ISD-NU-LINK<br>• Speaker | • Evaluation and demo kit for ISD91032CFI |  |
| **NM-ISD9160** | **ISD-DMK_9160** | ISD9160 | • ISD-DEMO9160<br>• ISD-NU-LINK<br>• ISD-9160-Touch<br>• ISD-9160-KB<br>• Speaker | • Evaluation, debugging and demo kit for ISD9160<br>• Keil RV/MDK available on Keil website<br>• Supports ICP (In-Circuit Programming) |  |
| **NV-ISD9160** | **ISD9160 IoT Eval board** | ISD9160 | ISD9160 IoT Eval board | ISD9160 IoT Eval module kits for IoT development |  |
| **NM-ISD91300** | **ISD-DMK_91300** | ISD91300 | • ISD-DEMO91300<br>• ISD-91300-Touch<br>• Speaker | • Evaluation, debugging and demo kit for ISD91300<br>• Keil RV/MDK available on Keil website<br>• Supports ICP (In-Circuit Programming) |  |
| Programmer/Writer | | | | | |
| **NW-ISD9160** | **ISD-ES9160__Prog_F** | ISD9160 Series LQFP pakcage | • ISD-ES9160__Prog_F | • ISD9160 LQFP single socket programmer<br>• Connect to PC via ISD NU-LINK for programming and evaluation |  |
| **NG-ISD9160** | **ISD-9160_GANG_Prog_F** | ISD9160 | • ISD-9160_GANG_Prog_F | • ISD9160 LQFP standalone gang programmer |  |
| **NW-ISD91300** | **ISD-ES19300_PROG_F** | ISD91300 | ISD-ES91300_PROG_F | • ISD91300 LQFP single socket programmer for programming and evaluation |  |
| **NG-ISD91300** | **ISD-91300_GANG_Prog_F** | ISD91300 | • ISD-91300_GANG_Prog_F | • ISD91300 LQFP standalone gang programmer |  |

# Development Tools for Audio CODECs

| Ordering No. | Part No. | Supported Devices | Content | Description | Picture |
|---|---|---|---|---|---|
| Evaluation Board | | | | | |
| **NE-NAU88C10** | NAU88C10-EVB | NAU88C10 | •NAU88C10-EVB<br>•GUI Installation CD | •Audio base Board for NAU88XX + NAU88C10 daughter card<br>•Installation CD kit |  |
| **NE-NAU8810** | NAU8810-EVB | NAU8810 | •NAU8810-EVB<br>•GUI Installation CD | •Audio base Board for NAU88XX + NAU8810 daughter card<br>•Installation CD kit | |
| **NE-NAU8812** | NAU8812-EVB | NAU8812 | •NAU8812-EVB<br>•GUI Installation CD | •Audio base Board for NAU88XX + NAU8812 daughter card<br>•Installation CD kit | |
| **NE-NAU8814** | NAU8814-EVB | NAU8814 | •NAU8814-EVB<br>•GUI Installation CD | •Audio base Board for NAU88XX + NAU8814 daughter card<br>•Installation CD kit | |
| **NV-NAU88C10** | NAU88C10-DEMO | NAU88C10 | •NAU88C10-DEMO<br>•GUI Installation CD | •Compact Audio Base Board + NAU88C10 daughter card<br>•Installation CD kit | |
| **NV-NAU8810** | NAU8810-DEMO | NAU8810 | •NAU8810-DEMO<br>•GUI Installation CD | •Compact Audio Base Board + NAU8810 daughter card<br>•Installation CD kit |  |
| **NV-NAU8812** | NAU8812-DEMO | NAU8812 | •NAU8812-DEMO<br>•GUI Installation CD | •Compact Audio Base Board + NAU8812 daughter card<br>•Installation CD kit | |
| **NV-NAU8814** | NAU8814-DEMO | NAU8814 | •NAU8814-DEMO<br>•GUI Installation CD | •Compact Audio Base Board + NAU8814 daughter card<br>•Installation CD kit | |
| **NE-NAU88L25** | NAU88L25-EVB | NAU88L25 | •NAU88L25-EVB<br>•GUI Installation CD | •Evaluation Board for NAU88L25<br>•Installation CD kit |  |
| **NE-NAU85L40** | NAU85L40-EVB | NAU85L40 | •NAU85L40-EVB<br>•GUI Installation CD | •Evaluation Board for NAU85L40<br>•Installation CD kit |  |
| **NE-NAU88L24** | NAU88L24-EVB | NAU88L24 | •NAU88L24-EVB<br>•GUI Installation CD | •Evaluation Board for NAU88L24YG<br>•Installation CD kit |  |

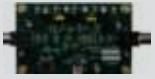
# Development Tools for Audio CODECs

| Ordering No. | Part No. | Supported Devices | Content | Description | Picture |
|---|---|---|---|---|---|
| Evaluation Board | | | | | |
| **NE-NAU88C22** | NAU88C22-EVB | NAU88C22 | •NAU88C22-EVB<br>•GUI Installation CD | •Audio base Board for NAU88XX + NAU88C22 daughter card<br>•Installation CD kit | |
| **NE-NAU8822L** | NAU8822L-EVB | NAU8822L | •NAU8822L-EVB<br>•GUI Installation CD | •Audio base Board for NAU88XX + NAU8822L daughter card<br>•Installation CD kit |  |
| **NE-NAU8820** | NAU8820-EVB | NAU8820 | •NAU8820-EVB<br>•GUI Installation CD | •Audio base Board for NAU88XX + NAU8820 daughter card<br>•Installation CD kit | |
| **NE-NAU8401** | NAU8401-EVB | NAU8401 | •NAU8401-EVB<br>•GUI Installation CD | •Audio base Board for NAU88XX + NAU8401 daughter card<br>•Installation CD kit | |
| **NE-NAU8501** | NAU8501-EVB | NAU8501 | •NAU8501-EVB<br>•GUI Installation CD | •Audio base Board for NAU88XX + NAU8501 daughter card<br>•Installation CD kit | |
| **NE-NAU8402** | NAU8402-EVB | NAU8402 | •NAU8402-EVB<br>•GUI Installation CD | •Audio base Board for NAU88XX + NAU8402 daughrer card<br>•Installation CD kit | |
| **NV-NAU88L25** | NAU88L25-DEMO | NAU88L25 | •NAU88L25-DEMO<br>•GUI Installation CD | •Demo board for NAU88L25<br>•Installation CD kit |  |
| **NL-NAU88L25** | NAU88L25-DEMO | NAU88L25 | •NAU88L25-DEMO | •Demo board for NAU88L25YGB |  |
| **NU-NAU88L25** | NAU-Audio_ Control_USB | NAU88L25 NAU88L24 | •NAU-Audio_ Control_USB | •Micro USB Audio control board for connecting both NL-NAU88L25 and NL-NAU88L24I to PC |  |
| **NV-NAU88L24Y** | NAU88L24Y-DEMO | NAU88L24 | •NAU88L24Y-DEMO<br>•GUI Installation CD | •Demo board for NAU88L24YG<br>•Installation CD kit |  |
| **NL-NAU88L24I** | NAU88L24I-DEMO | NAU88L24 | •NAU88L24I-DEMO | •Demo board for NAU88L24IG |  |
| **NV-NAU88L24I** | NAU88L24I-DEMO | NAU88L24 | •NAU88L24I-DEMO<br>•GUI Installation CD | •Demo board for NAU88L24IG<br>•Installation CD kit |  |
| **NV-NAU88C22** | NAU88C22-DEMO | NAU88C22 | •NAU88C22-DEMO<br>•GUI Installation CD | •Compact Audio Base Board + NAU88C22 daughter card<br>•Installation CD kit | |
| **NV-NAU8822L** | NAU8822L-DEMO | NAU8822L | •NAU8822L-DEMO<br>•GUI Installation CD | •Compact Audio Base Board + NAU8822L daughter card<br>•Installation CD kit | |
| **NV-NAU8820** | NAU8820-DEMO | NAU8820 | •NAU8820-DEMO<br>•GUI Installation CD | •Compact Audio Base Board + NAU8820 daughter card<br>•Installation CD kit |  |
| **NV-NAU8401** | NAU8401-DEMO | NAU8401 | •NAU8401-DEMO<br>•GUI Installation CD | •Compact Audio Base Board + NAU8401 daughter card<br>•Installation CD kit | |
| **NV-NAU8501** | NAU8501-DEMO | NAU8501 | •NAU8501-DEMO<br>•GUI Installation CD | •Compact Audio Base Board + NAU8501 daughter card<br>•Installation CD kit | |

# Development Tools for Audio Amplifiers

| Ordering No. | Part No. | Supported Devices | Content | Description | Picture |
|---|---|---|---|---|---|
| Power Amplifier | | | | | |
| **NV-NAU83P20** | NAU83P20-DEMO | NAU83P20 | •NAU83P20-DEMO | •Demo board for NAU83P20YG |  |
| **NE-NAU82039V** | NAU82039V-EVB | NAU82039 | •NAU82039V-EVB | •Evaluation Board for NAU82039VG |  |
| **NE-NAU82011V** | NAU82011V-EVB | NAU82011 | •NAU82011V-EVB | •Evaluation Board for NAU82011VG |  |
| **NV-NAU82011W** | NAU82011W-DEMO | NAU82011 | •NAU82011W-DEMO | •Demo Board for NAU82011WG |  |
| **NT-ISD8101** | ISD-DEMO8101 | ISD8101 | •ISDI8101-DEMO | •Demo Board for I8101SYI |  |
| **NT-ISD8102** | ISD-DEMO8102 | ISD8102 | •ISD8102-DEMO | •Demo Board for I8102SYI |  |
| **NT-ISD8104** | ISD-DEMO8104 | ISD8104 | •ISD8104-DEMO | •Demo Board for I8104SYI |  |

# Development Tools for Audio Amplifiers

| Ordering No. | Part No. | Supported Devices | Content | Description | Picture |
|---|---|---|---|---|---|
| Power Amplifier | | | | | |
| **NE-NAU8223** | NAU8223-EVB | NAU8223 | • NAU8223-EVB | • Evaluation Board for NAU8223SG |  |
| **NV-NAU8223** | NAU8223-DEMO | NAU8223 | • NAU8223-DEMO | • Demo Board for NAU8223SG |  |
| **NE-NAU8224** | NAU8224-EVB | NAU8224 | • NAU8224-EVB<br>• GUI Installation CD | • Evaluation Board for NAU8224SG<br>• Installation CD kit |  |
| **NU-NAU8224** | NAU-ES_MINI_USB | NAU8224 | • NAU-ES_MINI_USB | • USB to I²C bus dongle for NAU8224-EVB |  |
| **NE-NAU8220** | NAU8220WG-EVB | NAU8220 | • NAU8220WG-EVB | • Evaluation Board for NAU8220WG |  |

Contact us: Audio@nuvoton.com

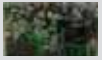
# Development Tools for ChipCorder® Family

| Ordering No. | Part No. | Supported Devices | Content | Description | Picture |
|---|---|---|---|---|---|
| Development Kit | | | | | |
| **NM-ISD15100** | ISD-DMK_15100 | ISD15116/08/04/02 | • ISD-DEMO15100<br>• ISD-ES_MINI_USB<br>• Speaker | • Evaluation and demo kit for ISD15102/4/8/16 |  |
| **NM-ISD15C00** | ISD-DMK_15C00 | ISD15C00 | • ISD-DEMO15C00<br>• ISD-ES_MINI_USB<br>• Speaker | • Evaluation and demo kit for ISD15C00 |  |
| **NM-ISD15D00** | ISD-DMK_15D00 | ISD15D00 | • ISD-DEMO15D00<br>• ISD-ES_MINI_USB<br>• Speaker | • Evaluation and demo kit for ISD15D00 |  |
| **NM-ISD2100Q** | ISD-DMK_2100 | ISD2100 Series | • ISD-DEMO2100_Q<br>• ISD-ES_MINI_USB<br>• Speaker | • Evaluation and demo kit for ISD2100 Series |  |
| **NM-ISD2360Q** | ISD-DMK_2360 | ISD2360 | • ISD-DEMO2360_Q<br>• ISD-ES_MINI_USB<br>• Speaker | • Evaluation and demo kit for ISD2360 |  |
| **NM-ISD3800** | ISD-DMK_3800 | ISD3800 | • ISD-DEMO3800<br>• ISD-ES_MINI_USB<br>• Speaker | • Evaluation and demo kit for ISD3800 |  |
| **NM-ISD3900** | ISD-DMK_3900 | ISD3900 | • ISD-DEMO3900<br>• ISD-ES_MINI_USB<br>• Speaker | • Evaluation and demo kit for ISD3900 |  |
| Evaluation/Demo/Development Board | | | | | |
| **NC-ISD18B24** | ISD-COB18B24 | ISD18B12/24 | • ISD-COB18B24 | • ISD18B24/12 demo board |  |
| **NC-ISD18C10** | ISD-COB18C10 | ISD18C10 | • ISD-COB18C10 | • ISD18C10/18C06 demo board (SPK/MIC sharing) |  |
| **NC-ISD1810** | ISD-COB1810 | ISD1806/10 | • ISD-COB1810 | • ISD1810/1806 demo board |  |

# Development Tools for ChipCorder® Family

| Ordering No. | Part No. | Supported Devices | Content | Description | Picture |
|---|---|---|---|---|---|
| **Evaluation/Demo/Development Board** | | | | | |
| **NC-ISD17240** | ISD-COB17240 | ISD17240/210/180 | • ISD-COB17240 | • ISD17240/210/180 demo board |  |
| **NC-ISD17150** | ISD-COB17150 | ISD17150/120/90 | • ISD-COB17150 | • ISD17150/120/090 demo board |  |
| **NC-ISD1760** | ISD-COB1760 | ISD1760/50/40 | • ISD-COB1760 | • ISD1760/50/40 demo board |  |
| **NC-ISD1730** | ISD-COB1730 | ISD1730 | • ISD-COB1730 | • ISD1730 demo board |  |
| **NC-ISD1620B** | I16-COB20 | ISD1600 Series | • I16-COB20 | • ISD1620/16/12/10 demo board |  |
| **NE-ISD1700** | ISD-ES17XX_USB_PB | ISD1700 Series | • ISD-ES17XX_USB_PB | • Eval board for 1700 Series |  |
| **Programmer/Writer** | | | | | |
| **NW-ISD15100** | ISD-ES15100_Mini_PROG_F | ISD15116/08/04/02 | • ISD-ES15100_Mini_PROG | • ISD15102/4/8/16 LQFP single socket programmer<br>• Connect to PC via ISD-ES_Mini_USB for programming and evaluation |  |
| **NW-ISD2100Q** | ISD-ES2100_Mini_PROG_Q | ISD2100 Series QFN package | • ISD-ES2100_Mini_PROG_Q | • ISD2100 QFN single socket programmer<br>• Connect to PC via ISD-ES_Mini_USB for programming and evaluation |  |
| **NW-ISD2100S** | ISD-ES2100_Mini_PROG_S | ISD2100 Series SOP package | • ISD-ES2100_Mini_PROG_S | • ISD2100 SOP single socket programmer<br>• Connect to PC via ISD-ES_Mini_USB for programming and evaluation |  |
| **NG-ISD2100Q** | ISD-2100_GANG_Prog_Q | ISD2100 Series QFN package | • ISD-2100_GANG_Prog_Q | • ISD2100 QFN standalone gang programmer |  |

# Development Tools for ChipCorder® Family

| Ordering No. | Part No. | Supported Devices | Content | Description | Picture |
|---|---|---|---|---|---|
| Programmer/Writer | | | | | |
| **NG-ISD2100S** | ISD-2100_GANG_Prog_S | ISD2100 Series SOP package | • ISD-2100_GANG_ Prog_S | • ISD2100 SOP standalone gang programmer |  |
| **NW-ISD2360Q** | ISD-ES2360_MINI_PROG_Q | ISD2360 | • ISD-ES2360_ MINI_PROG_Q | • ISD2360 QFN single socket programmer, used with ISD-ES_Mini_USB<br>• Connect to PC via ISD-ES_Mini_USB for programming and evaluation |  |
| **NW-ISD2360S** | ISD-ES2360_MINI_PROG_S | ISD2360 | • ISD-ES2360_ MINI_PROG_S | • ISD2360 SOP single socket programmer<br>• Connect to PC via ISD-ES_Mini_USB for programming and evaluation |  |
| **NW-ISDPROG** | ISD-PROG | ISD2100 Series<br>ISD15100 Series<br>ISD15D00 Series<br>Winbond SPI Flash | • ISD-PROG | • Stand alone Programmer for Digital ChipCorder |  |
| **NG-ISD2360Q** | ISD-2360_GANG_PROG_Q | ISD2360 QFN package | • ISD-2360_GANG_ PROG_Q | • ISD2360 QFN standalone gang programmer |  |
| **NG-ISD2360S** | ISD-2360_GANG_PROG_S | ISD2360 SOP package | • ISD-2360_GANG_ PROG_S | • ISD2360 SOP standalone gang programmer |  |
| **NW-ISDIPROG1** | ISD-IPROG-1 | ISD4000/5000/1700 | • ISD-PROG-1 | • Single chip programming board support ISD4000/5000/1700 Series |  |
| **NE-ISD1700** | ISD-ES17XX_USB_PB | ISD1700 Series | • ISD-ES17XX_ USB_PB | • Eval board for 1700 Series |  |
| **NE-ISD1900** | ISD-ES1900_USB_PROG | ISD1900 Series | • ISD-ES1900_ USB_PROG | • USB evaluation board for ISD1900 Series |  |
| **NE-ISD1600** | ISD-ES1600_USB_PROG | ISD1600 Series | • ISD-ES1600_ USB_PROG | • USB evaluation board for ISD1600 Series |  |

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