

September 12, 2013

Product Specifications of the RL78/F13 and RL78/F14 MCUs

- High-speed on-chip oscillator clock
Selectable from 32 MHz (Typ.), 24 MHz (Typ.), 16 MHz (Typ.), 12 MHz (Typ.), 8 MHz (Typ.), 4 MHz (Typ.) and 1MHz (Typ.) (Selectable from 64 MHz (Typ.) and 48 MHz (Typ.) when using timer RD)
- Low-speed on-chip oscillator clock: 15 kHz x 2 channels (one for WWDT and one for CPU and peripherals other than WWDT)
- On-chip PLL (x3, x4, x6, x8)
- On-chip single-power-supply flash memory (with prohibition of block erase/writing function)
- Product Lineup

RL78/F14

ROM	RAM	100 pins	80 pins	64 pins	48 pins (QFN)	48 pins (QFP)	32 pins (QFN)	30 pins
48 KB	4 KB	–	–	–	R5F10 PGD	R5F10 PGD	R5F10 PBD	R5F10 PAD
64 KB	6 KB	R5F10 PPE	R5F10 PME	R5F10 PLE	R5F10 PGE	R5F10 PGE	R5F10 PBE	R5F10 PAE
96 KB	8 KB	R5F10 PPF	R5F10 PMF	R5F10 PLF	R5F10 PGF	R5F10 PGF	–	–
128 KB	10 KB	R5F10 PPG	R5F10 PMG	R5F10 PLG	R5F10 PGG	R5F10 PGG	–	–
192 KB	16 KB	R5F10 PPH	R5F10 PMH	R5F10 PLH	R5F10 PGH	R5F10 PGH	–	–
256 KB	20 KB	R5F10 PPJ	R5F10 PMJ	R5F10 PLJ	R5F10 PGJ	R5F10 PGJ	–	–

RL78/F13 (With CAN & LIN)

ROM	RAM	80 pins	64 pins	48 pins (QFN)	48 pins (QFP)	32 pins (QFN)	30 pins
32 KB	2 KB	–	R5F10 BLC	R5F10 BGC	R5F10 BGC	R5F10 BBC	R5F10 BAC
48 KB	3 KB	–	R5F10 BLD	R5F10 BGD	R5F10 BGD	R5F10 BBD	R5F10 BAD
64 KB	4 KB	R5F10 BME	R5F10 BLE	R5F10 BGE	R5F10 BGE	R5F10 BBE	R5F10 BAE
96 KB	6 KB	R5F10 BMF	R5F10 BLF	R5F10 BGF	R5F10 BGF	R5F10 BBF	R5F10 BAF
128 KB	8 KB	R5F10 BMG	R5F10 BLG	R5F10 BGG	R5F10 BGG	R5F10 BBG	R5F10 BAG

RL78/F13 (With LIN)

ROM	RAM	80 pins	64 pins	48 pins (QFN)	48 pins (QFP)	32 pins (QFN)	30 pins	20 pins
16 KB	1 KB	–	–	R5F10 AGA	R5F10 AGA	R5F10 ABA	R5F10 AAA	R5F10 A6A
32 KB	2 KB	–	R5F10 ALC	R5F10 AGC	R5F10 AGC	R5F10 ABC	R5F10 AAC	R5F10 A6C
48 KB	3 KB	–	R5F10 ALD	R5F10 AGD	R5F10 AGD	R5F10 ABD	R5F10 AAD	R5F10 A6D
64 KB	4 KB	R5F10 AME	R5F10 ALE	R5F10 AGE	R5F10 AGE	R5F10 ABE	R5F10 AAE	R5F10 A6E
96 KB	6 KB	R5F10 AMF	R5F10 ALF	R5F10 AGF	R5F10 AGF	–	–	–
128 KB	8 KB	R5F10 AMG	R5F10 ALG	R5F10 AGG	R5F10 AGG	–	–	–

- Self-programming (with boot swap function/flash shield window function)
- On-chip debug function
- On-chip power-on-reset (POR) circuit and voltage detector (LVD)



- On-chip watchdog timer (operable with the dedicated low-speed on-chip oscillator clock)
- Multiply/divide/multiply/accumulate instructions are supported
 - 16 bits × 16 bits = 32 bits (Unsigned or signed)
 - 32 bits / 32 bits = 32 bits (Unsigned)
 - 16 bits × 16 bits + 32 bits = 32 bits (Unsigned or signed)
- On-chip key interrupt function
- On-chip clock output/buzzer output controller
- On-chip BCD adjustment
- I/O ports: 16 to 92 (including one input-only pin)
- Timers
 - 16-bit timer array unit: 8 to 16 channels
 - 16-bit timer RD: 2 channels (six triangle-wave outputs, saw-tooth wave/triangle-wave modulation)
 - 16-bit timer RJ: 1 channel
 - Watchdog timer: 1 channel
 - Real-time clock: 1 channel
- Serial interfaces
 - CSI, UART/UART (LIN-bus supported), I2C/simplified I2C
 - LIN module (master/slave supported)
 - CAN interface
- 8/10-bit resolution A/D converter ($V_{DD} = 2.7$ to 5.5 V): 4 to 31 channels
- DTC (Max. 52 sources)
- ELC (Max. 26 channels for event link source, Max. 9 channels for event link destination)*
- Safety functions (CRC calculation, PLL lock detection, AD test, SFR guard, etc.)
- 8-bit D/A converter*

- On-chip comparator: 1 channel (input pin: 4 channels)*
- Power supply voltage: VDD = 2.7 to 5.5 V
- Operating ambient temperature: TA = -40 to +105°C (GRADE L)/ TA = -40 to +125 °C (GRADE K)
- *Note: Available only in the RL78/F14 MCUs.

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