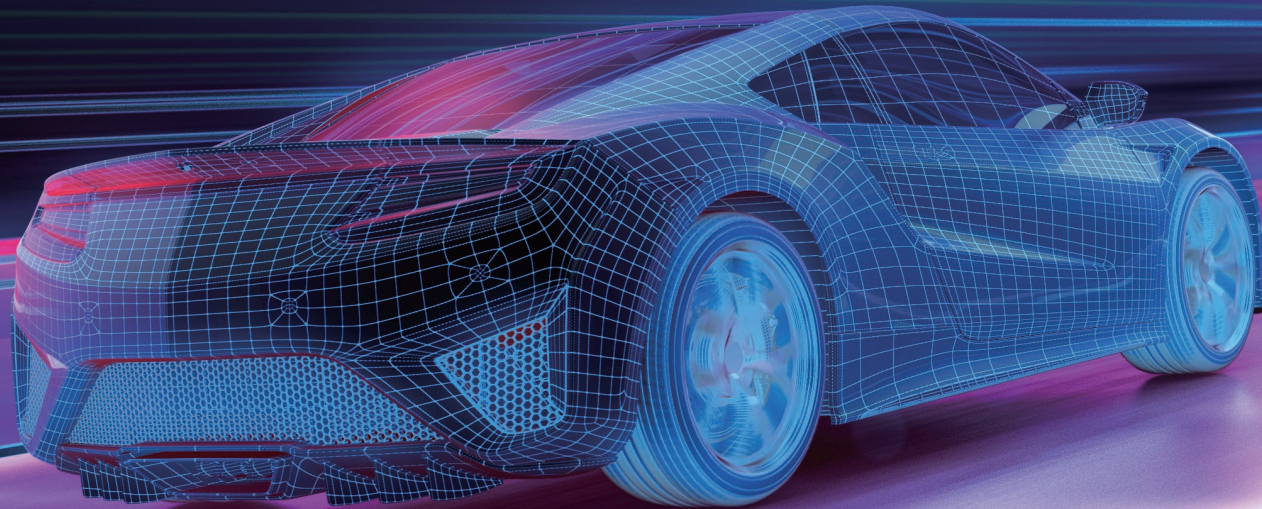


# RL78 AUTOMOTIVE MCU SCOUT



# AUTOMOTIVE MICROCONTROLLERS

Series	Nickname/Group	Part number	Flash size [B]	RAM [B]	Data flash [B]	Core	FPU	I/O lines	CS/JUART/LIN	CAW/CAN-FD	PC	External bus	Other interfaces	Timer channels [8-/16-/32-bit]	PWMs	Clock speed [MHz]	Internal oscillator(s)	Subclock [32 kHz]	A/D converter / D/A converter	Supply voltage (V) [V]	Pins	Packages	T <sub>max</sub> [°C]	Other features																							
F Series	RL78/ F12	RSF10968	8 K	0.5 K	4 K	RL78	-	16	2/3/1	-	1	-	-	-	-/9/-	4	32	1x 15 kHz/ 32 MHz	-	4x 10-bit/-	1.8...5.5	20	PLSP0020JC-A	85, 125	DMA, LVD, POR																						
		RSF1096A	16 K	1 K																																											
		RSF1096B	24 K	1.5 K																																											
		RSF1096C	32 K	2 K																																											
		RSF1096D	48 K	3 K																																											
		RSF1096E	64 K	4 K																																											
		RSF109AA	16 K	1 K																																											
		RSF109AB	24 K	1.5 K																																											
		RSF109AC	32 K	2 K																																											
		RSF109AD	48 K	3 K																																											
RSF109AE	64 K	4 K																																													
RSF109A	16 K	1 K																																													
RSF109GB	24 K	1.5 K																																													
RSF109GC	32 K	2 K																																													
RSF109GD	48 K	3 K																																													
RSF109GE	64 K	4 K																																													
RSF109LA	16 K	1 K																																													
RSF109LB	24 K	1.5 K																																													
RSF109LC	32 K	2 K																																													
RSF109LD	48 K	3 K																																													
RSF109LE	64 K	4 K																																													
RL78/ F13-LIN	RL78/ F13-LIN	RSF10A6A	16 K	1 K	4 K	RL78	-	16	2/2/1	-	2	-	-	-	-/17/-	9	32	-	4x 10-bit/-	2.7...5.5	20	PLSP0020JC-B	105, 125, 150	DTC, LVD, MCT, POR																							
		RSF10A6C	32 K	2 K																																											
		RSF10A6D	48 K	3 K																																											
		RSF10A6E	64 K	4 K																																											
		RSF10AAA	16 K	1 K																																											
		RSF10AAC	32 K	2 K																																											
		RSF10AAD	48 K	3 K																																											
		RSF10AAE	64 K	4 K																																											
		RSF10ABA	16 K	1 K																																											
		RSF10ABC	32 K	2 K																																											
RSF10ABD	48 K	3 K																																													
RSF10ABE	64 K	4 K																																													
RSF10AGA	16 K	1 K																																													
RSF10AGC	32 K	2 K																																													
RSF10AGD	48 K	3 K																																													
RSF10AGE	64 K	4 K																																													
RSF10AGF	96 K	6 K																																													
RSF10AGG	128 K	8 K																																													
RSF10ALC	32 K	2 K																																													
RSF10ALD	48 K	3 K																																													
RSF10ALE	64 K	4 K																																													
RSF10ALF	96 K	6 K																																													
RSF10ALG	128 K	8 K																																													
RSF10AME	64 K	4 K																																													
RSF10AMF	96 K	6 K																																													
RSF10AMG	128 K	8 K																																													
RL78/ F13-CAN	RL78/ F13-CAN	RSF10BAC	32 K	2 K	4 K	RL78	-	26	3/3/1	-	3	-	-	-	-/21/-	11	32	2x 15 kHz/ 32 MHz	-	12x 10-bit/-	2.7...5.5	30	PLSP0030JB-A	105, 125, 150	DTC, LVD, MCT, POR																						
		RSF10BAD	48 K	3 K																																											
		RSF10BAE	64 K	4 K																																											
		RSF10BAF	96 K	6 K																																											
		RSF10BAG	128 K	8 K																																											
		RSF10BBC	32 K	2 K																																											
		RSF10BBB	48 K	3 K																																											
		RSF10BBE	64 K	4 K																																											
		RSF10BBF	96 K	6 K																																											
		RSF10BBG	128 K	8 K																																											
RSF10BGC	32 K	2 K																																													
RSF10BGD	48 K	3 K																																													
RSF10BGE	64 K	4 K																																													
RSF10BGF	96 K	6 K																																													
RSF10BGG	128 K	8 K																																													
RSF10BLC	32 K	2 K																																													
RSF10BLD	48 K	3 K																																													
RSF10BLE	64 K	4 K																																													
RSF10BLF	96 K	6 K																																													
RSF10BLG	128 K	8 K																																													
RSF10BME	64 K	4 K																																													
RSF10BMF	96 K	6 K																																													
RSF10BMG	128 K	8 K																																													
RL78/ F14	RL78/ F14	RSF10PAD	48 K	4 K	4 K	RL78	-	26	3/3/1	-	3	-	-	-	-/21/-	11	32	2x 15 kHz/ 32 MHz	-	12x 10-bit/ 1x 8-bit	2.7...5.5	30	PLSP0030JB-A	105, 125, 150	CMP, DTC, ELC, LVD, MCT, POR																						
		RSF10PAE	64 K	6 K																																											
		RSF10PBD	48 K	4 K																																											
		RSF10PBE	64 K	6 K																																											
		RSF10PGD	48 K	4 K																																											
		RSF10PGE	64 K	6 K																																											
		RSF10PGF	96 K	8 K																																											
		RSF10PGG	128 K	10 K																																											
		RSF10PGH	192 K	16 K																																											
		RSF10PGJ	256 K	20 K																																											
RSF10PLE	64 K	6 K																																													
RSF10PLF	96 K	8 K																																													
RSF10PLG	128 K	10 K																																													
RSF10PLH	192 K	16 K																																													
RSF10PLJ	256 K	20 K																																													
RSF10PME	64 K	6 K																																													
RSF10PMF	96 K	8 K																																													
RSF10PMG	128 K	10 K																																													
RSF10PMH	192 K	16 K																																													
RSF10PMJ	256 K	20 K																																													
RSF10PPE	64 K	6 K																																													
RSF10PPF	96 K	8 K																																													
RSF10PPG	128 K	10 K																																													
RSF10PPH	192 K	16 K																																													
RSF10PPJ	256 K	20 K																																													
RL78/ F15	RL78/ F15	RSF113GK	384 K	26 K	16 K	RL78	-	44	4/4/2	-	5	-	-	-	-/25/-	15	32	2x 15 kHz/ 32 MHz	-	18x 10-bit / 1x 8-bit	2.7...5.5	48	PVQ0048KG-A PQ0048KF-A	105, 125	CMP, DTC, ELC, LVD, MCT, POR																						
		RSF113GL	512 K	32 K																																											
		RSF113LK	384 K	26 K																																											
		RSF113LL	512 K	32 K																																											
		RSF113ML	384 K	26 K																																											
		RSF113MM	512 K	32 K																																											
		RSF113PM	128 K	10 K																																											
		RSF113PH	192 K	16 K																																											
		RSF113PJ	256 K	20 K																																											
		RSF113PK	384 K	26 K																																											
RSF113PL	512 K	32 K																																													
RSF113TG	128 K	10 K																																													
RSF113TH	192 K	16 K																																													
RSF113TJ	256 K	20 K																																													
RSF113TK	384 K	26 K																																													
RSF113TL	512 K	32 K																																													
RL78/ F22	RL78/ F22	R7F122F7G3ANP-C	128 K	12 K	8 K	RL78	-	15	2/2/1	-/0	1	-	-	-	-	10	40	2x 15 kHz/ 40 MHz	-	4x 12-bit / -	1.8...5.5	24	PWQ0024KJ-A	105, 125	Capacitive Touch ISO26262 - Fusa up to ASIL B Evita Light - AES crypto module up to 256 bits POR, LVD, DTC, AAU, AESEA																						
		R7F122F8G3ANP-C																								36	4/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		R7F122G3ANP-C																																													
RL78/ F23	RL78/ F23	R7F123B	128 K	8 K	12 K	RL78	-	28	3/2/1	-/0	4	-	-	-	-	9	40	2x 15 kHz/ 40 MHz	-	11x 12-bit / -	2.7...5.5	32	PWQ0032KF-B	105, 125, 150	POR, LVD, DTC, AAU, AESEA																						
		R7F123G																								44	4/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		R7F123L																																													
		R7F123M																																													
RL78/ F24	RL78/ F24	R7F124B	256 K	16 K	24 K	RL78	-	28	3/2/1	-/1	5	-	-	-	-	11	40	2x 15 kHz/ 40 MHz	-	11x 12-bit / -	2.7...5.5	32	PWQ0032KF-B	105, 125, 150	POR, LVD, DTC, AAU, AESEA																						
		R7F124G																								44	4/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		R7F124L																																													
		R7F124M																																													
		R7F124P																																													
RL78/ F25	RL78/ F25	R7F125GL3AFB-C	512KB	40 K	16 K	RL78	-	36	4/2/3	-/2	1	-	-	-	-	14	40	2x 15 kHz/ 40 MHz	-	17x 12-bit / 1x 8-bit	2.7...5.5	48	PQ0048KF-A	105, 125	Capacitive Touch ISO26262 - Fusa up to ASIL B Evita Light - AES crypto module up to 256 bits POR, LVD, DTC, ELC, AAU, AESEA																						
		R7F125LL3AFB-C																								50	4/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		R7F125ML3AFB-C																																													
		R7F125PL3AFB-C																																													
		R7F125SL3AFB-C																																													

# AUTOMOTIVE INFORMATION SYSTEMS – MICROCONTROLLER

Series	Nickname/Group	Part number	Flash size [B]	RAM [B]	Data flash [B]	Core	FPU	I/O lines	CS/JUART/LIN	CAW/CAN-FD	PC	External bus	Other interfaces	Timer channels [8-/16-/32-bit]	PWMs	Clock speed [MHz]	Internal oscillator(s)	Subclock [32 kHz]	A/D converter / D/A converter	Supply voltage (V) [V]	Pins	Packages	T <sub>max</sub> [°C]	Other features	
D Series	RL78/ D1A	RSF10CGB	24 K	2 K	8 K	RL78	-	38	2/1/1	-	-	-	-	-	-	15	32	15kHz 32MHz	-	5x 10-bit/-	2.7...5.5	48	PQ0048KF-A	85, 105	DMA, LCD, POC, RTC, SMC, SND
		RSF10CGC	32 K	3 K																					
		RSF10CGD	48 K	3 K																					
		RSF10CLD	48 K	3 K																					
		RSF10CMD	48 K	3 K																					
		RSF10CME	64 K	4 K																					
		RSF10DGC	32 K	2 K																					
		RSF10DGD	48 K	3 K																					
		RSF10DGE	64 K	4 K																					
		RSF10DDG	48 K	3 K																					
RSF10DLE	64 K	4 K																							
RSF10DMD	48 K	3 K																							
RSF10DMF	64 K	4 K																							
RSF10DMG	96 K	6 K																							
RSF10DMH	128 K	8 K																							
RSF10DMJ	256 K	16 K																							
RSF10DPE	64 K	4 K																							
RSF10DPF	96 K	6 K																							
RSF10DPG	128 K	8 K																							
RSF10DPJ	256 K	16 K																							
RSF10DPK	384 K	20 K																							
RSF10DPL	512 K	24 K																							
RSF10DSJ	256 K	16 K																							
RSF10DSK	384 K	20 K																							
RSF10DSL	512 K	24 K																							
RL78/ D1A	RL78/ D1A	RSF10DMD	48 K	3 K	8 K	RL78	-	68	2/2/2	1/-	-	-	-	-	-	18	32	-	-	5x 10-bit/-	2.7...5.5	64	PQ0064KF-A	85, 105	DMA, LCD, POC, RTC, SMC, SND
		RSF10DME	64 K	4 K																					
		RSF10DMF	96 K	6 K																					
		RSF10DMG	128 K	8 K																					
		RSF10DMH	256 K	16 K																					
		RSF10DPE	64 K	4 K																					
		RSF10DPF	96 K	6 K																					
		RSF10DPG	128 K	8 K																					
		RSF10DPJ	256 K	16 K																					
		RSF10DPK	384 K	20 K																					
RSF10DPL	512 K	24 K																							
RSF10DSJ	256 K	16 K																							
RSF10DSK	384 K	20 K																							
RSF10DSL	512 K	24 K																							

Other features: CMP DMA DTC Comparator(s) Direct memory access Data Transfer Controller ELC LCD LVI Event Link Controller LCD controller/driver Low-voltage indicator MCT Motor control timer POC Power-On Clear RTC Real-Time Clock SMC Stepper motor controller SND Sound generator

## PACKAGE DIMENSIONS

Pincount	Code	Type	Body Size [mm²]	Pin Pitch [mm]
20	PLSP0020JC-A	SOP	6.1 x 6.65	0.65
	PLSP0020JC-B		6.1 x 6.5	
24	PVQ0024KJ-A	QFN	4 x 4	0.5
	PLSP0030JC-A		6.1 x 9.7	
30	PLSP0030JC-B	SOP	6.1 x 9.85	0.65
	PVQ0032KD-A		QFN	
32	PVQ0032KB-A	QFN		5 x 5
	PQ0048KF-A			
48	PQ0048KF-B	QFP	7 x 7	0.5
	PQ0048KG-A			
	PVQ0048KG-A			

Pincount	Code	Type	Body Size [mm²]	Pin Pitch [mm]
64	PQ0064KB-A	QFP	10 x 10	0.5
	PQ0064KF-A			
80	PQ0080KE-A	QFP	12 x 12	0.5
	PQ0080KE-B			
100	PQ0100KB-A	QFP	14 x 14	0.5
	PQ0100KE-A			
144	PQ0100LA-A	QFP	12 x 12	0.4
	PQ0144KD-E			



TOOLS

SOFTWARE TOOLS

IAR Embedded Workbench (RL78)

- Integrated development environment for C/C++
- Package includes project manager, editor, compiler, assembler, linker, simulator and C-Spy debugger
- Supports ELF/DWARF debugging format
- Different license options: locked to PC, dongled (USB), floating
- Order code depends on target platform and license type
- For more information visit [www.iar.com](http://www.iar.com)



AP4, AppliNet3, SmartConfigurator (RL78)

- Peripheral driver code generator for RL78 devices
- Based on graphical user interface settings the peripheral driver initialization and API function code will be generated
- Available for free at [www.renesas.com/ap4](http://www.renesas.com/ap4)
- SmartConfigurator: [www.renesas.com/software-tool/smart-configurator](http://www.renesas.com/software-tool/smart-configurator)



Renesas CS+ (RL78)

- Integrated development environment for C Package includes project manager, editor, compiler, assembler, linker simulator and debugger
- Supports ELF/DWARF debugging format
- Different License Options: node locked, floating
- Different License Types: permanent
- For more information visit [www.renesas.com/cs+](http://www.renesas.com/cs+)



Renesas e<sup>2</sup> studio (RL78)

- Integrated development environment based on Eclipse platform
- Support IAR compiler, and Renesas CC-RL compiler
- Supports ELF/DWARF debugging format
- For more information visit [www.renesas.com/e2studio](http://www.renesas.com/e2studio)



SOFTWARE

Renesas Graphic Library (RGL)

- For RH850/D1x
- Driver stack for all graphic related macros
- Simple interface for graphics programming
- Production quality code
- Easy to integrate into no-OS and RTOS environment
- Example programs for the best possible out of the box experience
- Contact your Renesas sales representative for more information



Autosar MCAL

- Standard Peripheral Abstraction Layer (SPAL) drivers, communication drivers and test drivers
- AUTOSAR AR4.X based MCAL for RH850
- Worldwide support infrastructure with interface for 1st and 2nd level support in Europe
- Cooperation with various BSW/OS vendors and integrators
- Flexible mass-production licenses
- Free-of-charge development licenses for limited prototypes



Renesas is working closely with multiple partners in order to extend the software offer and support customer requirements.

A complete list of SW solutions, and its contact can be found under:  
[www.renesas.com/us/en/software-tool/renesas-graphics-library-rgl#overview](http://www.renesas.com/us/en/software-tool/renesas-graphics-library-rgl#overview)  
[www.renesas.com/us/en/software-tool/renesas-mcal](http://www.renesas.com/us/en/software-tool/renesas-mcal)

OCD-EMULATOR

E2 On-Chip Debugging Emulator (RL78)

- On-Chip Debugging Emulator for all RL78 devices
- Supports fast in-circuit flash programming (Download speed 2 times faster than E1)
- Supports various Target Interfaces
  - » Single-pin for RL78
- Supports power supply to target
  - » 3.3V ... 5V (max. 200mA)
- Supports hot plug-in function (including connector)
- Package includes USB interface cable and 14-pin target cable
- Order code: **RTE0T00020KCE00000R**



E2 Lite On-Chip Debugging Emulator

- On-Chip Debugging Emulator for all RL78 devices
- Supports single-pin target interface for RL78
- Support 3.3V (max. 200mA) power supply to target
- Package includes USB interface cable and 14-pin target cable
- Order code: **RTE0T0002LKCE00000R**



IN-CIRCUIT EMULATION

IECUBE In-Circuit Emulator (RL78)

- For RL78 devices
- Package includes
  - » USB cable
- Order codes:
  - QB-RL78F12-ZZZ (RL78/F12)
  - QB-RL78F14-ZZZ (RL78/F13 & RL78/F14)
  - QB-RL78F15-ZZZ (RL78/F15)
  - QB-RL78D1A-ZZZ (RL78/D1A)
  - QB-RL78D1A2-ZZZ (RL78/D1A, 512 KB version)



Please visit [www.renesas.com/eu/en/software-tool/iecube-r178-family](http://www.renesas.com/eu/en/software-tool/iecube-r178-family) for socket references and additional tool information.

Please refer the following URL for power supplies.  
[www.renesas.com/us/en/document/mat/optional-product-list-iecube-r178-family](http://www.renesas.com/us/en/document/mat/optional-product-list-iecube-r178-family)

IE850 In-Circuit Emulator (RH850)

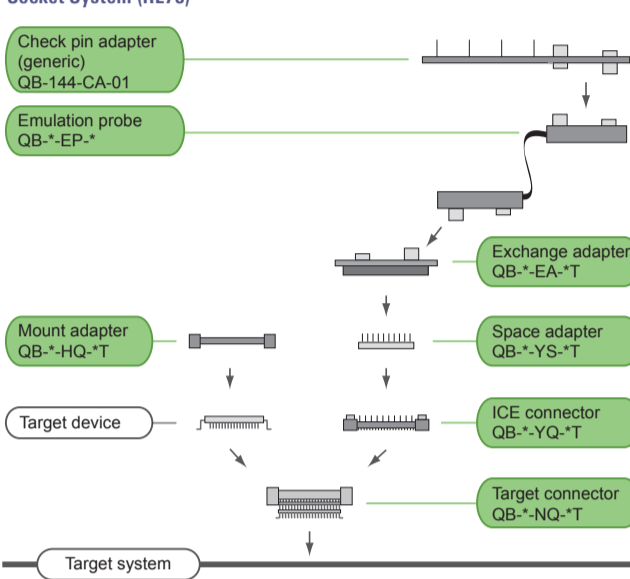
- For RH850/D1x devices
- Universal main unit, device dependent emulation probe
- Package includes
  - » USB cable
- Order codes:
  - QB-V850E2 (main unit)
  - RTE7701460EPA00000R (Emulation Probe for RH850/D1M2H, RH850/D1M2, RH850/D1M1A, RH850/D1M1-V2, RH850/D1L2H, RH850/D1L2, RH850/D1L1 and RH850/D1S1)



Please visit [www.renesas.com/eu/en/software-tool/ie850](http://www.renesas.com/eu/en/software-tool/ie850) for socket references and additional tool information.

Please refer the following URL for power supplies.  
[www.renesas.com/us/en/software-tool/ie850#ac](http://www.renesas.com/us/en/software-tool/ie850#ac)

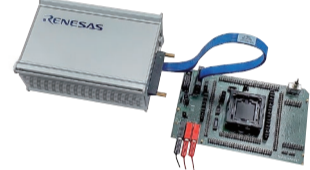
Socket System (RL78)



IE850A Emulator featuring AURORA Trace (RH850/E2x, RH850/U2Ax, RH850/U2Bx)

- For RH850/E2x, RH850/U2Ax, RH850/U2Bx devices
- The IE850A emulator features 9 GB of memory for storing histories of program execution, enabling the saving and checking of histories of program execution over longer periods, and is equipped with a rich variety of debugging functions, such as events, tracing, and time measurement.
- Order codes: **RTE0T0850AKCT00000J** (IE850A Emulator main unit)

Please visit [www.renesas.com/eu/en/products/software-tools/tools/emulator/ie850a.html](http://www.renesas.com/eu/en/products/software-tools/tools/emulator/ie850a.html) for additional tool information.



3<sup>RD</sup> PARTY EMULATORS

iSYSTEM

- Universal emulator and debugger system:
  - » On-chip debugging for RL78 and RH850
  - » In-Circuit Emulation of RL78
  - » On-Chip and Off-Chip Trace (Parallel and AURORA) for RH850
  - » Support for common compiler platforms
  - » Software API for 3rd party tools and test automation
- For more information visit [www.isystem.com](http://www.isystem.com)



Lauterbach

- Universal debugger system TRACE32™
  - » On-chip debugging for RL78 and RH850
  - » On-Chip and Off-Chip Trace (Parallel and AURORA) for RH850
  - » Support for common compiler platforms
  - » Software API for 3rd party tools and test automation
- For more information visit [www.lauterbach.com](http://www.lauterbach.com)



PLS

- Universal Debug Engine for debugging, trace and testing:
  - » UAD2pro, UADnext, UAD3+ support for RH850
  - » Support for common compiler platforms
  - » Software API for 3rd party tools and test automation
- For more information visit [www.pls-mc.com](http://www.pls-mc.com)



FLASH PROGRAMMERS

Flash Programmer PG-FPG

- Supports RL78 and RH850 flash microcontrollers
- For development, prototyping and mass production
- Windows™ and terminal interface
- Host-controlled and stand-alone operation
- 256 MB internal memory for up to 8 program codes incl. setup data
- USB2.0 and RS-232 interface
- Order code: **RTE0T00001FWREA000R**



Renesas Flash Programming Software (RFP)

- Supports RL78 and RH850 flash microcontrollers
- For development and prototyping
- Works with E2 OCD Emulator (RH850 and RL78), E2 Lite OCD Emulator (only RL78), and direct PC COM-port connection
- Graphical user interface
- Ability to save programming settings in workspace files
- Support for automated programming using scripts
- Support of multiple host OS: Windows™, Linux, macOS™
- Available for free at [www.renesas.com/rfp](http://www.renesas.com/rfp)



STARTER KITS

RL78/F12 Starter Kit

- Equipped with
  - » 48-pin RL78/F12 device (R5F109GE)
  - » LIN interface
  - » One switch, two LEDs
  - » Breadboard area (2.54 mm pin pitch)
  - » 20 MHz main clock resonator
  - » 14-pin debugging and programming interface
- Package includes
  - » E2 Lite On-Chip Debugging Emulator
  - » RL78/F12 target board
- Evaluation versions of the tools and sample software can be downloaded from website [www.renesas.com/Y-ASK-RL78F12-V2](http://www.renesas.com/Y-ASK-RL78F12-V2)
- Order code: **Y-ASK-RL78F12-V2**



RL78/F13 Starter Kit

- Equipped with
  - » 80-pin device (R5F10BMG)
  - » CAN & LIN interface
  - » One switch, two LEDs
  - » Breadboard area (2.54 mm pin pitch)
  - » 4 MHz main clock resonator
  - » 14-pin debugging and programming interface
- Package includes
  - » E2 Lite On-Chip Debugging Emulator
  - » RL78/F13 target board
- Evaluation versions of the tools and sample software can be downloaded from website [www.renesas.com/Y-ASK-RL78F13-V2](http://www.renesas.com/Y-ASK-RL78F13-V2)
- Order code: **Y-ASK-RL78F13-V2**



RL78/F14 Starter Kit

- Equipped with
  - » 100-pin device (R5F10PPJ)
  - » CAN & LIN interface
  - » One switch, two LEDs
  - » Breadboard area (2.54 mm pin pitch)
  - » 4 MHz main clock resonator
  - » 14-pin debugging and programming interface
- Package includes
  - » E2 Lite On-Chip Debugging Emulator
  - » RL78/F14 target board
- Evaluation versions of the tools and sample software can be downloaded from website [www.renesas.com/Y-ASK-RL78F14-V2](http://www.renesas.com/Y-ASK-RL78F14-V2)
- Order code: **Y-ASK-RL78F14-V2**



RL78/F15 Starter Kit

- Equipped with
  - » 144-pin RL78/F15 (R5F113TL) device
  - » 14-pin debug and flash programming interface
  - » CAN & LIN interface
  - » 4 MHz main clock resonator
  - » One switch, two LEDs
  - » Universal breadboard area (2.54 mm pin pitch)
- Package includes
  - » E2 Lite On-Chip Debugging Emulator
  - » RL78/F15 target board
- Evaluation versions of the tools and sample software can be downloaded from website [www.renesas.com/Y-ASK-RL78F15-V2](http://www.renesas.com/Y-ASK-RL78F15-V2)
- Order code: **Y-ASK-RL78F15-V2**



RL78/F24 Starter Kit

- Equipped with
  - » 100-pin device (R7F124FPJ)
  - » CAN & LIN interface
  - » One switch, two LEDs
  - » Breadboard area (2.54 mm pin pitch)
  - » 4 MHz main clock resonator
  - » 14-pin debugging and programming interface
- Package includes
  - » RL78/F24 Starter kit board
  - » KickStart Edition of IAR EWRL78 (16 KB)
  - » E1 On-Chip Debugging Emulator
  - » Quick-start guide, user's manual and sample software [www.renesas.com/Y-ASK-RL78F24](http://www.renesas.com/Y-ASK-RL78F24)
- Order code: **Y-ASK-RL78F24**



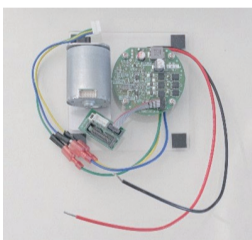
RL78/F24 Security Renesas Solution Starter Kit

- Features
  - » AES-ECB/CBC (Encryption/Decryption) and CMAC generation/verification
  - » Key registration with key length 128/196/256-bit
  - » Secure boot and random number generation
- Equipped with
  - » CAN & LIN interface
- Package includes
  - » RL78/F24 Security Renesas Solution Starter Kit
  - » The RL78/F24 Security RSSK Installation Guide:
- Details the components, software specifications, and environment setup required to develop and evaluate RL78 security functions.
- Outlines the package contents, including hardware, software, and user manuals available with or without NDA
- Specifies the software features such as AES encryption modes, random number generation, and development environments
- Provides step-by-step instructions for system setup, including serial port configuration using terminal emulators like Tera Term
- Order Code: **RTK7F124FPSS0000BJ**



RL78/F24 Solution Starter Kit

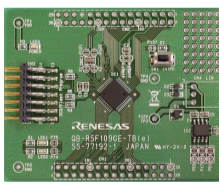
- Package includes
  - » 12V inverter Board
  - » Permanent magnetic synchronous motor (TG-55N-KA 12V)
  - » OCD connection conversion board
  - » Overcurrent protection function
  - » CAN transceiver
  - » Cables
  - » Sample programs for sensorless vector control & sensorless trapezoidal control
- Order Code: **RTK7F124FGS00000BJ**



EVALUATION BOARDS

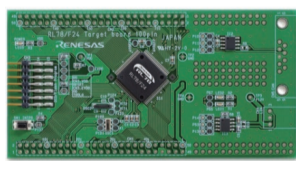
RL78/F1x Target Boards

- For RL78/F1x evaluation
- Equipped with
  - » RL78/F12, RL78/F13, RL78/F14 or RL78/F15
  - » 14-pin debugging and programming interface
  - » CAN & LIN interface
  - » 4 or 20 MHz main clock resonator
  - » switch, 2 LEDs
  - » breadboard area (2.54 mm pitch)
- Board dimensions: approx. 109 mm x 56 mm
- Order codes:
  - QB-R5F109GE-TB (RL78/F12)
  - QB-R5F10BMG-TB (RL78/F13)
  - QB-R5F10PPJ-TB (RL78/F14)
  - Y-QB-R5F113TL-TB-V2 (RL78/F15)



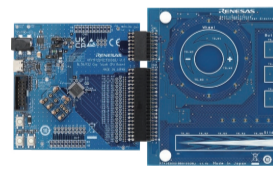
RL78/F2x Target Boards

- For RL78/F2x evaluation
- Equipped with
  - » RL78/F22 or RL78/F24 or RL78/F25
  - » 14-pin debugging and programming interface
  - » CAN & LIN interface
  - » 4 or 20 MHz main clock resonator
  - » Switch, 2 LEDs
  - » Breadboard area (2.54 mm pitch)
- Board dimensions: approx. 109 mm x 56 mm
- Order codes:
  - RTK7F122FPC01000BJ (RL78/F22)
  - RTK7F124FPC01000BJ (RL78/F24)
  - RTK7F125FPC01000BJ (RL78/F25)



RL78/2x Cap Touch Evaluation System

- Features
  - » Evaluation of different cap touch functions (button, slider & wheel)
  - » Simple prototyping
  - » Sensitivity adjustable by using QE for capacitive touch
  - » Easy to develop touch interfaces even for beginners with GUI
  - » Compliant with IEC 61000-4-3 & IEC 61000-4-6 Level 3
- Packages include
  - » RL78/F22 (48-pin) or RL78/F25 (100-pin) main board
  - » Board with capacitive touch sensor (CTSUS2LA) terminal and 12 channels
- Order codes:
  - RTK7F122FGST0000BJ (RL78/F22)
  - RTK7F125FPST0000BJ (RL78/F25)



Abbreviations:	IAR EW IAR Embedded Workbench with limitations	CMAC Cipher-based Message Authentication Code	AES Advanced Encryption Standard	AAU Application Accelerator Unit
	IEC International Electrotechnical Commission	ECB Cipher Block Chaining	LIN Local Interconnect Network	AESEA Advanced Encryption Standard Engine A
	OCD On-Chip Debug	ECB Electronic Codebook	CAN Controller Area Network	



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