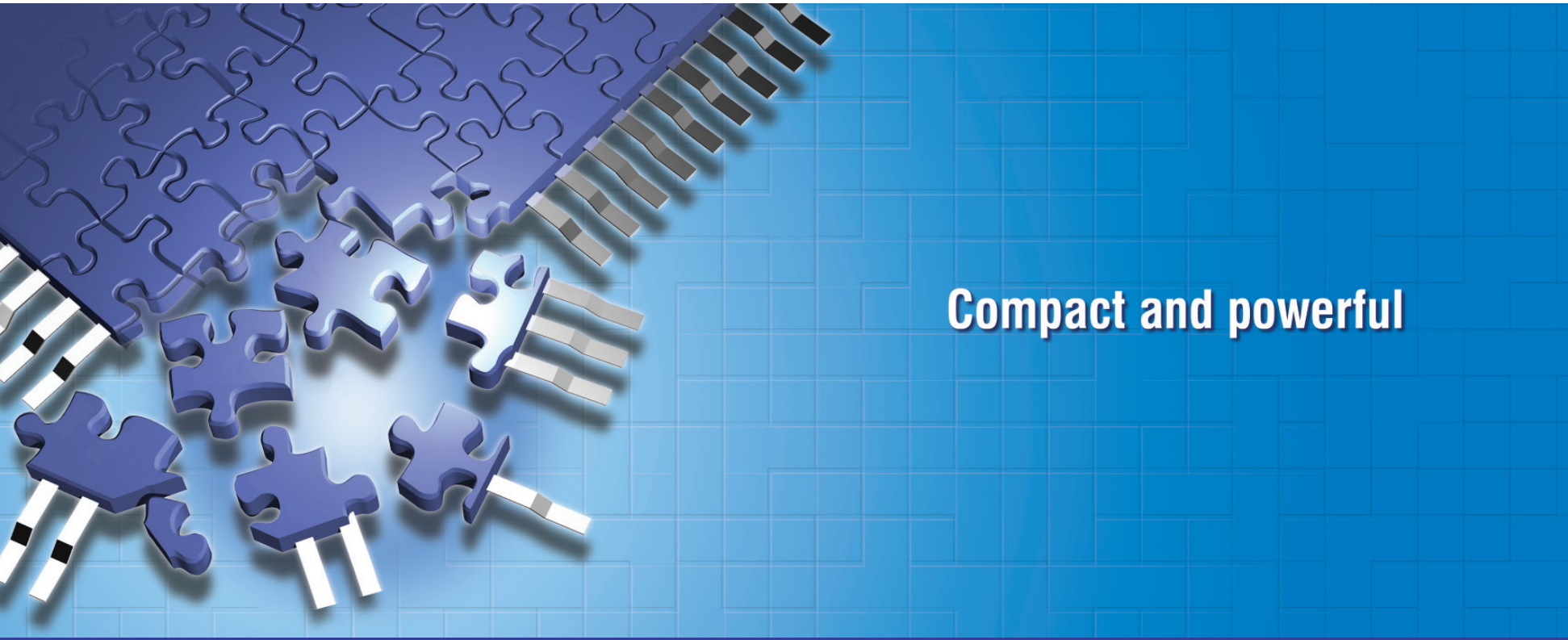
Renesas MPUs & MCUs

78K MCU Selection Guide



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78K0 and 78K0S MCUs

Device				Memory				Clock			I/O	Bus	Timer							Serial Interface												OCD	Peripheral Functions							Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [bytes]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	8-bit timer	Other timers	Watch timer	Real-time counter	Watchdog timer	PWM output	UART	UART supporting LIN	UART, CSI	UART supporting LIN, CSI	CSI	CSI, I²C	CSI with automatic transmission/reception function	I²C	IEBus	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
General Purpose (All Flash)	78K0S	78K0S/KU1+	μPD78F9200	1	Flash	√	128	10	8 M, 240 k	–	8	–/–	1	1	–	–	–	1	16 bits × 1, 8 bits × 1	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–	POC (2.1 V ± 0.1 V), LVI	2.0 to 5.5	10-SSOP (5.72)	QB-MINI2 (MINICUBE2) QB-78K0SKX1 (IECUBE)
			μPD78F9201	2																																					
			μPD78F9202	4																																					
			μPD78F9500	1									–						8 bits × 1															–							
			μPD78F9501	2																																					
			μPD78F9502	4																																					
		78K0S/KY1+	μPD78F9210	1	Flash	√	128	10	8 M, 240 k	–	14	–/–	1	1	–	–	–	1	16 bits × 1, 8 bits × 1	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–	POC (2.1 V ± 0.1 V), LVI	2.0 to 5.5	16-SSOP Thickness: 1.44 mm, (5.72) 1.5 mm (4.4 × 5) 16-WLBGA (2 × 2.3) 16-SDIP (7.62)	
			μPD78F9211	2																																					
			μPD78F9212	4																																					
			μPD78F9510	1																														–						16-SSOP Thickness: 1.44 mm (5.72)	
			μPD78F9511	2																																					
			μPD78F9512	4																																					
		78K0S/KA1+	μPD78F9221	2	Flash	√	128	10	8 M, 240 k	–	17	–/–	1	2	–	–	–	1	16 bits × 1, 8 bits × 1	–	1	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–	POC (2.1 V ± 0.1 V), LVI	2.0 to 5.5	20-SSOP (7.62) 20-SDIP (7.62)	
			μPD78F9222	4			256																																		
			μPD78F9224	8																																					
		78K0S/KB1+	μPD78F9232	4	Flash	√	256	10	8 M, 240 k	–	26	–/–	1	2	–	–	–	1	16 bits × 1, 8 bits × 1	–	1	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–	POC (2.1 V ± 0.1 V), LVI	2.0 to 5.5	30-SSOP (7.62) 32-SDIP (7.62)	
			μPD78F9234	8																																					

Remark POC: Power-on clear circuit
LVI: Low-voltage detector

Device				Memory				Clock			I/O	Bus	Timer							Serial Interface									OCD	Peripheral Functions						Other			
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [bytes]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	8-bit timer	Other timers	Watch timer	Real-time counter	Watchdog timer	PWM output	UART	UART supporting LIN	UART, CSI	UART supporting LIN, CSI	CSI	CSI, I²C	CSI with automatic transmission/reception function	I²C	IEBus	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
General Purpose (All Flash)	78K0	78K0/KB2	μPD78F0500A	8	Flash	√	512	20	8 M, 240 k	–	23	–/–	1	4	–	–	–	1	8 bits × 4	–	1	1	–	–	–	–	1	–	–	–	–	–	4	–	–	–	POC, LVI	1.8 to 5.5	30-SSOP (7.62) 36-FLGA (4 × 4)	E1 QB-78K0KX2 (IECUBE)
			μPD78F0501A	16			768																																	
			μPD78F0502A	24			1024																																	
			μPD78F0503A	32																																				
			μPD78F0503DA																											√										
		78K0/KC2 (38-pin)	μPD78F0511A	16	Flash	√	768	20	8 M, 240 k	√	31	–/–	1	4	–	1	–	1	8 bits × 4	–	1	1	–	–	–	–	1	–	–	–	–	–	6	–	–	–	POC, LVI	1.8 to 5.5	38-SSOP (7.62)	
			μPD78F0512A	24			1024																																	
			μPD78F0513A	32																																				
			μPD78F0513DA																											√										
		78K0/KC2 (44-pin)	μPD78F0511A	16			768				37																			–			8						44-LQFP (10 × 10)	
			μPD78F0512A	24			1024																																	
			μPD78F0513A	32																																				
			μPD78F0513DA																											√										
		78K0/KC2 (48-pin)	μPD78F0511A	16			768				41																			–									48-LQFP (7 × 7)	
			μPD78F0512A	24			1024																																	
			μPD78F0513A	32																																				
			μPD78F0514A	48			2048																														16 × 16 32 ÷ 16			
			μPD78F0515A	60			3072																																	
			μPD78F0515DA																											√										
		78K0/KD2	μPD78F0521A	16	Flash	√	768	20	8 M, 240 k	√	45	–/–	1	4	–	1	–	1	8 bits × 4	–	1	1	–	–	–	–	1	–	–	–	–	–	8	–	–	–	POC, LVI	1.8 to 5.5	52-LQFP (10 × 10)	
			μPD78F0522A	24			1024																																	
			μPD78F0523A	32																																				
			μPD78F0524A	48			2048																														16 × 16 32 ÷ 16			
			μPD78F0525A	60			3072																																	
			μPD78F0526A	96			5120																																	
			μPD78F0527A	128			7168																																	
			μPD78F0527DA																											√										
		78K0/KE2	μPD78F0531A	16	Flash	√	768	20	8 M, 240 k	√	55	–/–	1	4	–	1	–	1	8 bits × 4	–	1	1	–	–	–	–	1	–	–	–	–	–	8	–	–	–	POC, LVI	1.8 to 5.5	64-LQFP (10 × 10) 64-LQFP (12 × 12) 64-LQFP (14 × 14) 64-TQFP (7 × 7) 64-FLGA (5 × 5) 64-FPBGA (4 × 4)	
			μPD78F0532A	24			1024																																	
			μPD78F0533A	32																																				
			μPD78F0534A	48			2048						2						8 bits × 4					1													16 × 16 32 ÷ 16			
			μPD78F0535A	60			3072																																	
			μPD78F0536A	96			5120																																	
			μPD78F0537A	128			7168																																	
			μPD78F0537DA																											√										
		78K0/KF2	μPD78F0544A	48	Flash	√	2048	20	8 M, 240 k	√	71	–/–	2	4	–	1	–	1	8 bits × 4	–	1	1	–	1	–	1	1	–	–	–	–	–	8	–	–	16 × 16 32 ÷ 16	POC, LVI	1.8 to 5.5	80-LQFP (12 × 12) 80-LQFP (14 × 14)	
			μPD78F0545A	60			3072																																	
			μPD78F0546A	96			5120																																	
			μPD78F0547A	128			7168																																	
			μPD78F0547DA																											√										

Remark POC: Power-on clear circuit LVI: Low-voltage detector

Device				Memory				Clock			I/O	Bus	Timer							Serial Interface										OCD	Peripheral Functions							Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [bytes]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	8-bit timer	Other timers	Watch timer	Real-time counter	Watchdog timer	PWM output	UART	UART supporting LIN	UART, CSI	UART supporting LIN, CSI	CSI	CSI, I²C	CSI with automatic transmission/ reception function	I²C	IEBus	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
General Purpose (All Flash)	78K0	**78K0/KB2-A**	μPD78F0590	16	Flash	√	1024	20	8 M, 240 k	–	22	–/–	1	4	–	–	–	1	8 bits × 4	–	1	–	–	1	–	–	1	–	–	√	–	–	Note 1	–	–	16 × 16 32 ÷ 16	POC, LVI, operational amplifier × 3	1.8 to 5.5	30-SSOP (7.62)	E1 QB-78F0593 (IECUBE)
			μPD78F0591	32																																				
		78K0/KC2-A (36-pin)	μPD78F0592	16	Flash	√	1024	20	8 M, 240 k	–	28	–/–	1	4	–	–	1	1	8 bits × 4	–	1	–	–	1	–	–	1	–	–	√	–	–	Note 2	–	–	16 × 16 32 ÷ 16	POC, LVI, operational amplifier × 3	1.8 to 5.5	36-FLGA (4 × 4)	
			μPD78F0593	32																																				
		78K0/KC2-A (48-pin)	μPD78F0592	16						√	40																										POC, LVI, operational amplifier × 3, clock output		48-LQFP (7 × 7)	
			μPD78F0593	32																																				
		78K0/KY2-L	μPD78F0550	4	Flash	√	384	10	4 M, 8 M, 30 k	–	12	–/–	1	2	–	–	–	1	8 bits × 1	–	1	–	–	–	–	–	1	–	–	√	–	–	4	–	–	–	POC, LVI	1.8 to 5.5	16-SSOP (4.4 × 5)	E1 QB-78K0KX2L (IECUBE)
			μPD78F0551	8			512																																	
			μPD78F0552	16			768																																	
			μPD78F0555	4			384																														POC, LVI, operational amplifier			
			μPD78F0556	8			512																																	
			μPD78F0557	16			768																																	
		78K0/KA2-L (20-pin)	μPD78F0560	4	Flash	√	384	10	4 M, 8 M, 30 k	–	16	–/–	1	2	–	–	–	1	8 bits × 1	–	1	–	–	–	–	–	1	–	–	√	–	–	6	–	–	–	POC, LVI	1.8 to 5.5	20-SSOP (7.62)	
			μPD78F0561	8			512																																	
			μPD78F0562	16			768																																	
			μPD78F0565	4			384																														POC, LVI, operational amplifier			
			μPD78F0566	8			512																																	
			μPD78F0567	16			768																																	
		78K0/KA2-L (25-pin)	μPD78F0560	4			384				21													1									7				POC, LVI		25-LGA (3 × 3)	
			μPD78F0561	8			512																																	
			μPD78F0562	16			768																																	
			μPD78F0565	4			384																														POC, LVI, operational amplifier			
			μPD78F0566	8			512																																	
			μPD78F0567	16			768																																	
		78K0/KA2-L (32-pin)	μPD78F0560	4			384				25																						11				POC, LVI		32-WQFN (5 × 5)	
			μPD78F0561	8			512																																	
			μPD78F0562	16			768																																	
			μPD78F0565	4			384																														POC, LVI, operational amplifier			
			μPD78F0566	8			512																																	
			μPD78F0567	16			768																																	
		78K0/KB2-L	μPD78F0571	8	Flash	√	512	10	4 M, 8 M, 30 k	–	24	–/–	1	4	–	–	–	1	8 bits × 4	–	1	–	–	1	–	–	1	–	–	√	–	–	7	–	–	–	POC, LVI	1.8 to 5.5	30-SSOP (7.62)	
			μPD78F0572	16			768																																	
			μPD78F0573	32			1024																																	
			μPD78F0576	8			512																														POC, LVI, operational amplifier			
			μPD78F0577	16			768																																	
			μPD78F0578	32			1024																																	

Notes 1. 12-bit A/D converter: 10 channels

2. 12-bit A/D converter: 12 channels

Remark POC: Power-on clear circuit

LVI: Low-voltage detector

Device				Memory				Clock			I/O	Bus	Timer							Serial Interface										OCD	Peripheral Functions							Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [bytes]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	8-bit timer	Other timers	Watch timer	Real-time counter	Watchdog timer	PWM output	UART	UART supporting LIN	UART, CSI	UART supporting LIN, CSI	CSI	CSI, I^2C	CSI with automatic transmission/reception function	I^2C	IEBus	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
General Purpose (All Flash)	78K0	78K0/KC2-L (40-pin)	µPD78F0581	8	Flash	√	512	10	4 M, 8 M, 30 k	√	34	−/−	1	4	−	−	1	1	8 bits × 4	−	1	−	−	2	−	−	1	−	−	√	−	−	10	−	−	−	POC, LVI	1.8 to 5.5	40-WQFN (6 × 6)	E1 QB-78K0KX2L (IECUBE)
			µPD78F0582	16			768																																	
			µPD78F0583	32			1024																																	
			µPD78F0586	8			512																														POC, LVI, operational amplifier × 2			
			µPD78F0587	16			768																																	
			µPD78F0588	32			1024																																	
		78K0/KC2-L (44-pin)	µPD78F0581	8			512				38																						11				POC, LVI		44-LQFP (10 × 10)	
			µPD78F0582	16			768																																	
			µPD78F0583	32			1024																																	
			µPD78F0586	8			512																														POC, LVI, operational amplifier × 2			
			µPD78F0587	16			768																																	
			µPD78F0588	32			1024																																	
		78K0/KC2-L (48-pin)	µPD78F0581	8			512				42																										POC, LVI, clock output		48-LQFP (7 × 7)	
			µPD78F0582	16			768																																	
			µPD78F0583	32			1024																																	
			µPD78F0586	8			512																														POC, LVI, operational amplifier × 2, clock output			
			µPD78F0587	16			768																																	
			µPD78F0588	32			1024																																	

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LVI: Low-voltage detector

Device				Memory				Clock			I/O	Bus	Timer							Serial Interface												OCD	Peripheral Functions							Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [bytes]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	8-bit timer	Other timers	Watch timer	Real-time counter	Watchdog timer	PWM output	UART	UART supporting LIN	UART, CSI	UART supporting LIN, CSI	CSI	CSI, I²C	CSI with automatic transmission/reception function	I²C	IEBus	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
LCD (All Flash)	78K0	78K0/LC3	μPD78F0400	8	Flash	√	512	10	8 M, 240 k	√	30	−/−	1	6	−	−	1	1	8 bits × 2	1	1	−	−	−	−	−	−	−	−	√	18 × 8 or 22 × 4	−	−	−	−	−	POC, LVI, manchester code generator	1.8 to 5.5	48-LQFP (7 × 7)	E1 QB-78K0LX3 (IECUBE)
			μPD78F0401	16			768																																		
			μPD78F0402	24			1024																																		
			μPD78F0403	32																																					
			μPD78F0410	8			512																										6								
			μPD78F0411	16			768																																		
			μPD78F0412	24			1024																																		
			μPD78F0413	32																																					
		78K0/LD3	μPD78F0420	8	Flash	√	512	10	8 M, 240 k	√	34	−/−	1	6	−	−	1	1	8 bits × 2	−	1	1	−	−	−	−	−	−	−	√	20 × 8 or 24 × 4	−	−	−	−	−	POC, LVI, manchester code generator, remote control reception	1.8 to 5.5	52-LQFP (10 × 10)	
			μPD78F0421	16			768																																		
			μPD78F0422	24			1024																																		
			μPD78F0423	32																																					
			μPD78F0430	8			512																										6								
			μPD78F0431	16			768																																		
			μPD78F0432	24			1024																																		
			μPD78F0433	32																																					
		78K0/LE3	μPD78F0441	16	Flash	√	768	10	8 M, 240 k	√	46	−/−	1	6	−	−	1	1	8 bits × 4	−	1	1	−	−	−	−	−	−	−	√	28 × 8 or 32 × 4	−	−	−	−	−	POC, LVI, manchester code generator, remote control reception	1.8 to 5.5	64-LQFP (10 × 10) 64-LQFP (12 × 12)	
			μPD78F0442	24			1024																																		
			μPD78F0443	32																																					
			μPD78F0444	48			2048																																		
			μPD78F0445	60																																					
			μPD78F0451	16			768																										8							64-TQFP (7 × 7) 64-LQFP (10 × 10) 64-LQFP (12 × 12)	
			μPD78F0452	24			1024																																		
			μPD78F0453	32																																					
			μPD78F0454	48			2048																																		
			μPD78F0455	60																																					
			μPD78F0461	16			768																										20 × 8 or 24 × 4	3						64-LQFP (10 × 10) 64-LQFP (12 × 12)	
			μPD78F0462	24			1024																																		
			μPD78F0463	32																																					
			μPD78F0464	48			2048																																		
			μPD78F0465	60																																					
		78K0/LF3	μPD78F0471	16	Flash	√	768	10	8 M, 240 k	√	62	−/−	1	6	−	−	1	1	8 bits × 4	−	1	1	−	−	−	1	−	−	−	√	36 × 8 or 40 × 4	−	−	−	−	−	POC, LVI, manchester code generator, remote control reception	1.8 to 5.5	80-LQFP (12 × 12) 80-LQFP (14 × 14)	
			μPD78F0472	24			1024																																		
			μPD78F0473	32																																					
			μPD78F0474	48			2048																																		
			μPD78F0475	60																																					
			μPD78F0481	16			768																										8								
			μPD78F0482	24			1024																																		
			μPD78F0483	32																																					
			μPD78F0484	48			2048																																		
			μPD78F0485	60																																					
			μPD78F0491	16			768																										28 × 8 or 32 × 4	3							
			μPD78F0492	24			1024																																		
			μPD78F0493	32																																					
			μPD78F0494	48			2048																																		
			μPD78F0495	60																																					

Remark POC: Power-on clear circuit LVI: Low-voltage detector

Device				Memory				Clock			I/O	Bus	Timer							Serial Interface									OCD	Peripheral Functions						Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [bytes]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	8-bit timer	Other timers	Watch timer	Real-time counter	Watchdog timer	PWM output	UART	UART supporting LIN	UART, CSI	UART supporting LIN, CSI	CSI	CSI, I^2C	CSI with automatic transmission/ reception function	I^2C	IEBus	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
Power Meters (All Flash)	78K0	**78K0/LE3-M**	μPD78F8052	16	Flash	√	768	10	8 M, 240 k	√	32	−/−	1	6	−	−	1	1	8 bits × 1	−	1	1	−	−	−	−	−	−	−	√	24 × 4	Note 1	1	−	−	−	POC, LVI, power calculation, power quality measurement, digital frequency conversion, buzzer output, remote control transmitter	1.8 to 3.6	64-LQFP (10 × 10)	E1 QB-78K0LX3M (IECUBE)
			μPD78F8053	32			1024																																
		78K0/LG3-M	μPD78F8054	48	Flash	√	2048	10	8 M, 240 k	√	65	−/−	1	6	−	−	1	1	8 bits × 4	−	1	1	−	−	−	−	−	−	−	√	40 × 4	Note 2	8	−	−	−	POC, LVI, power calculation, power quality measurement, digital frequency conversion, buzzer output, remote control transmitter	1.8 to 3.6	100-LQFP (14 × 14)	
			μPD78F8055	60																																			

Notes 1. 24-bit ΔΣ A/D converter: 3 channels

2. 24-bit ΔΣ A/D converter: 4 channels

Remark POC: Power-on clear circuit

LVI: Low-voltage detector

Device				Memory				Clock			I/O	Bus	Timer							Serial Interface									OCD	Peripheral Functions						Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [bytes]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	8-bit timer	Other timers	Watch timer	Real-time counter	Watchdog timer	PWM output	UART	UART supporting LIN	UART, CSI	UART supporting LIN, CSI	CSI	CSI, I^2C	CSI with automatic transmission/ reception function	I^2C	IEBus	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
Inverter Control (All Flash)	78K0	**78K0/IY2**	μPD78F0740	4	Flash	√	384	20	40 M, 8 M, 30 k	–	12	–/–	3	2	–	–	–	1	16 bits × 4, 8 bits × 1 (2 phases, 16 bits × 2 or 4 phases, 16 bits × 1)	–	–	–	–	–	–	–	–	–	–	√	–	–	5	–	–	8 × 8 16 × 16	POC, LVI	2.7 to 5.5	16-SSOP (4.4 × 5)	E1 QB-78K0IX2 (IECUBE)
			μPD78F0741	8			512																														POC, LVI, operational amplifier			
			μPD78F0742	16			768																																	
			μPD78F0750	4			384																																	
			μPD78F0751	8			512																																	
			μPD78F0752	16			768																																	
		78K0/IA2	μPD78F0743	8	Flash	√	512	20	40 M, 8 M, 30 k	–	16	–/–	3	2	–	–	–	1	16 bits × 4, 8 bits × 1 (2 phases, 16 bits × 2 or 4 phases, 16 bits × 1)	–	1[Note]	–	–	–	–	–	1	–	–	√	–	–	6	–	–	8 × 8 16 × 16	POC, LVI	2.7 to 5.5	20-SSOP (7.62) 20-SOP (6.1 × 12.3)	
			μPD78F0744	16			768																																	
			μPD78F0753	8			512																																POC, LVI, operational amplifier			
			μPD78F0754	16			768																																	
		78K0/IB2 (30-pin)	μPD78F0745	8	Flash	√	512	20	40 M, 8 M, 30 k	–	25	–/–	3	2	–	–	–	1	16 bits × 5, 8 bits × 1 (2 phases, 16 bits × 2 or 4 phases, 16 bits × 1)	–	1[Note]	–	–	1	–	–	1	–	–	√	–	–	9	–	–	8 × 8 16 × 16	POC, LVI	2.7 to 5.5	30-SSOP (7.62)	
			μPD78F0746	16			768																																	
			μPD78F0755	8			512																																POC, LVI, operational amplifier			
			μPD78F0756	16			768																																	
		78K0/IB2 (32-pin)	μPD78F0745	8			512				23								16 bits × 4, 8 bits × 1 (2 phases, 16 bits × 2 or 4 phases, 16 bits × 1)																				POC, LVI		32-WQFN (5 × 5)	
			μPD78F0746	16			768																																	
			μPD78F0755	8			512																																POC, LVI, operational amplifier			
			μPD78F0756	16			768																																	
		μPD78F0712	μPD78F0711	8	Flash	√	768	20	8 M, 240 k	–	15	–/–	1	2	10 bits × 1	–	–	1	16 bits × 1, 8 bits × 1, 6 phases, 10 bits × 1	1	–	–	–	–	–	–	–	–	–	√	–	–	4	–	–	16 × 16 32 ÷ 16	POC, LVI	4.0 to 5.5	30-SSOP (7.62)	E1 QB-780714 (IECUBE)
			μPD78F0712	16																																			
		μPD78F0714	μPD78F0714	32	Flash	√	1024	20	240 k	–	48	–/–	2	3	10 bits × 1	–	–	1	16 bits × 2, 8 bits × 3, 6 phases, 10 bits × 1	1	–	–	–	1	–	–	–	–	–	√	–	–	8	–	–	16 × 16 32 ÷ 16	POC, LVI	4.0 to 5.5	64-TQFP (12 × 12)	

Note DALI slave communication possible

Remark POC: Power-on clear circuit
LVI: Low-voltage detector

Device				Memory				Clock			I/O	Bus	Timer						Serial Interface									OCD	Peripheral Functions							Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [bytes]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	8-bit timer	Other timers	Watch timer	Real-time counter	Watchdog timer	PWM output	UART	UART supporting LIN	UART, CSI	UART supporting LIN, CSI	CSI	CSI, I^2C	CSI with automatic transmission/ reception function	I^2C	IEBus	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
Digital AV (All Flash)	**78K0**	**78K0/KC2-C**	μPD78F0760	32	Flash	√	1024	20	8 M, 240 k	√	41	−/−	3	4	−	−	1	1	16 bits × 3, 8 bits × 4	−	1	1	−	1	−	−	3	−	−	√	−	−	8	−	−	16 × 16 32 ÷ 16	POC, LVI, CEC transmission/ reception, remote control reception, clock output	1.8 to 5.5	48-LQFP (7 × 7)	E1 QB-78K0KX2C (IECUBE)
			μPD78F0761	48			2048																																
			μPD78F0762	60			3072																																	
		78K0/KE2-C	μPD78F0763	32	Flash	√	1024	20	8 M, 240 k	√	55	−/−	3	4	−	−	1	1	16 bits × 3, 8 bits × 4	1	1	1	−	1	−	−	3	−	−	√	−	−	8	−	−	16 × 16 32 ÷ 16	POC, LVI, CEC transmission/ reception, remote control reception, clock output, buzzer output	1.8 to 5.5	64-LQFP (10 × 10)	
			μPD78F0764	48			2048																																
			μPD78F0765	60			3072																																	
Preset Remote Control (All Flash)	**78K0**	**μPD179F11x**	μPD179F110	4	Flash	√	512	4	4 M, 240 k	−	26	−/−	1	4	−	−	−	1	16 bits × 1, 8 bits × 4	1	−	−	−	−	−	−	−	−	−	√	−	−	−	−	−	−	POC, LVI, remote control signal output	1.8 to 3.6	30-SSOP (7.62)	QB-MINI2 (MINICUBE2) QB-179F124 (IECUBE)
			μPD179F111	8																																			
			μPD179F112	16			768																																	
			μPD179F113	24			1024																																	
			μPD179F114	32																																			
		μPD179F12x	μPD179F122	16	Flash	√	768	4	4 M, 240 k	−	34	−/−	1	4	−	−	−	1	16 bits × 1, 8 bits × 4	1	−	−	−	−	−	−	−	−	−	√	−	−	−	−	−	−	POC, LVI, remote control signal output	1.8 to 3.6	38-SSOP (7.62)	
			μPD179F123	24			1024																																	
			μPD179F124	32																																			
LED Lighting (All Flash)	**78K0**	**μPD78F8025**	μPD78F8024	8	Flash	√	512	20	8 M, 240 k	−	23	−/−	1	4	−	−	−	1	8 bits × 4	−	1	1	−	−	−	−	1	−	−	−	−	−	4	−	−	−	POC, LVI, step-up/step-down selectable, constant current driver	1.8 to 5.5	64-LQFP (12 × 12)	QB-78K0KX2 (IECUBE)
			μPD78F8025	32			1024																																
USB (All Flash)	**78K0**	**μPD78F0730**	μPD78F0730	16	Flash	√	3072	16	16 M, 6 M, 240 k	−	20	−/−	1	3	−	−	−	1	8 bits × 4	1	−	−	−	1	−	−	−	−	−	√	−	−	−	−	−	−	USB, POC, LVI	4.0 to 5.5	30-SSOP (7.62)	E1 QB-780731 (IECUBE)
Meter Control	**78K0**	**μPD780958**	μPD780957(A)	48	Mask	−	2048	1.2 (RC)	−	√	69	−/−	2	4	−	−	−	1	16 bits × 1	1	−	−	−	1	−	−	−	−	−	−	30 × 3	−	−	−	−	−	Subclock 2 (4.91 MHz), sampling pulse, MR sampling	2.2 to 3.5	100-LQFP (14 × 14)	IE-78K0-NS/-A, IE-780958-NS-EM4 + IE-78K0-NS-P02
			μPD780958(A)	60																																		

Remark POC: Power-on clear circuit
LVI: Low-voltage detector

Device				Memory				Clock			I/O	Bus	Timer						Serial Interface									OCD	Peripheral Functions						Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [bytes]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	8-bit timer	Other timers	Watch timer	Real-time counter	Watchdog timer	PWM output	UART	UART supporting LIN	UART, CSI	UART supporting LIN, CSI	CSI	CSI, I^2C	CSI with automatic transmission/ reception function	I^2C	IEBus	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
Car Electronics Body Control (On-Chip CAN) (All Flash)	78K0	**78K0/FC2**	μPD78F0881A	32	Flash	√	2048	20	8 M, 240 k	√	37	−/−	2	4	−	1	−	1	8 bits × 4	−	1	−	1	−	−	−	−	−	1	√	−	−	8	−	−	16 × 16 32 ÷ 16	POC, LVI	1.8 to 5.5	44-LQFP (10 × 10)	QB-MINI2 (MINICUBE2) QB-78K0FX2 (IECUBE)
			μPD78F0882A	48			3072																															
			μPD78F0883A	60																																		
			μPD78F0884A	32			2048				41																						9					48-LQFP (7 × 7)	
			μPD78F0885A	48			3072																															
			μPD78F0886A	60																																		
		78K0/FE2	μPD78F0887A	48	Flash	√	3072	20	8 M, 240 k	√	55	−/−	4	4	−	1	−	1	8 bits × 4	−	1	−	1	1	−	−	−	−	1	√	−	−	12	−	−	16 × 16 32 ÷ 16	POC, LVI	1.8 to 5.5	64-LQFP (10 × 10) 64-LQFP (12 × 12)	
			μPD78F0888A	60																																		
			μPD78F0889A	96			5120																															
			μPD78F0890A	128			7168																															
		78K0/FF2	μPD78F0891A	60	Flash	√	3072	20	8 M, 240 k	√	71	−/−	4	4	−	1	−	1	8 bits × 4	−	1	−	1	1	−	−	−	−	1	√	−	−	16	−	−	16 × 16 32 ÷ 16	POC, LVI	1.8 to 5.5	80-LQFP (12 × 12) 80-LQFP (14 × 14)	
			μPD78F0892A	96			5120																															
			μPD78F0893A	128			7168																															
Body Control (All Flash)	78K0	**78K0/FY2-L**	μPD78F0854	4	Flash	√	384	20	8 M, 4 M, 30 k	√	11	−/−	2	2	−	−	−	1	8 bits × 1	1	−	−	−	−	−	−	1	−	−	√	−	−	4	−	−	8 × 8 32 ÷ 16	POC, LVI	1.8 to 5.5	16-SSOP (5.72)	QB-MINI2 (MINICUBE2) QB-78K0FX2L (IECUBE)
			μPD78F0855	8			512																															
			μPD78F0856	16			768																															
		78K0/FA2-L	μPD78F0857	4	Flash	√	384	20	8 M, 4 M, 30 k	√	15	−/−	2	2	−	−	−	1	16 bits × 2, 8 bits × 1	1	−	−	−	−	−	−	1	−	−	√	−	−	6	−	−	8 × 8 32 ÷ 16	POC, LVI	1.8 to 5.5	20-SSOP (7.62)	
			μPD78F0858	8			512																															
			μPD78F0859	16			768																															
		78K0/FB2-L	μPD78F0864	8	Flash	√	512	20	8 M, 4 M, 30 k	√	24	−/−	3	2	−	−	−	1	16 bits × 4, 8 bits × 1	1	−	−	−	1	−	−	1	−	−	√	−	−	9	−	−	8 × 8 32 ÷ 16	POC, LVI	1.8 to 5.5	30-SSOP (7.62)	
			μPD78F0865	16			768																															

Remark POC: Power-on clear circuit
LVI: Low-voltage detector

Device				Memory				Clock			I/O	Bus	Timer							Serial Interface									OCD	Peripheral Functions							Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [bytes]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	8-bit timer	Other timers	Watch timer	Real-time counter	Watchdog timer	PWM output	UART	UART supporting LIN	UART, CSI	UART supporting LIN, CSI	CSI	CSI, I^2C	CSI with automatic transmission/reception function	I^2C	IEBus	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
Car Electronics Body Control (On-Chip LIN)	78K0	**μPD78F8016A**	μPD78F8014A	16	Flash	√	768	20	8 M, 240 k	√	25	–/–	1	4	–	1	–	1	8 bits × 4	–	1	1	–	–	–	–	1	–	–	–	–	–	5	–	–	–	POC, LVI, voltage regulator, LIN transceiver, Low-side driver × 4 ch, High-side driver × 1 ch	7 to 19	52-LQFP (10 × 10)	E1 QB-78K0KX2 (IECUBE)
			μPD78F8015A	24			1024																																
			μPD78F8016A	32																																			
			μPD78F8017A	48			2048				28		2						8 bits × 4														6			16 × 16 32 ÷ 16			64-LQFP (10 × 10)	
			μPD78F8018A	60			3072																																
			μPD78F8019A	96			5120																																
			μPD78F8020A	128			7168																																
			μPD78F8020DA																											√									
		μPD78F8032	μPD78F8026	16	Flash	√	768	20	8 M, 240 k	–	23	–/–	1	4	–	–	–	1	8 bits × 4	–	1	1	–	–	–	–	1	–	–	–	–	–	4	–	–	–	POC, LVI, voltage regulator, LIN transceiver, High-side driver × 1 ch, High voltage switch input circuit	6 to 19	48-LQFP (7 × 7)	
			μPD78F8027	24			1024																																
			μPD78F8028	32																																			
			μPD78F8029	48			2048																																
			μPD78F8030	60			3072																																
			μPD78F8032D	128			7168																							√									
		μPD78F8039*	μPD78F8033	16	Flash	√	768	20	8 M, 240 k	√	41	–/–	1	4	–	1	–	1	8 bits × 4	–	1	1	–	–	–	–	1	–	–	–	–	–	8	–	–	–	POC, LVI, voltage regulator, LIN transceiver, High-side driver × 1 ch, High voltage switch input circuit	6 to 19	64-LQFP (10 × 10)	
			μPD78F8034	24			1024																																
			μPD78F8035	32																																			
			μPD78F8036	48			2048																																
			μPD78F8037	60			3072																																
			μPD78F8039D	128			7168																							√									
		μPD78F8077*	μPD78F8071	16	Flash	√	768	20	8 M, 240 k	–	26	–/–	1	4	–	1	–	1	8 bits × 4	–	1	1	–	–	–	–	1	–	–	–	–	–	5	–	–	–	POC, LVI, voltage regulator, LIN transceiver, Half-bridge driver × 6 ch, SPI & PWM controller, Thermal shutdown circuit	6 to 19	64-WQFN (9 × 9)	
			μPD78F8072	24			1024																																
			μPD78F8073	32																																			
			μPD78F8074	48			2048																																
			μPD78F8075	60			3072																																
			μPD78F8077D	128			7168																							v									

Remark POC: Power-on clear circuit
LVI: Low-voltage detector

* Under development

Device				Memory				Clock			I/O	Bus	Timer							Serial Interface								OCD	Peripheral Functions							Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [bytes]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	8-bit timer	Other timers	Watch timer	Real-time counter	Watchdog timer	PWM output	UART	UART supporting LIN	UART, CSI	UART supporting LIN, CSI	CSI	CSI, I²C	CSI with automatic transmission/ reception function	I²C	IEBus	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
Car Electronics Dashboard Control (All Flash)	78K0	78K0/DE2	μPD78F0836	24	Flash	√	2048	20	8 M, 240 k	√	47	−/−	5	2	−	1	−	1	16 bits × 5, 8 bits × 2	−	−	−	1	−	−	−	1	−	−	√	24 × 4	−	4	−	−	16 × 16 32 ÷ 16	POC, LVI, sound generator, stepper motor controller/driver × 2	2.7 to 5.5	64-LQFP (10 × 10)	E1 QB-78K0DX2 (IECUBE)
			μPD78F0837	48			3076																																
			μPD78F0844	32			2048																						1											
			μPD78F0845	60			3076																																	
		78K0/DF2	μPD78F0838	24	Flash	√	2048	20	8 M, 240 k	√	63	−/−	5	2	−	1	−	1	16 bits × 5, 8 bits × 2	−	1	−	1	1	−	−	1	−	−	√	40 × 4	−	8	−	−	16 × 16 32 ÷ 16	POC, LVI, sound generator	2.7 to 5.5	80-LQFP (12 × 12)	
			μPD78F0839	48			3076																																	
			μPD78F0840	24			2048																									32 × 4						POC, LVI, sound generator, stepper motor controller/driver × 2			
			μPD78F0841	48			3076																																	
			μPD78F0842	24			2048																									28 × 4						POC, LVI, sound generator, stepper motor controller/driver × 4			
			μPD78F0843	48			3076																																	
			μPD78F0846	32			2048																						1			32 × 4						POC, LVI, sound generator, stepper motor controller/driver × 2			
			μPD78F0847	60			3076																																	
			μPD78F0848	32			2048																									28 × 4						POC, LVI, sound generator, stepper motor controller/driver × 4			
			μPD78F0849	60			3076																																	

Remark POC: Power-on clear circuit
LVI: Low-voltage detector

78K0R MCUs

Device				Memory				Clock			I/O	Bus	Timer				Serial Interface														OCD	Peripheral Functions							Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [KB]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	Real-time counter	Watchdog timer	PWM output	CSI	CSI, UART	CSI: 2 ch, UART: 1 ch	CSI, UART, simplified I²C	CSI: 2 ch, UART: 1 ch, simplified I²C: 2 ch	CSI: 2 ch, UART supporting LIN: 1 ch	CSI: 2 ch, simplified I²C: 1 ch	CSI, simplified I²C	UART, simplified I²C	UART	UART supporting LIN	Simplified I²C	I²C	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
General Purpose (All Flash)	78K0R	**78K0R/KE3**	μPD78F1142A	64	Flash	√	4	20	8 M, 240 k	√	55	–/–	8	1	1	PWM:16 bits × 3, multiplexed PWM: 16 bits × 6	–	1	–	1	–	–	–	–	–	–	1	–	1	–	√	–	–	8	–	–	16 × 16	POC, LVI, DMA, temperature sensor	1.8 to 5.5	64-TQFP (7 × 7) 64-LQFP (10 × 10) 64-LQFP (12 × 12) 64-FBGA (5 × 5) 64-FBGA (6 × 6)	E1 QB-78K0RKX3 (IECUBE)
			μPD78F1143A	96			6																																
			μPD78F1144A	128			8																																	
			μPD78F1145A	192			10																																	
			μPD78F1146A	256			12[Note 1]																																	
		78K0R/KF3	μPD78F1152A	64	Flash	√	4	20	8 M, 240 k	√	70	–/–	8	1	1	PWM:16 bits × 4, multiplexed PWM: 16 bits × 7	–	–	1	2	–	–	–	–	–	–	1	–	1	–	√	–	–	8	–	2	16 × 16	POC, LVI, DMA, temperature sensor	1.8 to 5.5	80-LQFP (12 × 12) 80-LQFP (14 × 14)	
			μPD78F1153A	96			6																																	
			μPD78F1154A	128			8																																	
			μPD78F1155A	192			10																																	
			μPD78F1156A	256			12[Note 1]																																	
		78K0R/KG3	μPD78F1162A	64	Flash	√	4	20	8 M, 240 k	√	88	16/20	8	1	1	PWM:16 bits × 4, multiplexed PWM: 16 bits × 7	–	–	1	2	–	–	–	–	–	–	1	–	1	–	√	–	–	16	–	2	16 × 16	POC, LVI, DMA, temperature sensor	1.8 to 5.5	100-LQFP (14 × 14) 100-LQFP (14 × 20)	
			μPD78F1163A	96			6																																	
			μPD78F1164A	128			8																																	
			μPD78F1165A	192			10																																	
			μPD78F1166A	256			12[Note 1]																																	
			μPD78F1167A	384			24																																	
			μPD78F1168A	512			30[Note 2]																																	
		78K0R/KH3	μPD78F1174A	128	Flash	√	8	20	8 M, 240 k	√	116	16/20	12	1	1	PWM:16 bits × 6, multiplexed PWM: 16 bits × 7 16 bits × 3	–	–	1	–	2	–	–	–	–	–	1	–	1	–	√	–	–	16	–	2	16 × 16	POC, LVI, DMA, temperature sensor	1.8 to 5.5	128-LQFP (14 × 20)	
			μPD78F1175A	192			10																																	
			μPD78F1176A	256			12																																	
			μPD78F1177A	384			24																																	
			μPD78F1178A	512			30[Note 2]																																	
		78K0R/KJ3	μPD78F1184A	128	Flash	√	8	20	8 M, 240 k	√	132	16/20	12	1	1	PWM:16 bits × 6, multiplexed PWM: 16 bits × 7 16 bits × 3	–	–	1	–	2	–	–	–	–	–	1	–	1	–	√	–	–	16	–	2	16 × 16	POC, LVI, DMA, temperature sensor	1.8 to 5.5	144-LQFP (20 × 20)	
			μPD78F1185A	192			10																																	
			μPD78F1186A	256			12																																	
			μPD78F1187A	384			24																																	
			μPD78F1188A	512			30[Note 2]																																	

Notes **1.** 10 KB when using the self-programming feature.
2. 28 KB when using the self-programming feature.

Remark POC: Power-on clear circuit
LVI: Low-voltage detector

Device				Memory				Clock			I/O	Bus	Timer				Serial Interface																		OCD	Peripheral Functions							Other			
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [KB]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	Real-time counter	Watchdog timer	PWM output	CSI	CSI, UART	CSI: 2 ch, UART: 1 ch	CSI, UART, simplified I^2C	CSI: 2 ch, UART: 1 ch, simplified I^2C: 2 ch	CSI: 2 ch, UART supporting LIN: 1 ch	CSI: 2 ch, simplified I^2C: 1 ch	CSI, simplified I^2C	UART, simplified I^2C	UART	UART supporting LIN	Simplified I^2C	I^2C	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
General Purpose (All Flash)	78K0R	78K0R/KC3-L (44-pin)	μPD78F1000	16	Flash	√	1	20	20 M, 8 M, 1 M, 30 k	√	37	−/−	8	1	1	PWM: 16 bits × 4, multiplexed PWM: 16 bits × 7	−	−	−	1	−	1	−	−	−	−	−	−	−	−	√	−	−	10	−	−	16 × 16 32 ÷ 32	POC, LVI, DMA, comparator × 2, programmable gain amplifier	1.8 to 5.5	44-LQFP (10 × 10)	E1 QB-78K0RIX3 (IECUBE)
			μPD78F1001	32			1.5																																			
			μPD78F1002	48			2																																			
			μPD78F1003	64			3[Note 1]																																			
		78K0R/KC3-L (48-pin)	μPD78F1001	32			1.5				41																		1				11						48-TQFP (7 × 7)		
			μPD78F1002	48			2																																			
			μPD78F1003	64			3[Note 1]																																			
		78K0R/KD3-L	μPD78F1004	32	Flash	√	1.5	20	20 M, 8 M, 1 M, 30 k	√	45	−/−	8	1	1	PWM: 16 bits × 4, multiplexed PWM: 16 bits × 7	−	−	−	1	−	1	−	−	−	−	−	−	1	−	√	−	−	11	−	−	16 × 16 32 ÷ 32	POC, LVI, DMA, comparator × 2, programmable gain amplifier	1.8 to 5.5	52-LQFP (10 × 10)	
			μPD78F1005	48			2																																			
			μPD78F1006	64			3[Note 1]																																			
		78K0R/KE3-L	μPD78F1007	32	Flash	√	1.5	20	20 M, 8 M, 1 M, 30 k	√	55	−/−	8	1	1	PWM: 16 bits × 4, multiplexed PWM: 16 bits × 7	−	−	−	1	−	1	−	−	−	−	−	−	1	−	√	−	−	12	−	−	16 × 16 32 ÷ 32	POC, LVI, DMA, comparator × 2, programmable gain amplifier	1.8 to 5.5	64-TQFP (7 × 7) 64-LQFP (10 × 10) 64-LQFP (12 × 12) 64-FBGA (4 × 4) 64-FBGA (5 × 5)	
			μPD78F1008	48			2																																			
			μPD78F1009	64			3[Note 1]																																			
		78K0R/KF3-L	μPD78F1010	64	Flash	√	4	20	20 M, 8 M, 1 M, 30 k	√	71	−/−	12	1	1	PWM: 16 bits × 6, multiplexed PWM: 16 bits × 7 16 bits × 3	−	−	1	2	−	−	−	−	−	−	1	−	1	−	√	−	−	12	−	−	16 × 16 32 ÷ 32	POC, LVI, DMA	1.8 to 5.5	80-LQFP (12 × 12) 80-LQFP (14 × 14)	E1 QB-78K0RKX3C (IECUBE)
			μPD78F1011	96			6																																			
			μPD78F1012	128			8[Note 2]																																			
			μPD78F1027	192			10												2																							E1 QB-78F1030 (IECUBE)
			μPD78F1028	256			12[Note 3]																																			
		78K0R/KG3-L	μPD78F1013	96	Flash	√	6	20	20 M, 8 M, 1 M, 30 k	√	89	−/−	12	1	1	PWM: 16 bits × 6, multiplexed PWM: 16 bits × 7 16 bits × 3	−	−	1	2	−	−	−	−	−	−	1	−	1	−	√	−	−	16	−	−	16 × 16 32 ÷ 32	POC, LVI, DMA	1.8 to 5.5	100-LQFP (14 × 14) 100-LQFP (14 × 20) 100-FBGA (6 × 6)	E1 QB-78K0RKX3C (IECUBE)
			μPD78F1014	128			8[Note 2]																																			
			μPD78F1029	192			10												2																							100-LQFP (14 × 14) 100-LQFP (14 × 20)	E1 QB-78F1030 (IECUBE)
			μPD78F1030	256			12[Note 3]																																			

Notes 1. 2 KB when using the self-programming feature.
2. 7 KB when using the self-programming feature.
3. 11 KB when using the self-programming feature.

Remark POC: Power-on clear circuit
LVI: Low-voltage detector

Device				Memory				Clock			I/O	Bus	Timer				Serial Interface																OCD	Peripheral Functions							Other			
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [KB]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	Real-time counter	Watchdog timer	PWM output	CSI	CSI, UART	CSI: 2 ch, UART: 1 ch	CSI, UART, simplified I^2C	CSI: 2 ch, UART: 1 ch, simplified I^2C: 2 ch	CSI: 2 ch, UART supporting LIN: 1 ch	CSI: 2 ch, simplified I^2C: 1 ch	CSI, simplified I^2C	UART, simplified I^2C	UART	UART supporting LIN	Simplified I^2C	I^2C	CAN	On-chip debugging	LCD [segments × commons]	12-bit A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
USB (All Flash)	78K0R	**78K0R/KC3-L**	μPD78F1022	64	Flash	√	6	20	20 M, 8 M, 1 M, 30 k	√	39 Note 2	−/−	8	1	1	PWM: 16 bits × 2, multiplexed PWM: 16 bits × 3	−	1	−	1	−	−	−	−	−	−	1	−	1	−	√	−	−	8	−	−	16 × 16 32 ÷ 32	POC, LVI, DMA, USB function controller	1.8 to 3.6	48-TQFP (7 × 7) 48-WQFN (7 × 7)	E1 QB-78F1026 (IECUBE)
			μPD78F1023	96			8 Note 1																																		
			μPD78F1024	128																																						
		78K0R/KE3-L	μPD78F1025	96	Flash	√	8 Note 1	20	20 M, 8 M, 1 M, 30 k	√	53 Note 2	−/−	8	1	1	PWM: 16 bits × 2, multiplexed PWM: 16 bits × 4	−	1	−	2	−	−	−	−	−	−	1	−	1	−	√	−	−	8	−	−	16 × 16 32 ÷ 32	POC, LVI, DMA, USB function controller	1.8 to 3.6	64-TQFP (7 × 7) 64-LQFP (10 × 10) 64-FBGA (5 × 5)	
			μPD78F1026	128																																						
General-Purpose 12-bit A/D (All Flash)	78K0R	**78K0R/KE3-A**	μPD78F1016	64	Flash	√	4	20	20 M, 8 M, 1 M, 30 k	√	53	−/−	12	1	1	PWM: 16 bits × 4, multiplexed PWM: 16 bits × 7	−	1	−	2	−	−	−	−	−	−	1	−	1	−	√	−	12	−	2	−	16 × 16 32 ÷ 32	POC, LVI, DMA, operational amplifier × 3	1.8 to 5.5	64-FBGA (6 × 6)	E1 QB-78K0RLX3 (IECUBE)
			μPD78F1017	96			6																																		
			μPD78F1018	128			7																																			
Digital AV (All Flash)	78K0R	**78K0R/KF3-C**	μPD78F1846A	96	Flash	√	6	20	20 M, 8 M, 30 k	√	71	−/−	11	1	1	PWM: 16 bits × 5, multiplexed PWM: 16 bits × 7 16 bits × 2	−	−	1	2	−	−	−	−	−	−	−	−	−	1	−	√	−	−	12	−	−	16 × 16 32 ÷ 32	POC, LVI, DMA, CEC transmission/ reception, remote control reception	2.7 to 5.5	80-LQFP (12 × 12)	E1 QB-78K0RKX3C (IECUBE)
			μPD78F1847A	128			8 Note 1																																		
		78K0R/KG3-C	μPD78F1848A	96	Flash	√	6	20	20 M, 8 M, 30 k	√	89	−/−	11	1	1	PWM: 16 bits × 5, multiplexed PWM: 16 bits × 7 16 bits × 2	−	−	1	2	−	−	−	−	−	−	−	−	−	1	−	√	−	−	16	−	−	16 × 16 32 ÷ 32	POC, LVI, DMA, CEC transmission/ reception, remote control reception	2.7 to 5.5	100-LQFP (14 × 14)	
			μPD78F1849A	128			8 Note 1																																		
Industrial System Sensors (All Flash)	78K0R	**μPD78F8043**	μPD78F8040	32	Flash	√	4	20	20 M, 8 M, 1 M, 30 k	√	26 Note 3	−/−	12	−	1	PWM: 16 bits × 5, multiplexed PWM: 16 bits × 6	−	−	−	1	−	−	−	−	−	−	1 Note 4	1	−	1	−	√	−	−	6	−	−	16 × 16 32 ÷ 32	POC, LVI, DMA, IO-Link transceiver	3.0 to 5.5	56-WQFN (8 × 8) 56-FBGA * (4 × 7)	
			μPD78F8041	64																																						
			μPD78F8042	96			6																																			
			μPD78F8043	128			7																																			
		μPD78F8069	μPD78F8064	128	Flash	√	8	24	4 M, 8 M, 30 k	√	26 Note 5	−/−	24	−	1	PWM: 16 bits × 12, multiplexed PWM: 16 bits × 18	1	−	−	1	−	−	−	−	−	−	2 Note 4	−	−	−	1	√	−	−	3	−	−	16 × 16 32 ÷ 32	16-bit wake-up timer × 1, Data flash: 16 KB, POC, LVI, DMA, IO-Link transceiver	2.7 to 3.45	64-WQFN (9 × 9)	E1 QB-78K0RFX3 (IECUBE)
			μPD78F8065	192			12																																		
			μPD78F8066	256			16																																			
			μPD78F8067	128			8																								−										
			μPD78F8068	192			12																																			
			μPD78F8069	256			16																																			

Notes 1. 7 KB when using the self-programming feature.
2. Of which 1 is for the USB buffer.
3. Three pins are used connected to the IO-Link transceiver.
4. For communication with the IO-Link transceiver
5. Four pins are used connected to the IO-Link transceiver.

Remark POC: Power-on clear circuit
LVI: Low-voltage detector

* Under development

Device				Memory				Clock			I/O	Bus	Timer				Serial Interface														OCD	Peripheral Functions							Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [KB]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	Real-time counter	Watchdog timer	PWM output	CSI	CSI, UART	CSI: 2 ch, UART: 1 ch	CSI, UART, simplified I^2C	CSI: 2 ch, UART: 1 ch, simplified I^2C: 2 ch	CSI: 2 ch, UART supporting LIN: 1 ch	CSI: 2 ch, simplified I^2C: 1 ch	CSI, simplified I^2C	UART, simplified I^2C	UART	UART supporting LIN	Simplified I^2C	I^2C	CAN	On-chip debugging	LCD [segments × commons]	12-bit A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
Inverter Control (All Flash)	78K0R	78K0R/IB3	μPD78F1201	16	Flash	√	1	20	40 M, 8 M, 30 k	–	23	–/–	12	–	1	PWM: 16 bits × 4, multiplexed PWM: 16 bits × 7 (6 phases, 16 bits × 1)	–	–	–	1	–	–	–	–	–	–	1	–	–	–	√	–	–	6	–	–	16 × 16 32 ÷ 32	POC, LVI, DMA, comparator × 2, programmable gain amplifier	2.7 to 5.5	30-SSOP (7.62)	E1 QB-78K0RIX3 (IECUBE)
			μPD78F1203	32			1.5																																		
		78K0R/IC3 (38-pin)	μPD78F1211	16	Flash	√	1	20	40 M, 8 M, 30 k	√	31	–/–	12	1	1	PWM: 16 bits × 5, multiplexed PWM: 16 bits × 9 (6 phases, 16 bits × 1)	–	–	–	1	–	–	–	–	–	–	1	–	–	–	√	–	–	8	–	–	16 × 16 32 ÷ 32	POC, LVI, DMA, comparator × 2, programmable gain amplifier	2.7 to 5.5	38-SSOP (7.62)	
			μPD78F1213	32			1.5																																		
		78K0R/IC3 (44A-pin)	μPD78F1211	16			1				37											1					–							10						44-LQFP (10 × 10)	
			μPD78F1213	32			1.5																																		
		78K0R/IC3 (48-pin)	μPD78F1213	32			1.5				41																		1					11						48-TQFP (7 × 7)	
			μPD78F1214	48			2																																		
			μPD78F1215	64			3[Note]																																		
		78K0R/ID3	μPD78F1223	32	Flash	√	1.5	20	40 M, 8 M, 30 k	√	45	–/–	12	1	1	PWM: 16 bits × 5, multiplexed PWM: 16 bits × 9 (6 phases, 16 bits × 1)	–	–	–	1	–	1	–	–	–	–	–	–	1	–	√	–	–	11	–	–	16 × 16 32 ÷ 32	POC, LVI, DMA, comparator × 2, programmable gain amplifier	2.7 to 5.5	52-LQFP (10 × 10)	
			μPD78F1224	48			2																																		
			μPD78F1225	64			3[Note]																																		
		78K0R/IE3	μPD78F1233	32	Flash	√	1.5	20	40 M, 8 M, 30 k	√	55	–/–	12	1	1	PWM: 16 bits × 6, multiplexed PWM: 16 bits × 11 (6 phases, 16 bits × 1)	–	–	–	1	–	1	–	–	–	–	–	–	1	–	√	–	–	12	–	–	16 × 16 32 ÷ 32	POC, LVI, DMA, comparator × 2, programmable gain amplifier	2.7 to 5.5	64-LQFP (10 × 10) 64-LQFP (12 × 12)	
			μPD78F1234	48			2																																		
			μPD78F1235	64			3[Note]																																		
LCD (All Flash)	78K0R	78K0R/LF3	μPD78F1500A	64	Flash	√	4	20	20 M, 8 M, 1 M, 30 k	√	51	–/–	12	1	1	PWM: 16 bits × 3, multiplexed PWM: 16 bits × 5	–	–	–	2	–	–	–	–	–	–	1	–	–	–	√	31 × 4 or 27 × 8	8	–	2	–	16 × 16 32 ÷ 32	POC, LVI, DMA, operational amplifier × 2	1.8 to 5.5	80-LQFP (12 × 12) 80-LQFP (14 × 14)	E1 QB-78K0RLX3 (IECUBE)
			μPD78F1510A																														–	8	–			POC, LVI, DMA			
			μPD78F1501A	96			6																										8	–	2			POC, LVI, DMA, operational amplifier × 2			
			μPD78F1502A	128			7																																		
			μPD78F1512A																														–	8	–			POC, LVI, DMA			
		78K0R/LG3	μPD78F1503A	64	Flash	√	4	20	20 M, 8 M, 1 M, 30 k	√	67	–/–	12	1	1	PWM: 16 bits × 4, multiplexed PWM: 16 bits × 7	–	1	–	2	–	–	–	–	–	–	1	–	1	–	√	40 × 4 or 36 × 8	12	–	2	–	16 × 16 32 ÷ 32	POC, LVI, DMA, operational amplifier × 3	1.8 to 5.5	100-LQFP (14 × 14)	
			μPD78F1513A																														–	12	–			POC, LVI, DMA			
			μPD78F1504A	96			6																										12	–	2			POC, LVI, DMA, operational amplifier × 3			
			μPD78F1505A	128			7																																		
			μPD78F1515A																														–	12	–			POC, LVI, DMA			
		78K0R/LH3	μPD78F1506A	64	Flash	√	4	20	20 M, 8 M, 1 M, 30 k	√	83	–/–	12	1	1	PWM:16 bits × 6, multiplexed PWM: 16 bits × 7 16 bits × 3	–	–	1	2	–	–	–	–	–	–	1	–	1	–	√	54 × 4 or 50 × 8	12	–	2	–	16 × 16 32 ÷ 32	POC, LVI, DMA, operational amplifier × 3	1.8 to 5.5	128-LQFP (14 × 20)	
			μPD78F1516A																														–	12	–			POC, LVI, DMA			
			μPD78F1507A	96			6																										12	–	2			POC, LVI, DMA, operational amplifier × 3			
			μPD78F1508A	128			7																																		
			μPD78F1518A																														–	12	–			POC, LVI, DMA			

Note 2 KB when using the self-programming feature.

Remark POC: Power-on clear circuit
LVI: Low-voltage detector

Device				Memory				Clock			I/O	Bus	Timer				Serial Interface															OCD	Peripheral Functions							Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [KB]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	Real-time counter	Watchdog timer	PWM output	CSI	CSI, UART	CSI: 2 ch, UART: 1 ch	CSI, UART, simplified I^2C	CSI: 2 ch, UART: 1 ch, simplified I^2C: 2 ch	CSI: 2 ch, UART supporting LIN: 1 ch	CSI: 2 ch, simplified I^2C: 1 ch	CSI, simplified I^2C	UART, simplified I^2C	UART	UART supporting LIN	Simplified I^2C	I^2C	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
Power Meters (All Flash)	**78K0R**	**78K0R/LG3-M**	μPD78F8070	128	Flash	√	7	20	8 M, 1 M, 30 k	√	45	−/−	12	2	1	PWM:16 bits × 2	−	−	−	1	−	−	−	−	−	1	1	−	1	−	√	40 × 4	Note	−	−	−	16 × 16 32 ÷ 32	POC, LVI, DMA, power calculation, power quality measurement, digital frequency conversion	1.8 to 3.6	100-LQFP (14 × 14)	E1

Note 24-bit ΔΣ A/D converter: 4 channels

Remark POC: Power-on clear circuit
LVI: Low-voltage detector

Device				Memory				Clock			I/O	Bus	Timer				Serial Interface																	OCD	Peripheral Functions								Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [KB]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	Real-time counter	Watchdog timer	PWM output	CSI	CSI, UART	CSI: 2 ch, UART: 1 ch	CSI, UART, simplified I^2C	CSI: 2 ch, UART: 1 ch, simplified I^2C: 2 ch	CSI: 2 ch, UART supporting LIN: 1 ch	CSI: 2 ch, simplified I^2C: 1 ch	CSI, simplified I^2C	UART, simplified I^2C	UART	UART supporting LIN	Simplified I^2C	I^2C	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
General Purpose (On-Chip CAN) (All Flash)	78K0R	**78K0R/HC3**	μPD78F1031A	64	Flash	√	4	24	8 M, 4 M, 30 k	–	41	–/–	17	–	1	PWM: 16 bits × 8, multiplexed PWM: 16 bits × 7, 16 bits × 7	2	–	–	–	–	–	–	–	–	–	2	1	–	1	√	–	–	11	–	–	16 × 16 32 ÷ 16	POC, LVI, DMA, CLM, data flash: 16 KB	2.7 to 5.5	48-LQFP (7 × 7)	E1 QB-78K0RFX3 (IECUBE)
			μPD78F1032A	96			6																																			
			μPD78F1033A	128			8																																			
			μPD78F1034A	192			12																																			
			μPD78F1035A	256			16																																			
		78K0R/HE3	μPD78F1036A	64	Flash	√	4	24	8 M, 4 M, 30 k	–	55	–/–	21	–	1	PWM: 16 bits × 10, multiplexed PWM: 16 bits × 7, 16 bits × 7, 16 bits × 3	3	–	–	–	–	–	–	–	1	–	2	1	–	1	√	–	–	15	–	–	16 × 16 32 ÷ 16	POC, LVI, DMA, CLM, data flash: 16 KB	2.7 to 5.5	64-LQFP (10 × 10)	
			μPD78F1037A	96			6																																			
			μPD78F1038A	128			8																																			
			μPD78F1039A	192			12																																			
			μPD78F1040A	256			16																																			
		78K0R/HF3	μPD78F1041A	64	Flash	√	4	24	8 M, 4 M, 30 k	–	71	–/–	21	–	1	PWM: 16 bits × 10, multiplexed PWM: 16 bits × 7, 16 bits × 7, 16 bits × 3	3	–	–	–	–	–	–	–	1	–	2	1	–	1	√	–	–	16	–	–	16 × 16 32 ÷ 16	POC, LVI, DMA, CLM, data flash: 16 KB	2.7 to 5.5	80-LQFP (12 × 12)	
			μPD78F1042A	96			6																																			
			μPD78F1043A	128			8																																			
			μPD78F1044A	192			12																																			
			μPD78F1045A	256			16																																			
		78K0R/HG3	μPD78F1046A	64	Flash	√	4	24	8 M, 4 M, 30 k	–	89	–/–	25	–	1	PWM: 16 bits × 12, multiplexed PWM: 16 bits × 7, 16 bits × 7, 16 bits × 7	3	–	–	–	–	–	–	–	1	1	–	2	–	–	1	√	–	–	24	–	–	16 × 16 32 ÷ 16	POC, LVI, DMA, CLM, data flash: 16 KB	2.7 to 5.5	100-LQFP (14 × 14)	
			μPD78F1047A	96			6																																			
			μPD78F1048A	128			8																																			
			μPD78F1049A	192			12																																			
			μPD78F1050A	256			16																																			

Remark POC: Power-on clear circuit
LVI: Low-voltage detector
CLM: Clock monitor

Device				Memory				Clock			I/O	Bus	Timer				Serial Interface														OCD	Peripheral Functions							Other		
Applications	CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [KB]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	Real-time counter	Watchdog timer	PWM output	CSI	CSI, UART	CSI: 2 ch, UART: 1 ch	CSI, UART, simplified I^2C	CSI: 2 ch, UART: 1 ch, simplified I^2C: 2 ch	CSI: 2 ch, UART supporting LIN: 1 ch	CSI: 2 ch, simplified I^2C: 1 ch	CSI, simplified I^2C	UART, simplified I^2C	UART	UART supporting LIN	Simplified I^2C	I^2C	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
Car Electronics **Body Control (All Flash)**	**78K0R**	**78K0R/FB3 (30-pin)**	μPD78F1804A	24	Flash	√	1.5	24	8 M, 4 M, 30 k	−	23	−/−	14	−	1	PWM: 16 bits × 5, multiplexed PWM: 16 bits × 7, 16 bits × 4	2	−	−	−	−	−	−	−	−	−	2	−	−	−	√	−	−	8	−	−	16 × 16 32 ÷ 16	POC, LVI, DMA, CLM, data flash: 16 KB	2.7 to 5.5	30-SSOP (7.62)	E1 QB-78K0RFX3 (IECUBE)
			μPD78F1805A	32			2																																		
			μPD78F1806A	48			3																																		
			μPD78F1807A	64			4																																		
		78K0R/FB3 (32-pin)	μPD78F1804A	24			1.5				25																	1						6						32-WQFN (5 × 5)	
			μPD78F1805A	32			2																																		
			μPD78F1806A	48			3																																		
			μPD78F1807A	64			4																																		
		78K0R/FC3 (40-pin)	μPD78F1808A	24	Flash	√	1.5	24	8 M, 4 M, 30 k	−	33	−/−	17	−	1	PWM: 16 bits × 8, multiplexed PWM: 16 bits × 7, 16 bits × 7	2	−	−	−	−	−	−	−	−	−	2	1	−	−	√	−	−	8	−	−	16 × 16 32 ÷ 16	POC, LVI, DMA, CLM, data flash: 16 KB	2.7 to 5.5	40-WQFN (6 × 6)	
			μPD78F1809A	32			2																																		
			μPD78F1810A	48			3																																		
			μPD78F1811A	64			4																																		
		78K0R/FC3 (48-pin)	μPD78F1812A	24			1.5				41																							11						48-LQFP (7 × 7) 48-WQFN (7 × 7)	
			μPD78F1813A	32			2																																		
			μPD78F1814A	48			3																																		
			μPD78F1815A	64			4																																		
			μPD78F1816A	96			6																																		
			μPD78F1817A	128			8																																		
			μPD78F1826A	64			4																							1											
			μPD78F1827A	96			6																																		
			μPD78F1828A	128			8																																		
			μPD78F1829A	192			12																																		
			μPD78F1830A	256			16																																		

Remark POC: Power-on clear circuit
LVI: Low-voltage detector
CLM: Clock monitor

Applications		CPU core	Commercial name	Product name	ROM size [KB]	ROM type	Single voltage flash	RAM size [KB]	Maximum operating frequency [MHz]	On-chip oscillator [Hz]	Subclock (32.768 kHz)	I/O ports	External bus (data/address)	16-bit timer	Real-time counter	Watchdog timer	PWM output	CSI	CSI, UART	CSI: 2 ch, UART: 1 ch	CSI, UART, simplified I²C	CSI: 2 ch, UART: 1 ch, simplified I²C: 2 ch	CSI: 2 ch, UART supporting LIN: 1 ch	CSI: 2 ch, simplified I²C: 1 ch	CSI, simplified I²C	UART, simplified I²C	UART	UART supporting LIN	Simplified I²C	I²C	CAN	On-chip debugging	LCD [segments × commons]	16-bit ΔΣ A/D converter	10-bit A/D converter	8-bit A/D converter	8-bit D/A converter	Multiplier/divider [bits × bits, bits ÷ bits]	Other functions	Power supply voltage [V]	Package (size [mm])	In-circuit emulator Emulation board
Device					Memory				Clock			I/O	Bus	Timer				Serial Interface														OCD	Peripheral Functions							Other		
Car Electronics	Body Control (All Flash)	78K0R	78K0R/FE3	μPD78F1818A	32	Flash	√	2	24	8 M, 4 M, 30 k	–	55	–/–	21	–	1	PWM: 16 bits × 10, multiplexed PWM: 16 bits × 7, 16 bits × 7, 16 bits × 3	3	–	–	–	–	–	–	–	–	–	2	1	–	–	√	–	–	15	–	–	16 × 16 32 ÷ 16	POC, LVI, DMA, CLM, data flash: 16 KB	2.7 to 5.5	64-LQFP (10 × 10)	E1 QB-78K0RFX3 (IECUBE)
				μPD78F1819A	48			3																																		
				μPD78F1820A	64			4																																		
				μPD78F1821A	96			6																			1																	
				μPD78F1822A	128			8																																				
				μPD78F1831A	64			4																								1												
				μPD78F1832A	96			6																																				
				μPD78F1833A	128			8																																				
				μPD78F1834A	192			12																																				
				μPD78F1835A	256			16																																				
			78K0R/FF3	μPD78F1823A	64	Flash	√	4	24	8 M, 4 M, 30 k	–	71	–/–	21	–	1	PWM: 16 bits × 10, multiplexed PWM: 16 bits × 7, 16 bits × 7, 16 bits × 3	3	–	–	–	–	–	–	–	1	–	2	1	–	–	√	–	–	16	–	–	16 × 16 32 ÷ 16	POC, LVI, DMA, CLM, data flash: 16 KB	2.7 to 5.5	80-LQFP (12 × 12)	
				μPD78F1824A	96			6																																		
				μPD78F1825A	128			8																																				
				μPD78F1836A	64			4																								1												
				μPD78F1837A	96			6																																				
				μPD78F1838A	128			8																																				
				μPD78F1839A	192			12																																				
				μPD78F1840A	256			16																																				
			78K0R/FG3	μPD78F1841A	64	Flash	√	4	24	8 M, 4 M, 30 k	–	89	–/–	25	–	1	PWM: 16 bits × 12, multiplexed PWM: 16 bits × 7, 16 bits × 7, 16 bits × 7	3	–	–	–	–	–	–	1	1	–	2	–	–	1	√	–	–	24	–	–	16 × 16 32 ÷ 16	POC, LVI, DMA, CLM, data flash: 16 KB	2.7 to 5.5	100-LQFP (14 × 14)	
				μPD78F1842A	96			6																																		
				μPD78F1843A	128			8																																				
				μPD78F1844A	192			12																																				
				μPD78F1845A	256			16																																				

Remark POC: Power-on clear circuit
LVI: Low-voltage detector
CLM: Clock monitor

Part Number Guide (78K0, 78K0S)

■ 78K0S/KY1+ (16-pin), Part number: μPD78F9210GR(A)-JJG-A

μPD78F9210xxGR(x)-JJG-A

ROM Type
F: Flash

Optional

Product Group
(78K0,78K0S Series)

04	78K0	Lx3
05	78K0	Kx2, Kx2-L, Kx2-A
07	78K0	Ix2, 071x, 073x, Kx2-C
08	78K0	Dx2, Fx2-L, Fx2
80*	78K0	8016A, 8025, 8032, 8039, 8077, Lx3-M
92	78K0S	Kx1+
95	78K0S	Kx1+

* Does not apply to all products

Temperature & Quality Grade

None	-40℃ to 85℃	Standard
(A), A	-40℃ to 85℃	Special
(A2), A2	-40℃ to 125℃	Special

Pb-Free

A	Terminal finish is Sn-Bi plating
AX, G	Terminal finish is Ni/Pa/Au plating

Packaging Type and Pin Count (Does not apply to all products)

MA-CAC	LSSOP	10	GA-8EU	LFQFP	48
MA-FAA	SSOP	16	GB-GAG	LFQFP	52
CS-CBA	SDIP	16	GB-UET	LFQFP	52
GR-JJG	SSOP	16	GC-GAL	LQFP	64
FH-2A2	UFBGA	16	GC-UBS	LQFP	64
MC-CAA	LSSOP	20	GK-UET	LQFP	64
MC-5A4	LSSOP	20	GK-GAJ	LQFP	64
CS-CAC	SDIP	20	GB-UEU	LFQFP	64
MC-CAB	SOP	20	GB-GAH	LFQFP	64
FC-2N2	WFLGA	25	GK-9ET	TQFP	64
MC-CAB	LSSOP	30	GA-HAB	TFQFP	64
MC-5A4	LSSOP	30	GA-9EV	TFQFP	64
K8-3B4	HWQFN	32	AF-AA2	VFBGA	64
CS-CAA	SDIP	32	FC-AA1	VFLGA	64
FC-AA3	VFLGA	36	GC-UBT	LQFP	80
MC-GAA	SSOP	38	GC-GAD	LQFP	80
K8-4B4	HWQFN	40	GK-8EU	LFQFP	80
GB-GAF	LQFP	44	GK-GAK	LFQFP	80
GB-UES	LQFP	44	KA-GAK	LFQFP	80
GA-GAM	LFQFP	48	GC-UEU	LFQFP	100

Part Number Guide (78K0R)

■ 78K0R/KG3 (100-pin), Part number: μPD78F1168GC-UEU-AX

μPD78F1168xGC(x)-UEU-AX

ROM Type
F: Flash

Optional

Product Group
(78K0R Series)

10	78K0R	Kx3-L, Kx3-A, Hx3
11	78K0R	Kx3
12	78K0R	Ix3
15	78K0R	Lx3
18	78K0R	Fx3, Kx3-C
80*	78K0R	Lx3-M, 8043, 8069

* Does not apply to all products

Temperature & Quality Grade

None	-40℃ to 85℃	Standard
(A), A	-40℃ to 85℃	Special
(A2), A2	-40℃ to 125℃	Special

Pb-Free

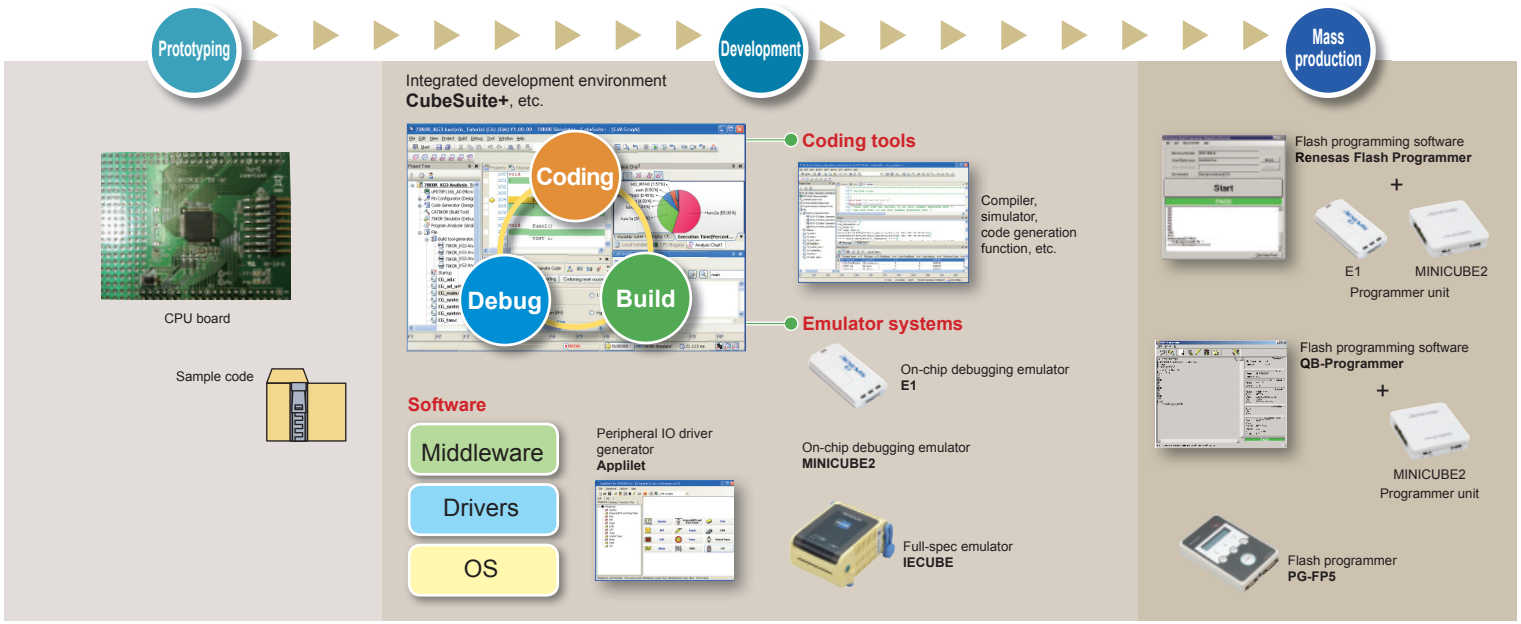
A	Terminal finish is Sn-Bi plating
AX, G	Terminal finish is Ni/Pa/Au plating

Packaging Type and Pin Count (Does not apply to all products)

MC-CAB	LSSOP	30	F1-BA4	LFBGA	64
K8-3B4	HWQFN	32	GA-HAB	TFQFP	64
MC-GAA	SSOP	38	GB-GAH	LFQFP	64
K8-4B4	HWQFN	40	GK-GAJ	LQFP	64
GB-GAF	LQFP	44	GC-GAD	LQFP	80
GA-HAA	TFQFP	48	GK-GAK	LFQFP	80
GA-GAM	LFQFP	48	GF-GAS	LQFP	100
K8-5B4	HWQFN	48	GC-UEU	LFQFP	100
K8-9B4	HWQFN	56	F1-BAK	TFBGA	100
F1-AA2	VFBGA	64	GF-GAT	LFQFP	128
F1-AN1	VFBGA	64	GJ-GAE	LFQFP	144

Tool Chain Overview: 78K0R

http://www.renesas.com/78k_tools



* A free evaluation version is also available for the coding tools and flash programming software (Renesas Flash Programmer).

■ 78K0R Development Tool Lineup

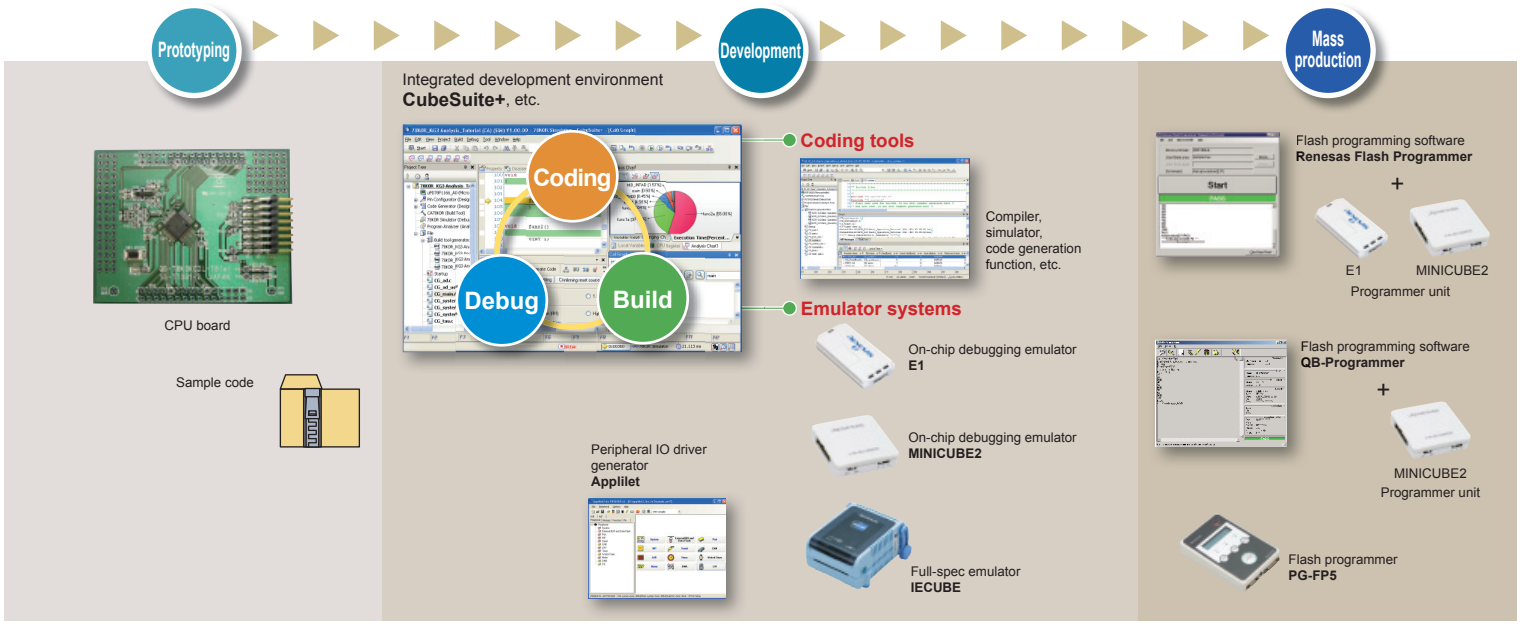
MCU	Real-time OS	Software Tools	Emulators		Programming Tools
			On-chip debugging emulator	Full-spec emulator	Programmer [5]
78K0R	RI78V4 [1]	Integrated Development Environment CubeSuite+ for RL78, 78K0R, 78K0 (includes integrated development environment [2], compiler, simulator, and emulator debugger)	E1 [4] MINICUBE2	IECUBE	PG-FP5 [6] E1 [4] [7] MINICUBE2 [7] [8]
		Software Package for 78K0R [SP78K0R] (includes integrated development environment [3], compiler, simulator, and emulator debugger)			

Notes:
1. Some MCUs support the RX78K0R real-time OS instead.
2. The integrated development environment is CubeSuite+.
3. The integrated development environment is the project manager PM+.
4. The E20 emulator may be used as well, but the supported debugging functions are equivalent to those of the E1.
5. This is a programmer for flash MCUs from Renesas. For details about which programmers can be used with each MCU and the programmer specifications, see the Renesas website (http://www.renesas.com/programmer).
6. Used together with a programming GUI (provided free of charge).
7. Used together with the programming software Renesas Flash Programmer (a free evaluation version is available).
8. Used together with the programming software QB-Programmer (provided free of charge).

* CubeSuite+ is not generally promoted to U.S. and European customers. Customers in the U.S. and Europe who are interested in CubeSuite+ are requested to contact our regional marketing departments for details.
* For details about which emulators can be used with each MCU and emulator specifications, see the Renesas website (http://www.renesas.com/emulation_debugging). The emulator that can be used might differ depending on the MCU part number.

Tool Chain Overview: 78K0

http://www.renesas.com/78k_tools



* A free evaluation version is also available for the coding tools and flash programming software (Renesas Flash Programmer).

■ 78K0 Development Tool Lineup

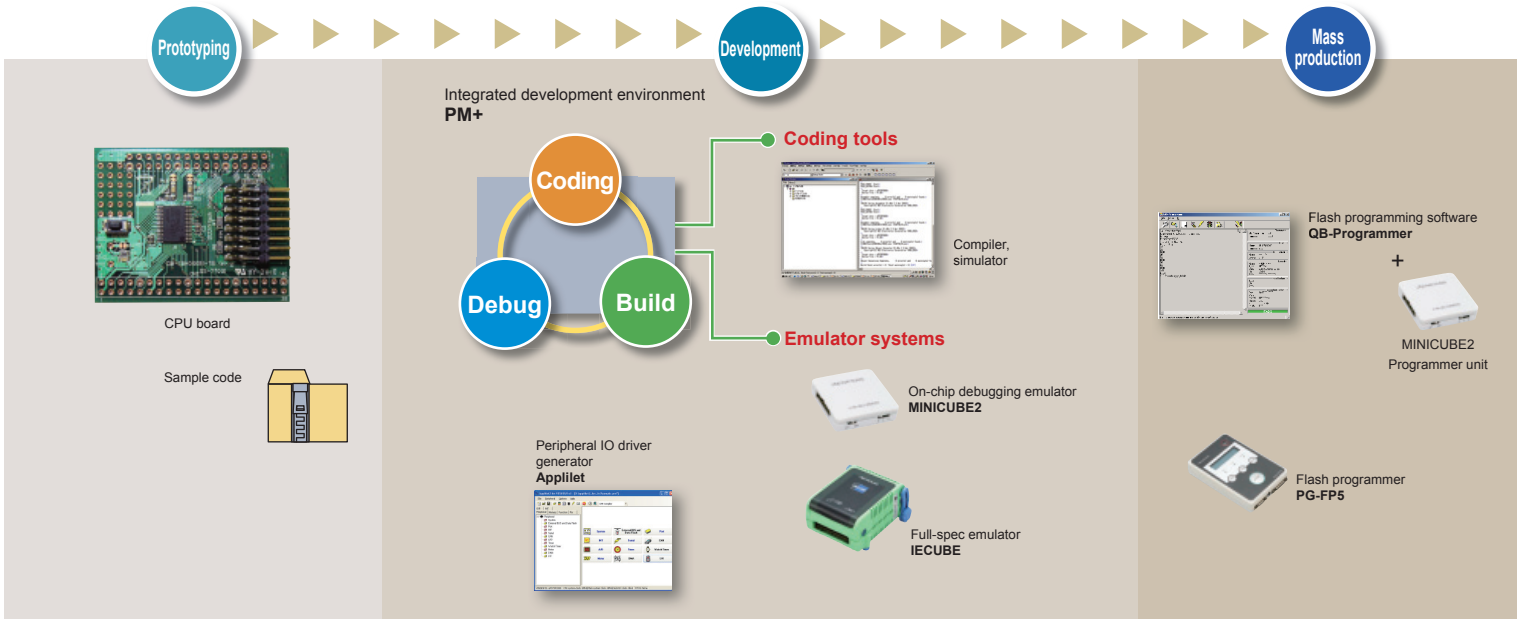
MCU	Real-time OS	Software Tools	Emulators		Programming Tools
			On-chip debugging emulator	Full-spec emulator	Programmer [4]
78K0	–	Integrated Development Environment CubeSuite+ for RL78, 78K0R, 78K0 (includes integrated development environment [1], compiler, simulator, and emulator debugger)	E1 [3] MINICUBE2	IECUBE	PG-FP5 [5] E1 [3 6] MINICUBE2 [6 7]
		Software Package for 78K0 [SP78K0] (includes integrated development environment [2], compiler, simulator, and emulator debugger)			

Notes:
1. The integrated development environment is CubeSuite+.
2. The integrated development environment is the project manager PM+.
3. The E20 emulator may be used as well, but the supported debugging functions are equivalent to those of the E1.
4. This is a programmer for flash MCUs from Renesas. For details about which programmers can be used with each MCU and the programmer specifications, see the Renesas website (http://www.renesas.com/programmer).
5. Used together with a programming GUI (provided free of charge).
6. Used together with the programming software Renesas Flash Programmer (a free evaluation version is available).
7. Used together with the programming software QB-Programmer (provided free of charge).

* CubeSuite+ is not generally promoted to U.S. and European customers. Customers in the U.S. and Europe who are interested in CubeSuite+ are requested to contact our regional marketing departments for details.
* For details about which emulators can be used with each MCU and emulator specifications, see the Renesas website (http://www.renesas.com/emulation_debugging). The emulator that can be used might differ depending on the MCU part number.

Tool Chain Overview: 78K0S

http://www.renesas.com/78k_tools



* A free evaluation version is also available for the coding tools.

■ 78K0S Development Tool Lineup

MCU	Real-time OS	Software Tools	Emulators		Programming Tools
			On-chip debugging emulator	Full-spec emulator	Programmer [2]
78K0S	–	Software Package for 78K0S [SP78K0S] (includes integrated development environment [1], compiler, simulator, and emulator debugger)	MINICUBE2	IECUBE	PG-FP5 [3] MINICUBE2 [4]

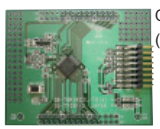
Notes:
1. The integrated development environment is the project manager PM+.
2. This is a programmer for flash MCUs from Renesas. For details about which programmers can be used with each MCU and the programmer specifications, see the Renesas website (http://www.renesas.com/programmer).
3. Used together with a programming GUI (provided free of charge).
4. Used together with the programming software QB-Programmer (provided free of charge).

* For details about which emulators can be used with each MCU and emulator specifications, see the Renesas website (http://www.renesas.com/emulation_debugging). The emulator that can be used might differ depending on the MCU part number.

CPU Board

This CPU board is used to evaluate the operation of a 78K MCU by using the on-chip debugging emulator E1 or MINICUBE2 (each sold separately). By using this board, you can evaluate a series of development processes from program development to actual operation.
All MCU pins are assigned to peripheral board connectors, letting you create evaluation circuits using a commercially available universal board.


QB-78K0RKE3L-TB
(for 78K0R)


QB-78K0KC2L-TB
(for 78K0)


QB-78K0SKB1-TB
(for 78K0S)

Target Device		Product Name	Emulator (sold separately)
Core	Group		
78K0R	78K0R/FB3, 78K0R/FC3, 78K0R/FE3, 78K0R/FF3, 78K0R/FG3	QB-78K0RFG3-TB *	E1 or MINICUBE2
	78K0R/HC3, 78K0R/HE3, 78K0R/HF3, 78K0R/HG3	QB-78K0RHG3-TB *	E1 or MINICUBE2
	78K0R/IB3, 78K0R/IC3, 78K0R/ID3, 78K0R/IE3	QB-78K0RIE3-TB *	E1 or MINICUBE2
	78K0R/KC3-L, 78K0R/KD3-L, 78K0R/KE3-L	QB-78K0RKE3L-TB *	E1 or MINICUBE2
	78K0R/KF3-C, 78K0R/KG3-C	QB-78K0RKG3C-TB *	E1 or MINICUBE2
	78K0R/KF3-L, 78K0R/KG3-L	QB-78K0RKG3L-TB *	E1 or MINICUBE2
	78K0R/KE3, 78K0R/KF3, 78K0R/KG3, 78K0R/KH3, 78K0R/KJ3	QB-78K0RKG3-TB *	E1 or MINICUBE2
	78K0R/LF3, 78K0R/LG3, 78K0R/LH3	QB-78K0RLH3-TB *	E1 or MINICUBE2
	78K0R/LG3-M	QB-78K0RLG3M-TB *	E1 or MINICUBE2
	78K0R/KC3-L(USB), 78K0R/KE3-L(USB)	QB-78F1026-TB *	E1 or MINICUBE2
	μPD78F8041, μPD78F8043	QB-78F8041-TB *	E1 or MINICUBE2
78K0	78K0/FA2-L, 78K0/FB2-L, 78K0/FY2-L	QB-78K0FB2L-TB *	E1 or MINICUBE2
	78K0/IA2, 78K0/IB2, 78K0/IY2	QB-78K0IB2-TB *	E1 or MINICUBE2
	78K0/KB2-A, 78K0/KC2-A	QB-78K0KC2A-TB *	E1 or MINICUBE2
	78K0/KA2-L, 78K0/KB2-L, 78K0/KC2-L, 78K0/KY2-L	QB-78K0KC2L-TB *	E1 or MINICUBE2
	78K0/KE2-C	QB-78K0KE2C-TB *	E1 or MINICUBE2
	78K0/KB2, 78K0/KC2, 78K0/KD2, 78K0/KE2, 78K0/KF2	QB-78K0KF2-TB *	E1 or MINICUBE2
	78K0/LC3, 78K0/LD3, 78K0/LE3, 78K0/LF3	QB-78K0LF3-TB *	E1 or MINICUBE2
	78K0/LG2	QB-78K0LG2-TB *	E1 or MINICUBE2
	78K0/LE3-M, 78K0/LG3-M	QB-78K0LG3M-TB *	E1 or MINICUBE2
	μPD78F0730	QB-78F0730-TB *	E1 or MINICUBE2
	μPD78F8032, μPD78F8039	QB-78F8039-TB *	E1 or MINICUBE2
78K0S	78K0S/KA1+, 78K0S/KB1+, 78K0S/KU1+, 78K0S/KY1+	QB-78K0SKB1-TB	MINICUBE2

* A 14-/16-pin conversion adapter QB-F14T16-01 (sold separately) is required when connecting an E1 emulator to a CPU board that has a connector for the MINICUBE2 emulator.


QB-F14T16-01

Extensive Renesas Development Ecosystem

A wide variety of products for the 78K family, such as compilers and programmers, are available from partner tool vendors. These products enable the 78K family to be used in an even broader range of applications.

■ IDE/Compilers/Code generators

- CATS CO.,LTD.
- Gaio Technology Co., Ltd.
- IAR Systems
- MathWorks
- Vector Informatik GmbH

■ Co-verification

- Gaio Technology Co., Ltd.
- IAR Systems
- Vector Informatik GmbH

■ OS

- EB (Elektrobit)
- Vector Informatik GmbH

■ Emulators and related emulation tools

- Lauterbach

■ Programmers

- Data I/O Corporation
- Hokuto Denshi Co.,Ltd.
- Vector Informatik GmbH
- WaveTechnology Co., Ltd.
- Yokogawa Digital Computer Corporation

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