

Separate Sheet

Product Specifications of the R7F0C205L, R7F0C206L, R7F0C206M, R7F0C207M and R7F0C208M microcontrollers

Item		64-pin		80-pin		
		R7F0C205L	R7F0C206L	R7F0C206M	R7F0C207M	R7F0C208M
Code flash memory		48 KB	64 KB	64 KB	96 KB	128 KB
Data flash memory		4 KB	4 KB	4 KB	4 KB	4 KB
RAM		5.5 KB	6 KB	6 KB	7 KB	8 KB
Address space		1 MB				
Main system clock	High-speed system clock	X1 (crystal/ceramic) oscillation, external main system clock input (EXCLK) HS (High-speed main) mode: 1 to 20 MHz ($V_{DD} = 2.7$ to 5.5 V), HS (High-speed main) mode: 1 to 16 MHz ($V_{DD} = 2.4$ to 5.5 V), LS (Low-speed main) mode: 1 to 8 MHz ($V_{DD} = 1.8$ to 5.5 V), LV (Low-voltage main) mode: 1 to 4 MHz ($V_{DD} = 1.6$ to 5.5 V)				
	High-speed on-chip oscillator (f_{IH})	HS (High-speed main) mode: 1 to 24 MHz ($V_{DD} = 2.7$ to 5.5 V), HS (High-speed main) mode: 1 to 16 MHz ($V_{DD} = 2.4$ to 5.5 V), LS (Low-speed main) mode: 1 to 8 MHz ($V_{DD} = 1.8$ to 5.5 V), LV (Low-voltage main) mode: 1 to 4 MHz ($V_{DD} = 1.6$ to 5.5 V)				
Clock for 16-bit timer KB2		48 MHz (TYP.): $V_{DD} = 2.7$ to 5.5 V				
Subsystem clock		XT1 (crystal) oscillation, external subsystem clock input (EXCLKS) 32.768 kHz (TYP.): $V_{DD} = 1.6$ to 5.5 V				
Low-speed on-chip oscillator		15 kHz (TYP.): $V_{DD} = 1.6$ to 5.5 V				
General-purpose register		8 bits \times 32 registers (8 bits \times 8 registers \times 4 banks)				
Minimum instruction execution time		0.04167 μ s (High-speed on-chip oscillator: $f_{IH} = 24$ MHz operation)				
		0.05 μ s (High-speed system clock: $f_{MX} = 20$ MHz operation)				
		30.5 μ s (Subsystem clock: $f_{SUB} = 32.768$ kHz operation)				
Instruction set		<ul style="list-style-type: none"> • Data transfer (8/16 bits) • Adder and subtractor/logical operation (8/16 bits) • Multiplication (8 bits \times 8 bits, 16 bits \times 16 bits), Division (16 bits \div 16 bits, 32 bits \div 32 bits) • Multiplication and accumulation (16 bits \times 16 bits + 32 bits) • Rotate, barrel shift, and bit manipulation (set, reset, test, and Boolean operation), etc. 				
I/O port	Total	47		63		
	CMOS I/O	42 (10 P-ch/N-ch large current pins, 25 N-ch large current pins)		56 (10 P-ch/N-ch large current pins, 39 N-ch large current pins)		
	CMOS input	5		5		
	N-ch O.D I/O (withstand voltage: 6 V)	-		2		

	Input pin shared with oscillator pin	4	4
Timer	16-bit timer TAU	8 channels	
	16-bit timer KB2	1 channel	
	Watchdog timer	1 channel	
	12-bit interval timer	1 channel	
	Real-time clock (RTC)	1 channel	
	RTC output	1 1 Hz (subsystem clock: $f_{SUB} = 32.768$ kHz)	

Item		64-pin		80-pin		
		R7F0C205L	R7F0C206L	R7F0C206M	R7F0C207M	R7F0C208M
Timer	Timer output	4 (TAU used), 2 (TKB2 used)		8 (TAU used), 2 (TKB2 used)		
	Remote control output function			1		
Clock output/buzzer output controller		2				
		<ul style="list-style-type: none"> • 2.44 kHz, 4.88 kHz, 9.77 kHz, 1.25 MHz, 2.5 MHz, 5 MHz, 10 MHz (Main system clock: $f_{MAIN} = 20$ MHz operation) • 256 Hz, 512 Hz, 1.024 kHz, 2.048 kHz, 4.096 kHz, 8.192 kHz, 16.384 kHz, 32.768 kHz (Subsystem clock: $f_{SUB} = 32.768$ kHz operation) 				
12-bit resolution A/D converter		8 channels		16 channels		
Comparator		-		2 channels		
Serial interface		[64-pin, 80-pin]				
		<ul style="list-style-type: none"> • CSI: 1 channel/UART (supporting LIN-bus): 1 channel/simplified I²C: 1 channel • CSI: 1 channel/UART: 1 channel/simplified I²C: 1 channel • UART (supporting IrDA): 1 channel 				
	I ² C bus	1 channel		1 channel		
Data transfer controller (DTC)		28 sources		30 sources		
Event link controller (ELC)		Event input: 28 Event trigger output: 12		Event input: 30 Event trigger output: 12		
Vectored interrupt sources	Internal	31		31		
	External	9		11		
Key interrupt		8				
LCD controller/driver		Internal voltage boosting method, capacitor split method, and external resistance division method are switchable.				
	Segment signal output	28/26/24				

Common signal output	4/6/8	
Capacitive touch sensing unit (CTSU)	16 channels	24 channels
Reset	<ul style="list-style-type: none"> • Reset by RESET pin • Internal reset by watchdog timer • Internal reset by power-on-reset • Internal reset by voltage detector • Internal reset by illegal instruction execution • Internal reset by RAM parity error • Internal reset by illegal-memory access 	
Power-on-reset circuit	<ul style="list-style-type: none"> • Power-on-reset: 1.51 V \pm0.04 V • Power-down-reset: 1.50 V \pm0.04 V 	
Voltage detector	<ul style="list-style-type: none"> • Rising edge: 1.67 V \pm0.03 V to 4.06 V \pm0.08 V (14 steps) • Falling edge: 1.63 V \pm0.03 V to 3.98 V \pm0.08 V (14 steps) 	
On-chip debug function	Provided	
Power supply voltage	V_{DD} = 1.6 to 5.5 V	
Operating ambient temperature	T_A = -40 to +85°C (2C: Industrial applications), T_A = -40 to +85°C (2D: Consumer applications)	

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