

Feature/Product	General Purpose MCU				
	IS31CS8969, IS32CS8969**	IS31CS8973, IS32CS8973**	IS31CS8967A	IS31CS8964	IS31CS6257
8-bit 8051 CPU Core/32-bit RISC Core	1T 8051, 25MHz, /w MDU (16MHz Zero Wait State)	1T 8051, 25MHz, /w MDU (16MHz Zero Wait State)	1T 8051, 24MHz, /w MDU (16MHz Zero Wait State)	1T 8051, 25MHz, /w MDU (16MHz Zero Wait State)	MIPS-X, 125MHz, /w unified DSP instructions
Flash	32KB	32KB	128KB	64KB	128KB (can use external SPI Flash memory for expansion)
RAM	1KB	1KB	6KB	2KB	64KB
Cache Controller's Cache Size					16KB
EEPROM (Data Flash)	Y	Y	Y	Y	Y
ISP / IAP / Debug	Y(SW) / Y / Y	Y(SW) / Y / Y	Y(SW) / Y / Y	Y(SW) / Y / Y	Y(SW) / Y / Y(E-JTAG)
ADC	12-bit SARADCx16-channel (/w PGA)	12-bit SARADCx16-channel (/w PGA)	12-bit SARADCx10-channel	12-bit SARADCx16-channel 2-ch can be triggered by PWM16 1 special channel /w PGA	12-bit SARADCx8-channel 10us conversion time; 12-bit pipeline ADCx5-channel 3us conversion time Analog window comparators/ thresholdsx5-channel OPAMP for channel A
VDAC	10-bit x 1	12-bit x 1	10-bit x 1	10-bit x 1	
PWM (PCA)	8-/16-bit PWMx6, /w PCA	16-bit PWMx6, /w PCA 8-bit PWMx12	8-/16-bit PCAx6 16-bit PWMx1	8-/16-bit PWMx6, /w PGA For Motor Control Design	16-bit PWMx6(3 complimentary, dead time, 6 ADC triggering pointers and interrupts), /w PCA For Motor Control Design; 14-bit PWMx1 /w FG counter For DC Fan Control Design; 16-bit PWMx2(2 ADC triggering pointers and interrupts), /w PCA (synchronized /w motor PCA) For PFC Control Design
I/O (Max.)	Up to 20 (24-pin package)	Up to 20 (24-pin package)	42	Up to 28 (32-pin package)	Up to 29 (64-pin package)
Master / Slave I2C	1/1	1/1	0/2	1/2	1/1
UART/LIN	1/1	1/1	1/1	1/1	3/3
SPI	1	1	1	1	1

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RTC			Y (No isolated RTC VDD)	Y (No isolated RTC VDD)	
LVD and LVR	Y (2.0~4.5V)	Y (2.0~4.5V)	Y	Y	Y
Internal OSC / PLL	Y (16MHz, 32KHz) No external X'tal	Y (16MHz, 32KHz) No external X'tal	Y (16MHz, 100KHz)	Y (16MHz, 100KHz)	N (8~16MHz X'tal, 125MHz PLL)
On-Chip Power On Reset					
Timer / Counter	16-bit x 5 24-bit x 1 30-bit WDT	16-bit x 5 24-bit x 1 30-bit WDT	16-bit x 3 24-bit x 1 30-bit WDT	16-bit x 5 24-bit x 1 30-bit WDT	32-bit x 2 16-bit x 2 32-bit WDT
DPTR	2	2	2	2	
CEC@HDMI Controller			Y		
PGA	Y (as 12-bit SARADC front-end)	Y (as 12-bit SARADC front- end)		Y (7X)	Y (as 12-bit pipeline ADC front-end)
Temperature Sensor	Y	Y	Y	Y	Y
Clock Output					
Cap. Touch Key	20 (TK1)	19 (TK1, TK2 charge transfer type)			
Buzzer Generator	Y	Y			
Parallel In Serial Out Shift Register					
Analog Comparator	4	4	4	4 Linked to PWM16 for emergency stop	10 Linked to 12-bit pipeline ADC for thresholds
Analog Switch					
Power Saving Mode	Y(< 20uA) (Wake-up noise filter: Up to 4ms)	Y(< 20uA) (Wake-up noise filter: Up to 4ms)	Y(< 20uA)	Y(< 20uA)	N
Power	+2.2~+5.5V	+2.2~+5.5V	+2.5~+5.5V	+2.5~+5.5V	+3.0~+5.5V
Package	TSSOP-24/20/16, QFN-24	TSSOP-24/20/16, TSSOP-24/16**	LQFP-48	LQFP-32/QFN-32**/ TSSOP-24	LQFP-64, LQFP-48
General Spec.	-40°C~ +85°C Operating Temperature, RoHS Compliance ** -40°C~ +105°C				

Feature / Product	CAN Bus MCU			STN-LCD/LED (Matrix) Drive MCU
	IS32CS8959	IS32CS8961	IS32CS8968A	IS31CS5523
8-bit 8051 CPU Core/32-bit RISC Core	1T 8051, 20MHz, /w MDU	1T 8051, 20MHz, /w MDU	1T 8051, 24MHz, /w MDU (16MHz Zero Wait State)	1T 8051, 16MHz
Flash/Program SRAM	171KB (ECC)	171KB (ECC)	128KB	64KB
RAM	4352B (ECC)	4352B (ECC)	6KB	2KB
EEPROM (Data Flash)	N	N	Y	Y
ISP / IAP / Debug	Y / N	Y / N	Y(SW) / Y / Y	Y / Y / Y
ADC	12-bit SARADC x13-channel	12-bit SARADC x6-channel	12-bit SARADC x10-channel	12-bit SARADCx16-channel 128us@1.8~2.4V/16us@2.5~5.5V conversion time
VDAC			10-bit x 1	
PWM (PCA)	8-bit PWMx7, 14-bit x2	8-bit PWMx6, 14-bit x2	8-/16-bit PWMx6, /w PCA 16-bit PWMx1	16-bit PWMx6, /w PCA 8-bit Window Mode, 8/16-bit PWM Mode
I/O (Max.)	75	39	42	37
Master / Slave I2C	1/2	1/1	0/2	1/2
UART(+EUART)/LIN- Capable EUART	2/0	2/0	1/1	1(+2)/1
SPI	1	1	1	1
RTC	Y	Y	Y (No isolated RTC VDD)	Y
I2S(TDM) Controller				
LVD and LVR			Y	Y
Internal OSC / PLL			Y (16MHz, 100KHz)	Y (16MHz, 30KHz) / Y
On-Chip Power On Reset				
Timer / Counter	16-bit x 3 26-bit WDT	16-bit x 3 26-bit WDT	16-bit x 3 24-bit x 1 30-bit WDT	16-bit x 5 24-bit x 1 30-bit WDT
DPTR	2	2	2	2
Temperature Sensor			Y	Y
CAN Controller 2.0 A/B	2(/w Gateway)	1	1	
Stepper Motor Driver				
STN-LCD Driver				Y (32/31/30/29/28-Seg / 4/5/6/7/8-Com)
CEC@HDMI Controller			Y	
PGA				Y

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	IS32CS8959	IS32CS8961	IS32CS8968A	IS31CS5523
Low / Band Pass Filter				
Analog Comparator			4	3
Analog Switch				
Trim-able Vref				Y (1.2V)
Sound/Buzzer Generator				Y
Ethernet				
USB 2.0 FS Host & PHY				
SDIO Host				
Cap. Touch Key				15-channel T-K
LED Controller				8-Seg / 15-Digit Common Cathode direct drive Up to 8-Com x 28-Seg external drive 64-brightness
Sync. Detection				
DDC / CI Port				
Clock Output	Y	Y		Y
Flash OSD (Font)				
ECC Generation	Y	Y		
JTAG Interface	Y	Y		
Power Saving Mode			Y(< 20uA)	Y(< 25uA)
Power	+5.0V	+5.0V	+2.5~+5.5V	+2.2V~+5.5V
Package	QFP-100	LQFP-64	LQFP-48	LQFP-64, LQFP-48, QFN-48
General Spec.	-40°C ~ +85°C Operating Temperature, RoHS Compliance			



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