



## DSP Function-Specific Demodulators

Device	Clock (MHz)	Data (Bits)	Decimation Factors	Filtering	Package
HSP50110	52	10 (Real or Complex)		Third Order CIC Compensation	84 Ld PLCC
HSP50210	52	10 (Real or Complex)	-201	RRC	84 Ld PLCC

## Digital Filters

Device	Subtype	Max Attenuation (dB)	Compute Rate (Taps/sec)	Filter Taps	Data (Bits)	Coefficient (Bits)	Rate Change (Decimation or Interpolation)	Control/μP Interface	Package
HSP43124	HB FIR	140	90	Up to 256 (FIR)	24	32	1 to 256	8-Bit Data 3-Bit Address WR RD	28 Ld SOIC
HSP43168	FIR	60	720	-240	10	10	-15	10-Bit Data 9-Bit Address	100 Ld MQFP, 84 Ld PLCC
HSP43216	HB	90	3484		16	20	1/2 2	Individual Control Lines	100 Ld MQFP, 84 Ld PLCC
HSP43220	CIC FIR	96	66	Up to 512	16	20	Up to 16,384	16-Bit Data	84 Ld PLCC

## Down Converters

Device	Clock (MHz)	Data (Bits)	Decimation Factors	Filtering	Package
HSP50016	75	16	32 to 131,072	CIC	44 Ld PLCC
HSP50210	52	10 (Real or Complex)	-201	RRC	84 Ld PLCC
HSP50214B	65MHz CLKIN 55MHz PROCCLK (Back End)	14	4 to 16,384	Fixed CIC Fixed Halfband Programmable FIR Fixed Re-Sampler	120 Ld MQFP
HSP50216	70	16	4 to >16k	CIC HB Programmable FIR Re-Sampler	196 Ld BGA
ISL5216	95	16	4 to >16k	CIC HB Programmable FIR Re-Sampler	196 Ld BGA
ISL5416	95	16	4 to >16k	CIC HB Programmable FIR Re-Sampler	256 Ld BGA

## Modulators

Device	Subtype	Modulation Formats	Input Rate (MSPS)	Input Data (Bits)	Frequency Resolution (Hz)	Output	Filtering	Package
HSP50415	Modulator	QPSK QAM AM	25MSym/S for QPSK	16	0.023	14-Bits/12-Bits IF 50+MHz	Programmable Shaping Interpolation	100 Ld MQFP

## Pre-Distortion Linearizers

Device	Device Description	Package
ISL5239	Pre-Distortion Linearizer	196 Ld BGA

## Programmable Data Buffer

Device	Clock (MHz)	Delay Buffer Length	Max. Data Word Length	Package
HSP9501	32	2 to 1281 Data Word Delays	10	44 Ld PLCC

## Synthesizers (NCO)

Device	Subtype	Modulation Formats	Input Rate (MSPS)	Input Data (Bits)	Spectral Purity (dBc)	Frequency Resolution (Hz)	Output	Filtering	Package
HSP45102	NCO	QPSK, FSK	40	12	69	0.009 @ 32-Bits	12-Bits, Sine 40MHz	None	28 Ld SOIC
HSP45116A	NCOM	AM, FM, PM, PSK, FSK, QAM		16	90	less than 0.008 (32-Bits)	16-Bits I/Q 33MHz	None	160 Ld MQFP
ISL5314	DDS	QPSK, FSK	125	14		48	Analog	None	48 Ld MQFP

## Up Converters

Device	Subtype	Modulation Formats	Input Rate (MSPS)	Input Data (Bits)	Spectral Purity (dBc)	Frequency Resolution (Hz)	Output	Filtering	Package
ISL5217	Digital Upconverter	QASK/FM Mod/FDM	6.5	16	>100	3.69e-7 (48-Bits)	4x20-Bits	Programmable Shaping Interpolation	196 Ld BGA

## Video Decoder/Encoder

Device	Device Description	Package
HMP8117	NTSC/PAL Video Decoder	80 Ld QFN
HMP8156A	NTSC/PAL Video Encoder	64 Ld MQFP
HMP8170	NTSC/PAL Video Encoder	64 Ld QFP

## Memory

### Parallel EEPROM

Device	Organization	Access Time (ns)	Active Current Max. (mA)	Standby Current Max. ( $\mu$ A)	Package
X28C010	128kx8-Bit	120	50	500	32 Ld CerDIP, 32 Ld FlatPack, 36 Ld PGA
X28C512	64kx8-Bit	90	50	500	32 Ld CerDIP, 32 Ld FlatPack, 32 Ld PLCC, 36 Ld PGA
X28C513	64kx8-Bit	90	50	500	32 Ld CLCC, 32 Ld PLCC
X28HC256	32kx8-Bit	70	60	500	28 Ld CSP, 28 Ld CerDIP, 28 Ld FlatPack, 28 Ld PDIP, 28 Ld PGA, 28 Ld SOIC, 32 Ld CLCC, 32 Ld LCC, 32 Ld PLCC
X28HC64	8kx8-Bit	70	40	200	28 Ld CerDIP, 28 Ld FlatPack, 28 Ld PDIP, 28 Ld PGA, 28 Ld SOIC, 32 Ld LCC, 32 Ld PLCC

### Memory/883

Device	Device Description	Package
HM-6514/883	1024x4 CMOS RAM	18 Ld CerDIP
HM-6514B/883	1024x4 CMOS RAM	18 Ld CerDIP
HM-65162/883	2kx8 Asynchronous CMOS Static RAM	24 Ld CerDIP
HM-6551/883	256x4 CMOS RAM	22 Ld CerDIP
HM-65642/883	8kx8 Asynchronous CMOS Static RAM	28 Ld CerDIP
HM-6617/883	2kx8 CMOS PROM	24 Ld CerDIP
HM-6642/883	512x8 CMOS PROM	24 Ld SBDIP

## Micro P/C

### Data Communication

Device	Features	Data Frame Length	Data Rate	Package
HD-15530	<ul style="list-style-type: none"> <li>• Independent Encoder and Decoder</li> <li>• No DC Component Allowing Transformer Coupling</li> <li>• High Noise Imm</li> </ul>	16	1.25MBit/s	24 Ld CerDIP, 8 Ld CerDIP
HD-15531	<ul style="list-style-type: none"> <li>• Sync Identification and Lock-In</li> <li>• Separate Manchester II Encode, Decode</li> <li>• Low Operating Power 50mW at 5V</li> </ul>	32	1.25MBit/s	40 Ld CerDIP
HD-4702	<ul style="list-style-type: none"> <li>• Low Power Dissipation</li> <li>• Conforms to EIA RS-404</li> <li>• One HD-4702 Controls up to Eight Transmission Channels</li> <li>• Initialization Circuit Facilitates Diagnostic Fault Isolation</li> <li>• On-Chip Input Pull-Up Circuit</li> </ul>	N/A	N/A	16 Ld PDIP
HD-6408	<ul style="list-style-type: none"> <li>• Independent Encoder and Decoder</li> <li>• No DC Component Allowing Transformer Coupling</li> <li>• High Noise Imm</li> </ul>	16	1MBit/s	24 Ld CerDIP, 24 Ld PDIP
HD-6409	<ul style="list-style-type: none"> <li>• Independent Encoder and Decoder</li> <li>• No DC Component Allowing Transformer Coupling</li> <li>• High Noise Imm</li> </ul>	Complete Variable	1MBit/s	20 Ld PDIP, 20 Ld SOIC
HS-3182	<ul style="list-style-type: none"> <li>• TTL and CMOS Compatible Inputs</li> <li>• Adjustable Rise and Fall Times via Two External Capacitors</li> <li>• Asynchronous Line Driver</li> </ul>	N/A	100kBit/s	16 Ld SBDIP, 28 Ld CLCC
HS-3282	<ul style="list-style-type: none"> <li>• Asynchronous Receiver</li> <li>• ARINC Specification 429 Compliant</li> <li>• Single 5V Supply</li> </ul>	25-Bit or 32-Bit Word	100kBit/s or 12.5kBit/s	40 Ld CerDIP, 44 Ld LCC

### LCD and LED Display Drivers

Device	Alphanumeric?	# of Digits	Display Type	Multiplexed?	Font	Interface	Cycle Time (ns)	Package
ICM7211A	N	4	LCD, DD	N	CODE B	MUX BCD	200	44 Ld MQFP, 40 Ld PDIP
ICM7218	N	8	LED, CA or CC	Y	CODE B, HEX	BIT PAR., DIGIT SER.	400	28 Ld CerDIP
ICM7228	N	8	LED, CA or CC	Y	CODE B, HEX	BIT PAR., DIGIT SER.	500	28 Ld PDIP, 28 Ld SOIC
ICM7243	Y	8 (14 or 16 segment)	LED, CC	Y	ASCII	BIT PAR., DIGIT SER., RANDOM	250	40 Ld PDIP, 44 Ld MQFP
ICM7244	Y	8 (16 segment)	LED	Y	ASCII	BIT PAR., DIGIT SER., RANDOM	250	44 Ld MQFP

### Microprocessor Peripherals

Device	Features	Package
82C82	<ul style="list-style-type: none"> <li>• Full 8-Bit Parallel Latching Buffer</li> <li>• 82C82 is Bipolar 8282 Compatible</li> <li>• 82C83H Bipolar 8283 Com</li> </ul>	20 Ld CerDIP
82C86	<ul style="list-style-type: none"> <li>• Full 8-Bit Bi-Directional Bus Interface</li> <li>• Industry Standard 8286 Compatible Pinout</li> <li>• High Drive</li> </ul>	20 Ld CerDIP
82C37A	<ul style="list-style-type: none"> <li>• Compatible with the NMOS 8237A</li> </ul>	40 Ld CerDIP, 40 Ld PDIP, 44 Ld PLCC
82C54	<ul style="list-style-type: none"> <li>• 8MHz to 12MHz Clock Input Frequency</li> <li>• Compatible with NMOS 8254 - Enhanced Version of NMOS 8253</li> </ul>	24 Ld CerDIP, 24 Ld PDIP, 28 Ld CLCC, 28 Ld PLCC
82C55A	<ul style="list-style-type: none"> <li>• Pin Compatible with NMOS 8255A</li> <li>• 24 Programmable I/O Pins</li> <li>• Fully TTL Compatible</li> <li>• High Speed</li> </ul>	40 Ld CerDIP, 40 Ld PDIP, 44 Ld CLCC, 44 Ld MQFP, 44 Ld PLCC

## Microprocessor Peripherals (Continued)

Device	Features	Package
MS82C55A	<ul style="list-style-type: none"> <li>• Pin Compatible with OKI MSM82C55A</li> <li>- No Bus Hold Devices on any Port Pins</li> <li>• 24 Programmable I/O Pins</li> <li>• Fully TTL Compatible</li> <li>• High Speed, No "Wait State" Operation with 8MHz 80C86 and 80C88</li> </ul>	44 Ld PLCC
MQ82C55A	<ul style="list-style-type: none"> <li>• Pin Compatible with OKI MSM82C55A</li> <li>- No Bus Hold Devices on any Port Pins</li> <li>• 24 Programmable I/O Pins</li> <li>• Fully TTL Compatible</li> <li>• High Speed, No "Wait State" Operation with 8MHz 80C86 and 80C88</li> </ul>	44 Ld MQFP
MP82C55A	<ul style="list-style-type: none"> <li>• Pin Compatible with OKI MSM82C55A</li> <li>- No Bus Hold Devices on any Port Pins</li> <li>• 24 Programmable I/O Pins</li> <li>• Fully TTL Compatible</li> <li>• High Speed, No "Wait State" Operation with 8MHz 80C86 and 80C88</li> </ul>	40 Ld PDIP
82C59A	<ul style="list-style-type: none"> <li>• 12.5MHz, 8MHz and 5MHz Versions Available</li> <li>• High Speed</li> </ul>	28 Ld CerDIP, 28 Ld PDIP, 28 Ld PLCC
82C88	<ul style="list-style-type: none"> <li>• Compatible with Bipolar 8288</li> <li>• Performance Compatible with: <ul style="list-style-type: none"> <li>- 80C86/80C88 (5MHz/8MHz)</li> <li>- 80186/80188 (6MHz/8MHz)</li> <li>- 8086/8088 (5MHz/8MHz)</li> <li>- 8089</li> </ul> </li> </ul>	20 Ld CerDIP, 20 Ld PDIP
82C89	<ul style="list-style-type: none"> <li>• Pin Compatible with Bipolar 8289</li> <li>• Performance Compatible with: 80C86/80C88 (5MHz/8MHz)</li> <li>• Provides Multi-Master System Bus Control and Arbitration</li> </ul>	20 Ld CerDIP, 20 Ld PDIP
82C84A	<ul style="list-style-type: none"> <li>• Generates the System Clock For CMOS or NMOS Microprocessors</li> <li>• Up to 25MHz Operation</li> <li>• Uses a Parallel Mode Crystal Circuit or External Frequency Source</li> <li>• Provides Ready Synchronization</li> </ul>	18 Ld CerDIP, 18 Ld PDIP, 20 Ld PLCC

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Digital ICs

## Microprocessors

Device	Device Description	Package
80C286	CMOS 16-Bit Microprocessor	68 Ld PLCC
80C286/883	High Performance Microprocessor with Memory Management and Protection	68 Ld PGA
80C86	CMOS 16-Bit Microprocessor	40 Ld CerDIP, 40 Ld PDIP
80C86/883	CMOS 16-Bit Microprocessor	40 Ld CerDIP
80C88	CMOS 8-Bit/16-Bit Microprocessor	40 Ld CerDIP, 40 Ld PDIP
80C88/883	CMOS 8-Bit/16-Bit Microprocessor	40 Ld CerDIP
CDP1802A	CMOS 8-Bit Microprocessors	40 Ld SBDIP

## SPI Bus Peripherals

Device	Oscillator Type	Frequency Range (Hz)	I <sub>S</sub> (μA)	V <sub>CC</sub> Range (+V)	Package
CDP68HC68T1	CRYSTAL or EXT CLK	32k to 4M	80	3 to 6	16 Ld PDIP, 16 Ld SOIC, 20 Ld SOIC

## UARTs/BRGs

Device	Features	Package
82C52	<ul style="list-style-type: none"><li>• Single Chip UART/BRG</li><li>• DC to 16MHz (1M Baud) Operation</li><li>• Crystal or External Clock Input</li><li>• On-Chip Baud Rate Generator-72 Selectable Baud Rates</li></ul>	28 Ld CLCC, 28 Ld CerDIP, 28 Ld PDIP, 28 Ld PLCC
HD-6402	<ul style="list-style-type: none"><li>• Low Power CMOS Design</li><li>• Programmable Word Length, Stop Bits and Parity</li></ul>	40 Ld PDIP