

SEMICONDUCTOR PRODUCTS

SHORT FORM CATALOG



2022

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INTRODUCTION

JSC "INTEGRAL" – Holding Management Company develops, manufactures and exports microelectronic components and electronic products. JSC "INTEGRAL" – Holding Management Company provides a full cycle of design and manufacture: from silicon substrates up to integrated circuits and semiconductor devices, from microelectronic components up to electronic.

Total labour is more than 6 thousand persons.

Mr. Vitaly A. Solodukha has been the General Director of JSC "INTEGRAL" – Holding Management Company.

The main line of activity of JSC "INTEGRAL" – Holding Management Company is design and manufacture of microelectronic products - over 70 % of the total production volume - for the branches manufacturing goods of household and consumer electronics.

JSC "INTEGRAL" – Holding Management Company exports more than 70 % of the volume of manufactured goods to the markets of the Russian Federation, Sout - East Asia, India and Western Europe.

The goods are exported to 30 countries of the world.

Manufacture of 0,35 μm design rule integrated circuits on $\text{Ø}200$ mm (8 inch) wafers has been set up.

The main lines of the development of JSC "INTEGRAL" – Holding Management Company – Holding Management Company are as follows: design and implementation of microelectronic components of power electronics, microsensors and optoelectronics.

Development of production of finished electronics is to be carried out in the following lines: displays; automotive electronics and electronics and equipment for health application; cashless payment systems, payment terminals, commercial and bank equipment, smart cards, identification and record keeping systems.

JSC "INTEGRAL" – Holding Management Company is open for cooperation both in design and deliveries of products, and in terms of joint realization of long-term investment projects.

• **BASIC TYPES OF INTEGRATED CIRCUITS MANUFACTURED:**

- Memories
- Microcontrollers, drivers, peripheral IC
- TV and audio IC
- Telecommunications IC
- Power electronics, standard analog IC
- Standard digital logic IC
- Special-purpose electronic component base
- Clock/watch, calculator IC
- Music synthesizer and electronic thermometer IC

• **BASIC TYPES OF SEMICONDUCTOR DEVICES MANUFACTURED:**

- Bipolar transistors
- Power bipolar Darlington transistors
- Insulated gate bipolar transistors
- Bipolar transistors with integrated anti-saturating element
- Bipolar transistors with damping diode and resistor in the emitter-base circuit
- Unijunction bipolar transistors
- Low-power n- and p-channel MOSFETs
- Power n- and p-channel MOSFETs
- Microwave mixing diodes, rectifier diodes, Schottky diodes
- Power high-speed diodes and diode matrices
- Pulse diode matrices
- Power rectifier and limiter diodes



QUALITY MANAGEMENT SYSTEM



INTEGRATED CIRCUITS

INTEGRATED CIRCUITS

Microcontrollers, Drivers, Peripherals IC

• Display Driver IC

Part	Pin to Pin Compatibility	Supply Voltage, Ucc,V	LCD Voltage, V	Duty	RAM	Column Lines	Common Lines	Frequency, kHz	Pins (Pads)	Notes
LCD Controllers and Drivers										
IZ6570AA	NJU6570AA SED1520DAA	2.4...5.5	2.4...13	1/16 1/32	80x32	61	16	2	(100)	Chip
IZ6570OA	NJU6570OA SED1520DOA	2.4...5.5	2.4...13	1/16 1/32	80x32	61	16	18	(100)	Chip
IZ6450	NJU6450A	2.4...5.5	3.5...10	1/16 1/32	80x32	61	16	18	(100)	Chip
IZ6451	NJU6451A	2.4...5.5	3.5...10	1/16 1/32	80x32	72	8	18	(100)	Chip
IZ7065	KS0065	2.7...5.5	3...13	1/8 1/16		40		max400	(59)	Chip
IZ7066	KS0066	4.5...5.5	3...13	1/8 1/11 1/16	80x8	40	16	350	(80)	Chip
IZ602	FL602 HT1621	2.4...5.5	2.4...Ucc	1/2 1/3 1/4	32x4	32	4	256	(48)	Chip

• LED Driver Circuits

Part	Pin to Pin Compatibility	Function	Package
IL9910N IL9910D IL9910DH IZ9910	HV9910	Universal High Brightness LED Driver, 1A	DIP-8 SO-8 SO-16 Chip
IZ9921	HV9921	20mA/50mA/30mA Switch-Mode LED Driver IC	Chip
IZ9922	HV9922		
IZ9922A	-		
IZ9923	HV9923		
IZ7150 IZ7150A	AMC7150	Power LED Driver, 1,5 A Power LED Driver, 0,8 A	Chip
IL3361AD	HV9961	High-stable LED-driver IC; 8 V÷450 V supply voltage	SO-8
IL3361BD			SO-16
IZ3361			-
IL3367D	HV9967	High-voltage LED-driver IC with built-in MOSFET key, 8 V÷60 V input voltage	SO-8
IZ3367			-
IZ33120		120mA LED Driver IC with built-in MOSFET, 8 V÷450 V input voltage	Chip
IZ3302		Universal High Brightness LED Driver, 1A	Chip
IZR402U	BCR402	Constant current LED-driver; 42 V supply voltage; 18.6 V output voltage; LED-driver current: 22 mA up to 65 mA with external resistor	
IZR402R		Constant current LED-driver; 60 V supply voltage; 38.6 V output voltage; LED-driver current: 22 mA up to 65 mA with external resistor	

● **Interface Integrated Circuits** (Reference Date)

Parameter	IL75232N IL75232DW	ILX202N ILX202D	ILX207N ILX207DW	ILX208N ILX208D	ILX232N ILX232D	ILX485N ILX485D	ILX3221N	ILX3226N	ILX3232N ILX3232D	ILX3483N	ILX3485N	ILX3486N
ESD Voltage (kV)	0.5	2	2	2	2	4	4	4	4	4	4	4
Power Supply Voltage (V)	±9...±15 for TX 5 for RX	4.5...5.5	4.75...5.25	4.5...5.5	4.5...5.5	4.75...5.25	3...5.5	3...5.5	3...5.5	3...3.6	3...3.6	3...3.6
No. of TX/RX	3/5	2/2	5/3	4/4	2/2	1/1	1/1	1/1	2/2	1/1	1/1	1/1
No. of TX/RX on Bus						32						
Supply Current (mA)	30	10	20	20	10	0.9	0.001	0.001	1	0.001	0.001	0.001
Standard	RS-232	•	•	•	•	•	•	•	•	•	•	•
	RS-485/RS-422					•				•	•	•
AutoShutdown Plus, AutoShutdown							•	•				
Date Rate (bps)		64K	120K	120K	120K	2.5M	250K	250K	120K	250K	12M	2.5M
External Caps (µF)		4x0.1	4x0.1	4x0.1	4x1.0		4x0.1	4x0.1	4x0.1	-	-	-
Operating Temperature Range (°C)	0 ÷ +75	-40 ÷ +85										

● **Real Time Clock**

Part	Pin to Pin Compatibility	Function	Package
Digital timers			
IN1307N IN1307D	DS1307N/ZN	64 x 8 Serial Real Time Clock	DIP-8 SO-8
IN1356D	M41T56	512 bit (64 bit x 8) Serial Access Timekeeper SRAM	SO-8
IN1363D	PCF8563	Real Time Clock / Calendar	SO-8

INTEGRATED CIRCUITS

Microcontrollers, Drivers, Peripherals IC

• Real Time Clock (Reference Date)

Parameter		Symbol	IN1307N/D	IN1356D	IN1363D
Supply Voltage, U _{cc}		V	4.5...5.5	4.5...5.5	1.8...5.5
Battery Supply Voltage, V _{BAT}		V	2.0...3.5	2.5...3.5	
Standby Current, I _{ccs} (max)		µA	200	100 (typ)	0.55
Active Supply Current, I _{ccA} , (max)		µA	1500	300	800
Battery Current, I _{BAT1} (max)		nA	500	550	
Clock Frequency, f _{scl} (max)		kHz	100	100	400
Programmable Signal		Hz	1; 4096; 8192; 32768	512	1; 32; 1024; 32768
Operating Temperature, T _A		°C	- 40 ÷ + 85		
Functions	clock	seconds	•	•	•
		minutes	•	•	•
		hours	•	•	•
		alarm			•
	calendar	weekday	•	•	•
		date of the month	•	•	•
		month	•	•	•
		years	•	•	•
		century		•	
	programmable alarm, timer and interrupt function				•
	software clock calibration			•	
	automatic power-fail detect and switch circuitry		•	•	
	interface			I ² C	I ² C

• IC for Audio Systems

Part	Pin to Pin Compatibility	Function	Features	Package
IL34119N IL34119D	MC34119	0.25 W Low Power Mono Audio Amplifier	<ul style="list-style-type: none"> □ Vcc=2...16 V □ Low Quiescent Supply Current for Battery Powered Applications □ Chip Disable Input to Power Down the IC □ Drives a Wide Range of Speaker Loads (8-100 Ω) □ Output Power Exceed 250 mW with 32 Ω Speaker □ Gain Adjustable from 0 dB to 46 dB for Voice Band □ Requires Few External Components 	DIP-8 SO-8
IL386N IL386D	LM386	1 W Low Power Mono Audio Amplifier	<ul style="list-style-type: none"> □ Vcc=4...12 V □ Battery Operation □ Low Quiescent Current Drain: 4 mA □ Voltage Gains from 20 to 200 dB □ Ground Referenced Input □ Self-Centering Output Quiescent Voltage □ Low Distortion 	DIP-8 SO-8
ILA7056B	TDA7056B	5 W Mono BTL Audio Amplifier with DC Volume Control	<ul style="list-style-type: none"> □ Vcc=4.5...18 V □ DC volume control □ Few external components □ Mute mode □ Thermal protection □ Short-circuit proof □ No switch-on and of clicks □ Low HF radiation □ Low power consumption 	SIL-9MPF
ILA7496Q	TDA7496Q	2 x 5 W Stereo Power Amplifier with linear volume adjustment	<ul style="list-style-type: none"> □ Vcc=11...35 V □ DC volume control □ Few external components 	SIL-15P

INTEGRATED CIRCUITS

TV and Audio IC

• IC for Audio Systems (Reference Data)

IC's Class	Part	Pin to Pin Compatibility	Supply Voltage, V	Maximum Power, W	Gain, dB	Load resistance, Ω	Package
Low Power	IL34119N, D Mono	MC34119	2.0...16.0	0.25	80	8; 16; 32	DIP-8, SO-8
	IL386N, D Mono	LM386	4.0...12.0	1.0	26...42	8.0 (4.0; 16)	DIP-8, SO-8
Middle Power	ILA7056B Mono with DC Control	TDA7056B	4.5...18.0	5.0	39.5...41.5	16.0	SIL-9MPF
Large Power	ILA7496Q Stereo with Linear Volume Adjustment	TDA7496Q	10.0...32.0	2x5	28.5...31.5	8.0	SIL-15P

● **DTMF Receivers**

Part	Pin to Pin Compatibility	Function	Features	Package
IL9170N IL9170DW	HM9170	DTMF Receiver	<ul style="list-style-type: none"> □ Vcc=2.5...5.5 V □ Icc max=9.0 mA □ Power consumption 15 mW □ Quartz generator 3.58 MHz □ Decoding of 16 DTMF tones-pairs □ 4-bit parallel output □ PWDN 	DIP-18 SO-18

● **Pulse and Tone/Pulse Dialers**

Part	Pin to Pin Compatibility	Function	Features	Package
IL91531N	UM91531	Parallel Input Tone/Pulse Dialer	<ul style="list-style-type: none"> □ Vcc=2.5...5.5 V □ Quartz generator 3.58 MHz □ Output signal: pulse 10 Hz or DTMF □ 4-bit parallel data input from microcomputer □ Selectable Make/Break ratio □ Inter digital pause 800 ms 	DIP-16
IL91214AN IL91214AD	UMS91214A	Tone/Pulse Dialer with Handfree Control and Flash Function	<ul style="list-style-type: none"> □ Vcc=2.0...5.5 V □ Quartz generator 3.58 MHz □ 32-digit redial memory □ Tone/Pulse switchable □ Output signal: pulse 10 Hz(20Hz) or DTMF □ Flash Function □ 4x4 keyboard □ 09 - mode output pin (IL91214BN/BDW) □ 10 - key in tone output (IL91214BN/BDW) 	DIP-16 SO-16

• **Single Chip Telephone IC**

Part	Pin to Pin Compatibility	Function	Features	Package
IL2533N IL2533DW	AS2533	Multi-Standard CMOS Single Chip Telephone IC with Dual Soft Clipping	<ul style="list-style-type: none"> □ Line/speech circuit, LD/MF repertory dialler and tone ringer on one 28 pin CMOS chip □ Operating range from 13 to 100 mA (down to 5mA with reduced performance) □ Soft clipping to avoid harsh distortion □ Volume control of receive signal □ Line loss compensation selectable by pin option □ Low noise (max. - 72 dBmp) □ Real or complex impedance □ NET 4 compatible. □ LD/MF switchable dialling □ Pacifier tone during programming □ 31 digit last number redial □ Sliding cursor protocol with comparison □ Pause key for access pause or wait function □ 3 flash keys, 100 ms, 280 ms and 375/600 ms □ On chip MF filter (CEPT CS 203 compatible) □ Ring frequency discrimination □ 3-tone melody generator □ Oscillator Frequency (Resonator: Murata CSA 3.58MG312AM)-3.58 MHz □ 4x4...4x8 Keyboard 	DIP-28 SO-28

• **Speaker Integrated Circuits**

Part	Pin to Pin Compatibility	Function	Features	Package
IL34118N IL34118DW	MC34118	Voice Switched Speakerphone Circuit	<ul style="list-style-type: none"> □ $V_{cc}=3.0...6.5\text{ V}$ □ $I_{cc}=5.0\text{ mA}$ □ Improved Attenuator Gain Range: 52 dB Between Transmit and Receive □ Low Voltage Operation for Line-Powered Applications (3.0-6.5 V) □ 4-Point Signal Sensing for Improved Sensitivity □ Background Noise Monitors for Both Transmit and Receive Paths □ Microphone Amplifier Gain Set by External Resistors – Mute Function Included □ Chip Disable for Active/Standby Operation □ On Board Filter Pinned-Out for User Defined Function □ Dial Tone Detector to Inhibit Receive Idle Mode During Dial Tone Presence □ Standard 28-Pin Plastic Dip Package and SOIC Package Available □ Compatible with IL34119 Speaker Amplifier 	DIP-28 SO-28
IL34119N IL34119D	MC34119	Telephone Audio Amplifier	<ul style="list-style-type: none"> □ $V_{cc}=2.0...16.0\text{ V}$ □ $I_{cc}=2.7\text{ mA}$ □ Drives a wide range of speaker loads (8...100 Ω) □ Output power exceeds 250 mW with 32 Ω Speaker □ Low total harmonic distortion □ Gain adjustable 0...46 dB for voice band □ Requires few external components 	DIP-8 SO-8

● **Speaker Integrated Circuits** (continued)

Part	Pin to Pin Compatibility	Function	Features	Package
IL3726/18N IL3726/18DW	PBL3726/18	Speaker Integrated Circuit	<ul style="list-style-type: none"> □ $V_{LN}=3.3...4.1$ V ($I_L=15$ mA) □ $V_{LN}=11.0... 15.0$ V ($I_L=100$mA) □ 7 Capacitors & Resistors □ Low Voltage Operating □ DTMF signal input with confidence tone □ Mute input for DTMF dialing □ Line loss compensation (line current dependent) for microphone and earpiece amplifiers □ Gain control curve adaptable to exchange supply □ DC line voltage adjustment facility 	DIP-18 SO-20
ILA1062AN ILA1062AD ILA1062N ILA1062D	TEA1062A TEA1062	Low Voltage Transmission Circuit with Dialer Interface	<ul style="list-style-type: none"> □ Low DC line voltage; operates down to 1.6 V □ Line operation current range 10...140 mA □ $I_{CC} \leq 1.35$ mA □ Voltage gain range: <ul style="list-style-type: none"> microphone amplifier 11...52 dB telephone amplifier 20...31 dB □ Voltage regulator with adjustable static resistance □ Provides supply for external circuits □ Symmetrical high-impedance inputs (64 kΩ) for dynamic, magnetic or piezoelectric microphones □ Asymmetrical high-impedance inputs (32 kΩ) for electret microphones □ DTMF signal input with confidence tone □ Mute input for pulse or DTMF dialing □ Receiving amplifier for dynamic, magnetic or piezoelectric earpieces □ Large gain setting range on microphone and earpiece amplifiers 	DIP-16 SO-16 DIP-16 SO-16

● **Tone Telephone Ringers**

Part	Pin to Pin Compatibility	Function	Features	Package
IL2418N IL2418D	KA2418	Two-Tone Telephone Ringer with Diode Bridge	<ul style="list-style-type: none"> □ $V_{CC}=26$ V □ $I_{CC \max}=1.8$ mA □ Activation voltage 12.2...13 V □ Sustaining voltage 8.0...8.8 V □ Internal Zener diodes to protect against over voltages □ High noise immunity due to built-in voltage-current hysteresis □ Ringer impedance adjustable with external components □ Output $F_1=2100...2550$ Hz $F_2=1500...1850$ Hz 	DIP-8 SO-8

INTEGRATED CIRCUITS

Telecommunications IC

• IC for Smart Cards (continued)

Part	Pin to Pin Compatibility	Function	Features	Pads
IZ2815A-03	SLE4436E	IC for Prepaid Cards	<ul style="list-style-type: none"> □ Vcc=4.5...5.5 V □ Icc=5 mA □ 221-bit EEPROM and 16 bit mask-programmable ROM □ 104 bit user memory fully compatible with IZ4406: <ul style="list-style-type: none"> - 64 bit identification area - 40 bit counter area including 1 bit for personalization □ 133 bit additional memory for advanced features <ul style="list-style-type: none"> - 4 bit counter backup (anti-tearing flags) - 1 bit initiation flag for authentication key 2 - 16 bit data area 1 for free user access - 48 bit authentication key 1 - either 64 bit data area 1 for user defined data or 48 bit authentication key 2 □ EEPROM programming time 5 ms □ Endurance minimum of 100000 write/erase cycles per bit □ Data retention for minimum of 10 years □ Contact configuration and serial interface in accordance to ISO standard 7816-3 	5

• IC for identification systems

Part	Pin to pin compatibility	Function	Features	Pads
IZ2806	H4102, H4100	Amplitude-modulated transponder IC	<ul style="list-style-type: none"> □ For non-contact plastic card □ Operating frequency range: 100 ... 150 kHz □ ROM information capacity: 64 bit □ External inductor AC voltage value: 3min and 15 max □ Data retention with the power off: 5 years min 	5
IZ2803	ATA5567	Read / write transponder IC	<ul style="list-style-type: none"> □ For non-contact plastic card □ Operating frequency range: 100 ... 150 kHz □ ROM information capacity: 64 bit □ External inductor AC voltage value: 3min and 15 max □ Data retention with the power off: 5 years min 	4
IZ2805	RI-TRP-W9QL	Read / write transponder IC	<ul style="list-style-type: none"> □ Operating frequency: 134,2 kHz □ ROM capacity: 80 bit □ Frequency modulation □ Complies with ISO 11784/785 	4

• **IC for identification systems** (continued)

Part	Pin to pin compatibility	Function	Features	Pads
IZ1990	DS1990A	1-Wire interface electronic key IC	<ul style="list-style-type: none"> □ Power supply: 2.8 – 6.0 V □ Unique 64 bite code 	2
IZ1991	DS1991	1-Wire interface and increased security level electronic key IC	<ul style="list-style-type: none"> □ Power supply: 2.8 – 6.0 V □ Unique 64 bite code □ 3 memory blocks, 384 bit each □ Scratch-pad memory: 512 bit 	2
IZ2009-01 IZ2009-02	DS1990	1-Wire interface and increased security level electronic key IC	<ul style="list-style-type: none"> □ Power supply: 2.8 – 6.0 V □ Unique 64 bite code 	2
IZ1961	DS1961	Secret controller IC for private key access systems	<ul style="list-style-type: none"> □ 64 bit EEPROM □ 512 bit SHA block □ 64 bit scratch-pad □ Security code memory: 64 bit □ Data EEPROM: 1024 bit □ Register page: 64 bit □ CRC16 generator 	2

INTEGRATED CIRCUITS

Power Electronics, Standard Analog IC

• IC for Control and Power Electronics

Part	Pin to Pin Compatibility	Function	Package
IL33035N IL33035DW	MC33035	Brushless DC Motor Controller	DIP-24 SO-24
IL33153PN	MC33153P	Single IGBT Gate Driver	DIP-8
IL33262N IL33262D	MC33262	Power Factor Controller ($T_A = -40...+105^{\circ}\text{C}$)	DIP-8 SO-8
IL34262N IL34262D	MC34262	Power Factor Controller	DIP-8 SO-8
IL6562D	L6562		SO-8
IL6562N	L6562	Power Factor Controller	DIP-8
IL7101N/AN/BN IL7101D/AD/BD	GL7101	Earth Leakage Current Detector ($U_T = 4..9 \text{ mV}$ for AN) ($U_T = 9..18 \text{ mV}$ for N/D)	DIP-8 DIP-8 SO-8
IL4145AN	RV4145A	Low Power Ground Fault Interrupter	DIP-8
ILN2003AN	ULN2003A	High-Voltage High-Current Darlington Transistor Arrays	DIP-16
ILN2004AN ILN2004AD	ULN2004A	High-Voltage High-Current Darlington Transistor Arrays	DIP-16 SO-16
ILN62083N ILN62083D	TD62083AFN	8CH Darlington Sink Driver	DIP-18 SO-18
ILN62084N ILN62084D	TD62084AFN		DIP-18 SO-18
ILN62783N ILN62783D	TD62783AFN		DIP-18 SO-18
ILN62784N ILN62784D	TD62784AFN		DIP-18 SO-18

Part	Topr (°C)	I _{OUT} (max) (mA)	V _{CE} (max) (V)	I _{IN} (max) (mA)	V _{IN} (max) (V)	V _F /V _R (max) (V/V)	Designation	Package
7CH High-Voltage Drivers								
ILN2003AN	- 20 ÷ +85	500	50	1.35	30	2/50	TTL, 5V CMOS	DIP-16
ILN2004AN ILN2004AD	- 20 ÷ +85	500	50	1.35	30	2/50	6 ~ 15V PMOS, CMOS	DIP-16 SO-16
8CH High-Voltage Drivers								
ILN62083N ILN62083D	- 40 ÷ +85	500	50	1.35	30	2/50	TTL, 5V CMOS	DIP-18 SO-18
ILN62084N ILN62084D	- 40 ÷ +85	500	50	0.50	30	2/50	6 ~ 15V PMOS, CMOS	DIP-18 SO-18
ILN62783N ILN62783D	- 40 ÷ +85	-500	50	0.26	30	2/50	TTL, 5V CMOS	DIP-18 SO-18
ILN62784N ILN62784D	- 40 ÷ +85	-500	50	0.13	30	2/50	6 ~ 15V PMOS, CMOS	DIP-18 SO-18

● **Automotive**

Part	Pin to Pin Compatibility	Function	Package
IL33193N IL33193D	MC33193	Automotive Direction Indicator $R_S=20\text{ m}\Omega$, $F_n=2.2$, Duty Cycle (Normal Operation) 45÷55%, Duty Cycle (One 21 W Lamp Defect) 35÷45%, Defect Lamp Detector Threshold 42.5÷56 mV, $R_{SS}=220\ \Omega$	DIP-8 SO-8
IL33193N-03 IL33193D-03	UEA1041B	Automotive Direction Indicator $R_S=30\text{ m}\Omega$, $F_n=2.5$, Duty Cycle (Normal Operation) 45÷55%, Duty Cycle (One 21 W Lamp Defect) 35÷45%, Defect Lamp Detector Threshold 75÷95 mV, $R_{SS}=220\ \Omega$, Short Circuit Detector Threshold	DIP-8 SO-8
IL33197AN IL33197AD	MC33197A	Automotive Wash Wiper Timer Output Clamp Voltage ($I_{out}=20\text{ mA}$) 19.5÷22 V, Internally incorporated Zener diode 20 V	DIP-8 SO-8
IL6083N IL6083N-01	U6083B	Power Control With Interference Suppression (for N-01: Duty cycle 10... 100%, $V_{S1}=24.5...28.0\text{ V}$, $V_{S2}=18.5...22.0\text{ V}$, $V_{Batt1}=16.7...21.0\text{ V}$ (switched on), $V_{Batt1}=18.3...22.5\text{ V}$ (switched off), $V_{TS}=10.1...10.7\text{ V}$, $I_S=5...17\text{ mA}$)	DIP-8
IN9014N		For light control relay IC	DIP-8
IL8190N IL8190DW	CS8190ENF16 CS8190EDWF20	Precision Air-Core Tach/Speedo Driver with Return to Zero	DIP-16 SO-20
IL33290AD	MC33290	ISO K Line Serial Link Interface	SO-8
ILA82C251D	PCA82C251T	CAN transceiver for 24 V systems	SO-8
IN2515/AN/ADW/BN/BDW	MCP2515	CAN Controller	SO-18
IL33091AN IL33091AD	MC33091A	High-Side MOS Driver	DIP-8 SO-8
ILE4250GS	TLE4250G	Low-Drop Voltage Tracker (2÷36 V); 50 mA; Reverse Polarity Protection	P-TO-263-5-1 TO-220AB/5
ILE4260 ILE4260-2	TLE4260	Low-Drop Voltage Regulator 5 V; 500 mA; Reverse Polarity Protection	P-TO-220-5-12
ILE4264G IZE4264-2	TLE4264G TLE4264-2G	Low-Drop Voltage Regulator 5 V; 100 mA; Reverse Polarity Protection	P-SOT223-4-1 Chip
ILE4266G IZE4266-2	TLE4266G TLE4266-2G	Low-Drop Voltage Regulator 5 V; 100 mA; Reverse Polarity Protection	P-SOT223-4-2 Chip
ILE4267G ILE4267S	TLE4267G TLE4267S	Low-Drop Voltage Regulator 5 V; 400 mA; Reverse Polarity Protection	P-TO-220-7-180 P-TO-220-7-230
ILE4268GDW	TLE4268G	Low-Drop Voltage Regulator 5 V; 150 mA; Reverse Polarity Protection	P-DSO-20-6
ILE4270G ILE4270S ILE4270Q IL4270	TLE4270G TLE4270S	Low-Drop Voltage Regulator 5 V; 550 mA; Reverse Polarity Protection IL4270 - without "RESET"	P-TO-263-5-1 P-TO-220-5-12 P-TO-220-5-11 TO-220AB/3
ILE4271G ILE4271S	TLE4271G TLE4271S	Low-Drop Voltage Regulator 5 V; 550 mA; Reverse Polarity Protection	P-TO-220-7-180 P-TO-220-7-230
ILE4274V50/V85/V10	TLE4274	Low-Drop Voltage Regulator 5 V/8.5 V/10 V; 400 mA; Reverse Polarity Protection	TO-220AB/3
ILE4275G/S	TLE4275G	Low-Drop Voltage regulator 5 V; 400 mA; Reverse Polarity Protection	P-TO-263-5-1 TO-220AB/5
ILE4276VG/VS/V50G/V50 S/V85G/V85S/V10S	TLE4276	Low-Drop Voltage Regulator 5 V/8.5 V/10 V; 400 mA; Reverse Polarity Protection	P-TO-263-5-1 TO-220AB/5
IZE4278	TLE4278	Low-Drop Voltage Regulator 5 V; 150 mA; Reverse Polarity Protection	Chip
IZ4206	TLE4206G	1 A DC Motor Driver for Servo Driver Applications	Chip
IZE4263	TLE4263	LDO Regulator 5 V; 150 mA	Chip
IZE4279	TLE4279	LDO Regulator 5 V; 150 mA	Chip

INTEGRATED CIRCUITS

Power Electronics, Standard Analog IC

• Timers

Part	Pin to Pin Compatibility	Function	Package
Digital timers			
IN555N IN555D	NE555	Timer	DIP-8 SO-8
ILC555N ILC555D	GLC555	Timer	DIP-8 SO-8
IN556N IN556D	NE556	Dual Timer	DIP-14 SO-14
ILC556N	GLC556	Dual Timer	DIP-14
IN558N	NE558	Quad Timer	DIP-16
ILC558N	GLC558	Quad Timer	DIP-16

• Comparators

Part	Pin to Pin Compatibility	Function	Package
IL311AN IL311AD IL311ANM	LM311, LM211	Highly Flexible Voltage Comparators ($T_A = -45...+85^\circ\text{C}$)	DIP-8 SO-8 DIP-14
IL339N IL339D	LM339	Quad Comparator	DIP-14 SO-14
IL293N IL293D	LM293	Dual Comparator ($T_A = -40...+85^\circ\text{C}$)	DIP-8 SO-8
IL393N IL393D	LM393	Dual Comparator	DIP-8 SO-8

• Comparators (Reference Data)

Part	T_{opr} ($^\circ\text{C}$)	I_{IB} (nA) Max	V_{io} (mV) Max	I_{io} (nA) Max	A_v (V/mV) Min	Response Time (ns) Typ	Supply Voltage (V)	Package
Single Comparators								
IL311ANM	-45 ÷ +85	250	3.0	50	150	300	+15, -15	DIP-14
IL311AN								DIP-8
IL311AD								SO-8
Dual Comparators								
IL293N	-40 ÷ +85	250	5.0	50	50	300	±2.5 ÷ ±15 or 5.0 ÷ 30	DIP-8
IL293D								SO-8
IL393N	0 ÷ +70	250	5.0	50	200	300	±2.5 ÷ ±15 or 5.0 ÷ 30	DIP-8
IL393D								SO-8
Quad Comparators								
IL339N	0 ÷ +70	250	5.0	50	200	300	±2.5 ÷ ±15 or 5.0 ÷ 30	DIP-14
IL339D								SO-14

INTEGRATED CIRCUITS

Power Electronics, Standard Analog IC

● Timers (Reference Date)

Parameter	CMOS TIMERS (ILC555N/D, ILC556N, ILC558N)					BIPOLAR TIMERS (IN55N/D, IN556N/D, IN558N)										
	Test Condition	Vcc	Min	Value Type	Max	Unit	Test Condition	Vcc	Min	Value Type	Max	Unit				
Supply Voltage, Vcc	-20°C ≤ T _A ≤ +70°C		2		18	V	10°C ≤ T _A ≤ +70°C		4.5	16	V					
Supply Current, I _{cc}	ILC555	2	—	60	200	μA	IN555	5	—	3000	6000					
		18	—	120	300			15	—	10000	15000					
		2	—	120	400			5	—	6000	12000					
	ILC556	18	—	240	600		IN556	15	—	16000	30000					
		2	—	240	800			15	—	16000	36000					
Timing Error Initial Accuracy, t _A Drift With Temperature, ΔtA/ΔT	R=1–100 kΩ, C = 0.1 μF	18	—	480	1200	%	R=1–100kΩ, C = 0.1μF					%				
		5	0.65xVcc	2.0	5.0			5		2.25						
		10	0.31xVcc	50	200			5	1.1	1.67	2.2					
Drift With Supply Voltage, ΔtA/ΔV _s		15				ppm /°C		15	4.5	5.0	5.6	ppm /°C				
		5		1.0	3.0					0.3			% / V			
Threshold Voltage, V _{TH}		5	0.65xVcc	0.67xVcc	0.7xVcc	V		5		3.33		V				
Trigger Voltage, V _{TRIG}		5	0.31xVcc	0.33xVcc	0.36xVcc	V		5	1.1	1.67	2.2	V				
Trigger Current, I _{TRIG}		18	50			pA	V _{TRIG} = 0V			0.5	2.0	μA				
Threshold Current, I _{TH}		5	10			pA						μA				
		2	1.0													
		18	50													
Reset Current, I _{RST}	V _{RESET} = G _{round}	5	20			pA						mA				
		2	2.0													
Reset Voltage, V _{RST}		18	0.4	0.7	1.0	V			0.4	0.7	1.0	V				
Control Voltage Lead, V _{CV}		2	0.4	0.7	1.0	V			9.0	10	11	V				
Output Voltage Low, V _{OL}	I _o = 20 mA I _o = 3.2 mA		0.65xVcc	0.67xVcc	0.69xVcc	V						V				
		15		0.4	1.0								15	5	0.1	0.25
		5		0.2	0.4								15	5	0.4	0.75
Output Voltage High, V _{OH}	I _o = 0.8 mA I _o = 0.8 mA	15	14.3	14.6		V						V				
		5	4.0	4.3									15	5	12.5	12.5
Rise (Fall) Time of Output, t _{rLH} , t _{fHL}	R _L = 10 MΩ, C _L = 10 pF	5	35	40	75	ns				100		ns				
Guaranteed Max Osc Freq, f _{max}	Astable Operation		500			kHz				500		kHz				
Operating Temperature, Topr																
Note:		T _A = 25°C, Vcc = +2 – +15V unless other specified					T _A = 25°C, Vcc = +5 – +15V unless other specified									
		-20 to +70					-10 to +70									

INTEGRATED CIRCUITS

Power Electronics, Standard Analog IC

• Operational Amplifiers

Part	Pin to Pin Compatibility	Function	Package
IL258N IL258D	LM258	Dual Operational Amplifier (T _A = -40 ÷ +85°C)	DIP-8 SO-8
IL358N IL358D	LM358	Dual Operational Amplifier	DIP-8 SO-8
IL224N IL224D	LM224	Quad Operational Amplifier (T _A = -40 ÷ +85°C)	DIP-14 SO-14
IL324N IL324D	LM324	Quad Operational Amplifier	DIP-14 SO-14
IL1776CN, CAN IL1776CD, CAD	MC1776C	Micropower Programmable Operational Amplifier (CAN, CAD T _A =-40÷+85°C)	DIP-8 SO-8
IL4558N IL4558D	GL4558	Dual Operational Amplifier	DIP-8 SO-8
IZ4560	NJM4560	Dual Operational Amplifier (T _A = -25 ÷ +75°C)	Chip
IZ4580	NJM4580	Dual Operational Amplifier (T _A = -40 ÷ +85°C)	Chip
IL9002N	OP-07	Low bias operational amplifier	DIP-8
IL9002AN	OP-07A	Low bias operational amplifier	DIP-8
IL8541D	AD8541	Micropower CMOS operational amplifier	Chip SO-8
IL8515D	AD8515	Low power operational amplifier	Chip SO-8
IL8615D	AD8615	Rail to Rail wide bandwidth operational amplifier	Chip SO-8

• Operational Amplifiers (Reference Data)

Part	T _{opr} (°C)	I _B (nA) Max	V _{io} (mV) Max	TC _{vio} (μV/°C) Type	I _{io} (nA) Max	A _{vol} (V/mV) Min	Supply Voltage (V)		Package
							Min	Max	
Micropower Programmable Operational Amplifier									
IL1776CN IL1776CD	0 ÷ +70	10	6.0		6.0	25	±3.0	±15	DIP-8
IL1776CAN IL1776CAD									-40 ÷ +85
									DIP-8
									SO-8
Dual Operational Amplifier									
IL258N IL258D	-40 ÷ +85	250	7.0	7.0	50	25	±2.5 +5.0	±15 +30	DIP-8
IL358N IL358D									0 ÷ +70
IL4558N IL4558D	0 ÷ +70								
IZ4560 IZ4580	-25 ÷ +75 -40 ÷ +85	500 500	6.0 3.0		200 200	86 dB 90 dB	±4 ±2	±15 ±15	Chip Chip
Quad Operational Amplifier									
IL224N IL224D	-40 ÷ +85	250	7.0	7.0	50	25	±2.5 +5.0	±15 +30	DIP-14
IL324N IL324D									0 ÷ +70
									SO-14
Low bias operational amplifier									
IL9002N IL9002AN	-60 ÷ +125	2.5 4	0.055 0.105	0.6 1.3	2.5 3.5	250 150	+3.0	±18	DIP-8

• μ P Supervisory Circuits

Part	Pin to Pin Compatibility	Function	Package
IN1232N IN1232D	DS1232	Micro Monitor	DIP-8 SO-8
IN1705N IN1705D IN1705RN IN1705RD	DS1705	Micro Monitor (RN,RD – Push-Pull Reset Output)	DIP-8 SO-8 DIP-8 SO-8
IN1706N IN1706D IN1706SRN IN1706SRD	DS1706S	Micro Monitor (SRN, SRD - Push-Pull Reset Output)	DIP-8 SO-8 DIP-8 SO-8
IN1708N IN1708D	DS1708	Micro Monitor	DIP-8 SO-8
IL809/810LW IL809/810MW IL809/810TW IL809/810SW IL809/810RW	STM809/810LW STM809/810MW STM809/810TW STM809/810SW STM809/810RW	Reset Circuit	SOT-23-3

• μ P Supervisory Circuits (Reference Data)

PARAMETER	IN1232N IN1232D	IN1705N IN1705D	IN1705R N IN1705R D	IN1706N IN1706D	IN1706SRN IN1706SRD	IN1708N IN1708D	IL809/810LW	IL809/810MW	IL809/810TW	IL809/810SW	IL809/810RW
							1.2...5.5				
Supply Voltage, V	4.5...5.5	1.2...5.5	1.2...5.5	1.2...5.5	1.2...5.5	1.2...5.5	1.2...5.5				
Nominal Reset Threshold, V	4.37	4.65	4.65	2.93	2.93	4.40	4.63	4.38	3.08	2.93	2.63
Minimum Reset Pulse Width, ms	250	100	100	130	130	130	140				
Push-Pull RESET Output	L, H	L	H	L	H	L, H	L/H				
Watchdog	•	•	•	•	•						
Nominal Watchdog Timeout Period (s), if available	0.15	1.6	1.6	1.6	1.6		-				
Separate Watchdog Output		•	•	•	•						
Power-Fail Comparator/Reset Input		•	•	•	•	•					
Manual-Reset Input	•	•	•	•	•	•					
Supply Current in Operating Mode, μ A, max (typ)	2000 (500)	350 (100)	350 (100)	50	50	50	15 (7)				
Operating Temperature, $^{\circ}$ C	- 10 \div +70		- 40 \div +85				- 40 \div +85				
Package	DIP-8 SO-8	DIP-8 SO-8	DIP-8 SO-8	DIP-8 SO-8	DIP-8 SO-8	DIP-8 SO-8	SOT-23-3				

• Voltage Regulators

Part	Pin to Pin Compatibility	Output Voltage, V	Output Current, A	Output Voltage Tolerance, %	Tested Operating Junction Temp. Range, $^{\circ}$ C	Package
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Positive Voltage Regulators

KP1180EHXXA KP1180EHXXB KP1180EHXXB	78XXAC 78XXC 78XXB	5; 6; 8; 9; 10; 12; 15; 18; 20; 24	1.0	2 4 4	T _j = -10...+125 T _j = -10...+125 T _j = -45...+125	TO-220
K1261EHXXП	78FXX	5; 6; 8; 9;10;12;15;18;24	1.0	4	T _j = -10...+125	TO-126
K1332EHXX	78MXX	5; 6; 8; 9; 12; 15; 18; 24	0,5	2 4	T _j = -10...+125	TO-126
KP1181EHXXA KP1181EHXXB	78LXXAC 78LXXC	3.3; 5; 6; 8; 9; 12; 15; 18; 24	0.1	5 10	T _j = -10...+125	TO-92

INTEGRATED CIRCUITS

Power Electronics, Standard Analog IC

• Voltage Regulators (continued)

Negative Regulators						
KP1179EHXXA KP1179EHXXB KP1179EHXXB	IL79XXAC IL79XXC IL79XXB	5; 6; 8; 9; 12; 15; 18; 20; 24	1.0	2 4 4	Tj= -10...+125 Tj= -10...+125 Tj= -45...+125	TO-220
KP1199EHXXA KP1199EHXXB	79LXXAC 79LXXC	5; 6; 8; 9; 12; 15; 18; 24	0.1	5 10	Tj= -10...+125	TO-92
Low Dropout Voltage Regulators						
ILE4250G/S (Tracker)	TLE4250G	2 ÷ 36	0.05	0.5	Tj= -40...+150	P-TO-263-5-1 TO-220AB/5
ILE4260 ILE4260-2	TLE4260S	5	0.5	5 2	Tj= -40...+125	P-TO-220-5-12
ILE4264G	TLE4264G	5	0.10	2	Tj= -40...+125	P-SOT223-4-1
IZE4264-2	TLE4264-2G	5	0.10	3	Tj= -40...+125	Chip
ILE4266G	TLE4266G	5	0.10	2	Tj= -40...+125	P-SOT223-4-2
IZE4266-2	TLE4266-2G	5	0.10	3	Tj= -40...+125	Chip
ILE4267G ILE4267S	TLE4267G TLE4267S	5	0.4	2	Tj= -40...+125	P-TO-220-7-180 P-TO-220-7-230
ILE4268GDW	TLE4268G	5	0.15	2	Tj= -40...+125	SO-20
ILE4270G ILE4270S ILE4270Q	TLE4270G TLE4270S	5	0.55	2	Tj= -40...+125	P-TO-263-5-1 P-TO-220-5-12 P-TO-220-5-11
ILE4270 (without "RESET")		5	0.55	2	Tj= -40...+125	TO-220AB/3
ILE4271G ILE4271S	TLE4271G TLE4271S	5	0.55	2	Tj= -40...+125	P-TO-220-7-180 P-TO-220-7-230
ILE4274V50/V8 5/V10	TLE4274	5; 8.5; 10	0.4	4	Tj= -40...+150	TO-220AB/3
ILE4275G/S	TLE4275G	5	0.4	2	Tj= -40...+150	P-TO-263-5-1 TO-220AB/5
ILE4276VG/VS/ V50G/V50S/V8 5G/V85S/V10G/ V10S	TLE4276	5; 8.5; 10	0.4	4	Tj= -40...+150	
IZE4278	TLE4278	5	0.15	2	Tj= -40...+150	Chip
IZ1734-33	SSAIC1734-33	3.3	0.3	2	Tj= -40...+125	Chip
IZ1734-50	SSAIC1734-50	5	0.3	2		
IZ1735-33	SSAIC1735-33	3.3	0.5	2		
IZ1735-50	SSAIC1735-50	5	0.5	2		
IL5212G	CS5201 LD1117S	1.2	0.8	5		
IL5218G		1.8	0.8	2		
IL5225G		2.5	0.8	2		
IL5228G		2.85	0.8	2		
IL5230G		3.0	0.8	2		
IL5233G		3.3	0.8	2		
IL5250G		5.0	0.8	2		
Tj= 0...+125						P-SOT-223-4-1
IL1117A-XX	AMS1117A-XX	1.2; 1.25; Adj; 1.5; 1.8; 2.5; 2.85; 3.3; 5	1.0	1.5	Tj= -40...+125	TO-220 TO-126
K1280EHXX	LM3480-XX	3.3; 5.0	0.1	4	Tj= -10...+125	TO-92
K1282EHXX	LT1084-XX	1.25; 1.5; 1.8; 2.5; 2.85; 3.3; 3.6; 5.0	5.0	1.5	Tj= -10...+125	TO-220
K1320EXX	LT1085	1.25; 1.5; 1.8; 2.5; 2.85; 3.3; 3.6; 5.0	3.0	1.5	Tj= -10...+125	TO-220
IL5219T	MIC5219	Adj; 1.8; 2.5; 3.3; 5.0	1.0	2	Tj= -40...+125	TO-220 TO-126 Chip

• Voltage Regulators (continued)

Adjustable Voltage Regulators

Part	Pin to Pin Compatibility	Function	Package
IL317	LM317T	Adjustable Output Positive Voltage Regulator 1.5 A; (1.2...37 V) T _j =-40...+125°C	TO-220AB/3
IZ317L	LM317L	Adjustable Output Positive Voltage Regulator 0.1 A; (1.2...37 V) T _j =-40...+125°C	TO-92
IL2931CD	LM2931C	Adjustable Dropout Voltage Regulator 0.1 A; (3...24 V) T _j =-40...+125°C	SO-8
IL5200G	CS5201 LD1117S	Adjustable Dropout Voltage Regulator 0.8 A; (1.25 ... 13.5 V) T _j = 0...+125°C	P-SOT-223-4-1

Switching Regulators

Part	Pin to Pin Compatibility	Function	Package
IL2576 – 3.3 IL2576 – 5 IL2576 – 12 IL2576 – 15 IL2576 – ADJ	LM2576 – 3.3 LM2576 – 5 LM2576 – 12 LM2576 – 15 LM2576 – ADJ	3.0 A, 15 V, Step-Down Switching Regulator	TO-220 AB/5
IL2596 – 3.3 IL2596 – 5 IL2596 – 12 IL2596 – ADJ	LM2596 – 3.3 LM2596 – 5 LM2596 – 12 LM2596 – ADJ	Power Converter 150 kHz 3 A Step-Down Voltage Regulator	TO-220 AB/5
IL1501 – 3.3 IL1501 – 5.0 IL1501 – 12 IL1501 - ADJ	AP1501 – 3.3V AP1501 – 5V AP1501 – 12V AP1501 – ADJ	150 kHz, 3 A PWM Buck DC/DC Converter	TO-220 AB/5
IZ9261 – 15 IZ9261 – 25 IZ9261 – 33 IZ9261 – 50	RT9261 – 15 RT9261 – 25 RT9261 – 33 RT9261 – 50	VFM Step-up DC/DC Converter	Chip
IL34063AN IL34063AD	MC34063A	Step-Up /Down/inverting Switching Regulator (I _{sw} ≤1.5A)	Dip-8 SO-8
IL33063AN IL33063AD	MC33063A	Step-Up /Down/inverting Switching Regulator T _A =(-40...+85°C)	Dip-8 SO-8
IL34063S1	MC34063A	Step-Up/Down/inverting Switching Regulator (I _{sw} ≤0.8 A)	Chip
IZ1583	MP1583	Step-Down Switching Regulator	Chip

• Precision Low Voltage Reference

Part	Pin to Pin Compatibility	Function	Features	Package
K1242EP1	TL431	Programmable precision references. This monolithic IC voltage references operate as a low temperature coefficient zener which is programmable from U _{ref} to 16/37 with two external resistors.	<ul style="list-style-type: none"> □ V_{ref} = 2.5...37 V □ I_{k max}=100 mA □ Shunt Reference Dynamic Impedance Z ≤ 0.5 Ω □ Tolerance 0.5%; 1%; 2% 	TO-92 SOT-23 SO-8
K142EP2ПИМ	TL432	The characteristics of these references make them excellent replacements for zener diodes in many applications such as digital voltmeters, power supplies, and operation amplifier circuitry.	<ul style="list-style-type: none"> □ V_{ref}= 1.24...16V □ I_{kmax} = 100 mA □ Shunt Reference Dynamic Impedance Z ≤ 0.5 Ω □ Tolerance 0.5%; 1% 	TO-92

INTEGRATED CIRCUITS

Power Electronics, Standard Analog IC

• Precision Low Voltage Reference (continued)

IL17431	HA17431	Temperature-compensated variable shunt regulator. Includes a photocoupler by pass resistor (2k Ω)	<input type="checkbox"/> Vref= 1.24...16V <input type="checkbox"/> Ikmax = 100 mA <input type="checkbox"/> Shunt Reference Dynamic Impedance $Z \leq 0.2 \Omega$ (typ) <input type="checkbox"/> Tolerance 0.5%	Chip
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• Switching Regulators (Reference Data)

Part	T (°C)	I _{OUT} (A)	V _{IN} (V)		V _{OUT} (V)	F _{sw} (typ) (kHz)	I _{STBY} (typ) (μA)	Package
			Min	Max				
Step-Down (Buck)								
IL1509	- 40 ÷ +125	3	4.5	22	1.8, 2.5, 3.3, 5, Adj (1.23 to 22)	150	70	TO-220AB/5 Chip
IL2576	- 40 ÷ +125	3	6.0	40	3.3, 5, 12, 15, Adj (1.23 to 37)	52	80	TO-220AB/5
IL2576HVR**	- 40 ÷ +125	3	6.0	60	3.3, 5, 12, 15, Adj (1.23 to 37)	52	80	TO-220AB/5
IL2596	- 40 ÷ +125	3	4.5	40	3.3, 5, 12, Adj (1.23 to 37)	150	80	TO-220AB/5
IL1501AT1	- 40 ÷ +125	5	4.5	40	3.3, 5, 12, Adj (1.23 to 37)	150	150	chip
IZ1583	- 40 ÷ +85	3	4.75	23	Adj (1.22 to 21)	385		Chip
Step-Up								
IZ9261	- 25 ÷ +85	0.250	1	4.5	1.5, 2.5, 3.3, 5	120	0.5	Chip
Step-Up /Down/Inverting								
IL33063AN IL33063AD	- 40 ÷ +85	1.5	3.0	40	Adj	33	2.5 mA	Dip-8 SO-8
IL34063AN IL34063AD	0 ÷ +70	1.5	3.0	40	Adj	33	2.5 mA	Dip-8 SO-8
IL34063S1	0 ÷ +70	0.8	3.0	40	Adj	33	2.5 mA	Chip

**Under Development

• PWM Controllers

Part	Pin to Pin Compatibility	Function	Package
IL494N	TL494IN	Pulse-Width-Modulation Control Circuit	DIP-16
IL6083N IL6083N-01	U6083B	Power Control With Interference Suppression (for IL6083N N-01: Duty cycle 10... 100%, V _{S1} =24.5...28.0 V, V _{S2} =18.5...22.0 V, V _{Batt1} =16.7...21.0 V (switched on), V _{batt1} =18.3...22.5 V (switched off), V _{TS} =10.1...10.7 V, I _s =5...17 mA)	DIP-8
IZ7500		Pulse-Width-Modulation Control Circuit	Chip

• Voltage Detectors

Part	Pin to Pin Compatibility	Function	Package
K1274CПXXП	KIA70XX	Voltage Detector U _{cc} max= 15 V; I _{OL} max<16 mA; U _s = 2.1/2.3/2.5/2.7/2.9/3.1/3.3/3.5/3.6/3.7/ 3.9/ 4.2/ 4.5 V	TO-92

INTEGRATED CIRCUITS

Power Electronics, Standard Analog IC

• Voltage Regulators (Reference Data)

Parameter	ILE4250G/S (Tracker)	ILE4260	ILE4260-2	ILE4264G	IZE4264-2	ILE4266G	IZE4266-2	ILE4267G/S	ILE4268GDW	ILE4270G/S/Q	IL4270	ILE4271G/S	ILE4274V50/V8 5V/10	ILE4275G/S	ILE4276VGN/S/ V50G/V50S/V85 G/V85S/V10G/V 10S	IZE4278	
Output current, mA	≤50	≤500	42 60 65 (≤400ms)	≤100	≤100	≤100	≤100	≤400	≤150	≤550	42 65 (≤400ms)	≤550	≤400	≤400	≤400	≤150	
Input voltage (max), V	45	42 60 65 (≤400ms)	45	45	45	45	45	42 60 65 (≤400ms)	45	42 65 (≤400ms)	42 65 (≤400ms)	42 65 (≤400ms)	45	45	45	45	
Output voltage, V	2-36	5	5	5	5	5	5	5	5	5	5	5	5	5	5; 8.5; 10	5	
Drop voltage, V	≤0.3	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5	≤0.6	≤0.5	≤0.7	≤0.7	≤0.7	≤0.5	≤0.5	≤0.5	≤0.5	
Output voltage tolerance, %	0.5	5	2	2	3	2	3	2	2	2	2	2	4	2	4	2	
I_o max																	
$I_o = 50$ mA																	
$I_o = \text{max}$																	
$I_o = 0.1$ mA					≤0.07	≤15	≤0.07	≤60	≤20	≤75	≤75	≤75	≤30	≤22	≤25	≤12	
$I_o = 1$ mA	0.15				0.4		-						0.22	0.20	0.22		
$I_o \leq 30$ mA	≤3				≤4		≤4										
$I_o = 50$ mA																	
Shot-circuit proof	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Overvoltage protection		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Reverse polarity protection	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Overtemperature protection	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Time		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Adjustable Reset		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Threshold		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
On/off logic																	
Watchdog																	
Inhibit Input																	
Junction Temperature, °C	-40 ÷ +150							-40 ÷ +125							-40 ÷ +150		-40 ÷ +125
Package	P-TO-263-5-1 TO-220AB/5	TO-220AB/5	Chip	P-SOT223-4-1	Chip	P-SOT223-4-2	Chip	P-TO-220-7-180	SO-20	P-TO-220-5-12 P-TO-220-5-11	TO-220AB/3	P-TO-220-7-180 P-TO-220-7-230	TO-220AB/3	P-TO-263-5-1 TO-220AB/5	P-TO-263-5-1 TO-220AB/5	Chip	

• Voltage Regulators (Reference Data)

Parameter	IL5212G	IL5218G	IL5225G	IL5228G	IL5230G	IL5233G	IL5250G	IL5200G	I21734-33	I21734-50	I21735-33	I21735-50	IL2931CD	IL317	I2317L	
	Output current, mA	≤800	≤800	≤800	≤800	≤800	≤800	≤800	≤800	≤300	≤300	≤500	≤500	100	1500	100
Input voltage (max), V	15	8	10	10	12	15	15	15	12	12	12	12	40	40	40	
Output voltage, V	1.2	1.8	2.5	2.85	3	3.3	5	1.25-13.5	3.3	5	3.3	5	3-24	1.2-37		
Drop voltage, V	≤1.2	≤1.2	≤1.2	≤1.2	≤1.2	≤1.2	≤1.2	≤1.2	0.47	0.4	0.65	0.51	≤0.6	≤2.5		
Output voltage tolerance, %	5	2	2	2	2	2	2	2	2	2	2	2	5	0.07%/V		
Current consumption, mA	10	10	10	10	10	10	10	10	0.08	0.08	0.09	0.09	6	0.1 (I _o =0.5A)		
Shot-circuit proof	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Overvoltage protection																
Reverse polarity protection																
Overtemperature protection	•	•	•	•	•	•	•	•								
On/off logic																
Junction Temperature, °C	0 ÷ +125								-40 ÷ +125							
Package	P-SOT1223-4-1								Chip				SO-8	TO-220AB/3	Chip	

• Power Supply ICs

Part	Pin to Pin Compatibility	Function	Package
K1294EEEXX	TSM1051	Constant Voltage and Constant Current Controller For Adaptors and Battery Chargers	DIP-8 Chip
IL1051(14V) IL1052(20V) IL1053(40V)		Constant Voltage and Constant Current Controller For Adaptors and Battery Chargers	Chip
K1301ПHXX	ICL7660	CMOS Voltage Converter	DIP-8, SO - 8 Chip

• IW4000AN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IW4001AN,AD	CD4001AN,AD	Quad 2-Input NOR Gate	DIP-14, SO-14
IW4002AN,AD	CD4002AN,AD	Dual 4-Input NOR Gate	DIP-14, SO-14
IW4011AN,AD	CD4011AN,AD	Quad 2-Input NAND Gate	DIP-14, SO-14
IW4012AN,AD	CD4012AN,AD	Dual 4-Input NAND Gate	DIP-14, SO-14
IW4013AN,AD	CD4013AN,AD	Dual D-Type Flip-Flop	DIP-14, SO-14
IW4015AN,AD	CD4015AN,AD	Dual 4-Bit Shift Register	DIP-16, SO-16
IW4017AN,AD	CD4017AN,AD	Decade Counter/Driver	DIP-16, SO-16
IW4019AN,AD	CD4019AN,AD	Quad AND-OR Gate	DIP-16, SO-16
IW4020AN,AD	CD4020AN,AD	14-Bit Binary Divide Counter	DIP-16, SO-16
IW4023AN,AD	CD4023AN,AD	Triple 3-Input NAND Gate	DIP-14, SO-14
IW4025AN,AD	CD4025AN,AD	Triple 3-Input NOR Gate	DIP-14, SO-14
IW4028AN,AD	CD4028AN,AD	BCD-to-Decimal Decoder	DIP-16, SO-16
IW4029AN,AD	CD4029AN,AD	Binary or BCD-Decade Counter	DIP-16, SO-16
IW4030AN,AD	CD4030AN,AD	Quad Exclusive-OR Gate	DIP-14, SO-14
IW4034AN,ADW	CD4034AN,AD	8-Bit Shift Register	DIP-24, SO-24
IW4043AN,AD	CD4043AN,AD	Quad NOR R-S Latch (3-State)	DIP-16, SO-16
IW4049AN,AD	CD4049AN,AD	Hex Buffer/Converter	DIP-14, SO-14
IW4050AN,AD	CD4050AN,AD	Hex Buffer/Converter	DIP-16, SO-16
IW4051AN,AD	CD4051AN,AD	Single 8-Channel Multiplexer/Demultiplexer	DIP-16, SO-16
IW4052AN,AD	CD4052AN,AD	Differential 4-Channel Multiplexer/Demultiplexer	DIP-16, SO-16
IW4066AN,AD	CD4066AN,AD	Quad Bilateral Switch	DIP-14, SO-14
IW4069AN,AD	CD4069AN,AD	Hex Inverter	DIP-14, SO-14
IW4093AN,AD	CD4093AN,AD	Quad 2-Input NAND Schmitt Trigger	DIP-14, SO-14
IW4502AN,AD	CD4502AN,AD	Hex Inverter/Buffer	DIP-16, SO-16
IW4516AN,AD	CD4516AN,AD	Presettable Binary Up/Down Counter	DIP-16, SO-16
IW4520AN,AD	CD4520AN,AD	Dual Binary Up Counter	DIP-16, SO-16

• IW4000BN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IW4001BN,BD	CD4001BN,BD	Quad 2-Input NOR Gate	DIP-14, SO-14
IW4002BN,BD	CD4002BN,BD	Dual 4-Input NOR Gate	DIP-14, SO-14
IW4006BN,BD	CD4006BN,BD	18-Bit Static Shift Register	DIP-14, SO-14
IW4008BN,BD	CD4008BN,BD	4-Bit Full Adder	DIP-16, SO-16
IW4011BN,BD	CD4011BN,BD	Quad 2-Input NAND Gate	DIP-14, SO-14
IW4012BN,BD	CD4012BN,BD	Dual 4-Input NAND Gate	DIP-14, SO-14
IW4013BN,BD	CD4013BN,BD	Dual D-Type Flip-Flop	DIP-14, SO-14
IW4015BN,BD	CD4015BN,BD	Dual 4-Bit Static Shift Register	DIP-16, SO-16
IW4016BN,BD	CD4016BN,BD	Quad Bilateral Switch	DIP-14, SO-14
IW4017BN,BD	CD4017BN,BD	Decade Counter/Driver	DIP-16, SO-16
IW4018BN,BD	CD4018BN,BD	Presettable Divide-by-N Counter	DIP-16, SO-16
IW4019BN,BD	CD4019BN,BD	Quad AND-OR Gate	DIP-16, SO-16
IW4020BN,BD	CD4020BN,BD	14-Bit Binary Divide Counter	DIP-16, SO-16

INTEGRATED CIRCUITS

Power Electronics, Standard Analog IC, Standard Digital Logic IC

• IW4000BN, D(DW) Series (continued)

Part	Pin to Pin Compatibility	Function	Package
IW4021BN,BD	CD4021BN,BD	8-Bit Shift Register	DIP-16, SO-16
IW4022BN,BD	CD4022BN,BD	Divide-by-8 Counter/Divider	DIP-16, SO-16
IW4023BN,BD	CD4023BN,BD	Triple 3-Input NAND Gate	DIP-14, SO-14
IW4025BN,BD	CD4025BN,BD	Triple 3-Input NOR Gate	DIP-14, SO-14
IW4027BN,BD	CD4027BN,BD	Dual J-K Flip-Flop	DIP-16, SO-16
IW4028BN,BD	CD4028BN,BD	BCD-to-Decimal Decoder	DIP-16, SO-16
IW4029BN,BD	CD4029BN,BD	Binary or BCD-Decade Counter	DIP-16, SO-16
IW4030BN,BD	CD4030BN,BD	Quad Exclusive-OR Gate	DIP-14, SO-14
IW4034BN,BDW	CD4034BN,BD	8-Bit Shift Register	DIP-24, SO-24
IW4035BN,BD	CD4035BN,BD	4-Bit Parallel-In/Parallel-Out Shift Register	DIP-16, SO-16
IW4040BN,BD	CD4040BN,BD	12-Bit Binary Counter	DIP-16, SO-16
IW4042BN,BD	CD4042BN,BD	Quad Clocked D-Latch	DIP-16, SO-16
IW4043BN,BD	CD4043BN,BD	Quad NOR R-S Latch (3-State)	DIP-16, SO-16
IW4049BN,BD	CD4049BN,BD	Hex Buffer/Converter	DIP-16, SO-16
IW4050BN,BD	CD4050BN,BD	Hex Buffer/Converter	DIP-16, SO-16
IW4051BN,BD	CD4051BN,BD	8-Channel Analog Multiplexer/Demultiplexer	DIP-16, SO-16
IW4052BN,BD	CD4052BN,BD	Dual 4-Channel Analog Multiplexer/Demultiplexer	DIP-16, SO-16
IW4053BN,BD	CD4053BN,BD	Triple 2-Channel Analog Multiplexer/Demultiplexer	DIP-16, SO-16
IW4059AN,ADW	CD4059AN,AD	Programmable Counter	DIP-24, SO-24
IW4060BN,BD	CD4060BN,BD	14-Bit Binary Divide/ Counter	DIP-16, SO-16
IW4066BN,BD	CD4066BN,BD	Quad Bilateral Switch	DIP-14, SO-14
IW4068BN,BD	CD4068BN,BD	8-Input NAND Gate	DIP-14, SO-14
IW4069UBN,UBD	CD4069UBN,UBD	Hex Inverter	DIP-14, SO-14
IW4070BN,BD	CD4070BN,BD	Quad Exclusive-OR Gate	DIP-14, SO-14
IW4071BN,BD	CD4071BN,BD	Quad 2-Input OR Gate	DIP-14, SO-14
IW4072BN,BD	CD4072BN,BD	Dual 4-Input OR Gate	DIP-14, SO-14
IW4073BN,BD	CD4073BN,BD	Triple 3-Input AND Gate	DIP-14, SO-14
IW4075BN,BD	CD4075BN,BD	Triple 3-Input OR Gate	DIP-14, SO-14
IW4077BN,BD	CD4077BN,BD	Quad Exclusive-NOR Gate	DIP-14, SO-14
IW4081BN,BD	CD4081BN,BD	Quad 2-Input AND Gate	DIP-14, SO-14
IW4093BN,BD	CD4093BN,BD	Quad 2-Input NAND Schmitt Trigger	DIP-14, SO-14
IW4098BN,BD	CD4098BN,BD	Dual Monostable Multivibrator	DIP-16, SO-16
IW40107BN,BD	CD40107BN,BD	Dual 2-Input NAND Buffer/Driver	DIP-14, SO-14
IW4502BN,BD	CD4502BN,BD	Hex Inverter/Buffer	DIP-16, SO-16
IW4503BN,BD	CD4503BN,BD	Hex Buffer	DIP-16, SO-16
IW4511BN,BD	CD4511BN,BD	BCD-to-7-Segment Latch Decoder/Driver	DIP-16, SO-16
IW4516BN,BD	CD4516BN,BD	Pre-settable Binary Up/Down Counter	DIP-16, SO-16
IW4518BN,BD	CD4518BN,BD	Dual BCD Up Counter	DIP-16, SO-16
IW4519BN,BD	CD4519BN,BD	Quad AND/OR Select Gate	DIP-16, SO-16
IW4520BN,BD	CD4520BN,BD	Dual Binary Up Counter	DIP-16, SO-16
IW4528BN,BD	CD4528BN,BD	Dual Monostable Multivibrator	DIP-16, SO-16
IW4531BN,BD	NEF4531BN,BD	12-Bit Checker Tree	DIP-16, SO-16
IW4541BN,BD	CD4541BN,BD	Programmable Timer	DIP-14, SO-14
IW4543BN,BD	CD4543BN,BD	BCD-to-7-Segment Latch/Decoder/Driver for Liquid-Crystal Display	DIP-16, SO-16
IW4585BN,BD	CD4585BN,BD	4-Bit Comparator	DIP-16, SO-16

● **IN74ACXXXN, D (DW) Series**

Part	Pin to Pin Compatibility	Function	Package
IN74AC00N,D	MC74AC00N,D	Quad 2-Input NAND Gate	DIP-14, SO-14
IN74AC02N,D	MC74AC02N,D	Quad 2-Input NOR Gate	DIP-14, SO-14
IN74AC04N,D	MC74AC04N,D	Hex Inverter	DIP-14, SO-14
IN74AC05N,D	CD74AC05N,D	Hex Inverter, OC	DIP-14, SO-14
IN74AC08N,D	MC74AC08N,D	Quad 2-Input AND Gate	DIP-14, SO-14
IN74AC10N,D	MC74AC10N,D	Triple 3-Input Positive-NAND Gate	DIP-14, SO-14
IN74AC11N,D	MC74AC11N,D	Triple 3-Input AND Gate	DIP-14, SO-14
IN74AC14N,D	MC74AC14N,D	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74AC20N,D	CD74AC20N,D	Dual 4-Input NAND Gate	DIP-14, SO-14
IN74AC21N,D	own	Dual 4-Input AND Gate	DIP-14, SO-14
IN74AC27N,D	own	Triple 3-Input NOR Gate	DIP-14, SO-14
IN74AC32N,D	MC74AC32N,D	Quad 2-Input OR Gate	DIP-14, SO-14
IN74AC34N,D	own	Hex Non-Inverter	DIP-14, SO-14
IN74AC74N,D	MC74AC74N,D	Dual D-Type Flip-Flop	DIP-14, SO-14
IN74AC86N,D	MC74AC86N,D	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74AC109N,D	MC74AC109N,D	Dual J-K Positive-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74AC112N,D	CD74AC112N,D	Dual J-K Negative-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74AC125N,D	T74AC125N,D	Quad 3-State Buffer	DIP-14, SO-14
IN74AC132N,D	MC74AC132N,D	Quad 2-Input NAND Schmitt-Trigger Inverter	DIP-14, SO-14
IN74AC138N,D	MC74AC138N,D	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74AC139N,D	MC74AC139N,D	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74AC151N,D	MC74AC151N,D	8-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74AC153N,D	MC74AC153N,D	Dual 4-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74AC157N,D	MC74AC157N,D	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74AC158N,D	MC74AC158N,D	Quad 2-1 Data Selector/Multiplexer, INV	DIP-16, SO-16
IN74AC161N,D	MC74AC161N,D	4-Bit Synchronous Binary Counter, Asynchronous Reset	DIP-16, SO-16
IN74AC163N,D	MC74AC163N,D	4-Bit Synchronous Binary Counter, Synchronous Reset	DIP-16, SO-16
IN74AC164N,D	CD74AC164N,D	8-Bit Serial-In Parallel-Out Shift Register	DIP-14, SO-14
IN74AC174N,D	MC74AC174N,D	Hex D-Type Flip-Flop	DIP-16, SO-16
IN74AC175N,D	MC74AC175N,D	Quad D-Type Flip-Flop	DIP-16, SO-16
IN74AC192N,D	MC74AC192N,D	Synchronous Decade Up/Down Counter	DIP-16, SO-16
IN74AC193N,D	CD74AC193N,D	4-Bit Synchronous Binary Up/Down Counter	DIP-16, SO-16
IN74AC240N,DW	MC74AC240N,D	Octal Buffer/Line Driver, INV (3-State)	DIP-20, SO-20
IN74AC241N,DW	MC74AC241N,D	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74AC244N,DW	MC74AC244N,D	Octal Buffer/Line Driver NINV (3-State)	DIP-20, SO-20
IN74AC245N,DW	MC74AC245N,D	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20
IN74AC251N,D	MC74AC251N,D	8-1 Data Selector/Multiplexer (3-State)	DIP-16, SO-16
IN74AC253N,D	MC74AC253N,D	Dual 4-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74AC257N,D	MC74AC257N,D	Quad 2-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74AC258N,D	MC74AC258N,D	Quad 2-1 Data Selector/Multiplexer, INV (3-State)	DIP-16, SO-16
IN74AC273N,DW	MC74AC273N,D	Octal D-Type Flip-Flop	DIP-20, SO-20
IN74AC299N,DW	MC74AC299N,D	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74AC323N,DW	CD74AC323N,D	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74AC373N,DW	MC74AC373N,D	Octal D-Type Latch (3-State)	DIP-20, SO-20
IN74AC374N,DW	MC74AC374N,D	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74AC533N,DW	MC74AC533N,D	Octal D-Type Latch, INV (3-State)	DIP-20, SO-20
IN74AC534N,DW	MC74AC534N,D	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74AC563N,DW	MC74AC563N,D	Octal D-Type Transparent Latch	DIP-20, SO-20
IN74AC564N,DW	MC74AC564N,D	Octal Edge-Triggered Flip-Flop	DIP-20, SO-20
IN74AC573N,DW	MC74AC573N,D	Octal Transparent Latch (3-State)	DIP-20, SO-20
IN74AC574N,DW	MC74AC574N,D	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74AC620N,DW	MC74AC620N,D	Octal Bidirectional Bus Transceiver, INV	DIP-20, SO-20
IN74AC623N,DW	MC74AC623N,D	Octal Bidirectional Bus Transceiver, NINV	DIP-20, SO-20
IN74AC640N,DW	MC74AC640N,D	Octal Bus Transceiver (3-State)	DIP-20, SO-20

INTEGRATED CIRCUITS

Power Electronics, Standard Analog IC, Standard Digital Logic IC

• IN74ACXXXN, D(DW) Series (continued)

Part	Pin to Pin Compatibility	Function	Package
IN74AC643N,DW	MC74AC643N,D	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74AC651N,DW	CD74AC651N,D	Octal Bus Transceiver/Register, INV (3-State)	DIP-24, SO-24
IN74AC652N,DW	own	Octal Bus Transceiver/Register, NINV (3-State)	DIP-24, SO-24
IN74AC810N,D	MC74AC810N,D	Quad Exclusive-NOR Gate	DIP-14, SO-14
IN74AC4006N,D	own	18-Bit Static Shift Register	DIP-14, SO-14
IN74AC4015N,D	own	Dual 4-Bit Static Shift Register	DIP-16, SO-16
IN74AC4035N,D	own	4-Bit Parallel-In/Parallel-Out Shift Register	DIP-16, SO-16
IN74AC4520N,D	own	Dual 4-Bit Synchronous Binary Counter	DIP-16, SO-16

• IN74ACTXXXN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IN74ACT00N,D	MC74ACT00N,D	Quad 2-Input NAND Gate	DIP-14, SO-14
IN74ACT02N,D	MC74ACT02N,D	Quad 2-Input NOR Gate	DIP-14, SO-14
IN74ACT04N,D	CD74ACT04N,D	Hex Inverter	DIP-14, SO-14
IN74ACT05N,D	CD74ACT05N,D	Hex Inverter, OC	DIP-14, SO-14
IN74ACT08N,D	MC74ACT08N,D	Quad 2-Input AND Gate	DIP-14, SO-14
IN74ACT10N,D	MC74ACT10N,D	Triple 3-Input Positive-NAND Gate	DIP-14, SO-14
IN74ACT11N,D	MC74ACT11N,D	Triple 3-Input AND Gate	DIP-14, SO-14
IN74ACT14N,D	MC74ACT14N,D	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74ACT20N,D	CD74ACT20N,D	Dual 4-Input NAND Gate	DIP-14, SO-14
IN74ACT21N,D	own	Dual 4-Input Positive-AND Gate	DIP-14, SO-14
IN74ACT27N,D	own	Triple 3-Input NOR Gate	DIP-14, SO-14
IN74ACT32N,D	MC74ACT32N,D	Quad 2-Input OR Gate	DIP-14, SO-14
IN74ACT34N,D	own	Hex Non-Inverter	DIP-14, SO-14
IN74ACT74N,D	MC74ACT74N,D	Dual D-Type Flip-Flop	DIP-14, SO-14
IN74ACT86N,D	MC74ACT86N,D	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74ACT109N,D	MC74ACT109N,D	Dual J-K Positive-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74ACT112N,D	MC74ACT112N,D	Dual J-K Negative-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74ACT125N,D	own	Quad 3-State Buffer	DIP-14, SO-14
IN74ACT132N,D	MC74ACT132N,D	Quad 2-Input NAND Schmitt-Trigger Inverter	DIP-14, SO-14
IN74ACT138N,D	MC74ACT138N,D	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74ACT139N,D	MC74ACT139N,D	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74ACT151N,D	MC74ACT151N,D	8-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ACT153N,D	MC74ACT153N,D	Dual 4-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ACT157N,D	MC74ACT157N,D	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ACT158N,D	MC74ACT158N,D	Quad 2-1 Data Selector/Multiplexer, INV	DIP-16, SO-16
IN74ACT161N,D	MC74ACT161N,D	4-Bit Synchronous Binary Counter, Asynchronous Reset	DIP-16, SO-16
IN74ACT163N,D	MC74ACT163N,D	4-Bit Synchronous Binary Counter, Synchronous Reset	DIP-16, SO-16
IN74ACT164N,D	CD74ACT164N,D	8-Bit Serial-In Parallel-Out Shift Register	DIP-14, SO-14
IN74ACT174N,D	MC74ACT174N,D	Hex D-Type Flip-Flop	DIP-16, SO-16
IN74ACT175N,D	CD74ACT175N,D	Quad D-Type Flip-Flop	DIP-16, SO-16
IN74ACT192N,D	own	Synchronous Decade Up/Down Counter	DIP-16, SO-16
IN74ACT193N,D	CD74ACT193N,D	4-Bit Synchronous Binary Up/Down Counter	DIP-16, SO-16
IN74ACT240N,DW	MC74ACT240N,D	Octal Buffer/Line Driver, INV (3-State)	DIP-20, SO-20
IN74ACT241N,DW	MC74ACT241N,D	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74ACT244N,DW	MC74ACT244N,D	Octal Buffer/Line Driver NINV (3-State)	DIP-20, SO-20
IN74ACT245N,DW	MC74ACT245N,D	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20
IN74ACT251N,D	MC74ACT251N,D	8-1 Data Selector/Multiplexer (3-State)	DIP-16, SO-16
IN74ACT253N,D	MC74ACT253N,D	Dual 4-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74ACT257N,D	MC74ACT257N,D	Quad 2-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74ACT258N,D	MC74ACT258N,D	Quad 2-1 Data Selector/Multiplexer, INV (3-State)	DIP-16, SO-16
IN74ACT273N,DW	MC74ACT273N,D	Octal D-Type Flip-Flop	DIP-20, SO-20
IN74ACT299N,DW	MC74ACT299N,D	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20

● **IN74ACTXXXN, D(DW) Series** (continued)

Part	Pin to Pin Compatibility	Function	Package
IN74ACT323N,DW	MC74ACT323N,D	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74ACT373N,DW	MC74ACT373N,DW	Octal D-Type Latch (3-State)	DIP-20, SO-20
IN74ACT374N,DW	MC74ACT374N,DW	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74ACT533N,DW	MC74ACT533N,DW	Octal D-Type Latch, INV (3-State)	DIP-20, SO-20
IN74ACT534N,DW	MC74ACT534N,DW	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74ACT563N,DW	MC74ACT563N,DW	Octal D-Type Transparent Latch	DIP-20, SO-20
IN74ACT564N,DW	MC74ACT564N,DW	Octal Edge-Triggered Flip-Flop	DIP-20, SO-20
IN74ACT573N,DW	MC74ACT573N,DW	Octal Transparent Latch (3-State)	DIP-20, SO-20
IN74ACT574N,DW	MC74ACT574N,DW	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74ACT620N,DW	MC74ACT620N,DW	Octal Bidirectional Bus Transceiver, INV	DIP-20, SO-20
IN74ACT623N,DW	MC74ACT623N,DW	Octal Bidirectional Bus Transceiver, NINV	DIP-20, SO-20
IN74ACT640N,DW	MC74ACT640N,DW	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74ACT643N,DW	MC74ACT643N,DW	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74ACT651N,DW	CD74ACT651D	Octal Bus Transceiver/Register, INV (3-State)	DIP-24, SO-24
IN74ACT652N,DW	own	Octal Bus Transceiver/Register, NINV (3-State)	DIP-24, SO-24
IN74ACT810N,D	IN74ACT810D	Quad Exclusive-NOR Gate	DIP-14, SO-14
IN74ACT4006N,D	own	18-Bit Static Shift Register	DIP-14, SO-14
IN74ACT4015N,D	own	Dual 4-Bit Static Shift Register	DIP-16, SO-16
IN74ACT4035N,D	own	4-Bit Parallel-In/Parallel-Out Shift Register	DIP-16, SO-16
IN74ACT4520N,D	own	Dual 4-Bit Synchronous Binary Counter	DIP-16, SO-16

● **IN74VHCXXD(DW)**

Part	Pin to Pin Compatibility	Function	Package
IN74VHC00D	TC74VHC00D	Quad 2-Input NAND Gate	SO-14
IN74VHC02D	TC74VHC02D	Quad 2-Input NOR Gate	SO-14
IN74VHC08D	TC74VHC08D	Quad 2-Input AND Gate	SO-14
IN74VHC32D	TC74VHC32D	Quad 2-Input OR Gate	SO-14
IN74VHC74D	TC74VHC74D	Dual D-type Flip-Flop	SO-14
IN74VHC125D	TC74VHC125D	Quad 3-State Buffer	SO-14
IN74VHC126D	TC74VHC126D	Quad 3-State Buffer	SO-14
IN74VHC240DW	TC74VHC240D	Octal Buffer/Line Driver, INV (3-State)	SO-20
IN74VHC241DW	TC74VHC241D	Octal Buffer/Line Driver, NINV (3-State)	SO-20
IN74VHC244DW	TC74VHC244D	Octal Buffer/Line Driver NINV (3-State)	SO-20
IN74VHC373DW	TC74VHC373D	Octal D-Type Latch (3-State)	SO-20
IN74VHC374DW	TC74VHC374D	Octal D-Type Flip-Flop (3-State)	SO-20

● **IN74VHCTXXD(DW)**

Part	Pin to Pin Compatibility	Function	Package
IN74VHCT00D	TC74VHCT00D	Quad 2-Input NAND Gate	SO-14
IN74VHCT02D	TC74VHCT02D	Quad 2-Input NOR Gate	SO-14
IN74VHCT08D	TC74VHCT08D	Quad 2-Input AND Gate	SO-14
IN74VHCT32D	TC74VHCT32D	Quad 2-Input OR Gate	SO-14
IN74VHCT74D	TC74VHCT74D	Dual D-type Flip-Flop	SO-14
IN74VHCT125D	TC74VHCT125D	Quad 3-State Buffer	SO-14
IN74VHCT126D	TC74VHCT126D	Quad 3-State Buffer	SO-14
IN74VHCT240DW	TC74VHCT240D	Octal Buffer/Line Driver, INV (3-State)	SO-20
IN74VHCT241DW	TC74VHCT241D	Octal Buffer/Line Driver, NINV (3-State)	SO-20
IN74VHCT244DW	TC74VHCT244D	Octal Buffer/Line Driver NINV (3-State)	SO-20
IN74VHCT373DW	TC74VHCT373D	Octal D-Type Latch (3-State)	SO-20
IN74VHCT374DW	TC74VHCT374D	Octal D-Type Flip-Flop (3-State)	SO-20

INTEGRATED CIRCUITS

Power Electronics, Standard Analog IC, Standard Digital Logic IC

● IN74HCXXXAN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IN74HC00AN,AD	MC74HC00AN,AD	Quad 2-Input NAND Gate	DIP-14, SO-14
IN74HC02AN,AD	MC74HC02AN,AD	Quad 2-Input NOR Gate	DIP-14, SO-14
IN74HC03AN,AD	MC74HC03AN,AD	Quad 2-Input NAND Gate, OC	DIP-14, SO-14
IN74HC04AN,AD	MC74HC04AN,AD	Hex Inverter	DIP-14, SO-14
IN74HC05AN,AD	SN74HC05AN,AD	Hex Inverter, OC	DIP-14, SO-14
IN74HC08AN,AD	MC74HC08AN,AD	Quad 2-Input AND Gate	DIP-14, SO-14
IN74HC10AN,AD	MC74HC10AN,AD	Triple 3-Input NAND Gate	DIP-14, SO-14
IN74HC11AN,AD	MC74HC11AN,AD	Triple 3-Input AND Gate	DIP-14, SO-14
IN74HC14AN,AD	MC74HC14AN,AD	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74HC20AN,AD	MC74HC20AN,AD	Dual 4-Input NAND Gate	DIP-14, SO-14
IN74HC21AN,AD	MC74HC21AN,AD	Dual 4-Input Positive-AND Gate	DIP-14, SO-14
IN74HC22AN,AD	MC74HC22AN,AD	Dual 4-Input Positive-NAND Gate, OC	DIP-14, SO-14
IN74HC27AN,AD	MC74HC27AN,AD	Triple 3-Input Positive-NOR Gate	DIP-14, SO-14
IN74HC30AN,AD	MC74HC30AN,AD	8-Input Positive-NAND Gate	DIP-14, SO-14
IN74HC32AN,AD	MC74HC32AN,AD	Quad 2-Input OR Gate	DIP-14, SO-14
IN74HC74AN,AD	MC74HC74AN,AD	Dual D-Type Flip-Flop	DIP-14, SO-14
IN74HC75AN,AD	MC74HC75AN,AD	Quad Bistable Latch	DIP-16, SO-16
IN74HC85AN,AD	MC74HC85AN,AD	4-Bit Magnitude Comparator	DIP-16, SO-16
IN74HC86AN,AD	MC74HC86AN,AD	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74HC109AN,AD	MC74HC109AN,AD	Dual J-K Positive-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74HC112AN,AD	MC74HC112AN,AD	Dual J-K Negative-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74HC123AN,AD	MC74HC123AN,AD	Dual Monostable Multivibrator with Reset	DIP-16, SO-16
IN74HC125AN,AD	MC74HC125AN,AD	Quad 3-State Buffer	DIP-14, SO-14
IN74HC132AN,AD	MC74HC132AN,AD	Quad 2-Input NAND Schmitt-Trigger Inverter	DIP-14, SO-14
IN74HC138AN,AD	MC74HC138AN,AD	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74HC139AN,AD	MC74HC139AN,AD	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74HC151AN,AD	MC74HC151AN,AD	8-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74HC153AN,AD	MC74HC153AN,AD	Dual 4-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74HC154AN,ADW	MC74HC154AN,ADW	4-16 Decoder/Demultiplexer (3-State)	DIP-24, SO-24
IN74HC155AN,AD	MM74HC155AN,AD	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74HC157AN,AD	MC74HC157AN,AD	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74HC158AN,AD	MC74HC158AN,AD	Quad 2-1 Data Selector/Multiplexer, INV	DIP-16, SO-16
IN74HC161AN,AD	MC74HC161AN,AD	4-Bit Synchronous Binary Counter, Asynchronous Reset	DIP-16, SO-16
IN74HC163AN,AD	MC74HC163AN,AD	4-Bit Synchronous Binary Counter, Synchronous Reset	DIP-16, SO-16
IN74HC164AN,AD	MC74HC164AN,AD	8-Bit Serial-In Parallel-Out Shift Register	DIP-14, SO-14
IN74HC165AN,AD	MC74HC165AN,AD	8-Bit Parallel-in Serial-Out Shift Register	DIP-16, SO-16
IN74HC166AN,AD	CD74HC166AN,AD	8-Bit Parallel-in Serial-Out Shift Register	DIP-16, SO-16
IN74HC174AN,AD	MC74HC174AN,AD	Hex D-Type Flip-Flop	DIP-16, SO-16
IN74HC175AN,AD	MC74HC175AN,AD	Quad D-Type Flip-Flop	DIP-16, SO-16
IN74HC192AN,AD	CD74HC192AN,AD	Synchronous Decade Up/Down Counter	DIP-16, SO-16
IN74HC193AN,AD	CD74HC193AN,AD	4-Bit Synchronous Binary Up/Down Counter	DIP-16, SO-16
IN74HC221AN,AD	CD74HC221AN,AD	Dual Monostable Multivibrator with Reset	DIP-16, SO-16
IN74HC240AN,ADW	MC74HC240AN,ADW	Octal Buffer/Line Driver, INV (3-State)	DIP-20, SO-20
IN74HC241AN,ADW	MC74HC241AN,ADW	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74HC244AN,ADW	MC74HC244AN,AD	Octal Buffer/Line Driver NINV (3-State)	DIP-20, SO-20
IN74HC245AN,ADW	MC74HC245AN,AD	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20
IN74HC251AN,AD	MC74HC251AN,AD	8-1 Data Selector/Multiplexer (3-State)	DIP-16, SO-16
IN74HC253AN,AD	MC74HC253AN,AD	Dual 4-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74HC257AN,AD	MC74HC257AN,AD	Quad 2-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74HC258AN,AD	CD74HC258AN,AD	Quad 2-1 Data Selector/Multiplexer, INV (3-State)	DIP-16, SO-16
IN74HC273AN,ADW	MC74HC273AN,AD	Octal D-Type Flip-Flop	DIP-20, SO-20
IN74HC279AN,AD	MC74HC279AN,AD	Quad Set/Reset Latch	DIP-16, SO-16
IN74HC283AN,AD	CD74HC283AN,AD	4-Bit Full Adder	DIP-16, SO-16
IN74HC299AN,ADW	MC74HC299AN,AD	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74HC323AN,ADW	MC74HC323AN,AD	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74HC365AN,AD	MC74HC365AN,AD	Hex Buffer/Line Driver (3-State)	DIP-16, SO-16

● **IN74HCXXXAN, D(DW) Series** (continued)

Part	Pin to Pin Compatibility	Function	Package
IN74HC367AN,AD	MC74HC367AN,AD	Hex Buffer/Line Driver (3-State)	DIP-16, SO-16
IN74HC373AN,ADW	MC74HC373AN,AD	Octal D-Type Latch (3-State)	DIP-20, SO-20
IN74HC374AN,ADW	MC74HC374AN,AD	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74HC393AN,AD	MC74HC393AN,AD	Dual 4-Bit Binary Counter	DIP-14, SO-14
IN74HC533AN,ADW	MC74HC533AN,AD	Octal D-Type Latch, INV (3-State)	DIP-20, SO-20
IN74HC534AN,ADW	MC74HC534AN,AD	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74HC573AN,ADW	MC74HC573AN,AD	Octal Transparent Latch (3-State)	DIP-20, SO-20
IN74HC574AN,ADW	MC74HC574AN,AD	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74HC595AN,AD	MC74HC595AN,AD	8-Bit Shift Register with Output Latch	DIP-16, SO-16
IN74HC597AN,AD	MC74HC597AN,AD	8-Bit Shift Register with Input Latch	DIP-16, SO-16
IN74HC620AN,ADW	SN74HC620AN,AD	Octal Bidirectional Bus Transceiver, INV	DIP-20, SO-20
IN74HC623AN,ADW	SN74HC623AN,AD	Octal Bidirectional Bus Transceiver, NINV	DIP-20, SO-20
IN74HC640AN,ADW	MC74HC640AN,AD	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74HC651AN,ADW	CD74HC651AN,AD	Octal Bus Transceiver/Register (3-State)	DIP-24, SO-24
IN74HC652AN,ADW	CD74HC652AN,AD	Octal Bus Transceiver/Register, NINV (3-State)	DIP-24, SO-24
IN74HC874AN,ADW	own	Dual 4-Bit D-Type Flip Flop	DIP-24, SO-24
IN74HC4015AN,AD	MC74HC4015AN,AD	Dual 4-Bit Static Shift Register	DIP-16, SO-16
IN74HC4046AN,AD	MC74HC4046AN,AD	Phase-Locked Loop	DIP-16, SO-16
IN74HC4051AN,AD	MC74HC4051AN,AD	8-Channel Analog Multiplexer/Demultiplexer	DIP-16, SO-16
IN74HC4052AN,AD	MC74HC4052AN,AD	Dual 4-Channel Analog Multiplexer/Demultiplexer	DIP-16, SO-16
IN74HC4053AN,AD	MC74HC4053AN,AD	Triple 2-Channel Analog Multiplexer/Demultiplexer	DIP-16, SO-16
IN74HC4094AN,AD	CD74HC4094AN,AD	8-Bit Shift and Bus Register	DIP-16, SO-16

● **IN74HCTXXXAN, D(DW) Series**

Part	Pin to Pin Compatibility	Function	Package
IN74HCT00AN,AD	MC74HCT00AN,AD	Quad 2-Input NAND Gate	DIP-14, SO-14
IN74HCT02AN,AD	MC74HCT02AN,AD	Quad 2-Input NOR Gate	DIP-14, SO-14
IN74HCT04AN,AD	MC74HCT04AN,AD	Hex Inverter	DIP-14, SO-14
IN74HCT08AN,AD	MC74HCT08AN,AD	Quad 2-Input AND Gate	DIP-14, SO-14
IN74HCT10AN,AD	MC74HCT10AN,AD	Triple 3-Input NAND Gate	DIP-14, SO-14
IN74HCT14AN,AD	MC74HCT14AN,AD	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74HCT20AN,AD	MC74HCT20AN,AD	Dual 4-Input NAND Gate	DIP-14, SO-14
IN74HCT27AN,AD	MC74HCT27AN,AD	Triple 3-Input Positive-NOR Gate	DIP-14, SO-14
IN74HCT30AN,AD	MC74HCT30AN,AD	8-Input Positive-NAND Gate	DIP-14, SO-14
IN74HCT32AN,AD	MC74HCT32AN,AD	Quad 2-Input OR Gate	DIP-14, SO-14
IN74HCT74AN,AD	MC74HCT74AN,AD	Dual D-Type Flip-Flop	DIP-14, SO-14
IN74HCT85AN,AD	MC74HCT85AN,AD	4-But Magnitude Comparator	DIP-16, SO-16
IN74HCT86AN,AD	MC74HCT86AN,AD	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74HCT125AN,AD	MC74HCT125AN,AD	Quad 3-State Buffer	DIP-14, SO-14
IN74HCT126AN,AD	MC74HCT126AN,AD	Quad 3-State Buffer	DIP-14, SO-14
IN74HCT132AN,AD	MC74HCT132AN,AD	Quad 2-Input NAND Schmitt-Trigger Inverter	DIP-14, SO-14
IN74HCT138AN,AD	MC74HCT138AN,AD	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74HCT139AN,AD	MC74HCT139AN,AD	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74HCT151AN,AD	MC74HCT151AN,AD	8-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74HCT153AN,AD	MC74HCT153AN,AD	Dual 4-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74HCT155AN,AD	MM74HCT155AN,AD	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74HCT157AN,AD	MC74HCT157AN,AD	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74HCT163AN,AD	MC74HCT163AN,AD	4-Bit Synchronous Binary Counter, Synchronous Reset	DIP-16, SO-16
IN74HCT164AN,AD	MC74HCT164AN,AD	8-Bit Serial-in Parallel-Out Shift Register	DIP-14, SO-14
IN74HCT165AN,AD	MC74HCT165AN,AD	8-Bit Parallel-in Serial-Out Shift Register	DIP-16, SO-16
IN74HCT174AN,AD	MC74HCT174AN,AD	Hex D-Type Flip-Flop	DIP-16, SO-16
IN74HCT240AN,ADW	MC74HCT240AN,AD	Octal Buffer/Line Driver, INV (3-State)	DIP-20, SO-20

INTEGRATED CIRCUITS

Power Electronics, Standard Analog IC, Standard Digital Logic IC

● IN74HCTXXXAN, D(DW) Series (continued)

Part	Pin to Pin Compatibility	Function	Package
IN74HCT241AN,ADW	MC74HCT241AN,AD	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74HCT244AN,ADW	MC74HCT244AN,AD	Octal Buffer/Line Driver NINV (3-State)	DIP-20, SO-20
IN74HCT245AN,ADW	MC74HCT245AN,AD	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20
IN74HCT251AN,AD	MC74HCT251AN,AD	8-1 Data Selector/Multiplexer, INV (3-State)	DIP-16, SO-16
IN74HCT273AN,ADW	MC74HCT273AN,AD	Octal D-Type Flip-Flop	DIP-20, SO-20
IN74HCT283AN,AD	CD74HCT283AN,AD	4-Bit Adder	DIP-16, SO-16
IN74HCT299AN,ADW	MC74HCT299AN,AD	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74HCT323AN,ADW	MC74HCT323AN,AD	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74HCT373AN,ADW	MC74HCT373AN,AD	Octal D-Type Latch (3-State)	DIP-20, SO-20
IN74HCT374AN,ADW	MC74HCT374AN,AD	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74HCT573AN,ADW	MC74HCT573AN,AD	Octal Transparent Latch (3-State)	DIP-20, SO-20
IN74HCT574AN,ADW	MC74HCT574AN,AD	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74HCT620AN,ADW	SN74HCT620AN,AD	Octal Bidirectional Bus Transceiver, INV	DIP-20, SO-20
IN74HCT623AN,ADW	own	Octal Bidirectional Bus Transceiver, NINV	DIP-20, SO-20
IN74HCT640AN,ADW	own	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74HCT874AN,ADW	MC74HCT874AN,AD	Dual 4-Bit D-Type Flip-Flop	DIP-24, SO-24

● IN74LVXXN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IN74LV00N,D	74LV00N,D	Quad 2-Input NAND Gate	DIP-14, SO-14
IN74LV02N,D	74LV02N,D	Quad 2-Input NOR Gate	DIP-14, SO-14
IN74LV04N,D	74LV04N,D	Hex Inverter	DIP-14, SO-14
IN74LVU04N,D	74LVU04N,D	Hex Inverter	DIP-14, SO-14
IN74LV08N,D	74LV08N,D	Quad 2-Input AND Gate	DIP-14, SO-14
IN74LV14N,D	74LV14N,D	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74LV32N,D	74LV32N,D	Quad 2-Input OR Gate	DIP-14, SO-14
IN74LV74N,D	74LV74N,D	Dual D-Type Flip-Flop	DIP-14, SO-14
IN74LV86N,D	74LV86N,D	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74LV138N,D	74LV138N,D	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74LV139N,D	74LV139N,D	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74LV164N,D	74LV164N,D	8-Bit Serial-In Parallel-Out Shift Register	DIP-14, SO-14
IN74LV174N,D	74LV174N,D	Hex D-Type Flip-Flop	DIP-16, SO-16
IN74LV240N,DW	74LV240N,D	Octal Buffer/line Driver, INV (3-State)	DIP-20, SO-20
IN74LV241N,DW	74LV241N,D	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74LV244N,DW	74LV244N,D	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74LV245N,DW	74LV245N,D	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20
IN74LV273N,DW	74LV273N,D	Octal D-Type Flip-Flop	DIP-20, SO-20
IN74LV373N,DW	74LV373N,D	Octal D-Type Latch (3-State)	DIP-20, SO-20
IN74LV374N,DW	74LV374N,D	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74LV573N,DW	74LV573N,D	Octal Transparent Latch (3-State)	DIP-20, SO-20
IN74LV574N,DW	74LV574N,D	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74LV620N,DW	74LV620N,D	Octal Bidirectional Bus Transceiver, INV	DIP-20, SO-20
IN74LV623N,DW	74LV623N,D	Octal Bidirectional Bus Transceiver, NINV	DIP-20, SO-20
IN74LV640N,DW	74LV640N,D	Octal Bus Transceiver (3-State)	DIP-20, SO-20

• **IN74XXXN, D Series**

Part	Pin to Pin Compatibility	Function	Package
IN7401N	SN7401N	Quad 2-Input NAND Gate, OC	DIP-14
IN7406N,D	SN7406N,D	Hex Inverter/Buffer with High-Voltage Output, OC	DIP-14, SO-14
IN7420N	SN7420N	Dual 4-Input NAND Gate	DIP-14
IN7450N	SN7450N	Dual 2-Wide 2-Input AND-OR-Invert Gate	DIP-14
IN7472N	SN7472N	J-K Flip-Flop	DIP-14
IN74141N	SN74141N	BCD-to-Decimal Decoder/Driver	DIP-16
IN74145N	SN74145N	BCD-to-Decimal Decoder, OC	DIP-16
IN74154N	SN74154N	4-16 Decoder/Demultiplexer	DIP-24
IN74175N	SN74175N	Quad D-Type Flip-Flop	DIP-16

• **IN74LSXXXN, D(DW) Series**

Part	Pin to Pin Compatibility	Function	Package
IN74LS04N,D	CD74LS04N,D	Hex Inverter	DIP-14, SO-14
IN74LS05N,D	CD74LS05N,D	Hex Inverter, OC	DIP-14, SO-14
IN74LS06N,D	CD74LS06N,D	Hex Inverter/Buffer with High-Voltage Output, OC	DIP-14, SO-14
IN74LS07N,D	CD74LS07N,D	Hex Buffer with High-Voltage Output, OC, 30 V	DIP-14, SO-14
IN74LS14N,D	CD74LS14N,D	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74LS86N,D	CD74LS86N,D	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74LS138N,D	CD74LS138N,D	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74LS157N,D	CD74LS157N,D	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74LS161AN,AD	CD74LS161AN,AD	4-Bit Binary Counter	DIP-16, SO-16
IN74LS164N,D	CD74LS164N,D	8-Bit Parallel-Out Shift Register	DIP-14, SO-14
IN74LS244N,DW	CD74LS244N,DW	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74LS245N,DW	CD74LS245N,DW	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20

• **IN74ALSXXXN, D(DW) Series**

Part	Pin to Pin Compatibility	Function	Package
IN74ALS00AN,AD	SN74ALS00AN,AD	Quad 2-Input Positive-NAND Gate	DIP-14, SO-14
IN74ALS01N,D	SN74ALS01N,D	Quad 2-Input Positive-NAND Gate, OC	DIP-14, SO-14
IN74ALS02N,D	SN74ALS02N,D	Quad 2-Input Positive-NOR Gate	DIP-14, SO-14
IN74ALS03AN,AD	SN74ALS03AN,AD	Quad 2-Input Positive-NAND Gate, OC	DIP-14, SO-14
IN74ALS04AN,AD	SN74ALS04AN,AD	Hex Inverter	DIP-14, SO-14
IN74ALS05AN,AD	SN74ALS05AN,AD	Hex Inverter, OC	DIP-14, SO-14
IN74ALS08N,D	SN74ALS08N,D	Quad 2-Input Positive-AND Gate	DIP-14, SO-14
IN74ALS09N,D	SN74ALS09N,D	Quad 2-Input Positive-AND Gate, OC	DIP-14, SO-14
IN74ALS10AN,AD	SN74ALS10AN,AD	Triple 3-Input Positive-NAND Gate	DIP-14, SO-14
IN74ALS11AN,AD	SN74ALS11AN,AD	Triple 3-Input Positive-AND Gate	DIP-14, SO-14
IN74ALS12AN,AD	SN74ALS12AN,AD	Triple 3-Input Positive-NAND Gate, OC	DIP-14, SO-14
IN74ALS14N,D	SN74ALS14N,D	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74ALS15AN,AD	SN74ALS15AN,AD	Triple 3-Input Positive-AND Gate, OC	DIP-14, SO-14
IN74ALS20AN,AD	SN74ALS20AN,AD	Dual 4-Input Positive-NAND Gate	DIP-14, SO-14
IN74ALS21N,AD	SN74ALS21N,AD	Dual 4-Input Positive-AND Gate	DIP-14, SO-14
IN74ALS22BN,BD	SN74ALS22BN,BD	Dual 4-Input Positive-NAND Gate, OC	DIP-14, SO-14
IN74ALS27N,D	SN74ALS27N,D	Triple 3-Input Positive-NOR Gate	DIP-14, SO-14
IN74ALS30AN,AD	SN74ALS30AN,AD	8-Input Positive-NAND Gate	DIP-14, SO-14
IN74ALS32N,D	SN74ALS32N,D	Quad 2-Input Positive-OR Gate	DIP-14, SO-14
IN74ALS33AN,AD	SN74ALS33AN,AD	Quad 2-Input Positive-NOR Buffer, OC	DIP-14, SO-14

INTEGRATED CIRCUITS

Power Electronics, Standard Analog IC, Standard Digital Logic IC

● IN74ALSXXXXN, D(DW) Series (continued)

Part	Pin to Pin Compatibility	Function	Package
IN74ALS51N,D	SN74ALS51N,D	AND-OR-Invert Gate	DIP-14, SO-14
IN74ALS54N,D	SN74ALS54N,D	4-Wide AND-OR-Invert Gate	DIP-14, SO-14
IN74ALS55N,D	SN74ALS55N,D	2-Wide 4-Input AND-OR-Invert Gate	DIP-14, SO-14
IN74ALS74AN,AD	SN74ALS74AN,AD	Dual D-Type Flip-Flop	DIP-14, SO-14
IN74ALS75N,D	SN74ALS75N,D	Quad Bistable Latch	DIP-16, SO-16
IN74ALS85N,D	SN74ALS85N,D	4-Bit Magnitude Comparator	DIP-16, SO-16
IN74ALS86N,D	SN74ALS86N,D	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74ALS90N,D	SN74ALS90N,D	4-Bit Decade Counter	DIP-14, SO-14
IN74ALS93N,D	SN74ALS93N,D	4-Bit Binary Counter	DIP-14, SO-14
IN74ALS107N,D	SN74ALS107N,D	Dual J-K Flip-Flop with Clear	DIP-14, SO-14
IN74ALS109N,D	SN74ALS109N,D	Dual J-K Positive-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74ALS112AN,AD	SN74ALS112AN,AD	Dual J-K Negative-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74ALS113AN,AD	SN74ALS113AN,AD	Dual J-K Negative-Edge-Triggered Flip-Flop	DIP-14, SO-14
IN74ALS114AN,AD	SN74ALS114AN,AD	Dual J-K Negative-Edge-Triggered Flip-Flop	DIP-14, SO-14
IN74ALS123N,D	SN74ALS123N,D	Dual Monostable Multivibrator with Reset	DIP-16, SO-16
IN74ALS125N,D	SN74ALS125N,D	Quad 3-State Buffer	DIP-14, SO-14
IN74ALS136N,D	SN74ALS136N,D	Quad 2-Input Exclusive-OR Gate, OC	DIP-14, SO-14
IN74ALS138N,D	SN74ALS138N,D	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74ALS139N,D	SN74ALS139N,D	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74ALS151N,D	SN74ALS151N,D	8-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ALS153N,D	SN74ALS153N,D	Dual 4-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ALS154N,DW	SN74ALS154N,D	4-16 Decoder/Demultiplexer (3-State)	DIP-24, SO-24
IN74ALS155N,D	SN74ALS155N,D	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74ALS157N,D	SN74ALS157N,D	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ALS158N,D	SN74ALS158N,D	Quad 2-1 Data Selector/Multiplexer, INV	DIP-16, SO-16
IN74ALS160AN,AD	SN74ALS160AN,AD	Synchronous Decade Counter, Asynchronous Reset	DIP-16, SO-16
IN74ALS161AN,AD	SN74ALS161AN,AD	4-Bit Synchronous Binary Counter, Asynchronous Reset	DIP-16, SO-16
IN74ALS162AN,AD	SN74ALS162AN,AD	Synchronous Decade Counter, Synchronous Reset	DIP-16, SO-16
IN74ALS163AN,AD	SN74ALS163AN,AD	4-Bit Synchronous Binary Counter, Synchronous Reset	DIP-16, SO-16
IN74ALS164N,D	SN74ALS164N,D	8-Bit Serial-In Parallel-Out Shift Register	DIP-14, SO-14
IN74ALS165N,D	SN74ALS165N,D	8-Bit Parallel-in Serial-Out Shift Register	DIP-16, SO-16
IN74ALS166N,D	SN74ALS166N,D	8-Bit Parallel-in Serial-Out Shift Register	DIP-16, SO-16
IN74ALS170N,D	SN74ALS170N,D	4-by-4 Register File, OC	DIP-16, SO-16
IN74ALS173AN,AD	SN74ALS173AN,AD	4-Bit D-Type Register (3-State)	DIP-16, SO-16
IN74ALS174N,D	SN74ALS174N,D	Hex D-Type Flip-Flop	DIP-16, SO-16
IN74ALS175N,D	SN74ALS175N,D	Quad D-Type Flip-Flop	DIP-16, SO-16
IN74ALS181N,DW	SN74ALS181N,D	4-Bit Arithmetic Logic Unit	DIP-24, SO-24
IN74ALS182N,D	SN74ALS182N,D	Look-Ahead Carry Generator	DIP-16, SO-16
IN74ALS190N,D	SN74ALS190N,D	Synchronous Decade Up/Down Counter	DIP-16, SO-16
IN74ALS191N,D	SN74ALS191N,D	4-Bit Synchronous Binary Up/Down Counter	DIP-16, SO-16
IN74ALS192N,D	SN74ALS192N,D	Synchronous Decade Up/Down Counter	DIP-16, SO-16
IN74ALS193N,D	SN74ALS193N,D	4-Bit Synchronous Binary Up/Down Counter	DIP-16, SO-16
IN74ALS240AN,ADW	SN74ALS240AN,AD	Octal Buffer/Line Driver, INV (3-State)	DIP-20, SO-20
IN74ALS241AN,ADW	SN74ALS241AN,AD	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74ALS242AN,AD	SN74ALS242AN,AD	Quad Bus Transceiver, INV (3-State)	DIP-14, SO-14
IN74ALS243AN,AD	SN74ALS243AN,AD	Quad Bus Transceiver, NINV (3-State)	DIP-14, SO-14
IN74ALS244AN,ADW	SN74ALS244AN,AD	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74ALS245AN,ADW	SN74ALS245AN,AD	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20
IN74ALS251N,D	SN74ALS251N,D	8-1 Data Selector/Multiplexer, INV (3-State)	DIP-16, SO-16
IN74ALS253N,D	SN74ALS253N,D	Dual 4-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74ALS257AN,AD	SN74ALS257AN,AD	Quad 2-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74ALS258AN,AD	SN74ALS258AN,AD	Quad 2-1 Data Selector/Multiplexer, INV (3-State)	DIP-16, SO-16
IN74ALS259N,D	SN74ALS259N,D	8-Bit Addressable Latch	DIP-16, SO-16
IN74ALS273N,DW	SN74ALS273N,D	Octal D-Type Flip-Flop	DIP-20, SO-20
IN74ALS279N,D	SN74ALS279N,D	Quad Set/Reset Latch	DIP-16, SO-16
IN74ALS280N,D	SN74ALS280N,D	9-Bit Odd/Even Parity Generator/Checker	DIP-14, SO-14

● **IN74ALSXXXXN, D(DW) Series** (continued)

Part	Pin to Pin Compatibility	Function	Package
IN74ALS295BN,BD	SN74ALS295BN,BD	4-Bit Universal Shift Register	DIP-14, SO-14
IN74ALS298N,D	SN74ALS298N,D	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ALS299N,DW	SN74ALS299N,D	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74ALS323N,DW	SN74ALS323N,D	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74ALS352N,D	SN74ALS352N,D	Dual 4-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ALS353N,D	SN74ALS353N,D	Dual 4-1 Data Selector/Multiplexer (3-State)	DIP-16, SO-16
IN74ALS368N,D	SN74ALS368N,D	Hex Bus Driver (3-State)	DIP-16, SO-16
IN74ALS373N,DW	SN74ALS373N,D	Octal D-Type Latch (3-State)	DIP-20, SO-20
IN74ALS374AN,ADW	SN74ALS374AN,AD	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74ALS377AN,ADW	SN74ALS377AN,AD	Octal D-Type Flip-Flop with Enable	DIP-20, SO-20
IN74ALS393N,D	SN74ALS393N,D	Dual 4-Bit Binary Counter	DIP-14, SO-14
IN74ALS465AN,ADW	SN74ALS465AN,AD	Octal Buffer, NINV (3-State)	DIP-20, SO-20
IN74ALS466AN,ADW	SN74ALS466AN,AD	Octal Buffer, INV (3-State)	DIP-20, SO-20
IN74ALS573N,DW	SN74ALS573N,D	Octal Transparent Latch (3-State)	DIP-20, SO-20
IN74ALS574N,DW	SN74ALS574N,D	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74ALS640BN,BDW	SN74ALS640BN,BD	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74ALS643AN,ADW	SN74ALS643AN,AD	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74ALS670N,D	SN74ALS670N,D	4-by-4 Register File (3-State)	DIP-16, SO-16
IN74ALS873N,DW	SN74ALS873N,D	Dual 4-Bit D-Type Latch (3-State)	DIP-24, SO-24
IN74ALS874N,DW	SN74ALS874N,D	Dual 4-Bit D-Type Flip-Flop	DIP-24, SO-24
IN74ALS1000AN,AD	SN74ALS1000AN,AD	Quad 2-Input Positive-NAND Buffer	DIP-14, SO-14
IN74ALS1002AN,AD	SN74ALS1002AN,AD	Quad 2-Input Positive-NOR Buffer	DIP-14, SO-14
IN74ALS1003AN,AD	SN74ALS1003AN,AD	Quad 2-Input Positive-NAND Buffer, OC	DIP-14, SO-14
IN74ALS1004N,D	SN74ALS1004N,D	Hex Inverting Driver	DIP-14, SO-14
IN74ALS1005N,D	SN74ALS1005N,D	Hex Inverting Buffer, OC	DIP-14, SO-14
IN74ALS1008AN,AD	SN74ALS1008AN,AD	Quad 2-Input Positive-NAND Buffer	DIP-14, SO-14
IN74ALS1010AN,AD	SN74ALS1010AN,AD	Triple 3-Input Positive-NAND Buffer	DIP-14, SO-14
IN74ALS1011AN,AD	SN74ALS1011AN,AD	Triple 3-Input Positive-AND Buffer	DIP-14, SO-14
IN74ALS1020AN,AD	SN74ALS1020AN,AD	Dual 4-Input Positive-NAND Buffer	DIP-14, SO-14
IN74ALS1032AN,AD	SN74ALS1032AN,AD	Quad 2-Input Positive-OR Buffer/Driver	DIP-14, SO-14
IN74ALS1034N,D	SN74ALS1034N,D	Hex Driver	DIP-14, SO-14
IN74ALS1035N,D	SN74ALS1035N,D	Hex Noninverting Buffer, OC	DIP-14, SO-14

INTEGRATED CIRCUITS

Standard Digital Logic IC

• FUNCTIONAL SELECTION

GATES

Function	Part	Technology										Pins	
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS		
Positive-NAND Gates													
8-Input	30					x	x					x	14
Dual 4-Input	20	x	x			x	x		x			x	14
	40												14
	1020											x	14
Triple 3-Input	10	x	x			x	x					x	14
	1010											x	14
Quad 2-Input	00	x	x	x	x	x	x	x				x	14
	132	x	x			x	x						14
	1000											x	14
Positive-NAND Gates, OC													
Dual 4-Input	22					x	x					x	14
Triple 3-Input	12											x	14
Quad 2-Input	01								x			x	14
	03					x						x	14
	1003											x	14
Positive-AND Gates, OC													
Triple 3-Input	15											x	14
Quad 2-Input	09											x	14
Positive-AND Gates													
Dual 4-Input	21	x	x			x	x					x	14
Triple 3-Input	11	x	x			x						x	14
	1011											x	14
Quad 2-Input	08	x	x	x	x	x	x	x				x	14
	1008											x	14
Positive-OR Gates													
Quad 2-Input	32	x	x	x	x	x	x	x				x	14
	1032											x	14
Positive-NOR Gates													
Triple 3-Input	27	x	x			x	x					x	14
Quad 2-Input	02	x	x	x	x	x	x	x				x	14
	33											x	14
	1002											x	14
Exclusive-OR Gates													
Quad 2-Input	86	x	x	x	x	x	x	x			x	x	14
	810	x	x										14
Quad 2-Input, OC	136											x	14
AND-OR Gates													
2-Wide 4-Input	55											x	14
4-Wide 2-3-3-2 Input	54											x	14
Dual 2-Wide 2-Input	51											x	14
Expandable Gates													
Dual 2-Wide AND-OR-Invert	50									x			14
4-Wide AND-OR-Invert	53												14
Dual 4-Input Expander	60												14

● **FUNCTIONAL SELECTION** (continued)

HEX INVERTERS/NONINVERTERS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Hex Inverters	04	x	x			x	x	x		x	x	14
	U04							x				14
	05	x	x			x				x	x	14
	06								x	x		14
	14	x	x			x	x	x		x	x	14
	16											14
	1004										x	14
1005										x	14	
Hex Noninverters	34	x	x									14

DRIVERS AND BUS TRANSCEIVERS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Hex Drivers												
Hex Drivers	07									x		14
	1034										x	14
	1035										x	14
Noninverting Hex Buffers/Drivers	365					x						16
	367					x						16
	368										x	16
Drivers with 3-State Outputs												
Quad Buffer Drivers	125	x	x	x	x	x	x				x	14
	126			x	x		x					14
Octal Buffer/Drivers, NINV	241	x	x	x	x	x	x	x			x	20
	244	x	x	x	x	x	x	x		x	x	20
	465										x	20
Octal Buffer Drivers, INV	240	x	x	x	x	x	x	x			x	20
	466										x	20
Bus Transceivers with 3-State Outputs												
Quad Transceiver, NINV	243										x	14
Quad Transceiver, INV	242										x	14
Octal Transceiver	245	x	x			x	x	x		x	x	20
	620	x	x			x	x	x				20
	640	x	x			x	x	x			x	20
	643	x	x								x	20
Octal Bus Transceivers with Registers	651	x	x			x						24
	652	x	x			x						24
True Output Transceiver	623	x	x			x	x	x				20
50/75-Ohm Line Drivers												
Quad 2-Input Positive-NOR	128											14

INTEGRATED CIRCUITS

Standard Digital Logic IC

● FUNCTIONAL SELECTION (continued)

FLIP-FLOPS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Dual and Single Flip-Flops												
Single J-K	72								x			14
Dual J-K Edge-Triggered	107										x	14
	109	x	x			x					x	16
	112	x	x			x					x	16
	113										x	14
	114										x	14
Dual D-Type	74	x	x	x	x	x	x	x			x	14
Quad and Hex Flip-Flops												
Quad D-Type	175	x	x			x			x		x	16
Hex D-Type	174	x	x			x	x	x			x	16
Quad J-K	279					x	x				x	16
D-Type Flip-Flops												
Octal (3-State)	374	x	x	x	x	x	x	x			x	20
	574	x	x			x	x	x			x	20
Octal with Clear	273	x	x			x	x	x			x	20
Dual 4-Bit with Clear	874					x	x				x	24
Octal with Enable	377										x	20
Octal Inverting (3-State)	534	x	x			x						20
	564	x	x									

LATCHES AND MULTIVIBRATORS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Latches												
4-Bit Bistable	75					x					x	16
Quad Set/Reset	279					x	x				x	16
Transparent (3-State)	373	x	x	x	x	x	x	x			x	20
	573	x	x			x	x	x			x	20
Dual 4-Bit Transparent (3-State)	873										x	24
Inverting Transparent	533	x	x			x						20
	563	x	x									20
8-Bit Addressable	259										x	16
Multivibrators												
Dual Monostable with Clear	123					x					x	16
	221					x						20

• FUNCTIONAL SELECTION (continued)

REGISTERS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Shift Registers												
8-Bit Universal	198											24
	299	x	x			x	x				x	20
	323	x	x			x	x				x	20
4-Bit Parallel-in/ Parallel-out	295										x	14
	4035	x	x									16
8-Bit Serial-in Parallel-Out	164	x	x			x	x	x		x	x	14
8-Bit Parallel-in Serial-Out	165					x	x				x	16
	166					x					x	16
	4015	x	x			x						16
8-Bit Shift and Store	4094					x						16
	4006	x	x									14
Shift Registers with Latches												
Serial-in Parallel-Out with Output Latches	595					x						16
Parallel-in Serial-Out with Input Latches	597					x						16
Register Files												
4-by-4, OC (3-State)	170										x	16
	670										x	16
Other Registers												
4-Bit D-Type Register (3-State)	173										x	16

COUNTERS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Synchronous Counters												
4-Bit Decade, Asynchronous Reset	160										x	16
	162										x	16
Decade Up/Down	190										x	16
	192	x	x			x					x	16
4-Bit Binary, Asynchronous Reset	161	x	x			x				x	x	16
	163	x	x			x	x				x	16
4-Bit Binary Up/Down	191										x	16
	193	x	x			x					x	16
Asynchronous Counters												
4-Bit Decade	90										x	14
4-Bit Binary	93										x	14
Dual 4-Bit Binary	393					x					x	14
	4520	x	x									16

INTEGRATED CIRCUITS

Standard Digital Logic IC

● FUNCTIONAL SELECTION (continued)

DECODERS, DATA SELECTORS/MULTIPLEXERS

Function	Part	Technology										Pins	
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS		
Data Selectors/Multiplexers													
Quad 2-1	157	x	x			x	x				x	x	16
	158	x	x			x						x	16
	298											x	16
	257	x	x			x						x	16
	258	x	x			x						x	16
Dual 4-1	153	x	x			x	x					x	16
	253	x	x			x						x	16
	352											x	16
	353											x	16
8-1	151	x	x			x	x					x	16
	152												14
	251	x	x			x	x					x	16
16-1	150											24	
Analog Multiplexers/Demultiplexers													
8-Channel	4051					x							16
Dual 4-Channel	4052					x							16
Triple 2-Channel	4053					x							16
Decoders													
Dual 2-4	139	x	x			x	x	x				x	16
	155					x	x					x	16
3-8	138	x	x			x	x	x			x	x	16
4-16	154					x				x		x	24
BCD-to-Decimal	141									x			16
	145									x			16
Digital Loops													
Phase-Lock Loop	4046					x							16

COMPARATORS AND ERROR DETECTION CIRCUITS

Function	Part	Technology										Pins	
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS		
Comparators													
4-Bit Magnitude Comparator	85					x	x					x	16
Parity Generators/Checkers													
8-Bit Odd/Even Parity	180												14
9-Bit Odd/Even Parity	280											x	14

ARITHMETIC CIRCUITS

Function	Part	Technology										Pins	
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS		
4-Bit Arithmetic Logic Unit	181											x	24
Look-Ahead Carry Generator	182											x	16
4-Bit Full Adder	283					x	x						16

● FAMILY CHARACTERISTICS

DC Characteristics (Max)

Parameters	TTL				CMOS										Units
	74	74LS	74ALS	4000A	4000B	74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV			
	5±5%	5±5%	5±10%	3...15	3...18	2...6	5±10%	2...5.5	5±5%	2...6	5±10%	1.0...5.5			
Supply Voltage Range, $V_{CC}(V_{DD})$	-10...+70	0...+70	-10...+70	-45...+85	-55...+125	-45...+85	-45...+85	-40...+85	-40...+85	-55...+125	-55...+125	-40...+125			
Operating Temperature, T_A	2	2	2	0.8xV _{DD}	0.7xV _{DD}	0.7xV _{CC}	2	0.7xV _{CC}	2	0.7xV _{CC}	2	0.7xV _{CC}			
High-Level Input Voltage, V_{IH} (min)	0.8	0.8	0.8	0.2xV _{DD}	0.3xV _{DD}	0.3xV _{CC}	0.8	0.3xV _{CC}	0.8	0.3xV _{CC}	0.8	0.3xV _{CC}			
Low-Level Input Voltage, V_{IL} (max)	2.4	V _{CC} -2	V _{CC} -2	V _{DD} -1	V _{DD} -0.05	V _{CC} -0.1	V _{CC} -0.1	3.8	3.8	V _{CC} -0.1	V _{CC} -0.1	V _{CC} -0.2			
Low-Level Output Voltage, V_{OL} (max)	0.4	0.5	0.5	0.05	0.05	0.1	0.1	0.44	0.44	0.1	0.1	0.2			
High-Level Input Current, I_{IH}	40	20	20	+1	+0.3	+1	+1	+1	+1	+1	+1	+1			
Low-Level Input Current, I_{IL}	-1600	-400	-100	-1	-0.3	-1	-1	-1	-1	-1	-1	-1			
High-Level Output Current, I_{OH}	-0.4	-0.4	-0.4	-0.25 at $V_0=4.5V$ $V_{DD}=5.0V$	-4.2 at $V_0=2.5V$ $V_{DD}=5.0V$	-24 at $V_0=V_{CC}-0.8$	-24 at $V_0=V_{CC}-0.8$	-8	-8	-4 at $V_0=V_{CC}-0.8$	-4 at $V_0=V_{CC}-0.8$	-16			
Low-Level Output Current, I_{OL}	16	8	8	0.5 at $V_0=0.5V$ $V_{DD}=5.0V$	0.88 at $V_0=0.4V$ $V_{DD}=5.0V$	24 at $V_0=0.4V$	24 at $V_0=0.4V$	8	8	4 at $V_0=0.4V$	4 at $V_0=0.4V$	16			
DC Noise Margin, DCM	0.4/0.4	0.3/0.7	0.3/0.7	1.0 at $V_{DD}=5V$ 1.0 at $V_{DD}=10V$	1.5 at $V_{DD}=5V$ 3.0 at $V_{DD}=10V$ 4.0 at $V_{DD}=15V$	1.25/1.25	0.7/2.4	1.25/1.25	0.7/2.4	1.25/1.25	0.7/2.4	0.8/0.8			

• FAMILY CHARACTERISTICS

DC Characteristics (Type)

Parameters	TTL			CMOS								Units	
	74	74LS	74ALS	4000A	4000B	74AC	74ACT	74VHC	74VHCT	74HC	74HCT		74LV
Supply Current for Gate, I_G	3.4	0.4	0.2	0.0004	0.0001	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	mA
Power Supply for Gate, P_G	10	2	1	0.0025	0.0001	0.0025	0.0025	0.0025	0.0025	0.001	0.001	0.001	mW
Propagation Delay Time, T_P	10	7	5	40 at $V_{DD}=5V$ 20 at $V_{DD}=10V$	40 at $V_{DD}=5V$ 20 at $V_{DD}=10V$ 15 at $V_{DD}=15V$	5	5	5.3	5.5	8	8	10	ns
Clock Frequency, F_{max}	35 $C_L=15$ pF	40 $C_L=15$ pF	45 $C_L=50$ pF	5 at $V_{DD}=5V$ 10 at $V_{DD}=10V$ $C_L=15$ pF	5 at $V_{DD}=5V$ 10 at $V_{DD}=10V$ 14 at $V_{DD}=15V$ $C_L=50$ pF	140 $C_L=50$ pF	140 $C_L=50$ pF	115 $C_L=50$ pF 170 $C_L=15$ pF	140 $C_L=50$ pF 160 $C_L=15$ pF	30 $C_L=50$ pF	30 $C_L=50$ pF	40 $C_L=50$ pF	MHZ
Inputs V_{IL}/V_{IH}	TTL	TTL	TTL	CMOS	CMOS	CMOS	TTL, CMOS	TTL at $V_O=3.3V$, CMOS	TTL, CMOS	CMOS	TTL, CMOS	CMOS	-
Outputs V_{OL}/V_{OH}	TTL	TTL	TTL	TTL, CMOS	TTL, CMOS	TTL, CMOS	TTL, CMOS	TTL, CMOS	TTL	TTL, CMOS	TTL, CMOS	TTL, CMOS	-

• FAMILY CHARACTERISTICS

AC Characteristics

Parameters	Performance	TTL			CMOS								Units	
		7400	74LS00	74ALS00	4001A	4001B	74AC00	74ACT00	74VHC00	74VHCT00	74HC00	74HCT00		74LV00
Propagation Delay, t_{PHL}/t_{PHL}	Type Gate, NOR or NAND	10 $C_L=15$ pF	7 $C_L=15$ pF	5 $C_L=50$ pF	80 at $V_{DD}=5$ V 40 at $V_{DD}=10$ V $C_L=15$ pF	60 at $V_{DD}=5$ V 25 at $V_{DD}=10$ V 20 at $V_{DD}=15$ V $C_L=50$ pF	5 $C_L=50$ pF	5 $C_L=50$ pF	5.4 $C_L=50$ pF 3.9 $C_L=15$ pF	5.9 $C_L=50$ pF 5.4 $C_L=15$ pF	8 $C_L=50$ pF	8 $C_L=50$ pF	10 $C_L=50$ pF	ns
		22 $C_L=15$ pF	15 $C_L=15$ pF	11 $C_L=50$ pF	120 at $V_{DD}=5$ V 60 at $V_{DD}=10$ V $C_L=15$ pF	110 at $V_{DD}=5$ V 60 at $V_{DD}=10$ V 48 at $V_{DD}=15$ V $C_L=50$ pF	8.5 $C_L=50$ pF	9.5 $C_L=50$ pF	8.5 $C_L=50$ pF 6.5 $C_L=15$ pF	8.5 $C_L=50$ pF 7.5 $C_L=15$ pF	22 $C_L=50$ pF	28 $C_L=50$ pF	14 $C_L=50$ pF	ns
Propagation Delay, t_{PHL}/t_{PHL} (Clock to Q)	Type Counter	16 $C_L=15$ pF	18 $C_L=15$ pF	10 $C_L=50$ pF	450 at $V_{DD}=5$ V 150 at $V_{DD}=10$ V $C_L=15$ pF	180 at $V_{DD}=5$ V 80 at $V_{DD}=10$ V 65 at $V_{DD}=15$ V $C_L=50$ pF	5 $C_L=50$ pF	6 $C_L=50$ pF	6 $C_L=50$ pF 4.9 $C_L=15$ pF	8.5 $C_L=50$ pF 7.7 $C_L=15$ pF	20 $C_L=50$ pF	20 $C_L=50$ pF	18 $C_L=50$ pF	sn
		38 $C_L=15$ pF	27 $C_L=15$ pF	26 $C_L=50$ pF	650 at $V_{DD}=5$ V 250 at $V_{DD}=10$ V $C_L=15$ pF	360 at $V_{DD}=5$ V 160 at $V_{DD}=10$ V 130 at $V_{DD}=15$ V $C_L=50$ pF	9.5 $C_L=50$ pF	12 $C_L=50$ pF	10.5 $C_L=50$ pF 8.5 $C_L=15$ pF	14.5 $C_L=50$ pF 13.5 $C_L=15$ pF	28 $C_L=50$ pF	28 $C_L=50$ pF	23 $C_L=50$ pF	ns
Propagation Delay, t_{PHL}/t_{PHL} (Clock to Q)	Type Flip-Flop, D-Type	25 $C_L=15$ pF	25 $C_L=15$ pF	13 $C_L=50$ pF	150 at $V_{DD}=5$ V 75 at $V_{DD}=10$ V $C_L=15$ pF	150 at $V_{DD}=5$ V 65 at $V_{DD}=10$ V 45 at $V_{DD}=15$ V $C_L=50$ pF	6 $C_L=50$ pF	6 $C_L=50$ pF	6.1 $C_L=50$ pF 4.6 $C_L=15$ pF	6.3 $C_L=50$ pF 5.8 $C_L=15$ pF	20 $C_L=50$ pF	24 $C_L=50$ pF	25 $C_L=50$ pF	ns
		40 $C_L=15$ pF	40 $C_L=15$ pF	18 $C_L=50$ pF	400 at $V_{DD}=5$ V 150 at $V_{DD}=10$ V $C_L=15$ pF	300 at $V_{DD}=5$ V 130 at $V_{DD}=10$ V 90 at $V_{DD}=15$ V $C_L=50$ pF	10 $C_L=50$ pF	11.5 $C_L=50$ pF	10.5 $C_L=50$ pF 8.5 $C_L=15$ pF	10.0 $C_L=50$ pF 9.0 $C_L=15$ pF	30 $C_L=50$ pF	36 $C_L=50$ pF	35 $C_L=50$ pF	ns

INTEGRATED CIRCUITS

Clock IC, Electronic Thermometer IC

• CMOS IC for LCD Wrist-Watches and Clocks

Part (Pin to Pin Compatibility)	Display			Functions				Multi- plexing Ratio	Supply Current without Load max, μA	V_{DD} , V	Notes
	Digits	Flags	Marks	Hour Minute Second Month Date	Alarm	Chrono- graph	12H/ 24H				
Digital watch											
IZ6099F/ L/C/E (KS5199)	3.5		1	+			12	1/2	1.5	1.5	
IZ6099K	3.5		1	+			12/24		1.5	1.5	
IZ6199	3.5		1	+			12	1/2	1.5	3.0	IZ6099+EL
IZ6018	12	-	8	+	+	+	12/24	1/3	2.0	3.0	$^{\circ}\text{C}$: -20 \pm +60 $^{\circ}\text{F}$: -4 \pm +140
Analog clock											
IZ33173	Output pulse duration 31.25 ms								2.0	1.5	Clock IC
IZ33567									1.5	1.5	Clock with alarm, snooze, crescendo

• Electronic Thermometer IC

Part	Pin to Pin Compatibility	Function	Features	Pads
IZ8016		100° Digital thermometer $^{\circ}\text{C}/^{\circ}\text{F}$	<ul style="list-style-type: none"> <input type="checkbox"/> Measurement temperature range: from -50°C to $+50^{\circ}\text{C}$ (from -58°F to $+122^{\circ}\text{F}$) <input type="checkbox"/> Resolution: 0.2°C ($^{\circ}\text{F}$) <input type="checkbox"/> Accuracy: $\pm 1^{\circ}\text{C}$ ($^{\circ}\text{F}$) <input type="checkbox"/> Supply voltage 1.5V <input type="checkbox"/> Measurement cycle 1, 3, 5 & 10 seconds (on default– 10 seconds) <input type="checkbox"/> Measuring RC-oscillator with external resistor & capacitor <input type="checkbox"/> 32 kHz clock RC-oscillator with build-in capacity <input type="checkbox"/> Serial interface <input type="checkbox"/> Build-in circuit of non-linear digital correction <input type="checkbox"/> 3.5 digit LCD with double multiplex 	36
IZ8005	HT7501	Medical thermometer	<ul style="list-style-type: none"> <input type="checkbox"/> Supply voltage 1.5V <input type="checkbox"/> Measurement temperature range: from $+32.00^{\circ}\text{C}$ to $+43.00^{\circ}\text{C}$ <input type="checkbox"/> Accuracy: $\pm 0.1^{\circ}\text{C}$ <input type="checkbox"/> Resolution: 0.01°C <input type="checkbox"/> Selftesting <input type="checkbox"/> Alarm signal <input type="checkbox"/> Storage of measurements results (highest temperature) <input type="checkbox"/> Automatic switch-off after 8 min 40 sec <input type="checkbox"/> One button on/off switching 	37
IZ8071		Digital medical thermometer	<ul style="list-style-type: none"> <input type="checkbox"/> Measurement temperature range: from 32 to 42°C (from 89.6 to 107.6°F) <input type="checkbox"/> Measurement accuracy: $\pm 0.05^{\circ}\text{C}$ – for range from 35 to 38°C, $\pm 0.1^{\circ}\text{C}$ – for ranges from 32 to 35°C & from 38°C to 42°C <input type="checkbox"/> Resolution: 0.0025°C <input type="checkbox"/> RC-oscillator with own frequency 32.32kHz (external resistance) with adjustment function <input type="checkbox"/> Build-in LCD driver circuit 3COM x 11SEG, 1/3 duty, 1/2 bias 	42
IN18B20D IN18B20	DS18B20	Integrated circuit of digital sensor- measurer of temperature for industrial temperature range	<ul style="list-style-type: none"> <input type="checkbox"/> Measurement temperature range: from -55°C to $+125^{\circ}\text{C}$ <input type="checkbox"/> Temperature value is converted to 12-bit digital code <input type="checkbox"/> Accuracy of temperature indication can be programmed by customer form 9 to 12 bit <input type="checkbox"/> Alarm signal for case of temperature excess of threshold values determined (programmed) by customer <input type="checkbox"/> Unique 64-bit serial number for each IC, not available for changes by customer <input type="checkbox"/> Data read/write operation from memory of IC, 1-wire interface of data transfer 	SO-8 TO-92

INTEGRATED CIRCUITS

Melody IC

• Melody IC

Part	Maximum Number of Tunes (Notes)	Vcc, V	Supply Current, μ A		Package
			Operating	Stand-by	
BT8028-XX	16 (64)	1.3 – 3.3	< 60	< 1.0	TO-92
BT8031-XX	2 (127)	2.0 – 5.0	<1000	< 5	TO-92

XX – Melody code

• Voltage Control Oscillator (VCO) IC

Part	Pin to Pin Compatibility	Function	Features	Pads
IZC6990**	LTC6990	Voltage Controlled Silicon Oscillator	<ul style="list-style-type: none"> □ Supply voltage 2.25V – 5.5 V □ Frequency Range: 488Hz to 2MHz □ 72μA Supply Current at 100kHz □ Fixed-Frequency or Voltage-Controlled Operation <ul style="list-style-type: none"> - Fixed: Single Resistor Programs Frequency with < 1.5% Max error - VCO: Two Resistors Set VCO Center Frequency and Tuning Range □ CMOS Logic Output Sources/Sinks 20mA 	6

**Under Development

DISCRETE SEMICONDUCTORS

• **Power N-Channel MOSFETs**

Part	Function	Package
IFP50N06	N-Channel MOSFET 60 V; 0.023 Ω – 50 A	TO-220/3
IFP70N06	N-Channel MOSFET 60 V; 0.015 Ω – 70 A	Chip
IFP85N06	N-Channel MOSFET 60 V; 0.012 Ω – 85 A	Chip
IFP75N75	N-Channel MOSFET 75 V; 0.017 Ω – 75 A	Chip
IFP75N08	N-Channel MOSFET 80 V; 0.015 Ω – 75 A	TO-220/3
IFP630	N-Channel MOSFET 200 V; 0.400 Ω – 9 A	Chip
IFF630		Chip
IFP640	N-Channel MOSFET 200 V; 0.180 Ω – 18 A	Chip
IFF640		Chip
IFP634	N-Channel MOSFET 250 V; 0.450 Ω – 8 A	Chip
IFF634		Chip
IFP730	N-Channel MOSFET 400 V; 0.950 Ω – 6 A	TO-220/3
IFF730		TO-220FP
IFP740	N-Channel MOSFET 400 V; 0.550 Ω – 10 A	TO-220/3
IFF740		TO-220FP
IFP830	N-Channel MOSFET 500 V; 1.400 Ω – 5 A	TO-220/3
IFF830		TO-220FP
IFP840	N-Channel MOSFET 500 V; 0.850 Ω – 8 A	TO-220/3
IFF840		TO-220FP
IFP13N50	N-Channel MOSFET 500 V; 0.490 Ω – 13 A	Chip
IFW20N50	N-Channel MOSFET 500 V; 0.260 Ω – 20 A	Chip
IFL50N50	N-Channel MOSFET 500 V; 0.120 Ω – 50 A	Chip
IFP1N60	N-Channel MOSFET 600 V; 12.000 Ω – 0,9 A	TO-220/3
IFU1N60		I-PAK
IFD1N60		D-PAK
IFU2N60	N-Channel MOSFET 600 V; 5.0 Ω – 1,8 A	I-PAK
IFD2N60		D-PAK
IFP2N60	N-Channel MOSFET 600 V; 5.0 Ω – 2 A	TO-220/3
IFF2N60		TO-220FP
IFP4N60	N-Channel MOSFET 600 V; 2.5 Ω – 4.0 A	TO-220/3
IFF4N60		TO-220FP
IFP7N60	N-Channel MOSFET 600 V; 1.2 Ω – 7 A	TO-220/3
IFF7N60		TO-220FP
IFP10N60	N-Channel MOSFET 600 V; 0.8 Ω – 10 A	Chip
IFF10N60		Chip
IFP12N60	N-Channel MOSFET 600 V; 0.7 Ω – 12 A	Chip
IFF12N60		Chip
IFW20N60	N-Channel MOSFET 600 V; 0.32 Ω – 20 A	Chip
IFW24N60	N-Channel MOSFET 600 V; 0.26 Ω – 24 A	Chip
IFW28N60	N-Channel MOSFET 600 V; 0.24 Ω – 28 A	Chip
IFL40N60	N-Channel MOSFET 600 V; 0.16 Ω – 40 A	Chip
IFU1N65	N-Channel MOSFET 650 V; 13.0 Ω – 1 A	Chip
IFD1N65		Chip
IFU2N65	N-Channel MOSFET 650 V; 5.5 Ω – 2 A	Chip
IFD2N65		Chip
IFP2N65		Chip
IFF2N65		Chip
IFP4N65		Chip
IFF4N65	Chip	
IFP7N65	N-Channel MOSFET 650 V; 1.3 Ω – 7 A	Chip
IFF7N65		Chip
IFP10N65	N-Channel MOSFET 650 V; 0.85 Ω – 10 A	Chip
IFF10N65		Chip
IFF12N65	N-Channel MOSFET 650 V; 0.8 Ω – 12 A	Chip
IFF12N65		Chip

DISCRETE SEMICONDUCTORS

Transistors, Diodes, Diode Arrays

• Bipolar Transistors

Part	Pin to Pin Compatibility	Polarity	P _c max, W	V _{CB} max, V	V _{CE} max, V	V _{EB} max, V	I _c max, mA	h _{FE}	V _{CE} sat, V	I _{CBO} , μA	F _T , MHz	Package
KT520A KT520B	MPSA42 MPSA43	NPN	0.625	300 200	300 200	6	500	>40	0.5 0.4	100	50	TO-92
KT521A KT521B	MPSA92 MPSA93	PNP	0.625	300 200	300 200	5	500	>40	0.5 0.4	100	50	TO-92
KT814A KT814B KT814C KT814D	BD136 BD138 BD140	PNP	10		40 50 70 100	5	1500	40...275 40...275 40...275 30...275	0.6	50	40	TO-126
KT8225A	BU941ZP	NPN	155	350	350	5	15000	>300	2.7	100		TO-218

• Unijunction Transistors

Part	Pin to Pin Compatibility	P max, W	V _b , b2 max, V	I _e pulse, A	I _e rev, μA	V _{eb} sat, V	η	Package
KT132A KT132B	2N2646 2N2647	0.3	35	2.0	12.0 0.2	0.7...3.5	0.56...0.75 0.68...0.82	Case 22A-01
KT133A KT133B	2N4870 2N4871	0.3	35	1.5	1.0	0.7...2.5	0.56...0.75 0.70...0.85	TO-92

• Power Thyristors and Triacs

Part	Pin to Pin Compatibility	Repetitive Peak Off-State Voltages V _{DRM} , V _{RRM} V	RMS On-State Current	I ² t for Fusing	Off-State Leakage Current	Holding Current	Latching Current	Gate Trigger Current	Peak Gate Current	Package
			I _{T(RMS)} A	I ² t, A ² c	I _D , I _R mA	I _H mA	I _L mA	I _{GT} mA	I _{GM} A	
KY251A KY251B	MCR100-8 KY251B	600 800	1.0	0.415	≤0.05	≤5	≤5	≤0.2	8,0	TO-92
Triac KY613A KY613B	BTA208-600B BTA208-800B	600 800	8.0	21	≤0.5	≤90	≤60	≤50	2.0	TO-220AB

Foundry business

- Semiconductor IC and Discrete Devices Manufacturing under the Customer's Design (delivery on base of Probe Test)
- Semiconductor IC and Discrete Devices Manufacturing under the Customer's Design (delivery on the base of PCM)
- Wafer Fab Service – execution of separate Process Flow Steps or blocks (Metal sputtering, film deposition, EPI growing, back grinding, wafers testing and so on)
- Raw Si substrate and EPI manufacturing under the Customer's Spec

Production Capacity available for Foundry Business:

- 8" wafer production line (0.5-0.35 μ m design rule)
- 6" wafer production line (0.8-1.2 μ m design rule)
- 4" wafer production line (1.2-3.0 μ m design rule)

Basic Process available:

a) Integrated Circuits:

- DMOS
- CMOS
- BiCMOS
- CDMOS
- BiCDMOS
- Bipolar

b) Discrete devices:

- D-MOS (≤ 1000 V)
- Multi-Epi (≤ 700 V)
- Bipolar
- Process for high frequency devices (≤ 300 V)

Si substrates and EPI, manufacturing and delivery (according to the Customer's Spec):

- 3", 4", 6", 8" wafers
- EPI parameter range: $d=0.5...80 \mu\text{m}$, $\rho=0.1...50 \Omega \cdot \text{cm}$

Mask making:

- Mask Set manufacturing under the Customer's Spec (GDS II and DB):
 - a) for contact lithography
 - b) for Projection Reduction (Stepper lithography) (1:1/1:5/1:10)
- Pellicles manufacturing under the Customer's Spec
- Manufacture of photomasks with P/R coatings (glass and quartz substrates)

Contract management

Packaging:

- IC and Discrete Devices assembly (packaging) with Testing
- IC and Discrete Devices assembly (packaging) without Testing
- IC and Discrete Devices assembly (packaging) with Testing and Marking

Packages Types available:

a) Integrated Circuits:

- SOP (8-28 LD)
- DIP (8-40 LD)
- SHRINK DIP (30, 42, 52, 56 LD)
- QFP (48, 64, 100 LD)
- SIL (3, 8, 13, 17 LD)
- SIP (9LD)
- TO-220 (3, 5, 7 LD)
- SOT -23, SOT -143, SOT -223

b) Discrete devices:

- Case 22A-01
- DO-34, DO-35
- MELF, miniMELF
- SOT -23, SOT -143, SOT -223
- SOWATT
- TO-18, TO-39, TO-72, TO-92, TO-126, TO-218, TO-220
- KD-17
- DPAK, D2PAK

Fabless service

IC and discrete devices design:

- IC Design according to the Customer's Data Sheet (Spec) and Process Development
- Discrete Devices Design according to the Customer's Data Sheet (Spec) and Process development
- GDS II and Tape out
- Engineering Consulting service
- Reengineering

Supplementary services

Design of electronic devices/ instruments and manufacture of samples as per Customer's requirements:

- Design and manufacture of PCB
- Design and manufacture of LCD:
 - TN-type ("twist") for electronic clock/watch, calculators, etc,
 - STN-type ("supertwist") for general purposes

Other services:

- Design and manufacture of quartz tooling and accessories, tools
- Design and manufacture of molds, punches, casting/transfer molds
- Marking blocks manufacturing
- High-precision stamping of lead frames for IC manufacturing

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