SDLS161 - OCTOBER 1976 - REVISED MARCH 1988

- 3-State Outputs Drive Bus Lines Directly
- Encodes 8 Data Lines to 3-Line Binary (Octal)
- Applications Include:

 N-Bit Encoding
 Code Converters and Generators
- Typical Data Delay . . . 15 ns
- Typical Power Dissipation . . . 60 mW

description

These TTL encoders feature priority decoding of the inputs to ensure that only the highest-order data line is encoded. The 'LS348 circuits encode eight data lines to three-line (4-2-1) binary (octal). Cascading circuitry (enable input E1 and enable output E0) has been provided to allow octal expansion. Outputs A0, A1, and A2 are implemented in three-state logic for easy expansion up to 64 lines without the need for external circuitry. See Typical Application Data.

FUNCTION TABLE

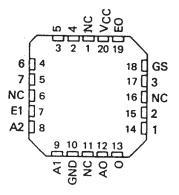
	INPUTS									Ol	JTPU	TS	
EI	0	1	2	3	4	5	6	7	A2	A1	A0	GS	EO
Н	Х	Х	Χ	Х	Χ	X	X	Х	Z	Z	Z	Н	Н
L	Н	Н	Н	Н	Н	Н	Н	Н	z	Z	Z	н	L
L	Х	Χ	Х	Х	Х	Χ	Х	L	L	L	L	L	н
L	Х	Х	X	Х	Х	Х	L	Н	L	L	Н	L	н
L	Х	Х	Χ	Χ	Х	L	Н	Н	L	Н	L	L	н
L	Х	Х	Χ	Х	L	Н	Н	Н	L	Н	Н	L	н
L	Ý	Х	Х	L	Н	Н	Н	Н	н	L	L	L	н
L	Х	Х	L	Н	Н	Н	Н	Н	н	L	Н	L	н
L	X	L	Н	H	Н	Н	Н	Н	н	Н	L	L	н
L	L	Н	Н	Н	H	Н	Н	Н	Н	Н	Н	L	н

H = high logic level, L = low logic level, X = irrelevant

SN54LS348 . . . J OR W PACKAGE SN74LS348 . . . D OR N PACKAGE (TOP VIEW)

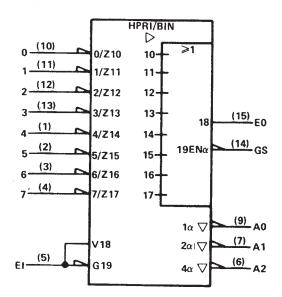
4 🛮 1	U ₁₆ V _{CC}
5 □2	15 EO
6 □3	14 🛮 GS
7 🛮 4	13 3
E1 ∏5	12 2
A2 ∏6	11 🛮 1
A1 □7	10 🛮 0
GND 8	9 AO

SN54LS348 . . . FK PACKAGE (TOP VIEW)



NC - No internal connection

logic symbol[†]



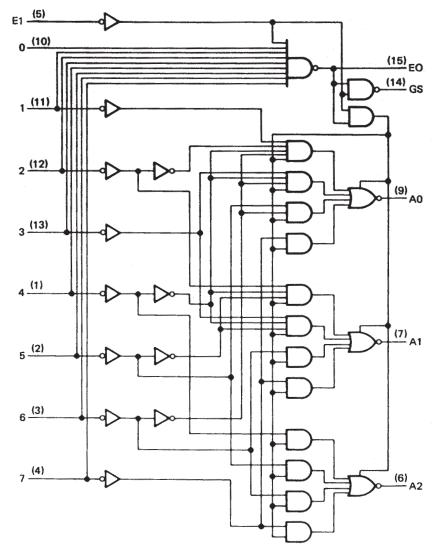
[†]This symbol is in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12.

Pin numbers shown are for D, J, N, and W packages.



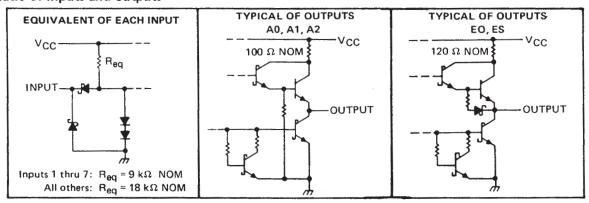
Z = high-impedance state

logic diagram (positive logic)



Pin numbers shown are for D, J, N, and W packages.

schematic of inputs and outputs





SDLS161 - OCTOBER 1976 - REVISED MARCH 1988

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

Supply voltage, VCC (see Note 1)	
Operating free-air temperature range	SN54LS348
	SN74LS348
Storage temperature range	

NOTE 1: Voltage values are with respect to network ground terminal.

recommended operating conditions

	·	SI	N54LS 3	48	Si			
		MIN	NOM	MAX	MIN	NOM	MAX	UNIT
Supply voltage, V _{CC}		4.5	5	5.5	4.75	5	5,25	V
High-level output current, IOH	A0, A1, A2			-1			-2.6	mA
migriever output current, 10H	EO, GS			-400			-400	μА
Low-level output current, IOI	A0, A1, A2			12			24	mA
- Converse of the Content to C	EO, GS			4			8	mA
Operating free-air temperature, TA		-55		125	0		70	°C

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

	PARAMETER	TEST CO	SN	154LS3	48	SN74LS348						
	TARAMETER		TEST COI	VDITIONS!	MIN	TYP‡	MAX	MIN	TYP‡	MAX	UNI.	
v_{IH}	High-level input voltage				2			2			V	
VIL	Low-level input voltage					**	0.7			0.8	V	
VIK	Input clamp voltage		V _{CC} = MIN,	I ₁ = -18 mA			-1.5			-1.5	V	
۷он	High-level	A0, A1, A2	V _{CC} = MIN,	I _{OH} = -1 mA	2.4	3.1						
	output voltage		V _{IH} = 2 V,	I _{OH} = -2.6 mA				2.4	3,1		V	
		EO, GS	VIL = VILmax	I _{OH} = -400 μA	2.5	3.4		2.7	3.4			
		A0, A1, A2	V _{CC} = MIN,	I _{OL} = 12 mA		0.25	0.4		0.25	0.4	ĺ	
VOL	Low-level		V _{1H} = 2 V,	OL = 24 mA					0,35	0.35 0.5 0.25 0.4 0.35 0.5	V	
OL	Output voltage	EO, GS	V _{IL} = V _{IL} max	¹ OL = 4 mA		0.25	0.4		0.25		ľ	
		20, 03	vif - vifillax	I _{OL} = 8 mA					0,35			
loz	Off-State (high-impedance	A0, A1, A2	V _{CC} = MAX,	V _O = 2.7 V			20			20		
102	state) output current	A0, A1, A2	V _{IH} = 2 V	V _O = 0.4 V			-20			-20	μ/	
11	Input current at maximum	Inputs 1 thru 7	V 1440 V	77.			0.2			0.2		
'1	input voltage	All other inputs	V _{CC} = MAX,	V = / V			0.1		0.1		mA	
ин	High-level input current	Inputs 1 thru 7	V 446V	V 07V			40			40		
чн	riigii-level iriput current	All other inputs	V _{CC} = MAX,	V ₁ = 2.7 V					20	μA		
111	Low-level input current	Inputs 1 thru 7	.,				-0.8			-0.8		
'11	Low-level input current	All other inputs	V _{CC} = MAX,	V = 0.4 V			-0.4			-0.4	mA	
los	Short-circuit output current §	Outputs A0, A1, A2	V MAY		-30		-130	-30		-130		
.02	onore oneuri output current o	Outputs EO, GS	V _{CC} = MAX		-20		-100	-20		-100	m	
Icc	Supply current		V _{CC} = MAX,	Condition 1		13	25		13	25		
.00	ouppry current		See Note 2	Condition 2		12	23		12	23	m	

For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

NOTE 2: ICC (condition 1) is measured with inputs 7 and EI grounded, other inputs and outputs open. ICC (condition 2) is measured with all inputs and outputs open.



[‡] All typical values are at $V_{CC} = 5 \text{ V}$, $T_A = 25^{\circ} \text{ C}$.

[§] Not more than one output should be shorted at a time.

SN54LS348, SN74LS348 (TIM9908) 8-LINE TO 3-LINE PRIORITY ENCODERS **WITH 3-STATE OUTPUTS**

SDLS161 - OCTOBER 1976 - REVISED MARCH 1988

switching characteristics, $V_{CC} = 5 \text{ V}$, $T_A = 25^{\circ} \text{ C}$

PARAMETER [†]	FROM (INPUT)	TO (OUTPUT)	WAVEFORM	TEST CONDITIONS	MIN	TYP	MAX	UNIT
ФLН	1 thru 7	A0, A1, or A2	In-phase		111	11	17	ns
tPHL.	1 11114 /	A0, A1, 01 A2	output	C. = 45 = 5		20	30	113
ФLН	1 thru 7	A0, A1, or A2	Out-of-phase	CL = 45 pF,		23	35	ns
tPHL	i thru /	AU, A1, 01 A2	output	RL = 667 Ω, See Note 3		23	35	1 ns
ФZH	EI	A0, A1, or A2		See Note 3		25	39	ns
ΨZL] '	70, 71, 01 72				24	41] ""
tPLH	0 thru 7	EO	Out-of-phase			11	18	ns
tPHL	O and /	20	output			26	40	
tPLH	0 thru 7	GS	In-phase	Cլ = 15 pF		38	55	ns
tPHL	O and /		output	$R_L = 2 k\Omega$,		9	21] ''3
tPLH	EI	GS	In-phase	See Note 3		11	17	
tPHL	1	43	output	See Note S		14	36	ns
ФLН	EI	EO	In-phase			17	26	
tPHL	1 "		output	:		25	40	ns
tPHZ	EI	A0, A1, or A2		CL = 5 pF		18	27	
ヤLZ] -'	70, 71, 01 72		R _L = 667 Ω		23	35	ns

[†] tpLH = propagation delay time, low-to-high-level output

tpzH = output enable time to high level

tpzL = output enable time to low level

tpHZ = output disable time from high level

tpLZ = output disable time from low level

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

TYPICAL APPLICATION DATA

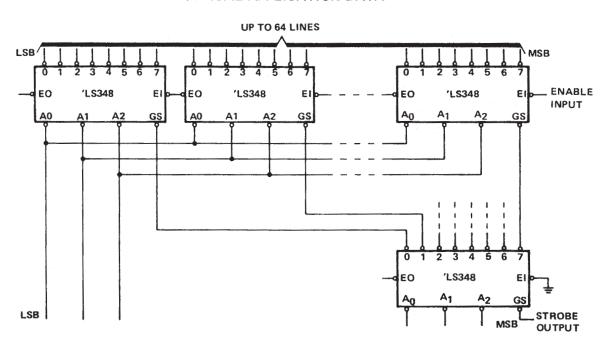


FIGURE 1-PRIORITY ENCODER WITH UP TO 64 INPUTS.



tpHL = propagation delay time, high-to-low-level output





10-Jun-2014

PACKAGING INFORMATION

Orderable Device	Status	Package Type	Package	Pins	Package	Eco Plan	Lead/Ball Finish	MSL Peak Temp	Op Temp (°C)	Device Marking	Samples
	(1)		Drawing		Qty	(2)	(6)	(3)		(4/5)	
JM38510/36002B2A	OBSOLETE	LCCC	FK	20		TBD	Call TI	Call TI	-55 to 125		
JM38510/36002BEA	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	-55 to 125		
SN54LS348J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	-55 to 125		
SN74LS348D	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	LS348	Samples
SN74LS348DG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	LS348	Samples
SN74LS348N	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	0 to 70	SN74LS348N	Samples
SN74LS348N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI	0 to 70		
SNJ54LS348FK	OBSOLETE	LCCC	FK	20		TBD	Call TI	Call TI	-55 to 125		
SNJ54LS348J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	-55 to 125		
SNJ54LS348W	OBSOLETE	CFP	W	20		TBD	Call TI	Call TI	-55 to 125		

⁽¹⁾ The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

⁽³⁾ MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

⁽⁴⁾ There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.



PACKAGE OPTION ADDENDUM

10-Jun-2014

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

OTHER QUALIFIED VERSIONS OF SN54LS348, SN74LS348:

Catalog: SN74LS348

Military: SN54LS348

NOTE: Qualified Version Definitions:

- Catalog TI's standard catalog product
- Military QML certified for Military and Defense Applications

14 LEADS SHOWN



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. This package is hermetically sealed with a ceramic lid using glass frit.
- D. Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
- E. Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

W (R-GDFP-F20)

CERAMIC DUAL FLATPACK



- A. All linear dimensions are in inches (millimeters).
- This drawing is subject to change without notice.
- C. This package can be hermetically sealed with a ceramic lid using glass frit.

 D. Index point is provided on cap for terminal identification only.

 E. Falls within Mil—Std 1835 GDFP2—F20



FK (S-CQCC-N**)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. This package can be hermetically sealed with a metal lid.
- D. Falls within JEDEC MS-004



N (R-PDIP-T**)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
- The 20 pin end lead shoulder width is a vendor option, either half or full width.



D (R-PDS0-G16)

PLASTIC SMALL OUTLINE



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
- Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
- E. Reference JEDEC MS-012 variation AC.



D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Publication IPC-7351 is recommended for alternate designs.
- D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
- E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.



IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46, latest issue, and to discontinue any product or service per JESD48, latest issue. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as "components") are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI's terms and conditions of sale of semiconductor products. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

TI assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using TI components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of significant portions of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI components or services with statements different from or beyond the parameters stated by TI for that component or service voids all express and any implied warranties for the associated TI component or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards which anticipate dangerous consequences of failures, monitor failures and their consequences, lessen the likelihood of failures that might cause harm and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have *not* been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

Products Applications

Audio www.ti.com/audio Automotive and Transportation www.ti.com/automotive Communications and Telecom Amplifiers amplifier.ti.com www.ti.com/communications **Data Converters** dataconverter.ti.com Computers and Peripherals www.ti.com/computers **DLP® Products** www.dlp.com Consumer Electronics www.ti.com/consumer-apps

DSP **Energy and Lighting** dsp.ti.com www.ti.com/energy Clocks and Timers www.ti.com/clocks Industrial www.ti.com/industrial Interface interface.ti.com Medical www.ti.com/medical logic.ti.com Logic Security www.ti.com/security

Power Mgmt power.ti.com Space, Avionics and Defense www.ti.com/space-avionics-defense

Microcontrollers <u>microcontroller.ti.com</u> Video and Imaging <u>www.ti.com/video</u>

RFID <u>www.ti-rfid.com</u>

OMAP Applications Processors www.ti.com/omap TI E2E Community e2e.ti.com/omap

Wireless Connectivity <u>www.ti.com/wirelessconnectivity</u>



Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«**FORSTAR**» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: http://oceanchips.ru/

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А