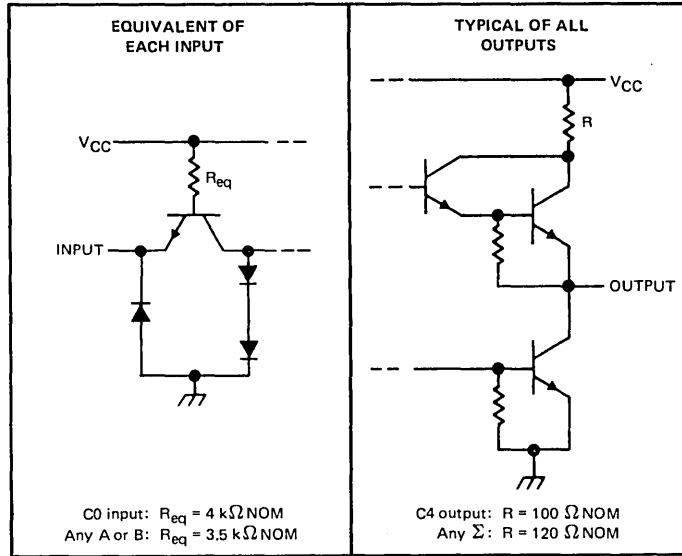


SN5483A, SN54LS83A, SN7483A, SN74LS83A
4-BIT BINARY FULL ADDERS WITH FAST CARRY

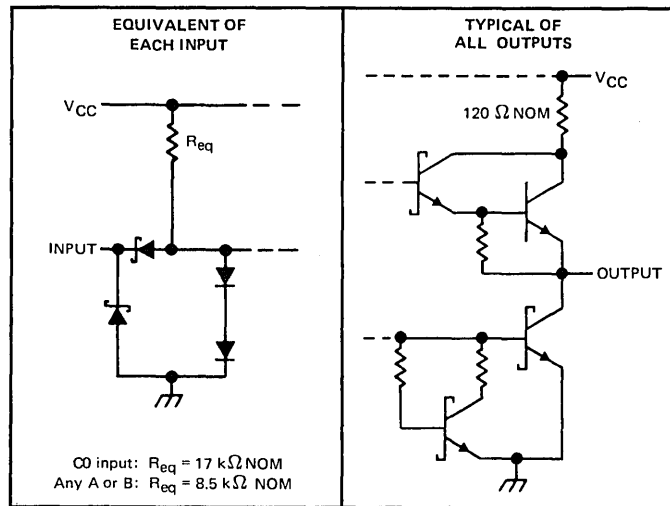
schematics of inputs and outputs

2
 TTL Devices

'83A



'LS83A



SN5483A, SN7483A 4-BIT BINARY FULL ADDERS WITH FAST CARRY

recommended operating conditions

	SN5483A			SN7483A			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply Voltage, V_{CC}	4.5	5	5.5	4.75	5	5.25	V
High-level output current, I_{OH}	Any output except C4			-800			μ A
	Output C4			-400			
Low-level output current, I_{OL}	Any output except C4			16			mA
	Output C4			8			
Operating free-air temperature, T_A	-55		125	0		70	$^{\circ}$ C

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

PARAMETER	TEST CONDITIONS [†]	SN5483A			SN7483A			UNIT
		MIN	TYP [‡]	MAX	MIN	TYP [‡]	MAX	
V_{IH} High-level input voltage		2			2			V
V_{IL} Low-level input voltage		0.8			0.8			V
V_{IK} Input clamp voltage	$V_{CC} = \text{MIN}, I_I = -12 \text{ mA}$	-1.5			-1.5			V
V_{OH} High-level output voltage	$V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, V_{IL} = 0.8 \text{ V}, I_{OH} = \text{MAX}$	2.4	3.4		2.4	3.4		V
V_{OL} Low-level output voltage	$V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, V_{IL} = 0.8 \text{ V}, I_{OL} = \text{MAX}$		0.2	0.4		0.2	0.4	V
I_I Input current at maximum input voltage	$V_{CC} = \text{MAX}, V_I = 5.5 \text{ V}$	1			1			mA
I_{IH} High-level input current	$V_{CC} = \text{MAX}, V_I = 2.4 \text{ V}$	40			40			μ A
I_{IL} Low-level input current	$V_{CC} = \text{MAX}, V_I = 0.4 \text{ V}$	-1.6			-1.6			mA
I_{OS} Short-circuit output current [§]	Any output except C4	-20			-18			mA
	Output C4	-20			-18			
I_{CC} Supply current	$V_{CC} = \text{MAX},$ All B low, other inputs at 4.5 V Outputs open	56			56			mA
		66			99			

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

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

[§] Only one output should be shorted at a time.

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

PARAMETER [¶]	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH}	C0	Any Σ_j	$C_L = 15 \text{ pF}, R_L = 400 \Omega,$ See Note 3	14	21	ns	
t_{PHL}				12	21		
t_{PLH}	A_i or B_i	Σ_j		16	24	ns	
t_{PHL}				16	24		
t_{PLH}	C0	C4	$C_L = 15 \text{ pF}, R_L = 780 \Omega,$ See Note 3	9	14	ns	
t_{PHL}				11	16		
t_{PLH}	A_i or B_i	C4		9	14	ns	
t_{PHL}				11	16		

[¶] t_{PLH} = propagation delay time, low-to-high-level output

t_{PHL} = propagation delay time, high-to-low-level output

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

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TTL Devices

SN54LS83A, SN74LS83A
4-BIT BINARY FULL ADDERS WITH FAST CARRY

recommended operating conditions

	SN54LS83A			SN74LS83A			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, V_{CC}	4.5	5	5.5	4.75	5	5.25	V
High-level output current, I_{OH}			-400			-400	μ A
Low-level output current, I_{OL}			4			8	mA
Operating free-air temperature, T_A	-55		125	0		70	$^{\circ}$ C

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

PARAMETER		TEST CONDITIONS†	SN54LS83A		SN74LS83A		UNIT	
			MIN	TYP‡	MAX	MIN		TYP‡
V_{IH}	High-level input voltage		2		2		V	
V_{IL}	Low-level input voltage		0.7		0.8		V	
V_{IK}	Input clamp voltage	$V_{CC} = \text{MIN}, I_I = -18 \text{ mA}$	-1.5		-1.5		V	
V_{OH}	High-level output voltage	$V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, V_{IL} = V_{IL \text{ max}}, I_{OH} = -400 \mu\text{A}$	2.5	3.4	2.7	3.4	V	
V_{OL}	Low-level output voltage	$V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, V_{IL} = V_{IL \text{ max}}, I_{OL} = 4 \text{ mA}$ $I_{OL} = 8 \text{ mA}$	0.25	0.4	0.25	0.4	V	
I_I	Input current at maximum input voltage	Any A or B	0.2		0.2		mA	
		C0	0.1		0.1			
I_{IH}	High-level input current	$V_{CC} = \text{MAX}, V_I = 2.7 \text{ V}$	40		40		μ A	
I_{IL}	Low-level input current	$V_{CC} = \text{MAX}, V_I = 0.4 \text{ V}$	-0.8		-0.8		mA	
I_{OS}	Short-circuit output current §	$V_{CC} = \text{MAX}$	-20	-100	-20	-100	mA	
I_{CC}	Supply current	$V_{CC} = \text{MAX},$ Outputs open	All inputs grounded	22	39	22	39	mA
			All B low, other inputs at 4.5 V	19	34	19	34	
			All inputs at 4.5 V	19	34	19	34	

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

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

§ Only one output should be shorted at a time, and duration of the short-circuit should not exceed one second.

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

PARAMETER†	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH}	C0	Any Σ	$C_L = 15 \text{ pF}, R_L = 2 \text{ k}\Omega,$ See Note 3		16	24	ns
t_{PHL}				15	24		
t_{PLH}	A_i or B_i	Σ_j		15	24	ns	
t_{PHL}				15	24		
t_{PLH}	C0	C4		11	17	ns	
t_{PHL}				15	22		
t_{PLH}	A_i or B_i	C4		11	17	ns	
t_{PHL}				12	17		

† t_{PLH} = propagation delay time, low-to-high-level output

t_{PHL} = propagation delay time, high-to-low-level output

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

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TTL Devices