

SCBS040A – JANUARY 1990 – REVISED JANUARY 1994

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SN64BCT245

OCTAL BUS TRANSCEIVER

WITH 3-STATE OUTPUTS

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

Supply voltage range, V_{CC}	– 0.5 V to 7 V
Input voltage range, V_I (see Note 1)	– 0.5 V to 7 V
Voltage range applied to any output in the disabled or power-off state, V_O	– 0.5 V to 5.5 V
Voltage range applied to any output in the high state, V_O	– 0.5 V to V_{CC}
Current into any output in the low state	128 mA
Operating free-air temperature range	– 40°C to 85°C
Storage temperature range	– 65°C to 150°C

[†] Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTE 1: The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

recommended operating conditions

		MIN	NOM	MAX	UNIT
V_{CC}	Supply voltage	4.5	5	5.5	V
V_{IH}	High-level input voltage	2			V
V_{IL}	Low-level input voltage			0.8	V
I_{IK}	Input clamp current			–18	mA
I_{OH}	High-level output current	A1 – A8		–3	mA
		B1 – B8		–15	
I_{OL}	Low-level output current	A1 – A8		24	mA
		B1 – B8		64	
T_A	Operating free-air temperature	–40		85	°C

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

PARAMETER		TEST CONDITIONS		MIN	TYP†	MAX	UNIT
V_{IK}		$V_{CC} = 4.5\text{ V}$	$I_I = -18\text{ mA}$			-1.2	V
V_{OH}	Any A	$V_{CC} = 4.5\text{ V}$	$I_{OH} = -1\text{ mA}$	2.5	3.4		V
	Any A or B		$I_{OH} = -3\text{ mA}$	2.4	3.3		
	Any B		$I_{OH} = -15\text{ mA}$	2	3.1		
V_{OL}	Any A	$V_{CC} = 4.5\text{ V}$	$I_{OL} = 24\text{ mA}$	0.35	0.5		V
	Any B		$I_{OL} = 64\text{ mA}$	0.42	0.55		
I_{OZ}	Power up	$V_{CC} = 0\text{ to }2.3\text{ V}$	$V_O = 2.7\text{ V}$			70	μA
			$V_O = 0.5\text{ V}$			-0.65	mA
	Power down	$V_{CC} = 1.8\text{ V to }0$	$V_O = 2.7\text{ V}$			70	μA
			$V_O = 0.5\text{ V}$			-0.65	mA
I_I^\ddagger	A and B	$V_{CC} = 5.5\text{ V}$	$V_I = 5.5\text{ V}$			1	mA
	DIR and \overline{OE}					0.1	
I_{IH}^\ddagger	A and B	$V_{CC} = 5.5\text{ V}$	$V_I = 2.7\text{ V}$			70	μA
	DIR and \overline{OE}					20	
I_{IL}	A and B	$V_{CC} = 5.5\text{ V}$	$V_I = 0.5\text{ V}$			-0.65	mA
	DIR and \overline{OE}					-1.2	
I_{OS}^\S	Any A	$V_{CC} = 5.5\text{ V}$	$V_O = 0$	-60		-150	mA
	Any B			-100		-225	
I_{CCH}	A-to-B	$V_{CC} = 5.5\text{ V}$			36	57	mA
I_{CCL}	A-to-B	$V_{CC} = 5.5\text{ V}$			57	90	
I_{CCZ}		$V_{CC} = 5.5\text{ V}$			10	15	
C_i	\overline{OE} and DIR	$V_{CC} = 5\text{ V}$	$V_I = 2.5\text{ V or }0.5\text{ V}$		7		pF
C_{io}	A to B	$V_{CC} = 5\text{ V}$	$V_I = 2.5\text{ V or }0.5\text{ V}$		9		pF
	B to A				12		

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

‡ For I/O ports, the parameters I_{IH} and I_{IL} include the off-state output current.

§ Not more than one output should be tested at a time, and the duration of the test should not exceed one second.

switching characteristics (see Note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω, T _A = 25°C		V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω				UNIT
					T _A = −40°C to 85°C		T _A = 0°C to 70°C		
			MIN	MAX	MIN	MAX	MIN	MAX	
t _{PLH}	A or B	B or A	1	6	1	7.2	1	7	ns
t _{PHL}			1.5	6.6	1.5	7.6	1.5	7	
t _{PZH}	OE	A or B	1.5	9.4	1.5	11.2	1.5	10.9	ns
t _{PZL}			1.5	10.2	1.5	11.8	1.5	11.6	
t _{PHZ}	OE	A or B	1.5	8.3	1.5	9.7	1.5	9.3	ns
t _{PLZ}			1.5	7.8	1.5	9.6	1.5	9.1	

NOTE 2: Load circuits and voltage waveforms are shown in Section 1.

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