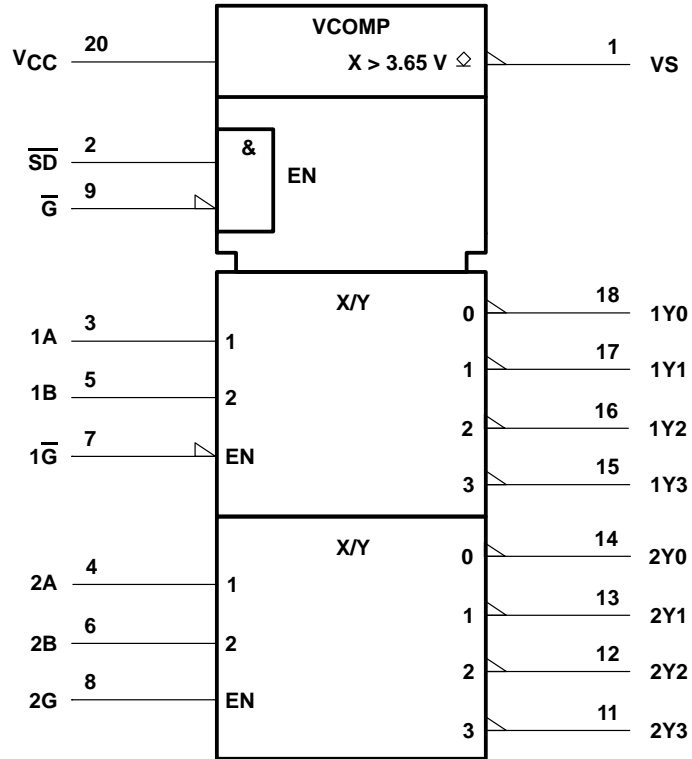


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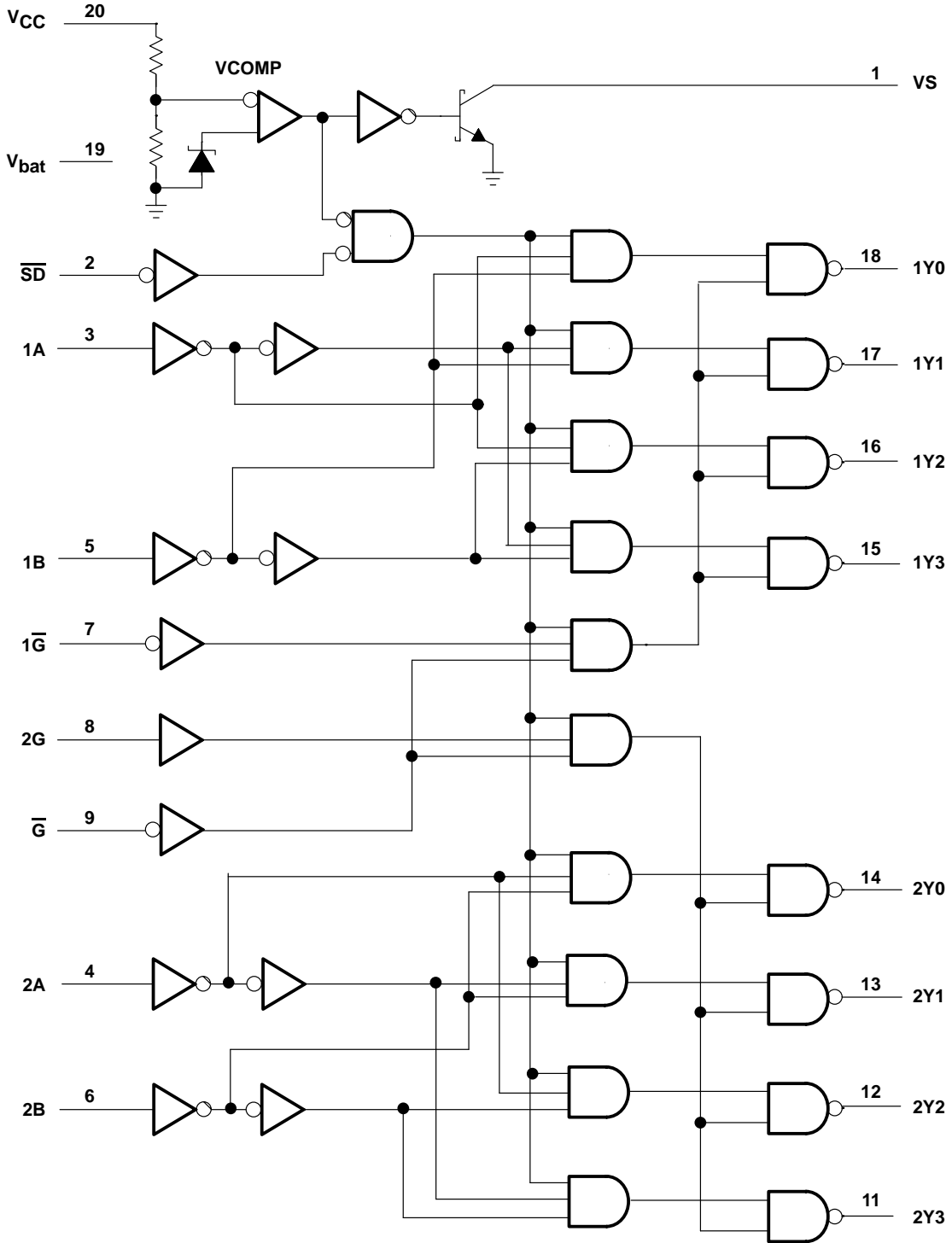
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logic symbol†



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

logic diagram (positive logic)



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FUNCTION TABLES

INPUTS					OUTPUTS			
CONTROL			SELECT					
\overline{G}	$1\overline{G}$	\overline{SD}	1B	1A	1Y0	1Y1	1Y2	1Y3
H	X	X	X	X	H	H	H	H
X	H	X	X	X	H	H	H	H
X	X	L	X	X	H	H	H	H
L	L	H	L	L	L	H	H	H
L	L	H	L	H	H	L	H	H
L	L	H	H	L	H	H	L	H
L	L	H	H	H	H	H	H	L

INPUTS					OUTPUTS			
CONTROL			SELECT					
\overline{G}	2G	\overline{SD}	2B	2A	2Y0	2Y1	2Y2	2Y3
H	X	X	X	X	H	H	H	H
X	H	X	X	X	H	H	H	H
X	X	L	X	X	H	H	H	H
L	H	H	L	L	L	H	H	H
L	H	H	L	H	H	L	H	H
L	H	H	H	L	H	H	L	H
L	H	H	H	H	H	H	H	L

NOTE: For a 3-line to 8-line decoder, the following pins must be shorted: $1\overline{G}$ to 2G, 1A to 2A and 1B to 2B.

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

Supply voltage range, V_{bat}	-0.5 V to 7 V
Supply voltage range, V_{CC}	-0.5 V to 7 V
Supply voltage V_{CC} with respect to V_{bat}	-1.5 V
Input voltage range, V_I	-0.5 V to $V_{CC} + 0.5$ V
Off-state output voltage range at V_S	-0.5 V to 7 V
Voltage range applied to any Y output in the power-off state	-0.5 V to 7 V
Voltage applied to any Y output in the power-off state with respect to V_{bat}	0.5 V
Operating free-air temperature range	0°C to 70°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



recommended operating conditions

		MIN	NOM	MAX	UNIT
V _{CC}	Supply voltage	4.5	5	5.5	V
V _{bat}	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			-400	μA
I _{OL}	Low-level output current	Y outputs		8	mA
		VS outputs		20	
t _t	Input transition time	0		10	ns/V
T _A	Operating free-air temperature	0		70	°C

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 V,	I _I = -18 mA			-1.2	V
V _{OH}		V _{bat} = V _{CC} = 4.5 V	I _{OH} = -20 μA	4.4			V
			I _{OH} = -400 μA	3.5			
		V _{bat} = 2 V, V _{CC} = 0,	I _{OH} = -50 μA	1.8			
V _{OL}	All except VS	V _{bat} = V _{CC} = 4.5 V	I _{OL} = 4 mA			0.4	V
			I _{OL} = 8 mA			0.5	
	VS	V _{bat} = V _{CC} = 4.5 V,	I _{OL} = 20 mA			1	
V _{T‡}					3.65		V
I _I		V _{bat} = V _{CC} = 5.5 V,	V _I = 5.5 V			100	μA
I _{IH}		V _{bat} = V _{CC} = 5.5 V,	V _I = 2.7 V			±20	μA
I _{IL}		V _{bat} = V _{CC} = 5.5 V,	V _I = 0.5 V			±20	μA
I _{OH}	VS	V _{bat} = 4.5 V,	V _{CC} = 0			1	μA
I _{O§}		V _{bat} = V _{CC} = 5.5 V,	V _O = 2.25 V	-30		-200	mA
I _{CC}		V _{bat} = V _{CC} = 5.5 V	Outputs high			3	mA
			Outputs low			3	
I _{bat}		V _{bat} = 2.5 V,	V _{CC} = 0		1	10	μA
		V _{bat} = V _{CC} = 5.5 V	Outputs high			20	
			Outputs low			3	mA
C _i		V _{bat} = V _{CC} = 5 V,	V _I = 0 or 3 V		4		pF
C _o	Any Y	V _{bat} = V _{CC} = 0			6.5		pF
	VS				5		

† All typical values are at V_{CC} = 5 V, T_A = 25°C.

‡ This value represents the V_{CC} monitor threshold voltage. Typical range is from 3.5 V to 3.8 V.

§ This output condition has been chosen to produce a current that closely approximates one half of the short-circuit output current, I_{O§}. Not more than one output should be tested at a time, and the duration of the test should not exceed one second.

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switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 5 V, C _L = 50 pF, R1 = 500 Ω, R2 = 500 Ω, T _A = 25°C			V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R1 = 500 Ω, R2 = 500 Ω, T _A = MIN to MAX†		UNIT
			MIN	TYP	MAX	MIN	MAX	
t _{PLH}	A or B	Any Y	1	5	10	1	12	ns
t _{PHL}			2	5.8	10	2	12	
t _{PLH}	Any \overline{G}	Any Y	1	4.5	9	1	10	ns
t _{PHL}			2	5.5	9	2	11	
t _{PLH}	\overline{SD}	Any Y	2	6.5	11	2	12	ns
t _{PHL}			2	6.5	11	2	12	

switching characteristics (see Note 1)

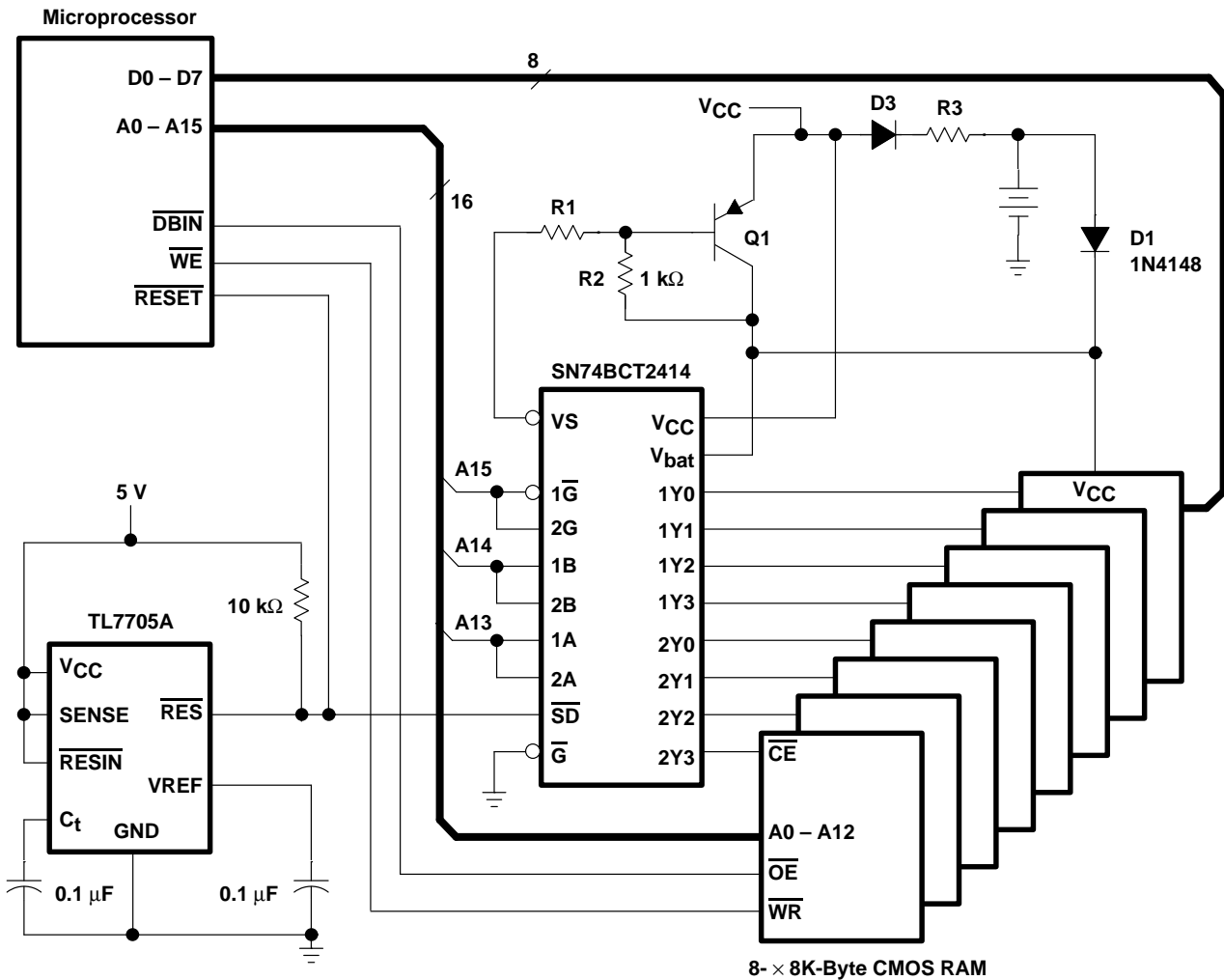
PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 5 V, C _L = 50 pF, R1 = 500 Ω, R2 = 500 Ω, T _A = 25°C			V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R1 = 500 Ω, R2 = 500 Ω, T _A = MIN to MAX†		UNIT
			MIN	TYP	MAX	MIN	MAX	
t _{PLH}	V _{CC}	Any Y	10	25	50	10	250	ns
t _{PHL}			15	45	100	15	250	
t _{PLH}	V _{CC}	VS	10	28	50	10	250	ns
t _{PHL}			20	50	100	20	250	

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

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

APPLICATION INFORMATION

A typical application circuit for a battery-buffered memory in a microcomputer system is shown in Figure 1 which uses the SN74BCT2414. When power fails, the supply-voltage supervisor (TL7705) resets the microcomputer and disables the memory by switching the shutdown input \overline{SD} of the memory decoder to a logic zero. All memory decoder outputs are forced to a logic one. Abnormal write commands from the microprocessor, which may be issued during further voltage breakdown, no longer affect the contents of the memory. When the system supply voltage becomes lower than approximately 3.65 V, the voltage monitor inside the SN74BCT2414 memory decoder disconnects the input buffers of this circuit from the decoding logic internally and keeps all outputs at a logic one. The VS output is also switched off, disconnecting the system supply voltage from the memory circuits. During this low-voltage condition, the memory decoder and the memory circuits are supplied by the battery.



For further information on this device, please contact factory.

Figure 1. Memory System With Battery Backup

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