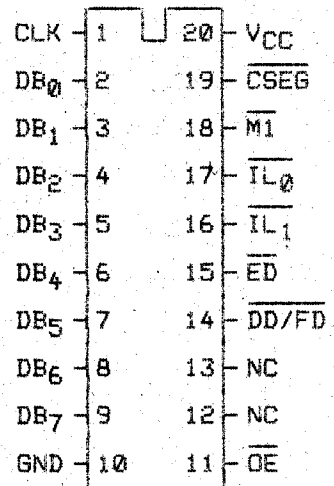* Generates Code Segment output for the entire Z-80 instruction set

* Can expand addressing capacity of Z-80 by separating program code from data (e.g. 64k bytes of program code segment and 64k bytes of data segment)

* Use with 16L802A to generate proper interrupt acknowlegde status for multi-byte interrupt instructions (e.g. CALL)

description

The 16R401A generates a Code Segment output for the Z-80 instruction set. The data bus inputs DB_0 through DB_7 and the $\overline{M1}$ input are decoded on the rising edge of the CLK input. The $\overline{CSEG}$ output will go low for the proper number of CLK cycles according to the instruction decoded on the data bus inputs, or if the $\overline{M1}$ input is low. The $\overline{OE}$ input may be tied high to disable the outputs $\overline{IL_0}$, $\overline{IL_1}$, $\overline{ED}$ and $\overline{DD/FD}$, as these outputs are not required for the normal function of the 16R401A. The $\overline{OE}$ input will not disable the $\overline{CSEG}$ output.

16L802A, 16L802A-15
TOP VIEW

CLK	1	20	V_{CC}
DB_0	2	19	$\overline{CSEG}$
DB_1	3	18	$\overline{M1}$
DB_2	4	17	$\overline{IL_0}$
DB_3	5	16	$\overline{IL_1}$
DB_4	6	15	$\overline{ED}$
DB_5	7	14	$\overline{DD/FD}$
DB_6	8	13	NC
DB_7	9	12	NC
GND	10	11	$\overline{OE}$

NOTE: Make no external connections to pins marked as "NC".

recommended operating conditions

PARAMETER		16R401A 16R401A-15			UNIT
		MIN	NOM	MAX	
Supply voltage, V_{CC}		4.75	5	5.25	V
Setup time DB_0 through DB_7, $\overline{MI}$ to CLK ↑	16R401A			50	ns
	16R401A-15			30	
Off-state output voltage, V_O (off)				5.5	V
Low-level output current, I_{OL}				24	mA
High-level output current, I_{OH}				-3.2	mA
Operating free-air temperature		0		70	deg C

electrical characteristics over operating conditions

PARAMETER	TEST CONDITIONS	16R401A 16R401A-15			UNIT
		MIN	TYP	MAX	
V_{IL} Low-level input voltage				0.8	V
V_{IH} High-level input voltage		2.0			V
V_{IK} Input clamp voltage	V_{CC} = MIN I_I = -18mA		-0.9	-1.2	V
I_{IL} Low-level input current	V_{CC} = MAX V_I = 0.4V		-20	-250	uA
I_{IH} High-level input current	V_{CC} = MAX V_I = 2.4V			25	uA
I_I Maximum input current	V_{CC} = MAX V_I = 5.5V			1	mA
V_{OL} Low-level output voltage	V_{CC} = MIN V_{IL} = MAX I_{OL} = MAX V_{IH} = MIN			0.5	V
V_{OH} High-level output voltage	V_{CC} = MIN V_{IL} = MAX I_{OH} = MAX V_{IH} = MIN	2.4	3.5		V
I_{OS} Short-circuit output current	V_{CC} = 5V	-30	-60	-90	mA
I_{CC} Supply current	V_{CC} = MAX		120	180	mA

switching characteristics over operating conditions
TEST CONDITIONS: R_1 = 200 ohms, R_2 = 390 ohms, C_L = 50 pF

PARAMETER	FROM (INPUT)	TO (OUTPUT)	16R401-1			16R401			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
t_{PLH}					15			25	ns
t_{PHL}					15			25	
t_{PLH}					15			25	ns
t_{PHL}					15			25	
t_{PLH}					30			50	ns
t_{PHL}					30			50	
t_{PLH}					30			50	ns
t_{PHL}					30			50	