3205, 3404
3205 HIGH SPEED 1 OUT OF 8 BINARY DECODER
3404 HIGH SPEED 6-BIT LATCH

- **18ns Max. Delay Over 0°C to 75°C Temperature: 3205**
- **12ns Max. Data to Output Delay Over 0°C to 75°C Temperature: 3404**
- **Directly Compatible With DTL and TTL Logic Circuits**
- **Totem-Pole Output**
- **Low Input Load Current: .25mA Max., 1/6 Standard TTL Input Load**
- **Minimum Line Reflection: Low Voltage Diode Input Clamp**
- **Outputs Sink 10mA Min.**
- **16-Pin Dual In-Line Package**
- **Simple Expansion: Enable Inputs**

3205

The 3205 decoder can be used for expansion of systems which utilize memory components with active low chip select input. When the 3205 is enabled, one of its eight outputs goes "low", thus a single row of a memory system is selected. The 3 chip enable inputs on the 3205 allow easy memory expansion. For very large memory systems, 3205 decoders can be cascaded such that each decoder can drive 8 other decoders for arbitrary memory expansions.

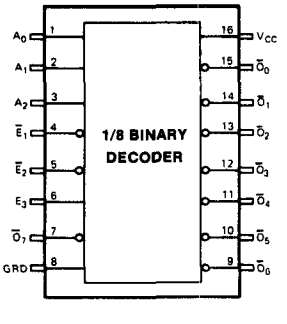
3404

The Intel 3404 contains six high speed latches organized as independent 4-bit and 2-bit latches. They are designed for use as memory data registers, address registers, or other storage elements. The latches act as high speed inverters when the "Write" input is "low".

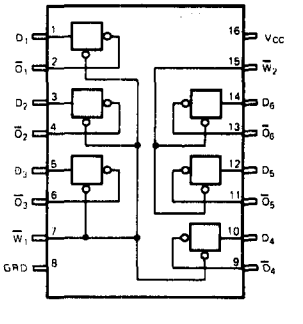
The Intel 3404 is packaged in a standard 16-pin dual-in-line package; and its performance is specified over the temperature range of 0°C to +75°C, ambient. The use of Schottky barrier diode clamped transistors to obtain fast switching speeds results in higher performance than equivalent devices made with a gold diffusion process.

PIN CONFIGURATION

3205



3404



ABSOLUTE MAXIMUM RATINGS*

Temperature Under Bias:	Ceramic	−65°C to +125°C
	Plastic	−65°C to +75°C
Storage Temperature		−65°C to +160°C
All Output or Supply Voltages		−0.5 to +7 Volts
All Input Voltages		−1.0 to +5.5 Volts
Output Currents		125 mA

*COMMENT

Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or at any other condition above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

D.C. CHARACTERISTICS T_A = 0°C to +75°C, V_{CC} = 5.0V ±5%

3205, 3404

SYMBOL	PARAMETER	LIMIT MIN.	LIMIT MAX.	UNIT	TEST CONDITIONS
I_F	INPUT LOAD CURRENT		−0.25	mA	V_{CC} = 5.25V, V_F = 0.45V
I_R	INPUT LEAKAGE CURRENT		10	µA	V_{CC} = 5.25V, V_R = 5.25V
V_C	INPUT FORWARD CLAMP VOLTAGE		−1.0	V	V_{CC} = 4.75V, I_C = −5.0 mA
V_{OL}	OUTPUT "LOW" VOLTAGE		0.45	V	V_{CC} = 4.75V, I_{OL} = 10.0 mA
V_{OH}	OUTPUT HIGH VOLTAGE	2.4		V	V_{CC} = 4.75V, I_{OH} = −1.5 mA
V_{IL}	INPUT "LOW" VOLTAGE		0.85	V	V_{CC} = 5.0V
V_{IH}	INPUT "HIGH" VOLTAGE	2.0		V	V_{CC} = 5.0V
I_{SC}	OUTPUT HIGH SHORT CIRCUIT CURRENT	−40	−120	mA	V_{CC} = 5.0V, V_{OUT} = 0V
V_{OX}	OUTPUT "LOW" VOLTAGE @ HIGH CURRENT		0.8	V	V_{CC} = 5.0V, I_{OX} = 40 mA

3205 ONLY

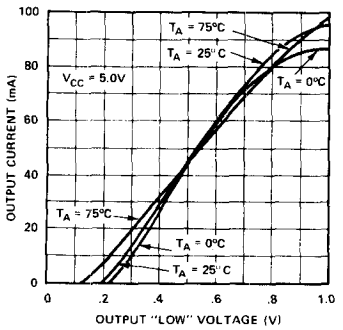
I_{CC}	POWER SUPPLY CURRENT		70	mA	V_{CC} = 5.25V, Outputs Open

3404 ONLY

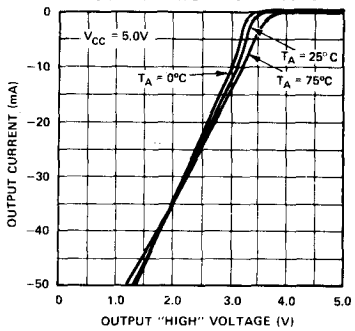
I_{CC}	POWER SUPPLY CURRENT		75	mA	V_{CC} = 5.25V, Outputs Open
I_{FW1}	WRITE ENABLE LOAD CURRENT PIN 7		−1.00	mA	V_{CC}=5.25V, V_W=0.45V
I_{FW2}	WRITE ENABLE LOAD CURRENT PIN 15		−0.50	mA	V_{CC}=5.25V, V_W=0.45V
I_{RW}	WRITE ENABLE LEAKAGE CURRENT		10	µA	V_R=5.25V

TYPICAL CHARACTERISTICS

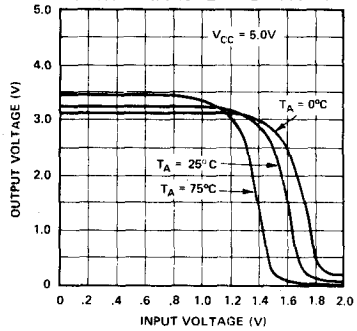
OUTPUT CURRENT VS. OUTPUT "LOW" VOLTAGE



OUTPUT CURRENT VS. OUTPUT "HIGH" VOLTAGE



DATA TRANSFER FUNCTION



3205 HIGH SPEED 1 OUT OF 8 BINARY DECODER

SWITCHING CHARACTERISTICS

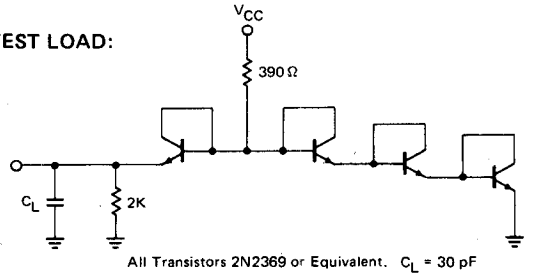
CONDITIONS OF TEST:

Input pulse amplitudes: 2.5V

Input rise and fall times: 5 nsec between 1V and 2V

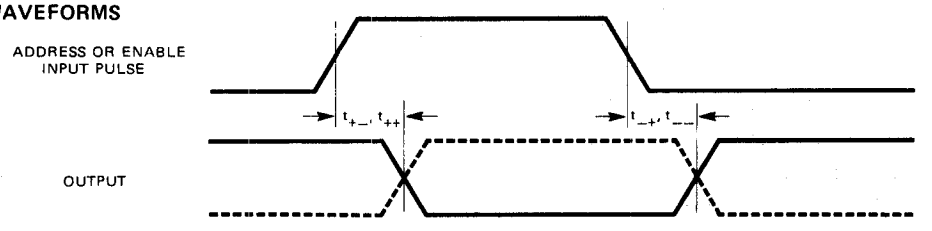
Measurements are made at 1.5V

TEST LOAD:



All Transistors 2N2369 or Equivalent. C_L = 30 pF

TEST WAVEFORMS



A.C. CHARACTERISTICS

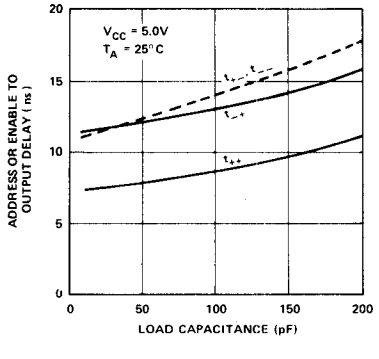
T_A = 0°C to +75°C, V_{CC} = 5.0V ±5% unless otherwise specified.

SYMBOL	PARAMETER		MAX. LIMIT	UNIT	TEST CONDITIONS
t_{++}	ADDRESS OR ENABLE TO OUTPUT DELAY		18	ns	
t_{-+}			18	ns	
t_{+-}			18	ns	
t_{--}			18	ns	
C_{IN} [1]	INPUT CAPACITANCE	P3205	4(typ.)	pF	f = 1 MHz, V_{CC} = 0V
		C3205	5(typ.)	pF	V_{BIAS} = 2.0V, T_A = 25°C

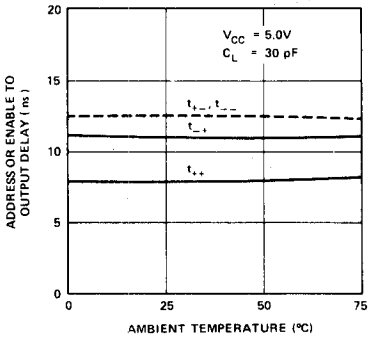
1. This parameter is periodically sampled and is not 100% tested.

TYPICAL CHARACTERISTICS

ADDRESS OR ENABLE TO OUTPUT DELAY VS. LOAD CAPACITANCE



ADDRESS OR ENABLE TO OUTPUT DELAY VS. AMBIENT TEMPERATURE



3404 6-BIT LATCH

SWITCHING CHARACTERISTICS

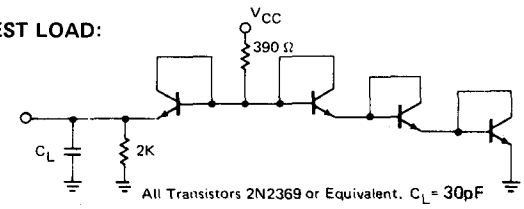
CONDITIONS OF TEST:

Input pulse amplitudes: 2.5V

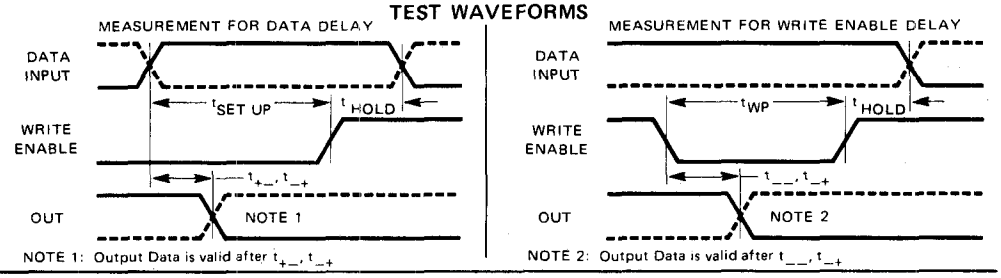
Input rise and fall times: 5 nsec between 1V and 2V

Measurements are made at 1.5V

TEST LOAD:



TEST WAVEFORMS



NOTE 1: Output Data is valid after t_{+-}, t_{-+}

NOTE 2: Output Data is valid after t_{--}, t_{-+}

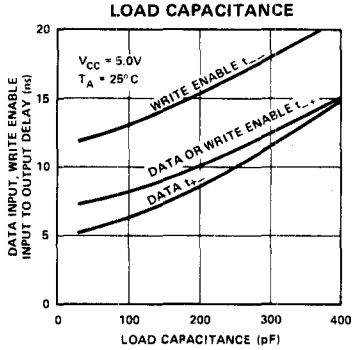
A.C. CHARACTERISTICS T_A = 0°C to +75°C, V_{CC} = 5.0V ±5%; unless otherwise specified.

SYMBOL	PARAMETER		LIMITS MIN.	LIMITS TYP.	LIMITS MAX.	UNIT	TEST CONDITIONS
t_{+-},t_{-+}	DATA TO OUTPUT DELAY				12	ns	
t_{--},t_{-+}	WRITE ENABLE TO OUTPUT DELAY				17	ns	
$t_{SET\ UP}$	TIME DATA MUST BE PRESENT BEFORE RISING EDGE OF WRITE ENABLE		12			ns	
t_{HOLD}	TIME DATA MUST REMAIN AFTER RISING EDGE OF WRITE ENABLE		8			ns	
t_{WP}	WRITE ENABLE PULSE WIDTH		15			ns	
C_{IND}(3)	DATA INPUT CAPACITANCE	P3404		4		pF	f = 1 MHz, V_{CC} = 0V
		C3404		5		pF	V_{BIAS} = 2.0V, T_A = 25°C
C_{INW}(3)	WRITE ENABLE CAPACITANCE	P3404		7		pF	f = 1 MHz, V_{CC} = 0V
		C3404		8		pF	V_{BIAS} = 2.0V, T_A = 25°C

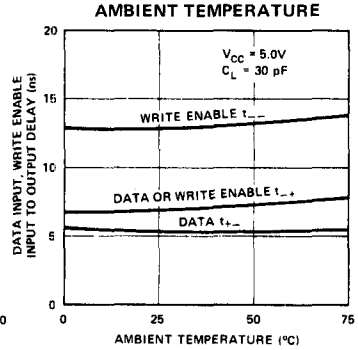
NOTE 3: This parameter is periodically sampled and is not 100% tested.

TYPICAL CHARACTERISTICS

DATA INPUT, WRITE ENABLE TO OUTPUT DELAY VS. LOAD CAPACITANCE



DATA INPUT, WRITE ENABLE TO OUTPUT DELAY VS. AMBIENT TEMPERATURE



WRITE ENABLE PULSE WIDTH VS. LOAD CAPACITANCE