

**MOTOROLA**

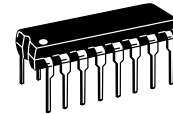
# MTTL Compatible Quad Line Driver

The MC3453 features four SN75110 type line drivers with a common inhibit input. When the inhibit input is high, a constant output current is switched between each pair of output terminals in response to the logic level at that channel's input. When the inhibit is low, all channel outputs are nonconductive (transistors biased to cut-off). This minimizes loading in party-line systems where a large number of drivers share the same line.

- Four Independent Drivers with Common Inhibit Input
- –3.0 V Output Common-Mode Voltage Over Entire Operating Range
- Improved Driver Design Exceeds Performance of Popular SN75110

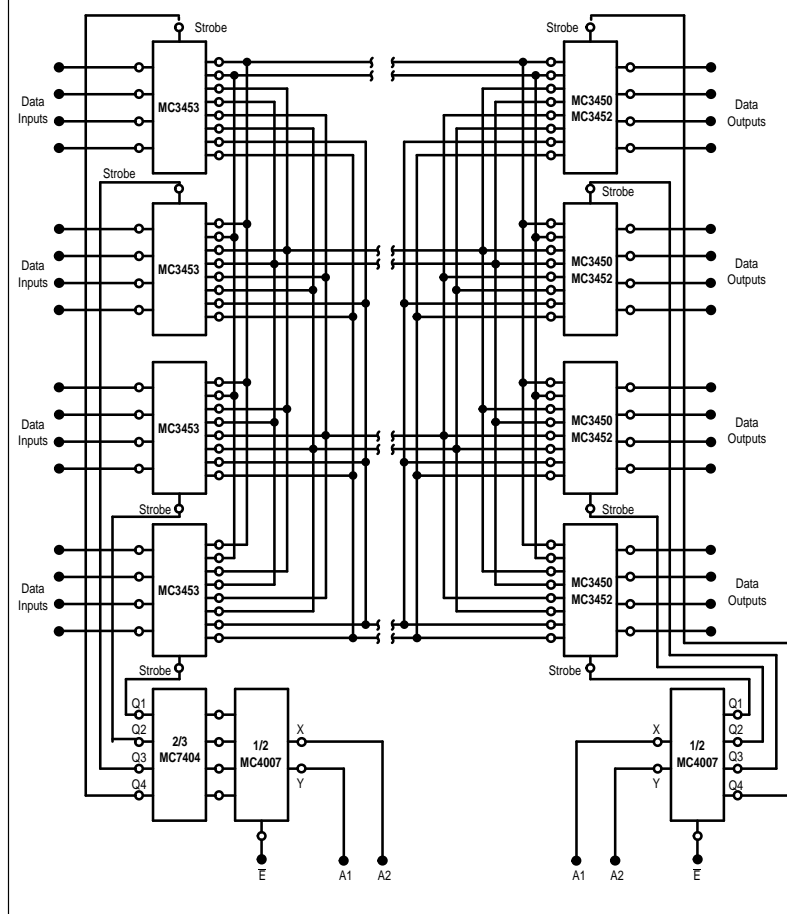
**MC3453**

## QUAD LINE DRIVER WITH COMMON INHIBIT INPUT

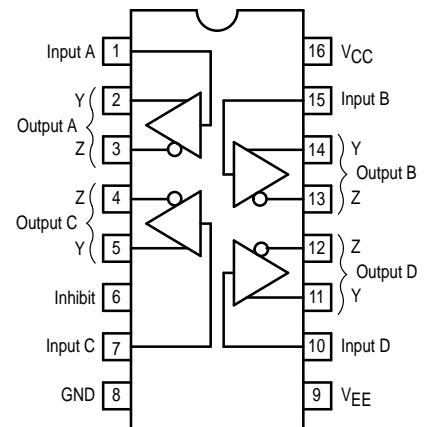
SEMICONDUCTOR  
TECHNICAL DATA

**P SUFFIX**  
PLASTIC PACKAGE  
CASE 648

**Figure 1. Party-Line Data Transmission System with Multiplex Decoding**



## PIN CONNECTIONS



**TRUTH TABLE**  
**(positive logic)**

Logic Input	Inhibit Input	Output Current	
		Z	Y
H	H	On	Off
L	H	Off	On
H	L	Off	Off
L	L	Off	Off

L = Low Logic Level  
H = High Logic Level

## ORDERING INFORMATION

Device	Operating Temperature Range	Package
MC3453P	T <sub>A</sub> = 0 to +70°C	Plastic DIP

**MAXIMUM RATINGS** ( $T_A = 0$  to  $+70^\circ\text{C}$ , unless otherwise noted.)

	Symbol	Value	Unit
Power Supply Voltage	$V_{CC}$	+7.0	V
Logic and Inhibitor Input Voltages	$V_{EE}$ $V_{in}$	-7.0 5.5	V
Common-Mode Output Voltage Range	$V_{OCR}$	-5.0 to +12	V
Power Dissipation (Package Limitation) Plastic Dual In-Line Package Derate above $T_A = 25^\circ\text{C}$	$P_D$	1000 6.6	mW mW/ $^\circ\text{C}$
Operating Ambient Temperature Range	$T_A$	0 to $+70$	$^\circ\text{C}$
Storage Temperature Range Plastic and Ceramic Dual In-Line Packages	$T_{stg}$	-65 to +150	$^\circ\text{C}$

**RECOMMENDED OPERATING CONDITIONS** (See Notes 1 and 2.)

Characteristic	Symbol	Min	Nom	Max	Unit
Power Supply Voltages	$V_{CC}$ $V_{EE}$	+4.75 -4.75	+5.0 -5.0	+5.25 -5.25	V
Common-Mode Output Voltage Range	$V_{OCR}$				V
Positive		0	-	+10	
Negative		0	-	-3.0	

**NOTES:** 1. These voltage values are in respect to the ground terminal.

2. When not using all four channels, unused outputs **must** be grounded.

**DEFINITIONS OF INPUT LOGIC LEVELS\***

Characteristic	Symbol	Min	Max	Unit
High-Level Input Voltage (at any input)	$V_{IH}$	2.0	5.5	V
Low-Level Input Voltage (at any input)	$V_{IL}$	0	0.8	V

\* The algebraic convention, where the most positive limit is designated maximum, is used with Logic Level Input Voltage Levels only.

**ELECTRICAL CHARACTERISTICS** ( $T_A = 0$  to  $+70^\circ\text{C}$ , unless otherwise noted.)

Characteristic##	Symbol	Min	Typ#	Max	Unit
High-Level Input Current (Logic Inputs) ( $V_{CC} = \text{Max}$ , $V_{EE} = \text{Max}$ , $V_{IH_L} = 2.4 \text{ V}$ )	$I_{IH_L}$	-	-	40	$\mu\text{A}$
( $V_{CC} = \text{Max}$ , $V_{EE} = \text{Max}$ , $V_{IH_L} = V_{CC} \text{ Max}$ )		-	-	1.0	mA
Low-Level Input Current (Logic Inputs) ( $V_{CC} = \text{Max}$ , $V_{EE} = \text{Max}$ , $V_{IL_L} = 0.4 \text{ V}$ )	$I_{IL_L}$	-	-	-1.6	mA
High-Level Input Current (Inhibit Input) ( $V_{CC} = \text{Max}$ , $V_{EE} = \text{Max}$ , $V_{IH_I} = 2.4 \text{ V}$ )	$I_{IH_I}$	-	-	40	$\mu\text{A}$
( $V_{CC} = \text{Max}$ , $V_{EE} = \text{Max}$ , $V_{IH_I} = V_{CC} \text{ Max}$ )		-	-		
Low-Level Input Current (Inhibit Input) ( $V_{CC} = \text{Max}$ , $V_{EE} = \text{Max}$ , $V_{IL_I} = 0.4 \text{ V}$ )	$I_{IL_I}$	-	-	-1.6	mA
Output Current ("ON" state) ( $V_{CC} = \text{Max}$ , $V_{EE} = \text{Max}$ ) ( $V_{CC} = \text{Min}$ , $V_{EE} = \text{Min}$ )	$I_{O(on)}$	- 6.5	11 11	15 -	mA
Output Current ("OFF" state) ( $V_{CC} = \text{Min}$ , $V_{EE} = \text{Min}$ )	$I_{O(off)}$	-	5.0	100	$\mu\text{A}$
Supply Current from $V_{CC}$ (with driver enabled) ( $V_{IL_L} = 0.4 \text{ V}$ , $V_{IH_I} = 2.0 \text{ V}$ )	$I_{CC(on)}$	-	35	50	mA
Supply Current from $V_{EE}$ (with driver enabled) ( $V_{IL_L} = 0.4 \text{ V}$ , $V_{IH_I} = 2.0 \text{ V}$ )	$I_{EE(on)}$	-	65	90	mA
Supply Current from $V_{CC}$ (with driver inhibited) ( $V_{IL_L} = 0.4 \text{ V}$ , $V_{IL_I} = 0.4 \text{ V}$ )	$I_{CC(off)}$	-	35	50	mA
Supply Current from $V_{EE}$ (with driver inhibited) ( $V_{IL_L} = 0.4 \text{ V}$ , $V_{IL_I} = 0.4 \text{ V}$ )	$I_{EE(off)}$	-	25	40	mA

#All typical values are at  $V_{CC} = 5.0 \text{ V}$ ,  $V_{EE} = -5.0 \text{ V}$ ,  $T_A = 25^\circ\text{C}$ .

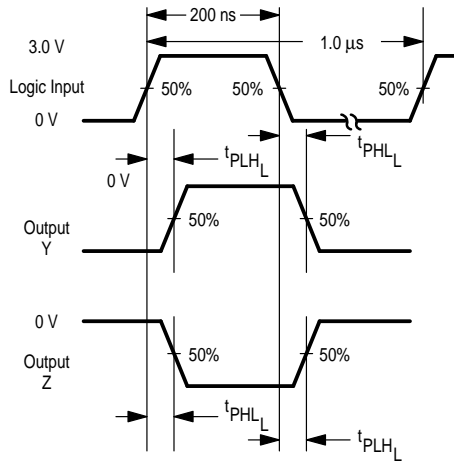
##For conditions shown as Min or Max, use the appropriate value specified under recommended operating conditions for the applicable device type.  
Ground unused inputs and outputs.

# MC3453

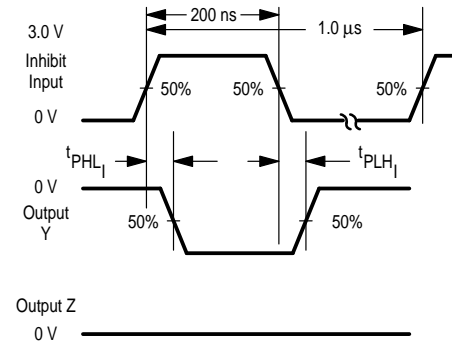
## SWITCHING CHARACTERISTICS ( $V_{CC} = 5.0\text{ V}$ , $V_{EE} = -5.0\text{ V}$ , $T_A = 25^\circ\text{C}$ .)

Characteristic	Symbol	Min	Typ	Max	Unit
Propagation Delay Time from Logic Input to Output Y or Z ( $R_L = 50\text{ ohms}$ , $C_L = 40\text{ pF}$ )	$t_{PLH_L}$ $t_{PHL_L}$	— —	9.0 9.0	17 17	ns
Propagation Delay time from Inhibit Input to Output Y or Z ( $R_L = 50\text{ ohms}$ , $C_L = 40\text{ pF}$ )	$t_{PLH_I}$ $t_{PHL_I}$	— —	20 16	25 25	ns

**Figure 2. Logic Input to Outputs Propagation Delay Time Waveforms**

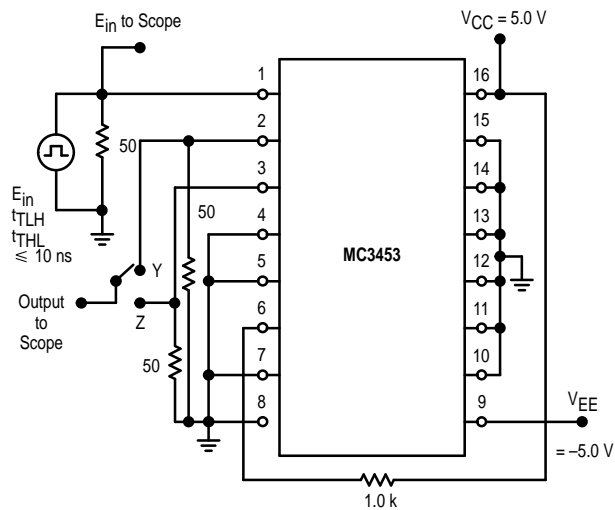


**Figure 3. Inhibit Input to Outputs Propagation Delay Time Waveforms**



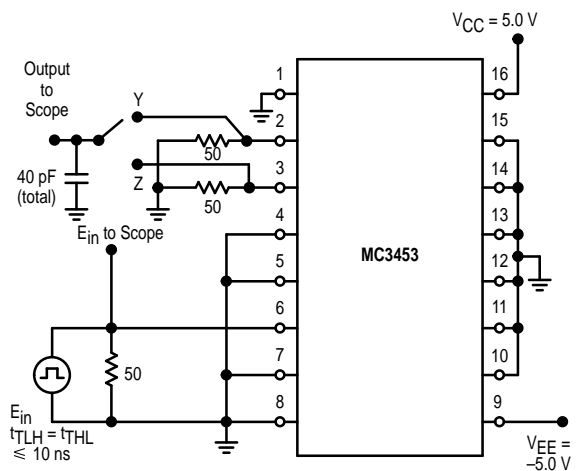
## TEST CIRCUITS

**Figure 4. Logic Input to Output Propagation Delay Time Test Circuit**



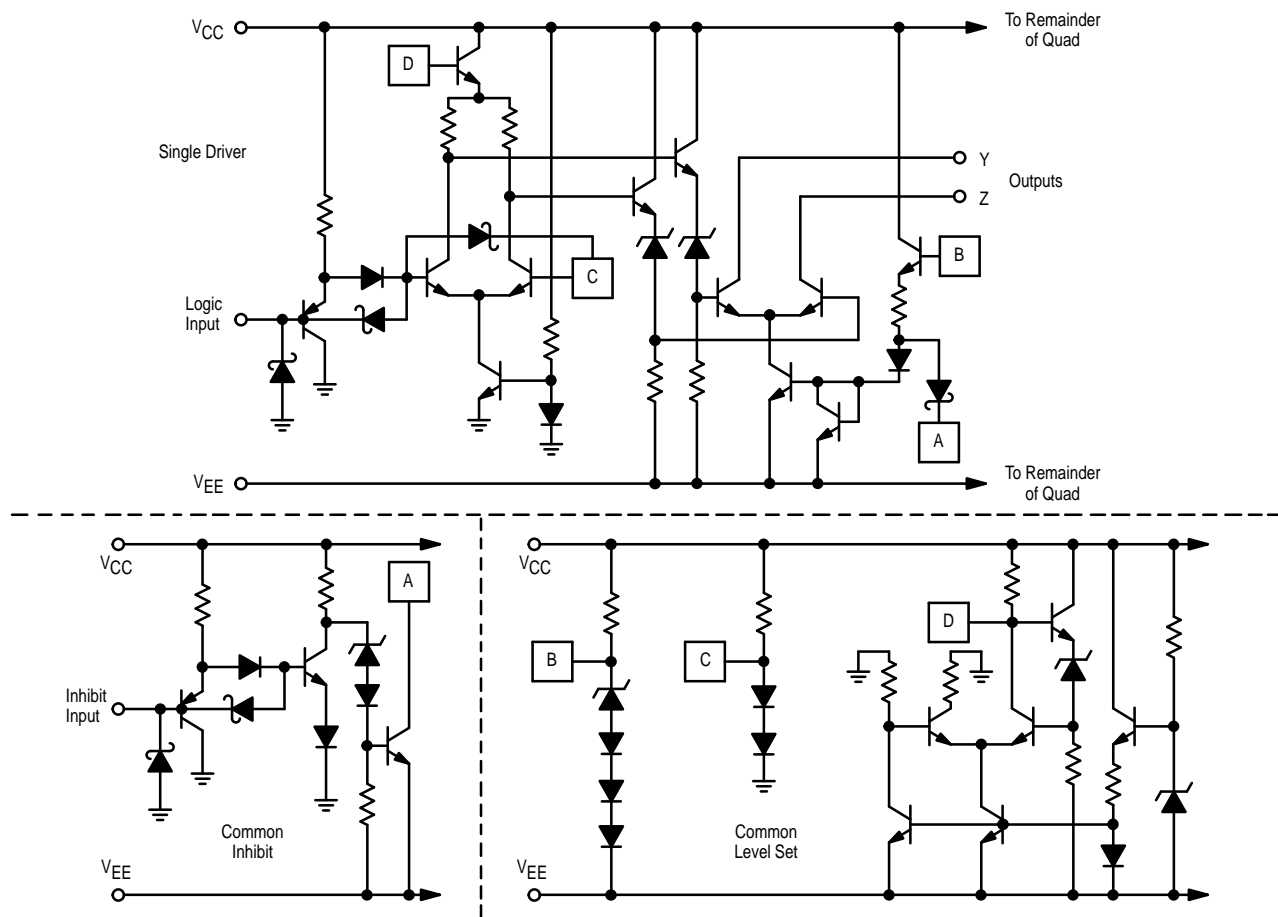
Channel A shown under test, the other channels are tested similarly.

**Figure 5. Inhibit Input to Output Propagation Delay time Test Circuit**



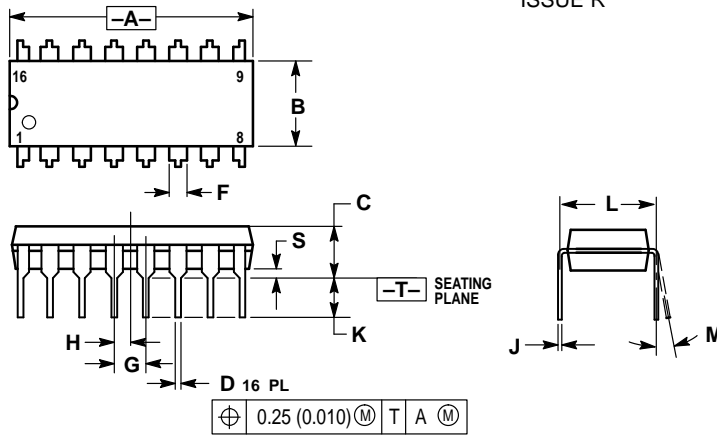
Channel A shown under test, the other channels are tested similarly.

**Figure 6. Circuit Schematic**  
(1/4 Circuit Shown)



## OUTLINE DIMENSIONS


**P SUFFIX**  
**PLASTIC PACKAGE**  
CASE 648-08  
ISSUE R



## NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.
5. ROUNDED CORNERS OPTIONAL.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.740	0.770	18.80	19.55
B	0.250	0.270	6.35	6.85
C	0.145	0.175	3.69	4.44
D	0.015	0.021	0.39	0.53
F	0.040	0.70	1.02	1.77
G	0.100 BSC		2.54 BSC	
H	0.050 BSC		1.27 BSC	
J	0.008	0.015	0.21	0.38
K	0.110	0.130	2.80	3.30
L	0.295	0.305	7.50	7.74
M	0°	10°	0°	10°
S	0.020	0.040	0.51	1.01

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