

Absolute Maximum Ratings (Note 1)

If Military/Aerospace specified devices are required, contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Voltage at any Input Pin $V_{CC} - 25V$ to GND + 25V

Voltage at any other Pin $-0.3V$ to $V_{CC} + 0.3V$

Operating Temperature Range (T_A) $-55^{\circ}C$ to $+125^{\circ}C$

MM54C914

$-40^{\circ}C$ to $+85^{\circ}C$

MM74C914

Storage Temperature Range (T_S) $-65^{\circ}C$ to $+150^{\circ}C$

Power Dissipation

Dual-In-Line 700 mW

Small Outline 500 mW

Operating V_{CC} Range 3V to 15V

Absolute Maximum (V_{CC}) 18V

Lead Temperature (T_L) 300°C

(Soldering, 10 seconds)

DC Electrical Characteristics Min/Max limits apply across temperature range unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Units
CMOS TO CMOS						
V_{T+}	Positive Going Threshold Voltage	$V_{CC} = 5V$	3.0	3.6	4.3	V
		$V_{CC} = 10V$	6.0	6.8	8.6	V
		$V_{CC} = 15V$	9.0	10	12.9	V
V_{T-}	Negative Going Threshold Voltage	$V_{CC} = 5V$	0.7	1.4	2.0	V
		$V_{CC} = 10V$	1.4	3.2	4.0	V
		$V_{CC} = 15V$	2.1	5	6.0	V
$V_{T+} - V_{T-}$	Hysteresis	$V_{CC} = 5V$	1.0	2.2	3.6	V
		$V_{CC} = 10V$	2.0	3.6	7.2	V
		$V_{CC} = 15V$	3.0	5	10.8	V
$V_{OUT(1)}$	Logical "1" Output Voltage	$V_{CC} = 5V, I_O = -10 \mu A$	4.5			V
		$V_{CC} = 10V, I_O = -10 \mu A$	9.0			V
$V_{OUT(0)}$	Logical "0" Output Voltage	$V_{CC} = 5V, I_O = +10 \mu A$			0.5	V
		$V_{CC} = 10V, I_O = +10 \mu A$			1.0	V
$I_{IN(1)}$	Logical "1" Input Current	$V_{CC} = 15V, V_{IN} = 25V$		0.005	5.0	μA
$I_{IN(0)}$	Logical "0" Input Current	$V_{CC} = 15V, V_{IN} = -10V$	-100	-0.005		μA
I_{CC}	Supply Current	$V_{CC} = 15V, V_{IN} = -10V/25V$		0.05	300	μA
		$V_{CC} = 5V, V_{IN} = -2.5V$ (Note 4)		20		μA
		$V_{CC} = 10V, V_{IN} = 5V$ (Note 4)		200		μA
		$V_{CC} = 15V, V_{IN} = 7.5V$ (Note 4)		600		μA

CMOS/LPTTL INTERFACE

$V_{IN(1)}$	Logical "1" Input Voltage	$V_{CC} = 5V$	4.3			V
$V_{IN(0)}$	Logical "0" Input Voltage	$V_{CC} = 5V$			0.7	V
$V_{OUT(1)}$	Logical "1" Output Voltage	54C, $V_{CC} = 4.5V, I_O = -360 \mu A$	2.4			V
		74C, $V_{CC} = 4.75V, I_O = -360 \mu A$	2.4			V
$V_{OUT(0)}$	Logical "0" Output Voltage	54C, $V_{CC} = 4.5V, I_O = 360 \mu A$			0.4	V
		74C, $V_{CC} = 4.75V, I_O = 360 \mu A$			0.4	V

OUTPUT DRIVE (See 54C/74C Family Characteristics Data Sheet) (Short Circuit Current)

I_{SOURCE}	Output Source Current (P-Channel)	$V_{CC} = 5V, V_{OUT} = 0V, T_A = 25^{\circ}C$	-1.75	-3.3		mA
I_{SOURCE}	Output Source Current (P-Channel)	$V_{CC} = 10V, V_{OUT} = 0V, T_A = 25^{\circ}C$	-8.0	-15		mA
I_{SINK}	Output Sink Current (N-Channel)	$V_{CC} = 5V, V_{OUT} = V_{CC}, T_A = 25^{\circ}C$	1.75	3.6		mA
I_{SINK}	Output Sink Current (N-Channel)	$V_{CC} = 10V, V_{OUT} = V_{CC}, T_A = 25^{\circ}C$	8.0	16		mA

AC Electrical Characteristics* $T_A = 25^\circ\text{C}$, $C_L = 50\text{ pF}$, unless otherwise specified

Symbol	Parameter	Conditions	Min	Typ	Max	Units
t_{PHL}	Propagation Delay from Input to Output	$V_{CC} = 5\text{V}$		220	400	ns
t_{PLH}		$V_{CC} = 10\text{V}$		80	200	ns
C_{IN}	Input Capacitance	Any Input (Note 2)		5		pF
C_{PD}	Power Dissipation Capacitance	(Note 3) Per Gate		20		pF

*AC Parameters are guaranteed by DC correlated testing.

Note 1: "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. Except for "Operating Temperature Range", they are not meant to imply that the devices should be operated at these limits. The table of "Electrical Characteristics" provides conditions for actual device operation.

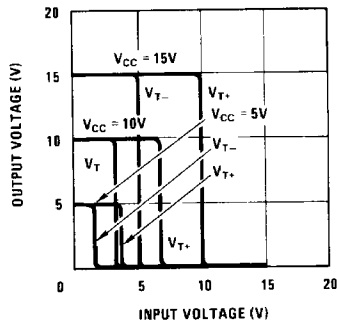
Note 2: Capacitance is guaranteed by periodic testing.

Note 3: C_{PD} determines the no load AC power consumption of any CMOS device. For complete explanation see 54C/74C Family Characteristics Application Note, AN-90.

Note 4: Only one input is at $\frac{1}{2} V_{CC}$, the others are either at V_{CC} or GND.

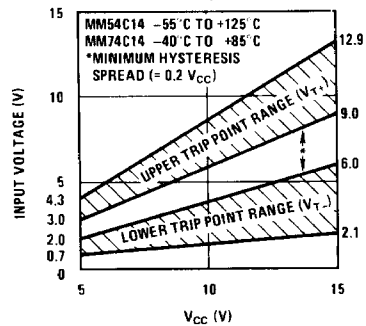
Typical Performance Characteristics

Typical Transfer Characteristics

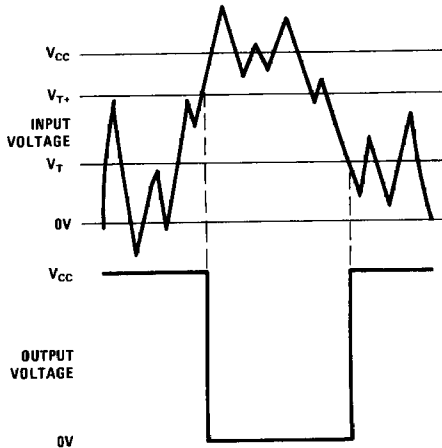


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Guaranteed Trip Point Range

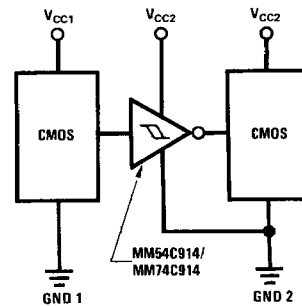


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Typical Application



Note: $V_{CC1} = V_{CC2}$
 $GND1 = GND2$

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