

MCH12140, MCK12140

Table 1. TRUTH TABLE*

Input		Output				Input		Output			
R	V	U	D	U	D	R	V	U	D	U	D
0	0	X	X	X	X	1	1	0	0	1	1
0	1	X	X	X	X	1	0	0	0	1	1
1	1	X	X	X	X	1	1	0	1	1	0
0	1	X	X	X	X	1	0	0	1	1	0
1	1	1	0	0	1	1	1	0	1	1	0
0	1	1	0	0	1	0	1	0	1	1	0
1	1	1	0	0	1	1	1	0	0	1	1
1	0	1	0	0	1						

*This is not strictly a functional table; i.e., it does not cover all possible modes of operation. However, it gives a sufficient number of tests to ensure that the device will function properly.

Table 2. H SERIES DC CHARACTERISTICS ($V_{EE} = V_{EE(min)} - V_{EE(max)}$; $V_{CC} = GND$ (Note 2), unless otherwise noted.)

Symbol	Characteristic	40 C		0 C		25 C		70 C		Unit
		Min	Max	Min	Max	Min	Max	Min	Max	
V_{OH}	Output HIGH Voltage	-1080	-890	-1020	-840	-980	-810	-910	-720	mV
V_{OL}	Output LOW Voltage	-1950	-1650	-1950	-1630	-1950	-1630	-1950	-1595	mV
V_{IH}	Input HIGH Voltage	-1230	-890	-1170	-840	-1130	-810	-1060	-720	mV
V_{IL}	Input LOW Voltage	-1950	-1500	-1950	-1480	-1950	-1480	-1950	-1445	mV
I_{IL}	Input LOW Current	0.5	-	0.5	-	0.5	-	0.3	-	mA

Table 3. K SERIES DC CHARACTERISTICS ($V_{EE} = V_{EE(min)} - V_{EE(max)}$; $V_{CC} = GND$ (Note 3), unless otherwise noted.)

Symbol	Characteristic	40 C			0 C to 70 C			Condition	Unit
		Min	Typ	Max	Min	Typ	Max		
V_{OH}	Output HIGH Voltage	-1085	-1005	-880	-1025	-955	-880	$V_{IN} = V_{IH(max)}$ or $V_{IL(min)}$	mV
V_{OL}	Output LOW Voltage	-1830	-1695	-1555	-1810	-1705	-1620		mV
V_{OHA}	Output HIGH Voltage	-1095	-	-	-1035	-	-	$V_{IN} = V_{IH(min)}$ or $V_{IL(max)}$	mV
V_{OLA}	Output LOW Voltage	-	-	-1555	-	-	-1610		mV
V_{IH}	Input HIGH Voltage	-1165	-	-880	-1165	-	-880	-	mV
V_{IL}	Input LOW Voltage	-1810	-	-1475	-1810	-	-1475	-	

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Table 4. MAXIMUM RATINGS

Symbol	Rating	Value	Unit
V_{EE}	Power Supply ($V_{CC} = 0$ V)	-8.0 to 0	VDC
V_I	Input Voltage ($V_{CC} = 0$ V)	0 to -6.0	VDC
I_{out}	Output Current Continuous Surge	50 100	mA
T_A	Operating Temperature Range	-40 to +70	C
V_{EE}	Operating Range (Note 4)	-5.7 to -4.2	V

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

NOTE: ESD data available upon request.

- 10H circuits are designed to meet the DC specifications shown in the table after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500 lfm is maintained. Outputs are terminated through a 50 Ω resistor to -2.0 V except where otherwise specified on the individual data sheets.
- This table replaces the three tables traditionally seen in ECL 100 K data books. The same DC parameter values at $V_{EE} = -4.5$ V now apply across the full V_{EE} range of -4.2 V to -5.5 V. Outputs are terminated through a 50 Ω resistor to -2.0 V except where otherwise specified on the individual data sheets.
- Parametric values specified at:
H-Series: -4.20 V to -5.50 V
K-Series:

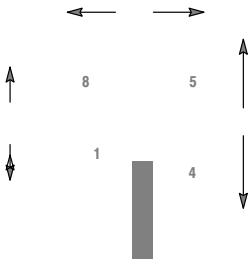
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APPLICATIONS INFORMATION

The 12140 is a high speed digital circuit used as a phase comparator in an analog phase-locked loop. The device determines the “lead” or “lag” phase relationship and time difference between the leading edges of a VCO (V) signal and a Reference (R) input. Since these edges occur only once per cycle, the detector has a range of ± 2

SOIC 8 NB
CASE 751-07
ISSUE AK

DATE 16 FEB 2011



SEATING
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