

MITSUBISHI LSTTLs
M74LS280P

9-BIT ODD/EVEN PARITY GENERATOR/CHECKER

DESCRIPTION

The M74LS280P is a semiconductor integrated circuit containing a 9-bit parity generator/checker function.

FEATURES

- Easy expansion of bits with cascade connection
- Wide operating temperature range ($T_a = -20 \sim +75^\circ\text{C}$)

APPLICATION

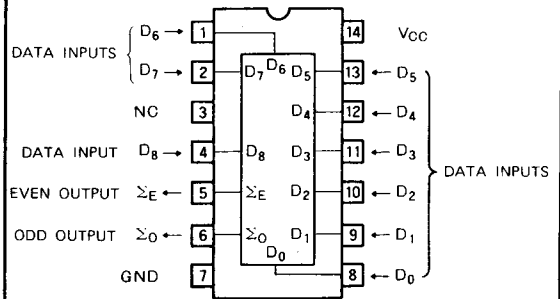
General purpose, for use in industrial and consumer equipment.

FUNCTIONAL DESCRIPTION

This device is provided with both a 9-bit parity generator and checker functions. For use as a parity generator, parity outputs in even output Σ_E and odd output Σ_O are obtained in accordance with the function table, depending on whether the number of high-level data in the inputs is even or odd when 9-bit data are applied to data inputs $D_0 \sim D_8$.

For use as a parity checker, one of the 9-bit data inputs is used for the even or odd parity designation and the remaining 8 bits are used as the data.

PIN CONFIGURATION (TOP VIEW)



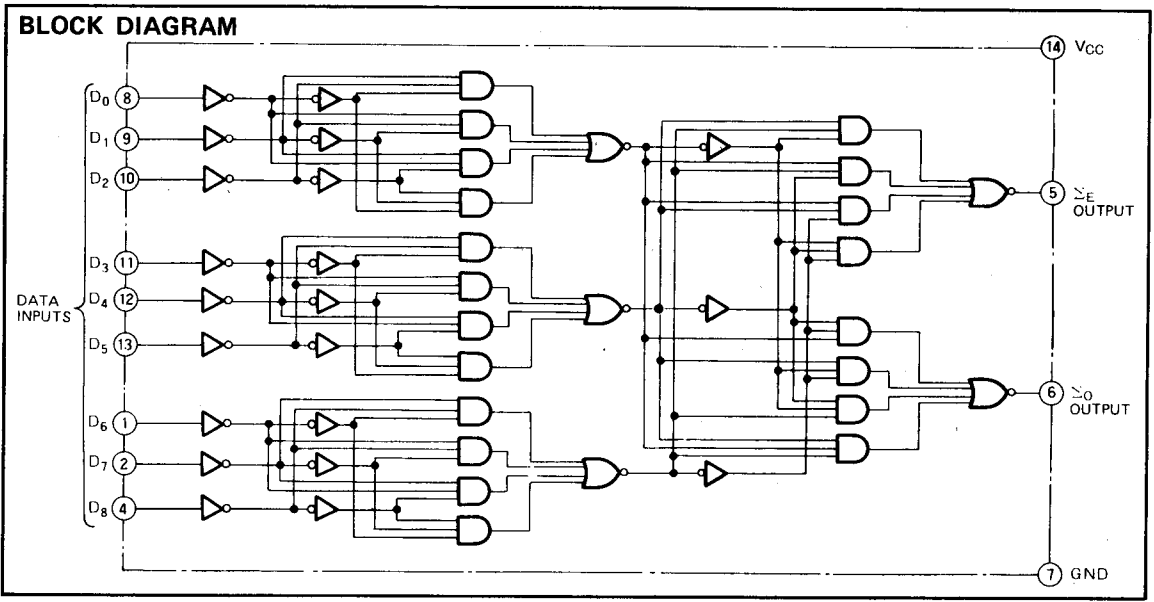
Outline 14P4

NC : NO CONNECTION

FUNCTION TABLE

Number of high-level data in input data.	Σ_E	Σ_O
Even number	H	L
Odd number	L	H

BLOCK DIAGRAM



9-BIT ODD/EVEN PARITY GENERATOR/CHECKER

ABSOLUTE MAXIMUM RATINGS ($T_a = -20 \sim +75^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Limits	Unit
V_{CC}	Supply voltage		-0.5 ~ +7	V
V_I	Input voltage		-0.5 ~ +15	V
V_O	Output voltage	High-level state	-0.5 ~ V_{CC}	V
T_{opr}	Operating free-air ambient temperature range		-20 ~ +75	$^\circ\text{C}$
T_{stg}	Storage temperature range		-65 ~ +150	$^\circ\text{C}$

RECOMMENDED OPERATING CONDITIONS ($T_a = -20 \sim +75^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Limits			Unit
		Min	Typ	Max	
V_{CC}	Supply voltage	4.75	5	5.25	V
I_{OH}	High-level output current	$V_{OH} \geq 2.7\text{V}$	0	-400	μA
I_{OL}	Low-level output current	$V_{OL} \leq 0.4\text{V}$	0	4	mA
		$V_{OL} \leq 0.5\text{V}$	0	8	mA

ELECTRICAL CHARACTERISTICS ($T_a = -20 \sim +75^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ *	Max	
V_{IH}	High-level input voltage		2			V
V_{IL}	Low-level input voltage				0.8	V
V_{IC}	Input clamp voltage	$V_{CC} = 4.75\text{V}$, $I_{IC} = -18\text{mA}$			-1.5	V
V_{OH}	High-level output voltage	$V_{CC} = 4.75\text{V}$, $V_I = 0.8\text{V}$ $V_I = 2\text{V}$, $I_{OH} = -400\mu\text{A}$	2.7	3.4		V
V_{OL}	Low-level output	$V_{CC} = 4.75\text{V}$ $V_I = 0.8\text{V}$, $V_I = 2\text{V}$	$I_{OL} = 4\text{mA}$	0.25	0.4	V
			$I_{OL} = 8\text{mA}$	0.35	0.5	V
I_{IH}	High-level input current	$V_{CC} = 5.25\text{V}$, $V_I = 2.7\text{V}$			20	μA
		$V_{CC} = 5.25\text{V}$, $V_I = 10\text{V}$			0.1	mA
I_{IL}	Low-level input current	$V_{CC} = 5.25\text{V}$, $V_I = 0.4\text{V}$			-0.4	mA
I_{OS}	Short-circuit output current (Note 1)	$V_{CC} = 5.25\text{V}$, $V_O = 0\text{V}$	-20		-100	mA
I_{CC}	Supply current	$V_{CC} = 5.25\text{V}$ (Note 2)		16	27	mA

* : All typical values are at $V_{CC} = 5\text{V}$, $T_a = 25^\circ\text{C}$.

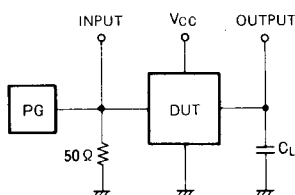
Note 1: All measurements should be done quickly.

Note 2: I_{CC} is measured with all inputs at 0V.

SWITCHING CHARACTERISTICS ($V_{CC} = 5\text{V}$, $T_a = 25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
t_{PLH}	Low-to-high-level, high-to-low-level output propagation time, from inputs $D_0 \sim D_8$ to output Σ_E	$C_L = 15\text{pF}$ (Note 3)		22	50	ns
t_{PHL}				17	45	ns
t_{PLH}	Low-to-high-level, high-to-low-level output propagation time, from inputs $D_0 \sim D_8$ to output Σ_O			16	35	ns
t_{PHL}				17	50	ns

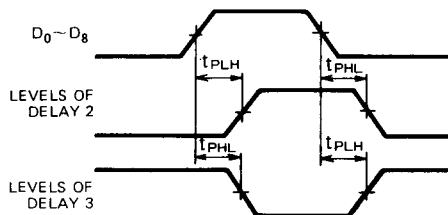
Note 3: Measurement circuit



- (1) The pulse generator (PG) has the following characteristics:
PRR=1MHz, $t_r=6\text{ns}$, $t_f=6\text{ns}$, $t_w=500\text{ns}$, $V_P=3V_{PP}$, $Z_0=50\Omega$.
- (2) C_L includes probe and jig capacitance

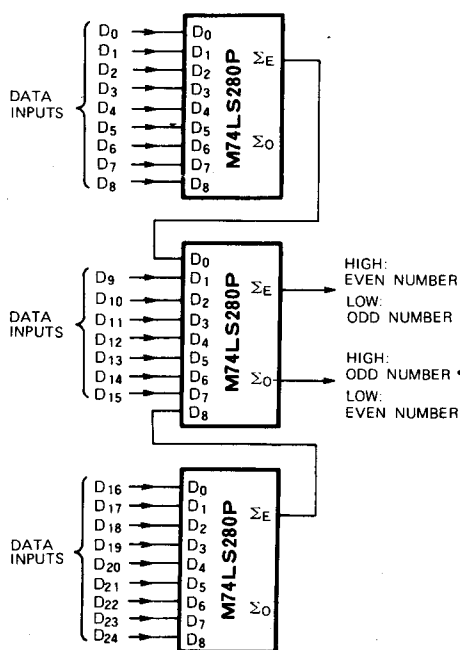
9-BIT ODD/EVEN PARITY GENERATOR/CHECKER

TIMING DIAGRAM (Reference level = 1.3V)

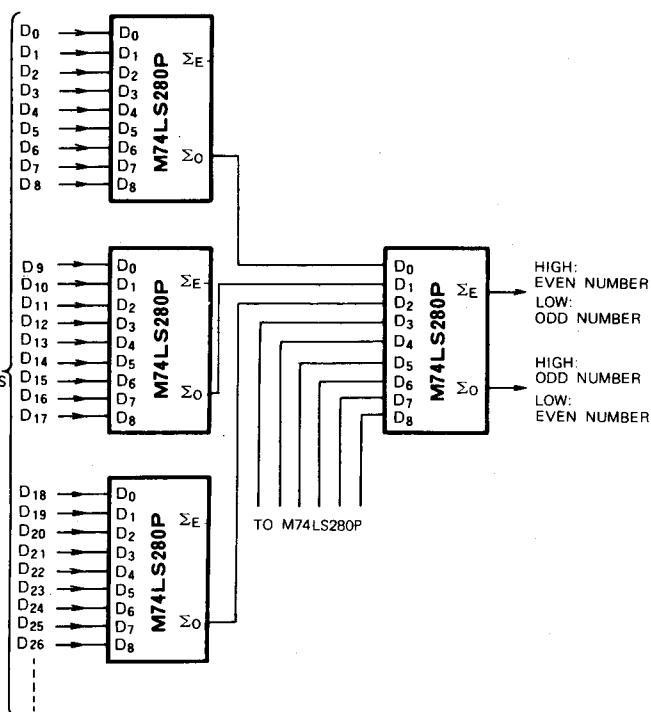


APPLICATIONS EXAMPLES

(1) 25-line parity generator/checker



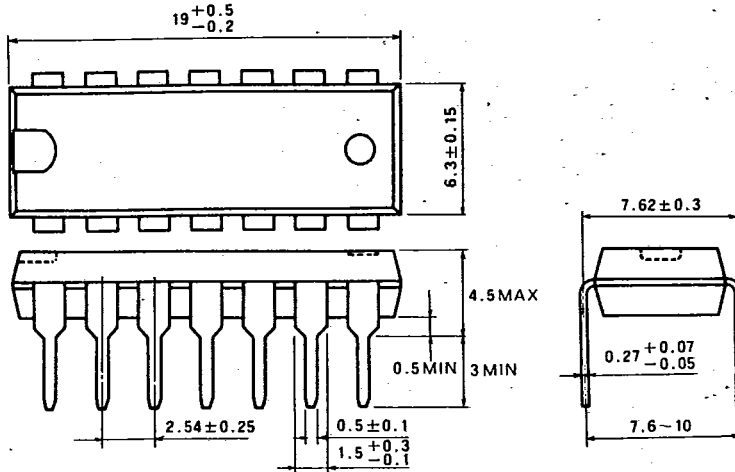
(2) 81-line parity generator/checker



T-90-20

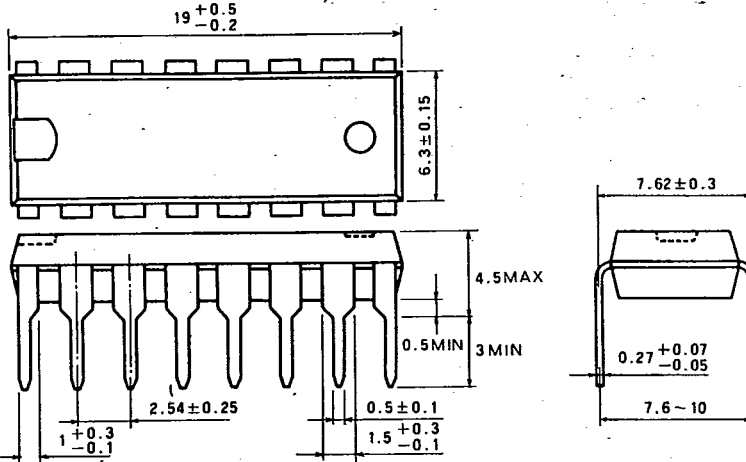
TYPE 14P4 14-PIN MOLDED PLASTIC DIL

Dimension in mm



TYPE 16P4 16-PIN MOLDED PLASTIC DIL

Dimension in mm



TYPE 20P4 20-PIN MOLDED PLASTIC DIL

Dimension in mm

