

DM74AS280

9-Bit Parity Generator/Checker

Features

- Generates either odd or even parity for nine data lines
- Inputs are buffered to lower the drive requirements
- Can be used to upgrade existing systems using MSI parity circuits
- Cascadable for N-bits
- Advanced oxide-isolated, ion-implanted Schottky TTL process
- Switching specifications at 50pF
- Switching specifications guaranteed over full temperature and V_{CC} range

General Description

These universal, 9-bit parity generators/checkers utilize advanced Schottky high performance circuitry and feature odd/even outputs to facilitate operation of either odd or even parity applications. The word length capability is easily expanded by cascading.

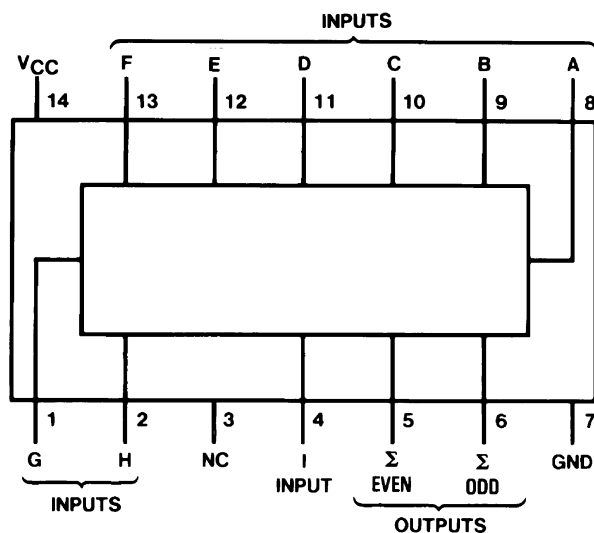
The DM74AS280 can be used to upgrade the performance of most systems utilizing the '180 parity generator/checker. Although the DM74AS280 is implemented without expander inputs, the corresponding function is provided by the availability of an input at pin 4 and no internal connection at pin 3. This permits the DM74AS280 to be substituted for the '180 in existing designs to produce identical function even if DM74AS280s are mixed with existing '180s.

Ordering Information

Order Number	Package Number	Package Description
DM74AS280M	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow

Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering number.

Connection Diagram

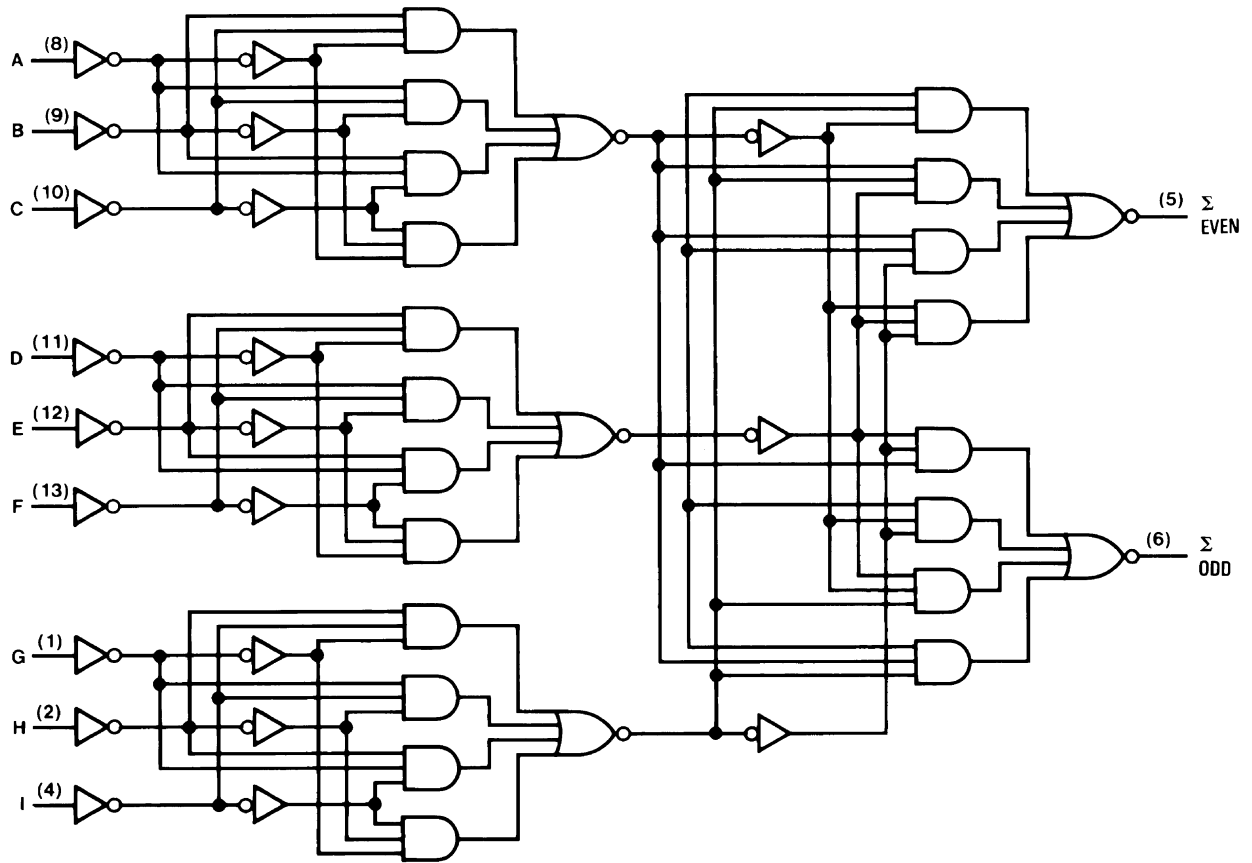


Function Table

Number of Inputs (A thru I) that are HIGH	Outputs	
	Σ Even	Σ Odd
0, 2, 4, 6, 8	H	L
1, 3, 5, 7, 9	L	H

L = LOW State
H = HIGH State

Logic Diagram



Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Symbol	Parameter	Rating
V_{CC}	Supply Voltage	7V
V_I	Input Voltage	7V
T_A	Operating Free Air Temperature Range	0°C to +70°C
T_{STG}	Storage Temperature Range	-65°C to +150°C
θ_{JA}	Typical Thermal Resistance	108.0°C/W

Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended operating conditions are specified to ensure optimal performance to the datasheet specifications. Fairchild does not recommend exceeding them or designing to absolute maximum ratings.

Symbol	Parameter	Min.	Typ.	Max.	Units
V_{CC}	Supply Voltage	4.5	5	5.5	V
V_{IH}	HIGH Level Input Voltage	2			V
V_{IL}	LOW Level Input Voltage			0.8	V
I_{OH}	HIGH Level Output Current			-2	mA
I_{OL}	LOW Level Output Current			20	mA
T_A	Free-Air Operating Temperature	0		70	°C

Electrical Characteristics

Over recommended free-air temperature range. All typical values are measured at $V_{CC} = 5V$, $T_A = 25^\circ C$.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{IK}	Input Clamp Voltage	$V_{CC} = 4.5V$, $I_I = -18mA$			-1.2	V
V_{OH}	HIGH Level Output Voltage	$I_{OH} = -2 mA$, $V_{CC} = 4.5V$ to $5.5V$	$V_{CC} - 2$			V
V_{OL}	LOW Level Output Voltage	$V_{CC} = 4.5V$, $I_{OL} = Max.$		0.35	0.5	V
I_I	Input Current @ Max Input Voltage	$V_{CC} = 5.5V$, $V_{IH} = 7V$			0.1	mA
I_{IH}	HIGH Level Input Current	$V_{CC} = 5.5V$, $V_{IH} = 2.7V$			20	μA
I_{IL}	LOW Level Input Current	$V_{CC} = 5.5V$, $V_{IL} = 0.4V$			-0.5	mA
I_O	Output Drive Current	$V_{CC} = 5.5V$, $V_O = 2.25V$	-30		-112	mA
I_{CC}	Supply Current	$V_{CC} = 5.5V$		25	40	mA

Switching Characteristics

Over recommended operating free air temperature range.

Symbol	Parameter	Conditions	From	To	Min.	Max.	Units
t_{PLH}	Propagation Delay Time, LOW-to-HIGH Level Output	$V_{CC} = 4.5V$ to $5.5V$, $C_L = 50pF$, $R_L = 500\Omega$	Data	Σ Even	3	12	ns
t_{PHL}	Propagation Delay Time, HIGH-to-LOW Level Output			Σ Odd	3	11	ns
t_{PLH}	Propagation Delay Time, LOW-to-HIGH Level Output		Data	Σ Odd	3	12	ns
t_{PHL}	Propagation Delay Time, HIGH-to-LOW Level Output				3	11.5	ns

Typical Applications

Three DM74AS280s can be used to implement a 25-line parity generator/checker.

As an alternative, the outputs of two or three parity generators/checkers can be decoded with a 2-input (AS86) or 3-input (S135) exclusive-OR gate for 18 or 27-line parity applications.

Longer word lengths can be implemented by cascading DM74AS280s. As shown in Figure 2, parity can be generated for word lengths up to 81 bits.

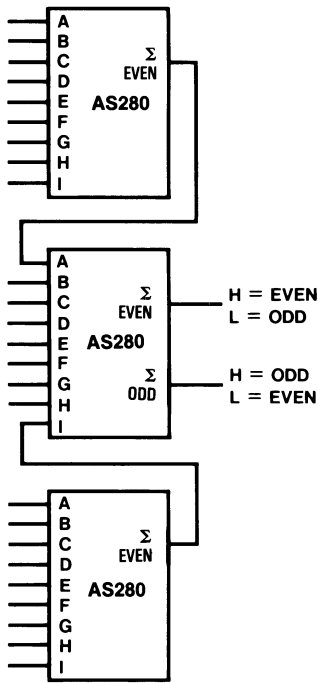


Figure 1. 25-Line Parity/Generator Checker

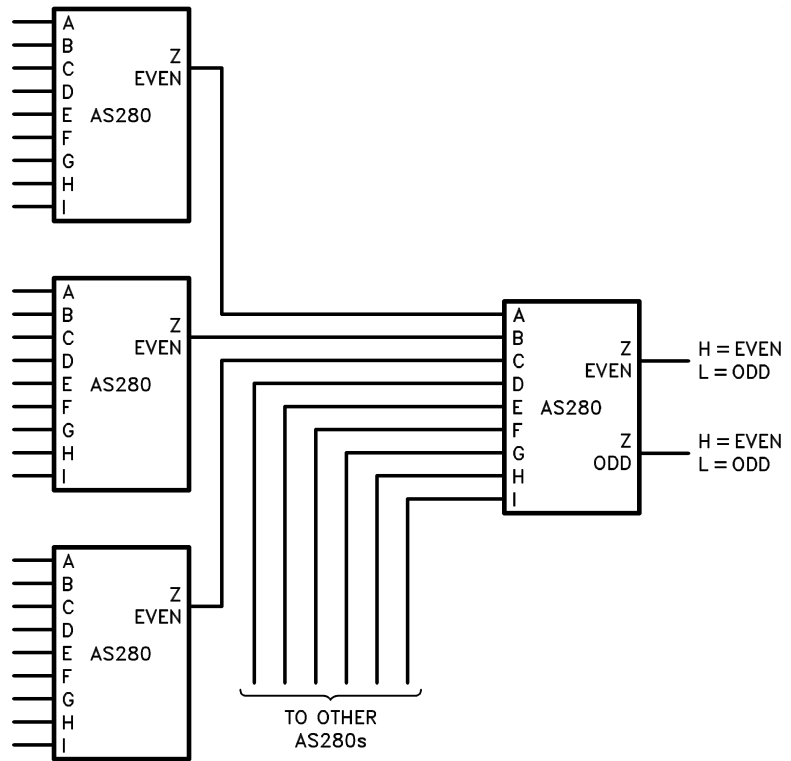
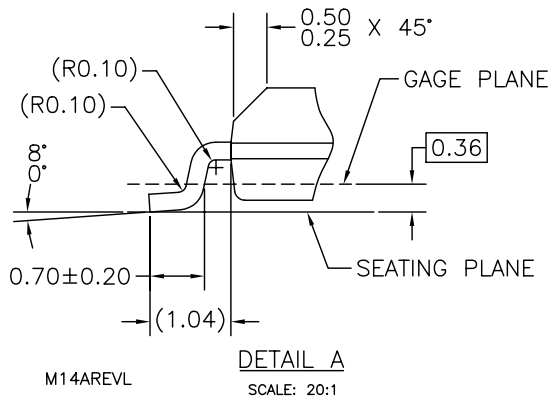
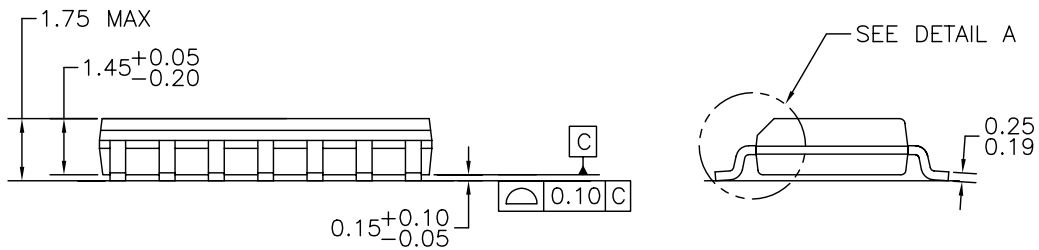
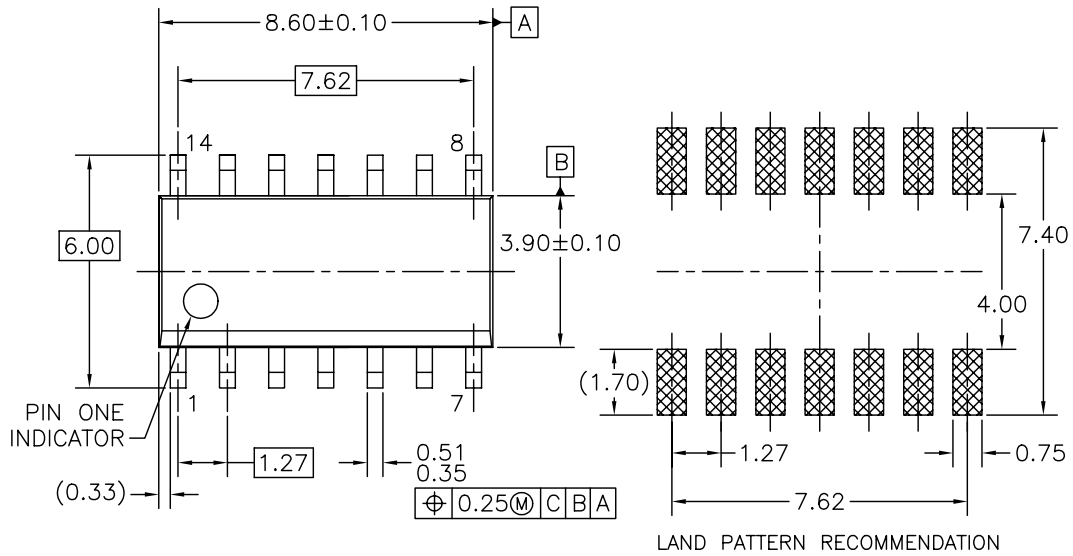


Figure 2. 81-Line Parity/Generator Checker

Physical Dimensions

Dimensions are in millimeters unless otherwise noted.



NOTES: UNLESS OTHERWISE SPECIFIED


- A) THIS PACKAGE CONFORMS TO JEDEC MS-012, VARIATION AB, ISSUE C, DATED MAY 1990.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS DO NOT INCLUDE MOLD FLASH OR BURRS.

Figure 3. 14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow Package Number M14A



TRADEMARKS

The following are registered and unregistered trademarks and service marks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks

ACEx®	Green FPS™ e-Series™	Power-SPM™	SyncFET™
Build it Now™	GTO™	PowerTrench®	The Power Franchise®
CorePLUS™	<i>i-Lo</i> ™	Programmable Active Droop™	 ™
CROSSVOLT™	IntelliMAX™	QFET®	TinyBoost™
CTL™	ISOPLANAR™	QS™	TinyBuck™
Current Transfer Logic™	MegaBuck™	QT Optoelectronics™	TinyLogic®
EcoSPARK®	MICROCOUPLER™	Quiet Series™	TINYOPTO™
FACT Quiet Series™	MicroPak™	RapidConfigure™	TinyPower™
FACT®	Motion-SPM™	SMART START™	TinyPWM™
FAST®	OPTOLOGIC®	SPM®	TinyWire™
FastvCore™	OPTOPLANAR®	STEALTH™	μSerDes™
FPS™	PDP-SPM™	SuperFET™	UHC®
FRFET®	Power220®	SuperSOT™-3	UniFET™
Global Power Resource™	Power247®	SuperSOT™-6	VCX™
Green FPS™	POWEREDGE®	SuperSOT™-8	

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION, OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. THESE SPECIFICATIONS DO NOT EXPAND THE TERMS OF FAIRCHILD'S WORLDWIDE TERMS AND CONDITIONS, SPECIFICALLY THE WARRANTY THEREIN, WHICH COVERS THESE PRODUCTS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

- Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
- A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.

Rev. I28