

Am2924

Three-Line to Eight-Line Decoder/Demultiplexer

DISTINCTIVE CHARACTERISTICS

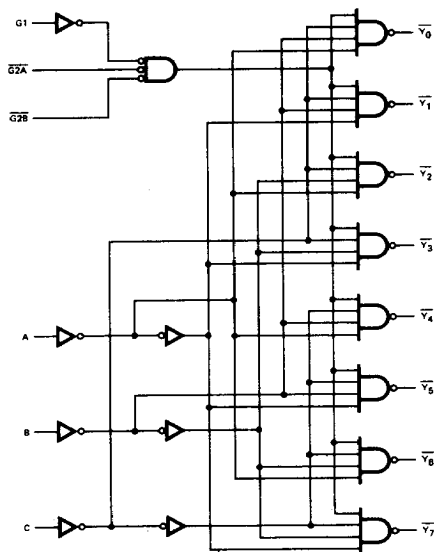
- Advanced Schottky technology
- Inverting and non-inverting enable inputs

GENERAL DESCRIPTION

The Am2924 is a 3-line to 8-line decoder/demultiplexer fabricated using advanced Schottky technology. The decoder has three buffered select inputs A, B and C that are decoded to one of eight \bar{Y} outputs.

One active-HIGH and two active-LOW enables can be used for gating the decoder or can be used with incoming data for demultiplexing applications. When the enable input function is in the disable state, all eight \bar{Y} outputs are HIGH regardless of the A, B and C select inputs.

BLOCK DIAGRAM

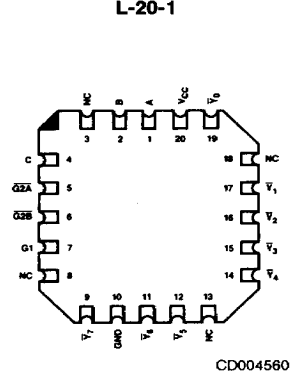
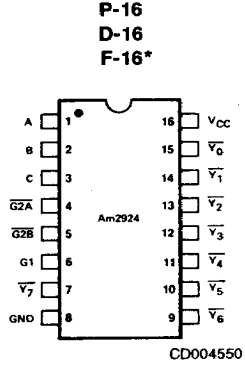


BD002380

RELATED PRODUCTS

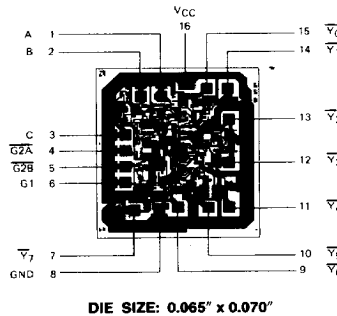
Part No.	Description
Am25LS2536	8-Bit Decoder
Am25LS2537	1 of 10 Decoder
Am25LS2538	1 of 8 Decoder
Am25LS2539	Dual 1 of 4 Decoder
Am25LS2548	Chip Select Address Decoder
Am2921	1 of 8 Decoder

CONNECTION DIAGRAM Top View



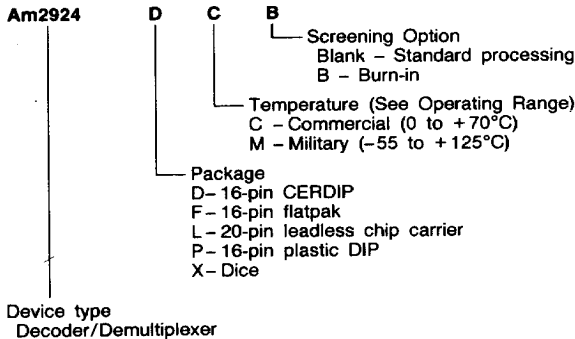
*F-16 pin configuration identical to D-16, P-16.
Note: Pin 1 is marked for orientation

METALLIZATION AND PAD LAYOUT



ORDERING INFORMATION

AMD products are available in several packages and operating ranges. The order number is formed by a combination of the following: Device number, speed option (if applicable), package type, operating range and screening option (if desired).



Valid Combinations	
Am2924	PC DC, DCB, DM, DMB FM, FMB LC, LCB, LM, LMB XC, XM

Valid Combinations
Consult the AMD sales office in your area to determine if a device is currently available in the combination you wish.

PIN DESCRIPTION

Pin No.	Name	I/O	Description
1, 2, 3	A, B, C	I	A, B, C Select. The three select inputs to the decoder.
6	G1	I	The active-HIGH enable input. A LOW on the G1 input forces all \bar{Y} outputs HIGH regardless of any other inputs.
4, 5	$\bar{G}2A, \bar{G}2B$	I	The active-LOW enable input. A HIGH on either the $\bar{G}2A$ or $\bar{G}2B$ input forces all \bar{Y} outputs HIGH regardless of any other inputs.
15, 14, 13 12, 11, 10 9, 7	$\bar{Y}_0, \bar{Y}_1, \bar{Y}_2, \bar{Y}_3, \bar{Y}_4, \bar{Y}_5, \bar{Y}_6, \bar{Y}_7$	O	The eight decoder outputs.

FUNCTION TABLE

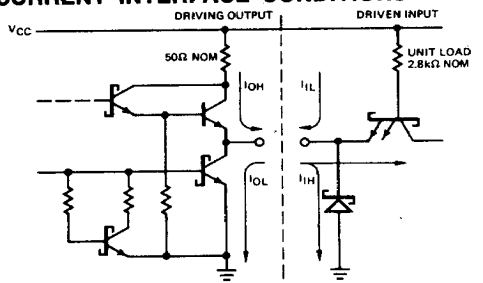
Inputs				Outputs									
Enable		Select											
G1	$\bar{G}2A$	$\bar{G}2B$	C	B	A	\bar{Y}_0	\bar{Y}_1	\bar{Y}_2	\bar{Y}_3	\bar{Y}_4	\bar{Y}_5	\bar{Y}_6	\bar{Y}_7
L	X	X	X	X	X	H	H	H	H	H	H	H	H
X	H	X	X	X	X	H	H	H	H	H	H	H	H
X	X	H	X	X	X	H	H	H	H	H	H	H	H
H	L	L	L	L	L	L	H	H	H	H	H	H	H
H	L	L	L	L	H	H	L	H	H	H	H	H	H
H	L	L	L	H	L	H	H	L	H	H	H	H	H
H	L	L	L	H	H	H	H	L	H	H	H	H	H
H	L	L	L	H	L	H	H	H	L	H	H	H	H
H	L	L	L	H	H	L	H	H	H	L	H	H	H
H	L	L	L	H	H	H	H	H	H	L	H	H	H
H	L	L	L	H	H	H	H	H	H	H	L	H	H
H	L	L	L	H	H	H	H	H	H	H	H	L	L

H = HIGH
L = LOW
X = Don't care

LOADING RULES (In Unit Loads)

Input/Output	Pin No.'s	Unit Load	Fan-out	
			Output HIGH	Output LOW
A	1	1	-	-
B	2	1	-	-
C	3	1	-	-
$\bar{G}2A$	4	1	-	-
$\bar{G}2B$	5	1	-	-
G1	6	1	-	-
\bar{Y}_7	7	-	20	10
GND	8	-	-	-
\bar{Y}_6	9	-	20	10
\bar{Y}_5	10	-	20	10
\bar{Y}_4	11	-	20	10
\bar{Y}_3	12	-	20	10
\bar{Y}_2	13	-	20	10
\bar{Y}_1	14	-	20	10
\bar{Y}_0	15	-	20	10
VCC	16	-	-	-

SCHOTTKY INPUT/OUTPUT CURRENT INTERFACE CONDITIONS

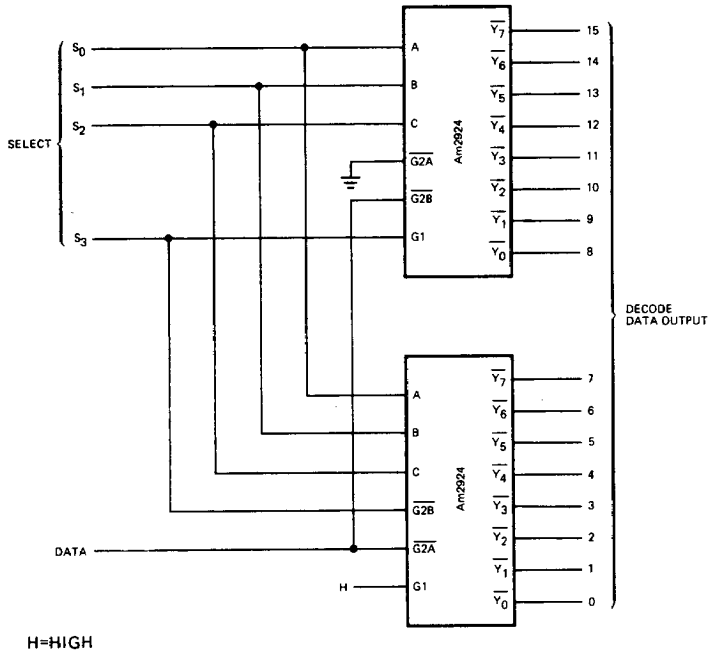


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Note: Actual current flow direction shown.

A Schottky TTL Unit Load is defined as 50μA measured at 2.7V HIGH and -2.0mA measured at 0.5V LOW.

APPLICATIONS



H=HIGH

AF002010

One-of-Sixteen Demultiplexer

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65°C to +150°C
(Ambient) Temperature Under Bias	-55°C to +125°C
Supply Voltage to Ground Potential (Pin 16 to Pin 8) Continuous	-0.5V to +7.0V
DC Voltage Applied to Outputs For High Output State	-0.5V to +V _{CC} max
DC Input Voltage	-0.5V to +5.5V
DC Output Current, Into Outputs	30mA
DC Input Current	-30mA to +5.0mA

Stresses above those listed under **ABSOLUTE MAXIMUM RATINGS** may cause permanent device failure. Functionality at or above these limits is not implied. Exposure to absolute maximum ratings for extended periods may affect device reliability.

OPERATING RANGES

Commercial (C) Devices	Temperature	0°C to +70°C
	Supply Voltage	+4.75V to +5.25V
Military (M) Devices	Temperature	-55°C to +125°C
	Supply Voltage	+4.5V to +5.5V

Operating ranges define those limits over which the functionality of the device is guaranteed.

DC CHARACTERISTICS over operating range unless otherwise specified

Parameters	Description	Test Conditions (Note 1)	Min	Typ (Note 2)	Max	Units
V _{OH}	Output HIGH Voltage	V _{CC} = MIN, I _{OH} = -1mA V _{IN} = V _{IH} or V _{IL}	MIL 2.5 COM'L 2.7	3.4 3.4		Volts
V _{OL}	Output LOW Voltage	V _{CC} = MIN, I _{OL} = 20mA V _{IN} = V _{IH} or V _{IL}			0.5	Volts
V _{IH}	Input HIGH Level	Guaranteed input logical HIGH voltage for all inputs	2.0			Volts
V _{IL}	Input LOW Level	Guaranteed input logical LOW voltage for all inputs			0.8	Volts
V _I	Input Clamp Voltage	V _{CC} = MIN, I _{IN} = -18mA			-1.2	Volts
I _{IL} (Note 3)	Input LOW Current	V _{CC} = MAX, V _{IN} = 0.5V			-2	mA
I _{IH} (Note 3)	Input HIGH Current	V _{CC} = MAX, V _{IN} = 2.7V			50	μA
I _I	Input HIGH Current	V _{CC} = MAX, V _{IN} = 5.5V			1.0	mA
I _{SC}	Output Short Circuit Current (Note 4)	V _{CC} = MAX, V _{OUT} = 0.0V	-40		-100	mA
I _{CC}	Power Supply Current	V _{CC} = MAX (Note 5)		49	74	mA

- Notes: 1. For conditions shown as MIN or MAX, use the the appropriate value specified under Operating Ranges for the applicable device type.
 2. Typical limits are at V_{CC} = 5.0 V, 25°C ambient and maximum loading.
 3. Actual input currents = Unit Load Current x Input Load Factor (See Loading Rules).
 4. Not more than one output should be shorted at a time. Duration of the short circuit test should not exceed one second.
 5. Output enabled and open.

SWITCHING CHARACTERISTICS (T_A = 25°C)

Parameters	Description	Test Conditions	Min	Typ	Max	Units
t _{PLH}	Two Level Delay Select to Output	V _{CC} = 5V, C _L = 15pF, R _L = 280Ω		4.5	7	ns
t _{PHL}				7	10.5	
t _{PLH}	Three Level Delay Select to Output			7.5	12	ns
t _{PHL}				8	12	
t _{PLH}	G2A or G2B to Output			5	8	ns
t _{PHL}				7	11	
t _{PLH}	G1 to Output		7	11	ns	
t _{PHL}			7	11		