

Am25LS2536

Eight-Bit Decoder with Control Storage

DISTINCTIVE CHARACTERISTICS

- 8-bit decoder/demultiplexer with control storage
- 3-state outputs
- Common clock enable
- Common clear
- Polarity control
- Advanced Low-Power Schottky Process

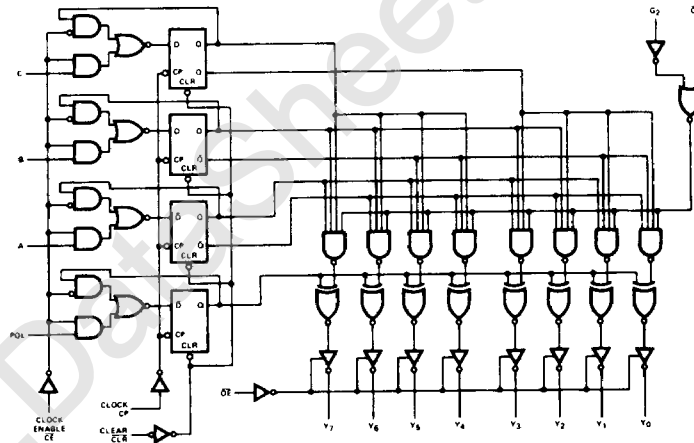
GENERAL DESCRIPTION

The Am25LS2536 is an eight-bit decoder with control storage. It provides a conventional 8-bit decoder function with two enable inputs which may also be used for data input. This can be used to implement a demultiplexer function. In addition, the exclusive "OR" gate allows for polarity control of the selected output. The 3-state outputs are enabled by a LOW on the (\overline{OE}) output enable.

The three control bits representing the output selection and the single bit polarity control are stored in "D" type flip-flops. These flip-flops have both Clear, Clock, and Clock Enable functions provided. The G_1 and G_2 input provide either polarity for input control or data.

BLOCK DIAGRAM

8-Bit Decoder/Demultiplexer with Control Storage

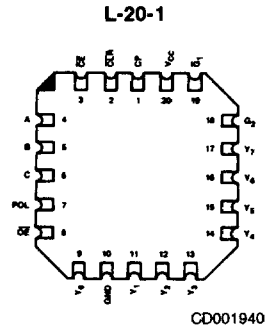
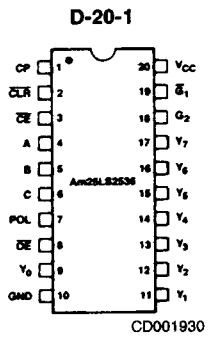


BD001630

RELATED PRODUCTS

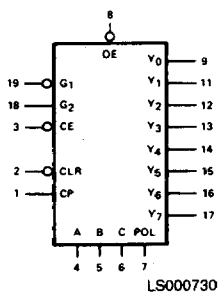
Part No.	Description
Am25LS2537	1 of 10 Decoder
Am25LS2538	1 of 8 Decoder
Am25LS2539	Dual 1 of 4 Decoder
Am25LS2548	Chip Select Address Decoder
Am2921	1 of 8 Decoder
Am2924	3 to 8 Line Decoder/Demultiplexer

CONNECTION DIAGRAM Top View

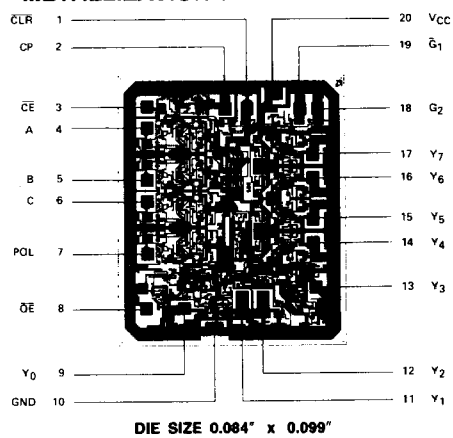


Note: Pin 1 is marked for orientation

LOGIC SYMBOL

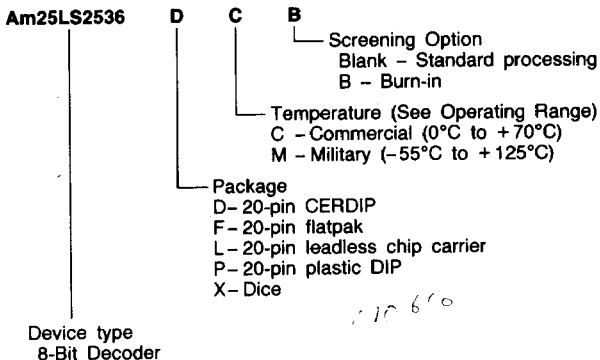


METALLIZATION AND PAD LAYOUT



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	
Am25LS2536	PC DC, DM FM LC, LM 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.

ABSOLUTE MAXIMUM RATINGS

Storage Temperature -65°C to +150°C
 Ambient Temperature
 Under Bias -55°C to +125°C
 Supply Voltage to Ground Potential
 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 +7.0V
 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 2)	Min	Typ (Note 1)	Max	Units
V _{OH}	Output HIGH Voltage	V _{CC} = MIN V _{IN} = V _{IH} or V _{IL}	I _{OH} = -2.6mA, COM'L	2.4	3.2	
			I _{OH} = -1.0mA, MIL	2.4	3.4	
V _{OL}	Output LOW Voltage	V _{CC} = MIN V _{IN} = V _{IH} or V _{IL}	I _{OL} = 24mA, COM'L		0.4	0.5
			I _{OL} = 12mA, MIL		0.35	0.4
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.	MIL		0.7	
			COM'L			0.8
V _I	Input Clamp Voltage	V _{CC} = MIN, I _{IN} = -18mA			-1.5	Volts
I _{IL}	Input LOW Current	V _{CC} = MAX, V _{IN} = 0.4V			-0.4	mA
I _{IH}	Input HIGH Current	V _{CC} = MAX, V _{IN} = 2.7V			20	μA
I _I	Input HIGH Current	V _{CC} = MAX, V _{IN} = 7.0V			0.1	mA
I _O	Off-State (High-Impedance) Output Current	V _{CC} = MAX	V _O = 0.4V		-20	μA
			V _O = 2.4V		20	
I _{SC}	Output Short Circuit Current (Note 3)	V _{CC} = MAX	-15		-85	mA
I _{CC}	Power Supply Current (Note 4)	V _{CC} = MAX		37	56	mA

- Notes: 1. Typical limits are at V_{CC} = 5.0V, 25°C ambient and maximum loading.
 2. For conditions shown as MIN or MAX, use the appropriate value specified under Operating Ranges for the applicable device type.
 3. Not more than one output should be shorted at a time. Duration of the short circuit test should not exceed one second.
 4. Test Conditions A = B = C = G₁ = OE = CE = GND; CLK = CLR = POL = G₂ = 4.5V.

SWITCHING CHARACTERISTICS ($T_A = +25^\circ\text{C}$, $V_{CC} = 5.0\text{V}$)

Parameters	Description	Test Conditions	Min	Typ	Max	Units
t_{PLH}	\bar{G}_1 to $Y_0 - Y_7$	$C_L = 45\text{pF}$ $R_L = 667\Omega$		17	25	ns
t_{PHL}				23	34	
t_{PLH}	G_2 to $Y_0 - Y_7$			20	30	ns
t_{PHL}				26	39	
t_{PLH}	CP to $Y_0 - Y_7$			24	36	ns
t_{PHL}				30	45	
t_{PLH}	\bar{CLR} to $Y_0 - Y_7$			24	36	ns
t_{PHL}				31	46	
t_s	Clock Enable to CP			25		ns
t_h				0		
t_s	A, B, C, POL to CP		15		ns	
t_h			0			
t_{HZ}	\bar{OE} to $Y_0 - Y_7$	$C_L = 5\text{pF}$ $R_L = 667\Omega$		9	14	ns
t_{LZ}				11	17	
t_{ZH}	\bar{OE} to $Y_0 - Y_7$	$C_L = 45\text{pF}$ $R_L = 667\Omega$		15	22	ns
t_{ZL}				16	24	
t_s	Set-up Time, Clear Recovery to CP		20			ns
t_{pw}	Pulse Width	Clock	15			ns
		Clear	15			

SWITCHING CHARACTERISTICS over operating range unless otherwise specified*

Parameters	Description	Test Conditions	COMMERCIAL		MILITARY		Units
			Am25LS2536		Am25LS2536		
			Min	Max	Min	Max	
t_{PLH}	\bar{G}_1 to $Y_0 - Y_7$	$C_L = 45\text{pF}$ $R_L = 667\Omega$		29		31	ns
t_{PHL}				39		42	
t_{PLH}	G_2 to $Y_0 - Y_7$			34		37	ns
t_{PHL}				44		48	
t_{PLH}	CP to $Y_0 - Y_7$			40		42	ns
t_{PHL}					51		
t_{PLH}	\bar{CLR} to $Y_0 - Y_7$					47	54 ns
t_{PHL}					58		
t_s	Clock Enable to CP			27		30	ns
t_h				0		0	
t_s	A, B, C, POL to CP		17		20	ns	
t_h			0		0		
t_{HZ}	\bar{OE} to $Y_0 - Y_7$	$C_L = 5.0\text{pF}$ $R_L = 667\Omega$		17		18	ns
t_{LZ}				27		34	
t_{ZH}	\bar{OE} to $Y_0 - Y_7$	$C_L = 5.0\text{pF}$ $R_L = 667\Omega$		25		27	ns
t_{ZL}					28		
t_s	Set-up Time, Clear Recovery to CP		23		25		ns
t_{pw}	Pulse Width	Clock	17		20		ns
		Clear	15		15		

*AC performance over the operating temperature range is guaranteed by testing defined in Group A, Subgroup 9.